FINAL PROJECT – TI 184833

PRODUCT REDEVELOPMENT FOR MATURE E-COMMERCE SYSTEM USING USER EXPERIENCE APPROACH AND KANSEI ENGINEERING (CASE STUDY: BUKALAPAK)

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SURABAYA
2020

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APPROVAL SHEET

PRODUCT REDEVELOPMENT FOR MATURE E-COMMERCE USING USER EXPERIENCE APPROACH AND KANSEI ENGINEERING (CASE STUDY: BUKALAPAK)

FINAL PROJECT

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Surabaya, Indonesia

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SURABAYA, 18 AUGUST 2020

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PRODUCT REDEVELOPMENT FOR MATURE E-COMMERCE SYSTEM USING USER EXPERIENCE APPROACH AND KANSEI ENGINEERING (CASE STUDY: BUKALAPAK)

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ABSTRACT

In preparing highly competitive market among e-commerce in Indonesia, a company must be aware ready about when the product will be headed out to decline stage and then vanish from the competition. Innovation plays integral role in designing user experience as user experience focuses on the customer and their journeys that features need to be updated according to the change of user needs. Therefore, Kansei Engineering can be involved in the analysis of study. This leads to design feature as strategy to extend product's life on maturity phase by capturing customer's perspective through Kansei Engineering and User Experience approach to explore a breakthrough feature. The knowledge gain could be used by e-commerce as a strategy to extend the maturity phase before going to decline phase by implementing Kansei engineering into User Experience Design to recognize user needs on e-commerce. There are 32 words chosen from interview and literature. Derived from chosen Kansei Words (Special, Extraordinary, Uncrowded, and Well-known), the proposed featured is Try-On Feature and Personalized Quiz. The prototype is designed by using Adobe XD. User interface of the new feature is evaluated using SUS Questionnaire filled by 5 people. Three out of 5 respondents' results score above 70 which is interpreted into acceptable system of the proposed feature.

Keyword: *Kansei Engineering, User Experience, E-Commerce*

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PREFACE

Praises to Allah SWT for his blessings and mercy, the author can complete this research entitled "Product Redevelopment for Mature E-commerce using User Experience Approach and Kansei Engineering (Case Study: Bukalapak)" smoothly and on time. This report is made to fulfill the requirement in completing a Bachelor Degree program in the Department of Industrial and System Engineering, Faculty of Industrial Technology and System Engineering, Institut Teknologi Sepuluh Nopember Surabaya.

On this occasion, the author would like to express gratitude and appreciation to various parties who always provide support, motivation, inspiration, and help during the completion of this report. Therefore, the author conveys sincere gratitude and appreciation to:

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The author realizes that this research still has gap for further improvement. Therefore, constructive criticisms and suggestions are welcomed. Hopefully, this

research will be useful for future research about similar topic or any other related field. Thank you.

<div align="right">Cilegon, July 2020</div>

<div align="right">Author</div>

DISCLAMER

The following thesis with the title "Product Redevelopment for Mature E-commerce using User Experience Approach and Kansei Engineering (Case Study: Bukalapak" is an unpublished research document. Any kinds of referencing activities involving this research must not be done before permission from corresponding researcher and the research's supervisor are granted. Permission proposal is able to be sent via email from the author's profile at the end of this thesis page.

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Surabaya, August 2020

Author

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CHAPTER I
INTRODUCTION

This chapter shows the background, problem statement, objectives, benefits, scope, and outline of research.

1.1 Background

E-commerce in Indonesia has grown steadily in the past years. The number of internet users in Indonesia, which is more than 100 million users, is one of the strengths which drives e-commerce growth. This results in Indonesia tops a list of ten countries with the fastest-growing e-commerce in the world. Indonesia leads the rank of these countries with a growth of 78% in 2018 (Widowati, 2019).
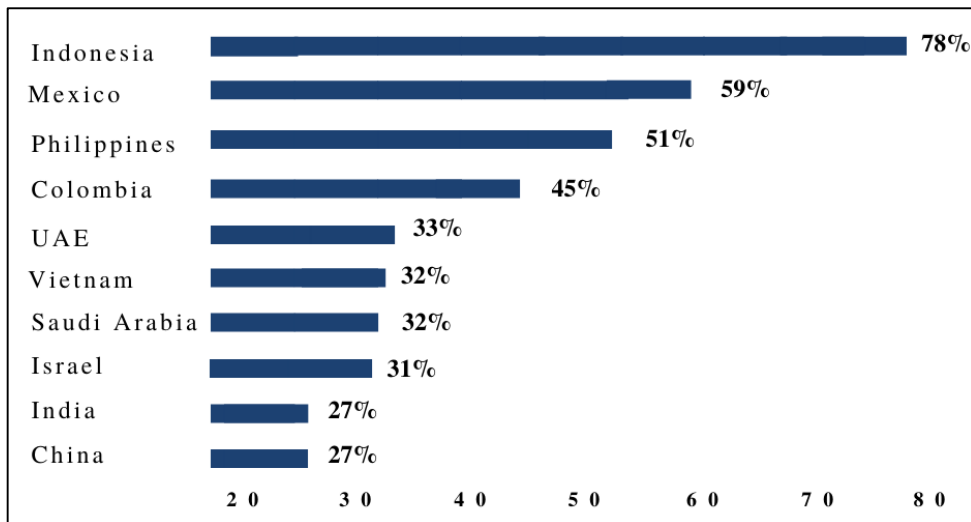
Figure 1.1 Top-10 Rising E-Commerce Countries

Source: (Widowati, 2019)

Rivalry among e-commerce in Indonesia is highly competitive. In the beginning, businesses tend to choose a platform that is already popular in advance to build a solid buyer base. Then, business owners can focus on developing their sites. As the competition inside the country, there is top-5 e-commerce with the largest number of visitors in quartile-III of 2019.
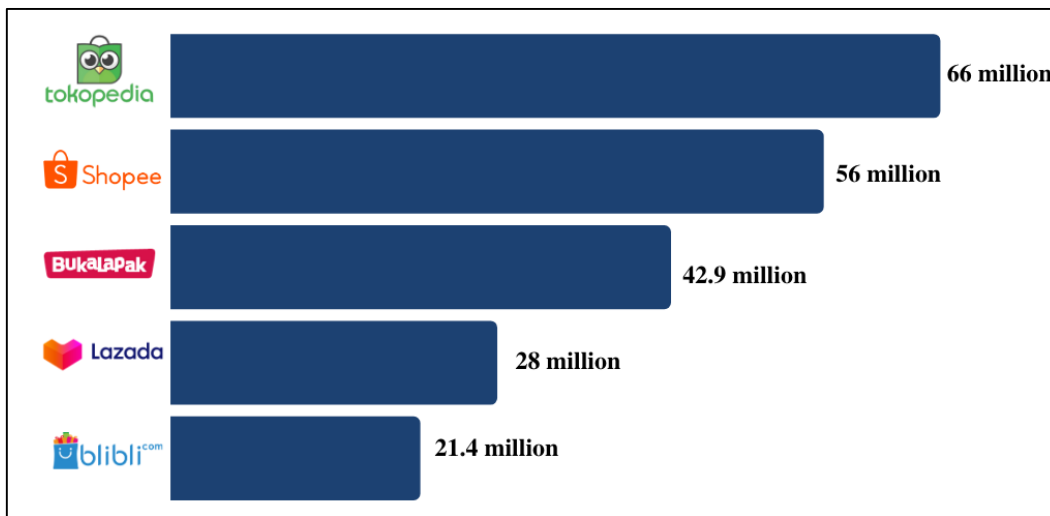
Figure 1.2 Indonesia E-Commerce with Largest Number of Visitors in Q3 2019

(Jayani, 2019)

iPrice Group, a meta-search site that conducts research on shopping behavior, named Tokopedia as e-commerce with the largest number of monthly web visitors in the third quarter of 2019. The total number of Tokopedia's monthly web visitors was 66 million visitors. The next rank was filled by Shopee with 56 million visitors and Bukalapak with 43 million monthly web visitors. The data provided uses the average website visitors sourced from SimilarWeb (Jayani, 2019).

In preparing competition, the company must also be aware of its product life cycle that most alert and thoughtful senior marketing executives are by now familiar with the concept of the product life cycle. The life story of the most successful product is a history of their passing through certain recognizable phases. (Levitt, 1965). An important concept underlying most dynamic business planning models is the Product Life Cycle (PLC). Because a product's sales position and profitability change over time, every firm needs to revise its product strategy periodically. Using the concept of the Life Cycle, the firm recognizes distinct phases in the sales history of the product and its market and thereby develop strategies appropriate to those various stages (Oluwasanmi, 2014). Despite significant criticism, the classical model of the Product Life Cycle has shown remarkable resilience in the past five decades (Hui & Paul, 2012).
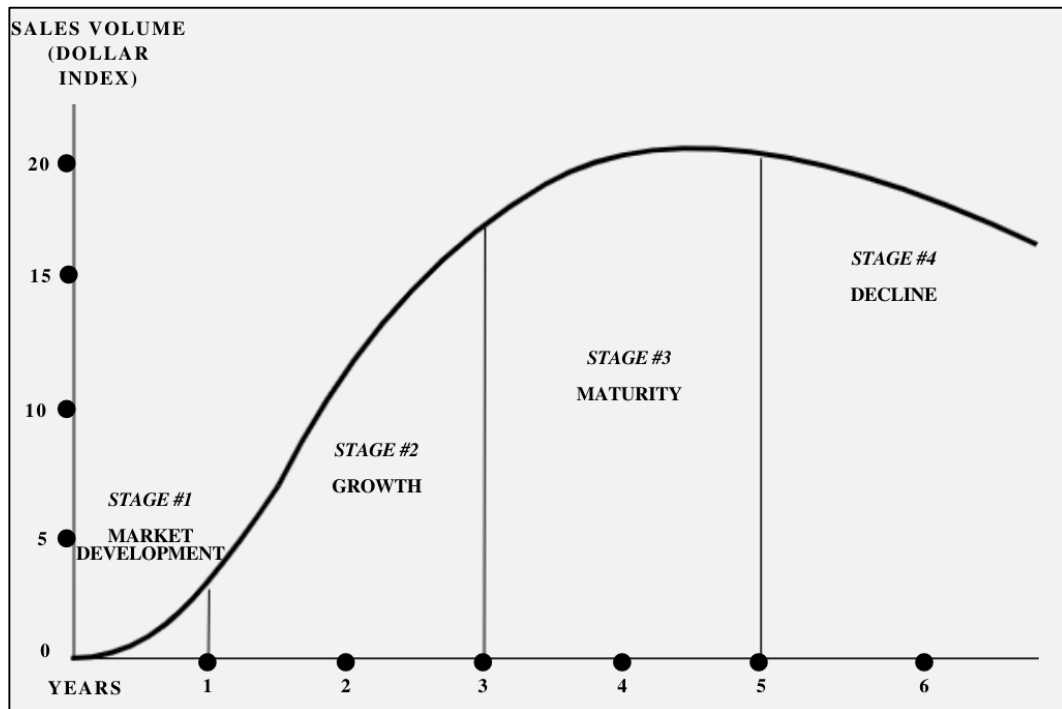
Figure 1.3 Product Life Cycle

(Levitt, 1965)

Maturity can last for a long time, or it can never be attained (Levitt, 1965). A company that hits maturity stage is indicated by evidence of market saturation which shows that most consumer or sales prospects will be owning or using the product. Price and brand preference competition now becomes intense (Levitt, 1965). Characterized by highly competitive pressure, the maturity stage requires changes in strategy (Hallberg, et al., 2014).

When the maturity stage left without a qualified strategy, the stage will be headed out to the decline stage. The product is gradually displaced by some new products due to changes in buying behavior of customers. Promotion expenditure is drastically reduced. The decline may be rapid and the product may soon disappear from the market. The general recommendation to business is to get rid of a product once it reached the decline stage, since its profitability in all likelihood is dropping, and it is a waste of resources to continue investing in it. It has appeared that, in spite of conventional wisdom, there are exceptions, and a product in its decline phase

3

could still be profitable (Kotler & Armstrong, 2012). In short, decline may be slowed when new uses of the product are created (Levitt, 1965)

The extension of life cycle can be illustrated by looking at the history of nylon invented by company named Dupont.
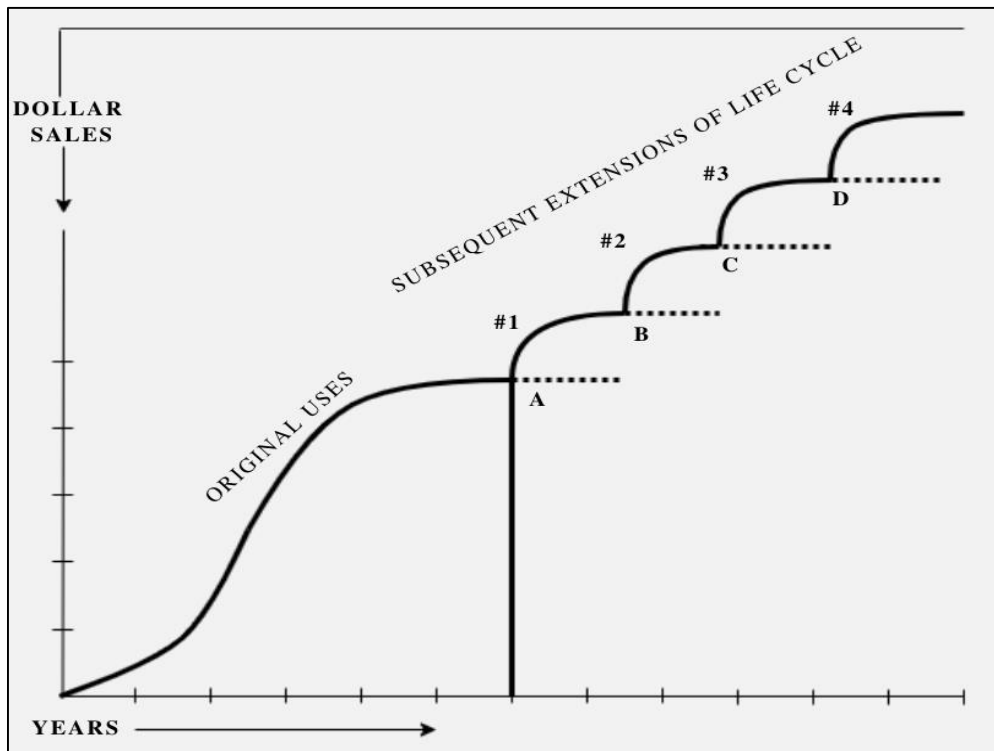
Figure 1.4 Hypothetical Life Cycle – Nylon

(Levitt, 1965)

Point A shows the hypothetical point at which the nylon curve flattened out. If nothing further had been done, the sales curve would have continued along the flattened pace indicated by the dotted line at Point A. This is also the hypothetical point at which the first systematic effort was made to extend the product's life. Du Pont, in effect, took certain "actions" which pushed hosiery sales upward rather than continuing the path implied by the dotted line extension of point A. At point A action #1 pushed an otherwise flat curve upward. They use one of route to expand sales, promoting more frequent usage of the product among current users (Levitt, 1965)

One of strategy to overcome fierce competition is the blue ocean strategy. The Blue Ocean Strategy has goal to find and develop "blue oceans" which is an

uncontested, growing market and avoids "red oceans" which is an overdeveloped, saturated market. A company will have more success, fewer risks, and increased profits in a blue ocean market (Kim & Mauborgne, 2005). The fundamental premise of Blue Ocean strategy is that as opposed to continuing to compete in the red ocean, company should try to find new space in which to sell goods and services. Because of the uniqueness of company offers, company in a blue ocean is able to service customers in uncontested space.

Companies that use blue ocean strategy do not use competition as the benchmark. Instead, they followed a different strategic logic that is called value innovation. Value innovation is the cornerstone of blue ocean strategy which focuses on making the competition irrelevant by creating a leap in value for buyers and companies, thereby opening up new and uncontested market space. Value innovation is a new way of thinking about executing strategy that results in the creation of a blue ocean and a break from the competition.

User experience is a critical factor of a quality software product and is responsible for a defensible strategic advantage for businesses; especially for new entrepreneurs who launch new products that are similar to those of the competitors in the same market (Badran & Shafig, 2018). For this reason, applying an aspect from blue ocean strategy which is the value innovation will help the business to have a breakthrough idea to create an uncontested market. However, positive user experience does not appear by itself but has to be designed for and evaluated systematically (Alenljung, et al., 2017). Several obstacles came in the way of activating or even keeping this standard running, due to misunderstanding of what is needed since there is often a shortage of contact with the users or misunderstanding of user requirements. Therefore, user's psychological or emotional factors become parameters in the design of the interface, meaning that Kansei Engineering can be involved in the analysis of study (Isa and Hadiana, 2017)

The emotional appeal-based design could be derived from Kansei Engineering (KE), a product development method pioneered by Nagamachi that converts feelings and impressions (Kansei) into product parameters and design specifications (Nagamachi, 1989). Kansei Engineering analyzes the implicit needs of consumers and applies them to the design and character of a product (Lokman,

2010). Defining design begins with human experience, expertise, and science that concentrate on the ability of humans to think, plan and realize products that meet the daily needs of humans, both individually and in groups (Buchanan, 2000).

Furthermore, personality refers to impressions formed based on appearance and behaviors, a concept that applies to applications as well as people. Personality is conveyed visually through the characteristics of what people see: how layout, type, color, imagery, and controls and affordances are represented (Schlatter & Levinson, 2013). Each user has different preferences about the design because of their personality traits (Sodiya, et al., 2007). Personality traits refer to factors that represent the personality of a person (Matthews, et al., 2003). Meanwhile, to get the user's functional needs, designers use Kansei engineering as the method.

Bukalapak is on declining phase as stated on iPrice Group data (Jayani, 2019), Bukalapak's average monthly web visitors in the second quarter of 2019 decreased 22.1% from 115.26 million to 89.77 million visitors. This decrease is the most significant for the last two years. The declining trend has occurred since the first quarter of 2019; from 116 million to 115.26 million which resulted a decrease of 0.6%. According to IdEA (Association of Indonesia E-Commerce) Chairperson, Ignatius Untung, in the future competition between e-commerce services will be increasingly fierce. Those who do not have a strategy will be threatened with a merger, acquisition or forced to close down. E-commerce that is still trying to find and build loyal buyers by providing low prices will experience difficulties. Today, a brand can be cheaper, but in the next day, the situation can change. For this reason, players should start focusing on more unique areas. Therefore, this study focuses on Bukalapak as one of Indonesia's marketplace which shows sign of declining phase. It is deemed necessary for Bukalapak to apply blue ocean strategy which is a uniqueness of a brand in a form of a new feature based on user experience.

In this study, Kansei Engineering is applied to find new feature to cope with declining issue on e-commerce life cycle, in this case is Bukalapak. The research objective is to implement a user experience approach and Kansei Engineering to recognize user needs on e-commerce. The knowledge gain has been applied by e-commerce as a strategy to extend the maturity phase before going to decline phase in facing the fierce competition of e-commerce in Indonesia.

1.2 Problem Statement

As the problem definition above, the formulation of the problem in this study is desigining feature as strategy to extend product's life on maturity phase by capturing customer's perspective through Kansei Engineering and User Experience approach to explore a breakthrough feature.

1.3 Objectives of Research

The objectives of this research are listed below.

1. Identify user needs on e-commerce feature using the Kansei approach.
2. Design new function as service on e-commerce based on emotional aspects.
3. Prototyping user interface for the new function on e-commerce.
4. Evaluate usability of user interface of the new feature.

1.4 Benefits of Research

The benefits of this research are listed below.

- Benefit for E-commerce
1. Determine feature from emotional aspect.
2. Recommend strategy for extending e-commerce's maturity phase before facing decline phase.
3. Evaluate the application of Kansei Engineering as an added-value tool to facilitate the understating of consumer's desires in an objective matter.
- Benefit for Users
1. The needs of users are fulfilled.
2. Helps the user to have a feature that consider their emotion.

1.5 Scope of Research

The scopes of research are listed below.

1. Focusing on Indonesia consumers.
2. The platform is the mobile application of Bukalapak.
3. The featured proposed is developed to mock-up design interface only.

1.6 Outline of Research

The outline of research for each chapter is listed below.

CHAPTER I INTRODUCTION

This chapter will describe the reason of the conducted research, including the identification of the problem. The sub-chapters included in this chapter are background, problem identification, objectives of research, benefits of research, scope of research, and outline of research.

CHAPTER II LITERATURE REVIEW

Literature review chapter describes the theory or existing research that used as references to conduct the research. Topics that are included in this chapter are; product life cycle, blue ocean strategy, user experience, human computer interaction, ergonomics cognitive, e-commerce, and kansei engineering.

CHAPTER III METHODOLOGY

This chapter describes the sequences and how methods are used in the research. Research methodology will make the research more systematic and structured. In this chapter, there will be a flowchart and explanation regarding the steps to complete this research.

CHAPTER IV DATA COLLECTION AND PROCESSING

This chapter consists of data collection that will become input of the research and calculation based on the methodology that already explained in the previous chapter. It also consists of the design phase of the application based on the data processing that already done before. In addition, the feature will be tested and evaluated through several steps.

CHAPTER V ANALYSIS AND EVALUATION

In this chapter, there will be explanation and analysis about the result of the application design.

CHAPTER VI CONCLUSION AND SUGGESTION

This chapter consists the conclusion of the research regarding the research objectives. Several recommendations are also given for further research on the related topic.

CHAPTER II
LITERATURE REVIEW

In Chapter II of Literature Review, theories used in the research are given.

2.1 Product Life Cycle

Most successful products have a life story which is a history passing through certain recognizable stages. The first theory of the product life cycle was firmly in place by the mid-1960s in marketing circles (Hui & Paul, 2012). New products have a protected distinctiveness which is doomed to progressive degeneration from competitive inroads or to be called the 'cycle of competitive degeneration'.

Product life cycle occurs in the following order, Market Development, Growth, Maturity, Decline (Hui & Paul, 2012).

1. Development: The time when a new product is first brought to market. The condition of this stage is that sales are low and gradually increasing. Uncertainties surround the stage when a new product is brought to a market. How long the demand created depends on the product's complexity, its degree of newness, its fit into customer needs, and the presence of competitive substitutes of one form or another.

2. Growth: the other calling for this stage is "Takeoff stage". Demand starts to accelerate, and the size of the total market expands expeditiously which shows the usual characteristic of a successful new product. At this point product and brand differentiation begin to develop.

3. Maturity: Demand levels off and grows, for the most part, only at the replacement and new family-formation rate. The first sign of the stage is evidence of market saturation which shows that most consumer or sales prospects will be owning or using the product. Price and brand preference competition now becomes intense. The roles of retailers and distributors will now frequently have been reduced largely to being merchandise-displayers and order takers. The company will now tend to communicate directly with the consumer. Companies will have competitive attempts in making finer differentiation in the product customer services, and in the promotional

practices and claims made for the product. In addition, there will be attempts to create and promote good product distinctions through packaging and advertising, and to appeal to special market segments.

4. Decline: the product begins to lose consumer appeal and sales taper off. Few companies are able to cope with the competitive situation. Some companies see the declining moment but feel that proper management will be key to surpass the stage. A variety of aggressively repressive tactics such as propose mergers or buy-outs will be run as a strategy of a company to proceed with competitors' downfall directly or to frighten them into early voluntary withdrawal from the industry. A few companies do sustained life through the constant descent that now clearly characterizes the industry.

The key point of the division of the product's life into stages is that different strategies may be applied to a product class as it moves from to another, thus allowing the product lifecycle to act as a basis for production planning and control (Hui & Paul, 2012). The life cycle concept can be effectively applied in the strategy of both existing and new products (keeping the product profitably alive by "life extension" or "market stretching"). Advanced planning should be directed at extending the life of the product.

Some strategies mentioned to expand sales

1. Promoting more frequent usage of the product among current users
2. Developing more varied usage of the product among current users
3. Creating new users for the product by expanding the market
4. Finding new uses for the basic material

Having a clear idea of future product development possibilities and market development opportunities should reduce the likelihood of becoming locked into forms of merchandising that might possibly be proven undesirable.

2.2 Blue Ocean Strategy

Products rivalry can be illustrated by two sorts of oceans: red oceans and blue oceans. Red oceans represent all the industries in existence today which is the known market space. On the other hand, blue oceans express all the industries not in existence today which is the unknown market space. Red oceans have

characteristics of defined industry boundaries and competitive rules of the. In the red oceans, companies try to exceed their rivals' performance to grab a greater share of existing demand. Prospects for profits and growth are reduced as the market space gets crowded. Products become commodities, and cutthroat competition turns the red ocean bloody which originates the name of Red Oceans. Blue oceans, in contrast, are defined by unutilized market space, demand creation, and the opportunity for highly profitable growth (Kim & Mauborgne, 2005)

Red oceans will always matter and will always be a fact of business life. Most blue oceans are created from within red oceans by expanding existing industry boundaries. But with supply exceeding demand in more industries, competing for a share of contracting markets, while necessary, will not be sufficient to sustain high performance. Companies need to go beyond competing. To seize new profit and growth opportunities, they also need to create blue oceans.

What consistently separated winners from losers in creating blue oceans was their approach to strategy (Kim & Mauborgne, 2005) The companies caught in the red ocean followed a conventional approach, racing to beat the competition by building a defensible position within the existing industry order. The creators of blue oceans do not use the competition as their benchmark. Instead, they followed a different strategic logic that we call value innovation. Value innovation is the cornerstone of blue ocean strategy which focuses on beating the competition. Instead, it focuses on making the competition irrelevant by creating a leap in value for buyers and company, thereby opening up new and uncontested market space.

The following charts show the impact of creating blue oceans on a company's growth in both revenues and profits in a study of the business launches of 108 companies (Kim & Mauborgne, 2005)

BUSINESS LAUNCH	86%	14%
REVENUE IMPACT	62%	38%
PROFIT IMPACT	39%	61%
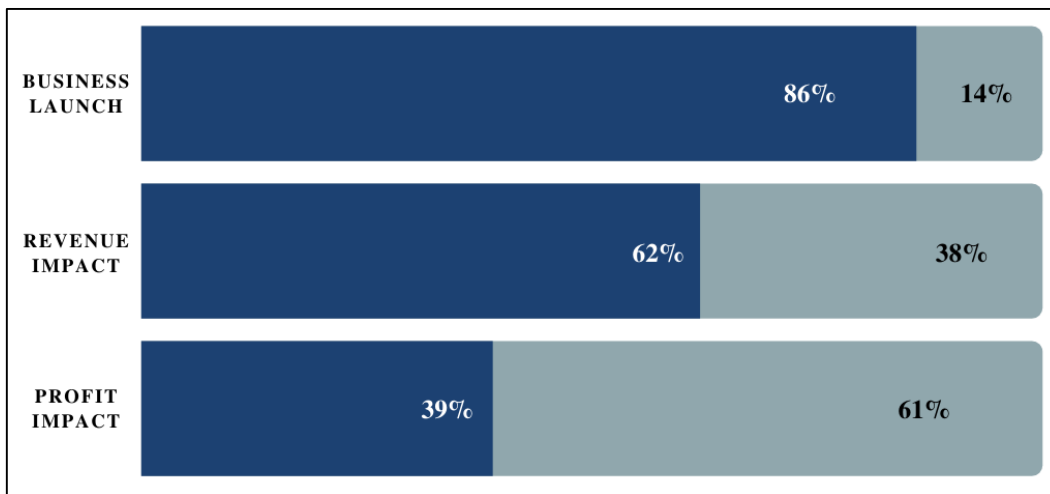
Figure 2.1 Profit of Creating Blue Ocean

(Kim & Mauborgne, 2005)

The study found that 86 percent of the launches were line extensions, that is, incremental improvements within the red ocean of existing market space. Yet the launches accounted for only 62% of total revenues and a mere 39% of total profits. The remaining 14% of the launches were aimed at creating blue oceans. They generated 38 % of total revenues and 61 % of total profits. Given that business launches included the total investments made for creating red and blue oceans (regardless of their subsequent revenue and profit consequences, including failures), the performance benefits of creating blue waters are evident.

2.3 Human Computer Interaction

Human–computer interaction (HCI) is a cross-disciplinary area that deals with the theory, design, implementation, and evaluation of the ways that humans use and interact with computing devices. Interaction refers to an abstract model by which humans interact with the computing device for a given task, and an interface is a choice of technical realization (hardware or software) of such a given interaction model (Kim, 2015). The primary goal of Human Computer Interaction is to improve the interactions between users and computers. It makes computers more operational and receptive to the user's wants. Human computer interaction develops or improves certain goals in designing devices. Five important goals are:

Safety, Utility, Effectiveness, Efficiency, and Usability (Thussethan & Kuhanesan, 2014).

HCI has a framework of interaction as translation between languages. The framework concentrates on four components and each has its unique language (Dix *et al.*, 2004). Those are; User, Input, System, Output. HCI also comprises three major parts within the framework.; the user, the computer, and the interaction, indicate the ways those majors work together to achieve goals.

The human as the user is the one whom computer systems are designed to assist. A person's interaction with the outside world occurs through information being received and sent: input and output. In an interaction with a computer the user receives information that is output by the computer, and responds by providing input to the computer – the user's output becomes the computer's input and vice versa. When users interact with computers, they are either passing information to other people or receiving information from them. Interaction is therefore a process of information transfer. Relating this to the electronic computer, the same principles hold: interaction is a process of information transfer, from the user to the computer and from the computer to the user.

Any effort to design an effective interface for human–computer interaction (HCI) requires two basic elements: an understanding of (a) computer factors (software/hardware) and (b) human behavior. (Kim, 2015). To practice user-centered design by following these principles and guidelines, the interface requirements must often be investigated, solicited, derived, and understood directly from the target users through focus interviews and surveys. However, it is also possible to obtain a fairly good understanding of the target user from knowledge of human factors. As the main underlying theory for HCI, human factors can largely be divided into: (a) cognitive science, which explains the human's capability and model of conscious processing of high-level information and (b) ergonomics, which elucidates how raw external stimulation signals are accepted by five senses, are processed up to the preattentive level, and are later acted upon in the outer world through the motor organs (Kim, 2015).

2.4 Ergonomics Cognitive

Ergonomics Cognitive is defined as knowledge based on information of human's personality and abilities to get the best work system. Cognitive research includes research or experiment about human behavior in facing work including acceptance, learning, assessment, and decision making. Cognitive aspects of a workplace concern the sensory signals that give the brain the clues and cues to understand a task or to solve a problem (Berlin, 2017). Cognition is the combination of sensory stimulation, focus, perception, working memory, long-term memory, and interpretation, leading to decision making and response. Parts of the cognitive process are including (Berlin, 2017):

a. Attention

Attention means devoting a human's mental resources to a task or event at hand. Undivided attention focuses on all human cognitive processing capability to one stimulus. The ability to keep the focus on a process for the duration for time is called 'vigilance'. The contrary condition is boredom which is a mental state where the brain deactivates certain nervous centers and decreases alertness. In this state, humans are less ready to perform tasks well or respond to sudden stimuli.

b. Perception

Perception is the process of how an individual chooses, organizes, and implements information to create a meaningful picture of the world. The sequence of cognitive process that shapes the human perception begins at how human spots some stimulus and choose which stimulus to be focused one.

c. Memory

Memory is the process of obtaining information and keep the information that people have and take it whenever people need. Memory involves storing information in the entire time. Information processing is the process by which stimulation is received, interpreted, stored, and retrieved from the memory.

2.5 User Experience

User experience is the experience of a product or service that is made for someone to use it in the real world (Garret, 2011). User experience is not about the inner working of a product or service. It is about how it works on the outside, where a person encounters it. User experience makes sure the brand designs products that solve the right problem efficiently and enjoyably.

User experience represents how good a company business is. Information on site or content has to be represented in a way that helps people absorb and understand it. Otherwise, the user might not ever find out that the company offer service or product people are looking for. Even when the people manage to find the information, they would likely conclude that if the site is difficult to work with, the company probably is as well. Features and functions always matter, but the user experience has a far greater effect on customer loyalty (Garret, 2011).

The user experience design is based on The Five Planes the basic elements of user experience

1. Strategy Plane

    Before the project is started, the researcher needs to get the basics down first which means understanding the user and the brand. Designing user experience is all about addressing the user's pain points. Background research is used to uncover user needs. This gives the researcher a better idea of the user profile, user needs, and user preferences.

2. Scope Plane

    Strategy becomes scope when it translates user needs and product objectives into specific requirements for what content and functionality the product will offer to users.

3. Structure Plane

    This plane focuses on interaction design and information architecture. Interaction design and information architecture emphasizes defining patterns and sequences in which options will be presented to users. Interaction design concerns the options involved in performing and completing tasks. Information architecture deals with the options involved in conveying information to a user. By building this understanding into the

structure of the product, it will help to ensure a successful experience for those who use it.

Interaction design concerns with describing possible user behavior and defining how the system will accommodate and respond to that behavior. The user moves around, and the system responds. Then the user moves in response to the system, and so the interaction goes on. Instead of designing software that works best for the machine, the researcher could design software that works best for the people who use it. On the other hand, information architecture is concerned with how people cognitively process information.

4. Skeleton Plane

On the skeleton plane, researcher further refines the structure, identifying specific aspects of interface, navigation, and information design that will make the intangible structure concrete. Interface designs consist of the familiar realm of buttons, fields, and other interface components. Navigation design is the specialized form of interface design tailored to presenting information spaces. Information design is the presentation of information for effective communication.

Page layout is where information design, interface design, and navigation design come together form a unified and cohesive skeleton which is a lot to balance all at once. Therefore, page layout is covered in detail in a document called a page schematic or wireframe. Wireframe is a low fidelity version of what the product will eventually look like.

5. Surface Plane

Content, functionality, and aesthetics come together to produce a finished design that phases the senses while fulfilling all the goals of the other four planes.

Evaluation is required to fulfill the user experience design. Among many questionnaires that can be used, SUS is a simple and reliable questionnaire. Developed by John Brooke, SUS is a reliable, popular, effective, and inexpensive usability scale, which can be used to compare globally to system usability. It has ten question components and five answer choices, ranging from strongly disagree

to strongly agree with a minimum score of 0 and a maximum of 100. In this research, usability testing is carried out by using the SUS questionnaire (Tullis & Albert, 2013).

2.6 E-Commerce

The number of internet users in Indonesia, which is more than 100 million users, is one of the strengths which drives e-commerce growth. This results in Indonesia tops a list of ten countries with the fastest growing e-commerce in the world. Indonesia leads the rank of these countries with a growth of 78% in 2018 (Widowati, 2019). The business model where the website is concerned not only helps promote merchandise only but also facilitates online money transactions. Marketplace e-commerce business activities must use a third party or that called 'escrow' to guarantee transaction security. The seller will only accept money payment after the item is received by the buyer. As long as the item has not arrived, money will be stored in a third-party account. If the transaction fails, the money will be returned to the buyer.

Bukalapak is one of the leading online marketplaces in Indonesia that provides a platform for buying and selling from consumers to consumers. Everyone can open an online store in Bukalapak and serve buyers from all over Indonesia for single or multiple transactions. Bukalapak has the slogan of buying and selling online easily and reliably because Bukalapak provides a 100% money-back guarantee to the buyer if the goods are not sent by 'Pelapak' or the seller. Bukalapak's vision is to be the number 1 online marketplace in Indonesia. Meanwhile, Bukalapak's mission is to empower UKM in all parts of Indonesia. In the third-quarter of 2019, Bukalapak has ranked at 3rd place among Marketplace Indonesia with largest number of web visitors of 43 million monthly web visitors. (Jayani, 2019). In the beginning of 2020, Bukalapak release new logo that symbolizes new spirit and also marks Bukalapak's transformation to be better.

2.7 *Kansei* Engineering

Kansei is a Japanese term used to express one's impression towards artefact, situation, and surrounding. Having various interpretations by different literature,

Kansei is generally referred to as sensitivity, sensibility, feeling, and emotion (Yoshikawa, 2000). Psychologically, Kansei means the mental state where knowledge, emotion, and sentiment are harmonized, and people with rich Kansei are people who are rich in emotion and sentiment, adaptive warm, and responsive. (Lokman, 2010).

In KE, there is a method where people will be asked to express their Kansei in words upon seeing products, or for products that they want to buy in the future. These kinds of words are called "Kansei Words"

Kansei researchers have to think which entrance is appropriate to reach the human Kansei and how to measure the expression(s). The Kansei entrance is not always just one gateway, but it may be a combination of several gateways.
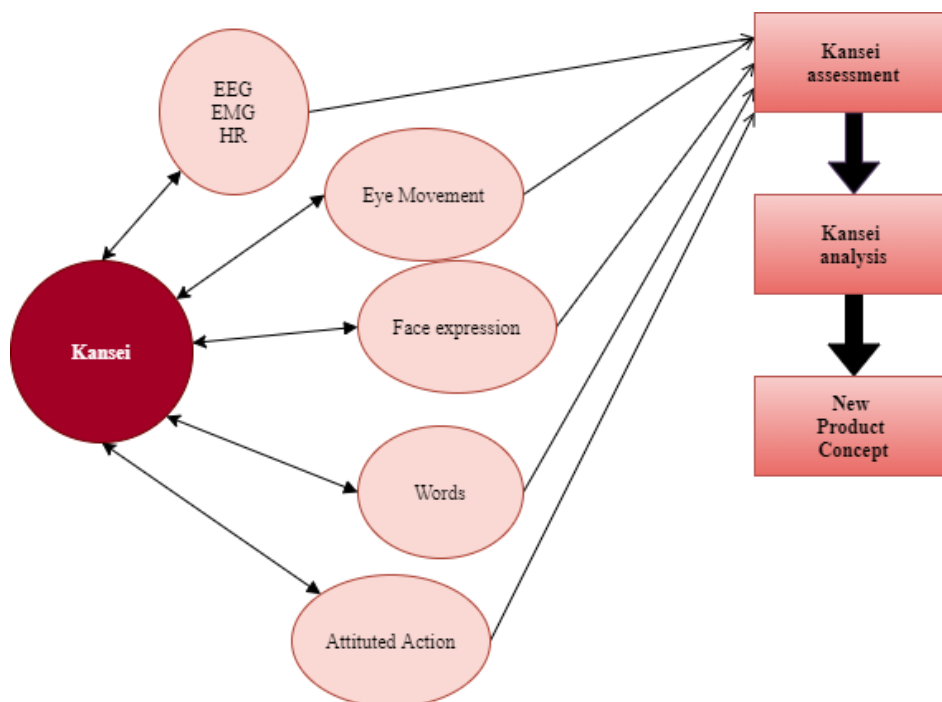
Figure 2. 1 Kansei Gateways

Source: (Lokman & Nagamachi, 2009)

The figure shows options of appropriate gateway in reaching Kansei; EEG (electroencephalogram), EMG (muscular loads measurement by

electromyography), HR (heart rate), Eye Movement, Face Expression, Words, Attitude Action.

The phase consists of three stages: Identification, Measurement, and Analysis of Kansei (Lokman, 2010).

1. **Identification of Kansei**: First, expressions of the dimension of Kansei in the form of adjective or noun, called Kansei Words (KW), must be prepared. Usually the number of initially prepared KW will be very large, and reduction of this number can be performed by qualitative or quantitative methods.

2. **Measurement of Kansei:** Kansei measurement is the process of capturing consumer's Kansei. Since Kansei is subjective, ambiguous, and unstructured, it is impossible to measure it directly. Therefore, we need to devise indirect measurement methods by using alternative expression approach (Ishihara, 2005). Kansei measurement is classified to physiological measures and psychological measures.

   a) **Physiological measure** targets to capture consumer behaviors, responses and body expressions. This can be done through analysis of brain waves by electroencephalogram (EEG), muscular loads measurement by electromyography (EMG), eye movement, and other physiological ergonomic indicators that are used to measure Kansei while a consumer is using or looking at the product. Example of study performed using this kind of measure can be found in the impact of heat to heart rate refrigerator, and response to robot movement

   b) **Psychological measure** deals with human mental states such as consumer behavior, expression, action, and impression. This can be measured using self-reporting system such as Different Emotional Scale (DES), Semantic Differential (SD) scale or free labeling system. This type of measure is very popular in KE implementation due to its simplicity.

3. Analysis of Kansei: Evaluation of Kansei gives opportunity for one study to investigate the similar meanings, structure and the concept in consumer Kansei. The following denotes some of the analysis commonly performed to analyze the consumers' Kansei:

a) **Investigating Similarities Between Variables**

Kansei responses differ in different domain, therefore identification of similarities enables discovery of more objective Kansei that reflects the domain. In KE, Correlation Coefficient Analysis is widely used as a measure of the strength of the association between variables. It is commonly used to measure correlation between Kansei in a domain enabling the investigation of similarity between Kansei so that highly correlated Kansei could be summarized. The result will be used to measure more objective Kansei. Alternatively, qualitative research method could also be used to produce similar results.

b) **Deriving Principal Components**

Even though a study is performed using more objective Kansei, it is believed that it will still result in some redundancy of variables due to the subjective perception. Here, redundancy means that some of the variables are correlated with one another, possibly because they are measuring the same construct. Due to the redundancy, it is believed that it should be possible to reduce the observed variables into a smaller number of principal components that will account for most of the variance in the observed variables. Principal Component Analysis (PCA) is a data reduction technique used to identify a small set of variables that account for a large proportion of the total variance in the original variables. Components can be calculated from the correlation matrix (the default) or the covariance matrix. Output consists of the eigenvalues (i.e., the variances of the principal components), the proportion and cumulative proportion of the total variance explained by

each principal component, and the coefficients for each principal component.

In KE, PCA is commonly used to find semantic space of Kansei and specimens, and Kansei strategy could be determined by PC Vector plot. Kansei strategy is important as it could be used by businesses to strategize new concept of product, with clues on competitor's product design. The Plot of PC loadings could be used to visualize how much the evaluation on Kansei affects variables, and the plot of PC Score shows which Kansei has strong relations to what specimen.

c) **Determining the Concept of Kansei**

Factor analysis (FA) is a statistical data reduction technique used to explain variability among observed random variables in terms of fewer unobserved random variables called factors. FA assumes that all the rating data on different attributes can be reduced down to a few important dimensions. This reduction is possible because the rating given to any one attribute is partially the result of the influence of other attributes. FA is commonly used to find psychological structure of Kansei that constitutes the essential concept of Kansei of the domain under investigation. The result could be used to strategize new concept of Kansei product that represent consumer's Kansei determinants in a domain.

Kansei Engineering is founded as a technology that facilitates the development of product that delights and satisfies human physiologically. Since then, Kansei Engineering has been successfully used to develop products in a wide range of industries such as automotive, construction machines, home appliances, costume, and cosmetic (Nagamachi, 2002). Kansei Engineering has also been used to evaluate e-commerce website design (Lokman & Nagamachi, 2009). Further, Lokman had applied Kansei Engineering in e-commerce children clothing design to identify design concept and characteristic that appeals to consumers of e-commerce markets (Lokman & Aziz, 2010).

2.8 Previous Study

This research was made based on reference to several studies that have similarities in fields with additional combinations of principles and knowledge that have been explored. Table 2.1 shows a collection of previous studies used as a basis for this research.

Table 2.1 List of Previous Research

No.	Title	Author, Year	Object	Method	Significant Content
1	Kansei engineering for e-commerce sunglasses selection in Malaysia	(Chuan *et al.*, 2013)	Sunglasses e-commerce industry	Kansei engineering	Kansei Engineering could be used in the sunglasses e-commerce industry as an added-value tool to facilitate the understanding of consumer's desire in an objective matter
2	Desain Afektif B2C Mobile E-commerce Menggunakan Kansei Engineering	(Ramadhan *et al.*, 2017)	Mobile E-commerce: Lazada, Matahari Mall, Shopee, Bukalapak, Tokopedia	Kansei Engineering	The Partial Least Square Analysis recapitulation has produced an interface design formulation matrix that was successfully validated with the successful development of the B2C m-commerce interface design.
3	An affective e-commerce design for SMEs product marketing based on kansei engineering	(Habyba, Djatna and Anggraeni, 2018)	SMEs e-commerce website design	Kansei Engineering	Four concepts were analyzed with four design elements (body background color, logo typografy, page style and dominant item) of the e-commerce website using QTT-1 analysis. The result showed that "Natural-Formal" concept has the greatest value of $R2$ than

No.	Title	Author, Year	Object	Method	Significant Content
					others. This design concept is recommended for a new SMEs e-commerce website design
4	Implementasi Kansei Engineering Dalam Perancangan Antarmuka Website Mobile Portal Berita Informasi Pendidikan dan Kesehatan Anak	(Ginanjar and Supendi, 2018)	News Mobile Website	Kansei Engineering	The design concept that has been produced can be a new innovation by looking at the highest value of Kansei Words from each design concept, it can also come from one kansei word per kansei concept or combining two kansei words per kansei concept.
5	Implementasi Kansei Engineering dalam Perancangan Desain Interface E-Learning Berbasis web (Studi Kasus: SMK Negeri 1 Sukabumi)	(Isa and Hadiana, 2017)	E-Learning Website	Kansei Engineering	Kansei Engineering Analysis can not only be applied in terms of appearance / interface design, but can be applied in system design, menu design or features.
6	*Evaluasi Pengalaman Pengguna Pada Aplikasi Mobile E-Commerce Di Indonesia Dengan*	(Mutiasanti, Ananta and Az-zahra, 2018)	Mobile E-commerce: Bukalapak, Lazada, Tokopedia,	UX Honeycomb	Bukalapak, Lazada, Tokopedia, Zalora and Matahari Mall have all the values of all aspects of the honeycomb use experience, namely accessible, credible, desirable, findable, usable, useful and valuable.

No.	Title	Author, Year	Object	Method	Significant Content
	Menggunakan UX Honeycomb		Zalora, Matahari Mall,		
7	*Pengukuran Kualitas Layanan Bukalapak.Com terhadap Kepuasan Konsumen Dengan Metode Webqual 4.0*	(Fauziah and Wulandari, 2018)	Bukalapak	Webqual 4.0	Dimension of Bukalapak website quality based on webqual 4.0 variables which includes usability (X1), information quality (X2), and interaction quality (X3) either individually or together have a significant effect on customer satisfaction (Y) of Bukalapak website.
8	*Evaluasi Website Forum United Indonesia dengan Metode Kansei Engineering dan Extended Goal Question Metric untuk Meningkatkan User Experience*	(Kushendriawan, Az-zahra and Rokhmawati, 2018)	Forum Website	Kansei Engineering and Extended Goal Question Metrics	A website that is up to date accordance with current developments and trends can increase user satisfaction and increase the level of user experience of users and prospective users

CHAPTER III
RESEARCH METHODOLOGY

In this chapter, the research methodology will be explained as sequences that will be done to achieve the denied goal.

3.1   Flow of Research Method

The flow of research method shows the step performed in the research. The flowchart below shows the steps of the method that will be used in the research.
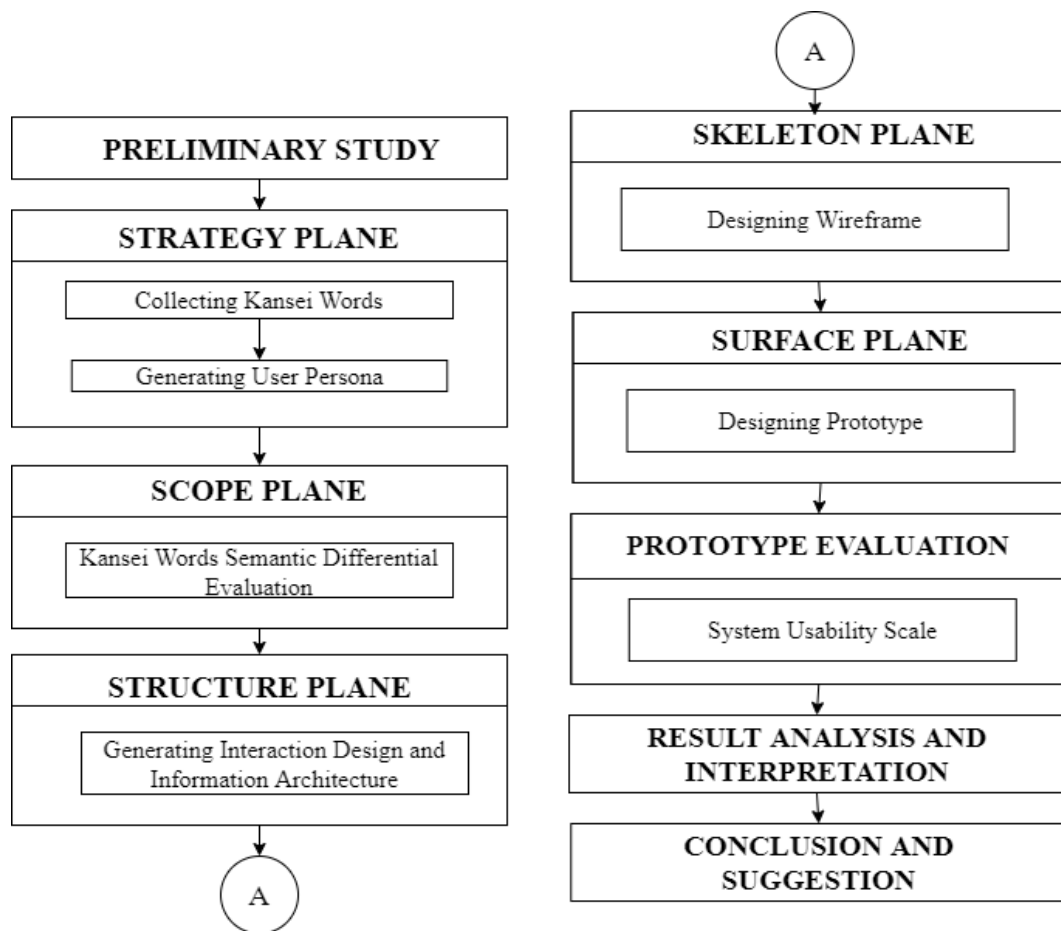

Figure 3.1 Flowchart of Methodology based on Five Planes

(Source: Processed in Visio, 2020)

Based on Figure 3.1 that shows the research methodology, there are several main stages to complete this research; The Five Planes (Strategy, Scope, Structure, Skeleton, and Surface) and Prototype Evaluation.
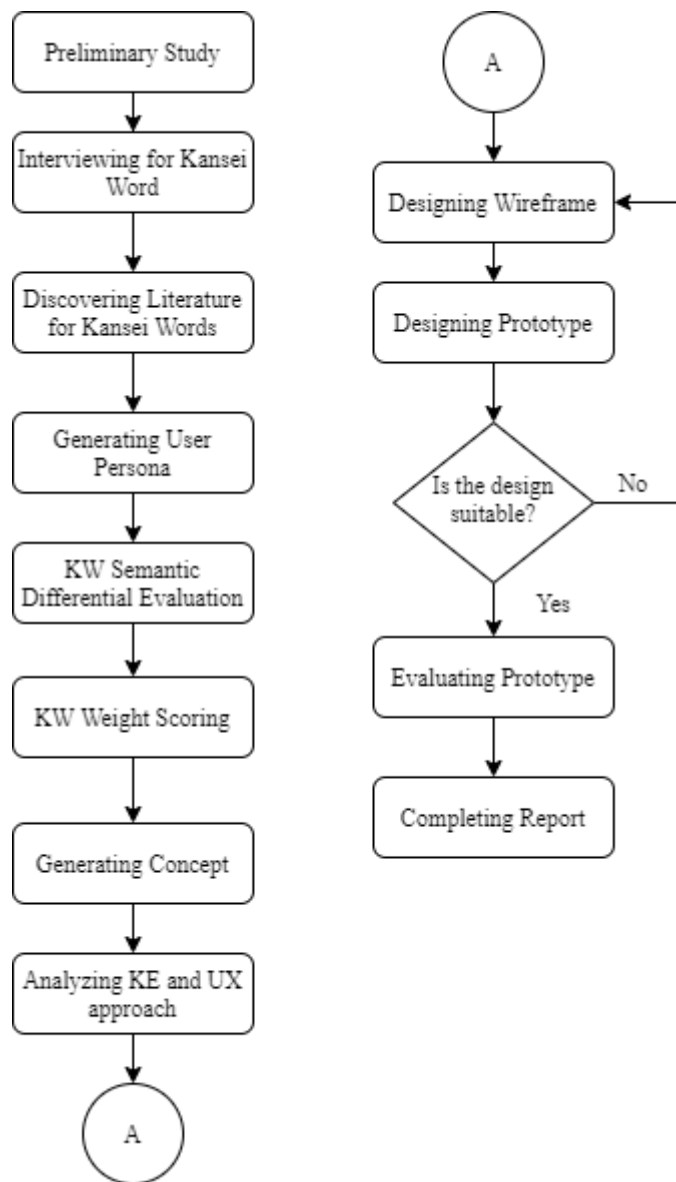
Figure 3.2 Detailed Research Methodology

(Source: Processed in Visio, 2020)

3.2 Preliminary Study

Preliminary study is done to form a framework that determines this research. It starts with discussion of background about competition among e-commerce in Indonesia as the sector is growing rapidly in the country and role of understanding product life cycle can give impact on winning the competition. The discussion leads to a problem identification of launching new feature based on as strategy of extending maturity phase by applying user experience approach Kansei Engineering method.

As the study goes, a literature review is done to deepen understanding of the identified problem. Literature review is obtained from existing literatures and results from previous research. The topics of literature review includes product life cycle, blue ocean strategy, user experience, ergonomics cognitive, human computer interaction, kansei engineering, and some previous studies about similar topic of study. The preliminary study generates framework for author to arrange study solving the identified problems.

3.3 Strategy Plane

Strategy plane focuses on background research which is used to uncover user needs. Following shows the detailed step on strategy plane of the study.

3.3.1 Collecting Kansei Words

Expressions of the dimension of Kansei are shown in the form of adjective or noun, called Kansei Words (KW), must be prepared. Words are sourced from interview and literature related to the study. The first step of interview of determining Kansei Word is by providing an open questionnaire about the question that contains what is desired from Bukalapak mobile application. Respondent is required to have done a transaction in Bukalapak. Determination of Kansei Word is based on perceptions or views of testers or respondents to the interface shown. Usually the number of initially prepared KW will be very large, and reduction of this number can be performed by qualitative or quantitative methods.

3.3.2 *Generating User Persona*

User research focuses on understanding user behaviors, needs, and motivations through observation techniques, task analysis, and other feedback methodologies. A persona is an abstract representation of many people with similar characteristics. It generally includes the needs, goals, and observed behavior patterns of the target audience.

3.4 Scope Plane

Scope Plane focuses on translating user needs and product objectives into specific requirements for what content and functionality the product will offer to users. Following shows the detailed step on scope plane of the study. To conduct the evaluation, experiment respondents evaluate Kansei words on semantic differential (SD) to see the importance level of each Kansei word. The choice of semantic differential consists of 1= strongly disagree, 2= disagree, 3= undecided, 4 = agree, 5= strongly agree. The respondents recruited is has criteria to be familiar with online shopping in Bukalapak. Then, Kansei words (Kansei Word) importance is calculated by using Weight Analysis by find the average score for each word.

3.5 Structure Plane

Structure plane focuses on generating the interaction design that emphasizes on defining patterns and sequences in which options will be presented to users and information architecture which deals with the options involved in conveying information to a user. The weight analysis produces an interface design formulation matrix which is then used as a reference in the design of new feature user interface. The matrix is arranged based on Kansei Word which has the biggest influence in the interaction between users and application. After getting the results of the improvement analysis, the next step is the implementation of the solution.

3.6 Skeleton Plane

Skeleton plane focuses on identifying specific aspects of interface, navigation, and information design that will make the intangible structure concrete. Following shows the detailed step on skeleton plane of the study.

The Kansei Words chosen will be developed into new feature.. The wireframe as the page layout will incorporate the various navigation system which is designed to convey a different view of the architecture. It captures all the skeleton decisions in a single document that serves as a reference for visual design work and site implementation. Wireframe contains all the interface elements required by any functionality on the page and the information design.

3.7 Surface Plane

Surface plane focuses on delivering content, functionality, and aesthetics to come together to produce a finished design that phases the senses while fulfilling all the goals of the other four planes. Implementation of the design is made with a prototype in accordance with an analysis of improvements previously carried out, the design begins by designing a mock-up to produce a new product or prototype. Mock-up design is done to bring design solutions into a more tangible form. The mock-up design will be generated by using Adobe XD which allows creating wireframe, prototype, and design specs in one place. This website also enables people to access the mockup as usability testing will be needed in the next step.

3.8 Prototype Evaluation

The design of new feature is evaluated by delivering questionnaire-2 that focuses on usability of the new feature. Following figure shows the System Usability Scale. (Tullis & Albert, 2013)

Table 3.1 SUS Questionnaire

No	Statement	1	2	3	4	5	SUS Score	SUS Score * 2.5
1	I think that I would like to use this system frequently							
2	I found the system unnecessarily complex							
3	I thought the system was easy to use							
4	I think that I would need to support of a technical person to be able to use this system							

No	Statement	1	2	3	4	5	SUS Score	SUS Score * 2.5
5	I found the various functions in this system were well integrated							
6	I thought there was too much inconsistency in this system							
7	I would imagine that most people would learn to use this system very quickly							
8	I found the system very cumbersome to use							
9	I felt very confident using the system							
10	I needed to learn a lot of things before I could get going with this system							
	TOTAL							

For odd-numbered item, the score contribution is the scale position minus 1. For even-numbered items, the score contribution is 5 minus the scale position. Multiply the sum of the cores by 2.5 to obtain the overall SUS score. The interpretation of SUS scores will be 'not acceptable' for score under 50, 'marginal', for score of 50-70, and 'acceptable' for score more than 70.

3.9   Result Analysis and Interpretation

The analysis is done based on the data given by evaluating the application of Kansei Engineering as an added-value tool to facilitate the understating of consumer's desires in an objective matter. In addition, the result identifies whether the user experience resulted from featured founded by Kansei Engineering method fulfills standard given. Recommendations will be given to follow-up the usability evaluation.

3.10   Conclusion and Suggestion

In this section, researcher presents the conclusion and suggestion following the finding of the study. The first section is the conclusions of the research finding and the second is the suggestion dealing with the objectives and learning process. This chapter is arranged to be the closing of the study.

CHAPTER IV
STRATEGY PLANE DATA COLLECTION AND ANALYSIS

This chapter shows the data collection and analysis of Strategy Plane. The primary data is obtained from online interview due to the condition of COVID-19.

4.1   Collection of Kansei Words

The Kansei Words are collected from the viewpoint of users' words concerning the usage of e-commerce. The data collection based on literature study and insights is obtained from the Bukalapak's advertisement in social media. The data collection based on the interview is conducted online via video call due to the condition of COVID-19.

4.1.1   Interview

The data collection based on the interview is conducted online via video call due to the condition of COVID-19. Total of respondents are 12 people from both students and workers who have used Bukalapak mobile application before. All of respondents' latest education is high-school or currently pursue bachelor degree in university. Further explanation of the respondents is explained in the Chapter 4.2 User Persona. The following Table 4.1 shows the questions for the interview.

Table 4.1 Questions for Interview

No	Expected Output	Question
1	Factor in choosing an e-commerce over another competitor.	Describe aspects that triggers you to choose an e-commerce over another e-commerce.
	The impression obtained before using the feature	Describe your first impression when using Bukalapak.
2	The impression obtained during the usage of the feature	Describe your feeling when doing the check-out transaction.
3	The impression obtained after the usage of the feature	Describe about your needs that you think still not fulfilled by Bukalapak.

No	Expected Output	Question
		State your impression about Bukalapak in 5 words.

The series of interview results total of 30 Kansei Words. The occurrence of words is listed as the frequency. The overall Kansei Words obtained from interview are listed in Table 4.2 below.

Table 4.2 Kansei Words Generated from User Research

No	Kansei Words	Frequency
1.	Responsive	3
2.	Robust	1
3.	Fast	3
4.	Confusing	2
5.	Enjoyable	4
6.	Pricey	1
7.	User friendly	1
8.	Persuasive	1
9.	Crowded	4
10.	Fun	5
11.	Mainstream	1
12.	Local	7
13.	Simple	5
14.	Friendly	2
15.	Creative	1
16.	Trusted	3
17.	Consistent	1
18.	Informative	2
19.	Ordinary	3
20.	Practical	2
21.	Varied	1
22.	Attractive	1

No	Kansei Words	Frequency
23.	Underrated	3
24.	Comfortable	3
25.	Modern	1
26.	Minimalist	1
27.	Integrated	3
28.	Secured	1
29.	Straightforward	1
30.	Easy	7

4.1.2   Literature, advert, social media

In addition, the data collection is also sourced from literature study. The data collection based on literature study and insights is obtained from the Bukalapak's advertisement in social media.

Table 4.3 Kansei Words Generated from Literature

No.	Kansei Words	Frequency
1.	Empowered	1
2.	Easy	As stated before
3.	Trusted	As stated before
4.	Fun	As stated before
5.	Exciting	1

There are 32 words found to represent feelings of user in context of experience on using Bukalapak. Hereby the recapitulation of Kansei words combined from Interview and Literature:

Table 4.4 Final Kansei Words

No	Kansei Words	Frequency	Description
1.	Local	7	The experience in using the application resembles Indonesia

No	Kansei Words	Frequency	Description
2.	Easy	7	The features on Bukalapak is easy to use.
3.	Fun	5	The features on Bukalapak is entertaining
4.	Simple	5	The features on Bukalapak is easy to understand.
5.	Enjoyable	4	User has pleasant experience in using the feature on Bukalapak.
6.	Crowded	4	The features in Bukalapak is compact, or many elements
7.	Responsive	3	Feature is flexible in giving response to users
8.	Fast	3	Feature gives response immediately
9.	Trusted	3	The feature shows is dependable
10	Ordinary	3	The application has no distinctive features
11.	Underrated	3	The application has not received the praise it deserved
12.	Comfortable	3	The features provide ease in usage
13.	Integrated	3	The application is coordinated
14.	Confusing	2	The application is difficult to understand
15.	Friendly	2	The feature is pleasant to use
16.	Informative	2	The application provides information very well
17.	Practical	2	The feature of application is actually do its function
18.	Robust	1	The application is stoutly built
19.	Pricey	1	The services is expensive

No	Kansei Words	Frequency	Description
20.	User friendly	1	The application is easy to understand and use
21.	Persuasive	1	The application makes users tempted to use.
22.	Mainstream	1	Nothing special from the application feature
23.	Creative	1	The feature is innovative
24.	Consistent	1	The feature in application is done in the same way over time
25.	Varied	1	The items has variety in types
26.	Attractive	1	The feature on application is appealing to look at
27.	Modern	1	The style of application represent modern style
28.	Minimalist	1	The feature represent its most basic, stripped of superfluous elements, colors, shapes and textures
29.	Secured	1	The users feel safe to use Bukalapak
30.	Straightforward	1	The content in feature gives information to the point
31.	Empowered	1	The application helps user get in touch with local SME
32.	Exciting	1	The user is enthusiast to use the features of Bukalapak

4.2 User Persona

The user persona is based on the user research following the collection of Kansei Words. The character generated is 18-25 years old. The job is mainly

students and worker. The respondents come from Java and Sumatera islands. All respondents have already or currently pursue bachelor degree.

The users tends to use Bukalapak not as their first option as they find that there is no specialty in the app and they have another application they usually use, mainly Tokopedia and Shopee. They have tendency to stick to one marketplace, and only check another marketplace if there is discount session. The users' habit in shopping is to look at the promo and price in each marketplace application they have in their mobile phone. For instance, they usually use Tokopedia as their main marketplace. When they are not satisfied with the stated price, they will switch to another marketplace. This shows how easily a user switches from one to another marketplace since there is no significant feature that differentiate each application.

The user's goal is to fulfill their needs which is shopping with convenience. They require trust and comfort in the shopping experience. Another ease in online shopping is the integration of e-wallet which public use widely. E-wallet also becomes one of factor in the shopping experience since the user tend to choose marketplace corresponds with e-wallet that they have. For instance, a respondent only use OVO as their e-ewallet therefore they tend to use Tokopedia more. Same case goes to Shopee & ShopeePay and Bukalapak & Dana.

The main pain point that comes several times from the interview is when the item they ordered comes with condition under their expectation. This is caused by product display does not show the real condition of the product and the fact that the user does not have chance to try the product as one of the downside to shop online. The user relies heavily on shop's review as trust is one of their factor in online shopping.

CHAPTER V
SCOPE AND STRUCTURE PLANE DATA COLLECTION AND ANALYSIS

This chapter shows the evaluation of Kansei Words and data processing and score sorting.

5.1 Kansei Words Evaluation

Evaluation through questionnaire and interview to respondents who have experienced in using Bukalapak mobile application. The subject population in this study is decided based on the numbers suggested which are around $30 - 50$ subjects. Semantic Differential is used in the process with a scale of five. The respondents consist of 40 respondents from questionnaire and 5 respondents from interview. The questionnaire respondents' job consist of student, government employees, private sector employee, and freelancer. There are 60.9% of the respondent's age $18 - 22$ years old, 23.9% age $23 - 26$ years old, 8.7% age above 31 years old, and 6.5% age under 18 years old. The job consists of 56.5% of undergraduate students, 17.4% of private employees, 10.9% government employees, 8.7% freelance, and 6.6% other sectors.

The following shows the interview performed via Zoom. The respondent will be shown 32 Kansei Words written in the PowerPoint. The respondent will give point 1 to 5. The points explained by: 5 means the user's impression of the Kansei Word is compatible, 1 means the user's impression is more compatible with the antonym of the Kansei Word shown.
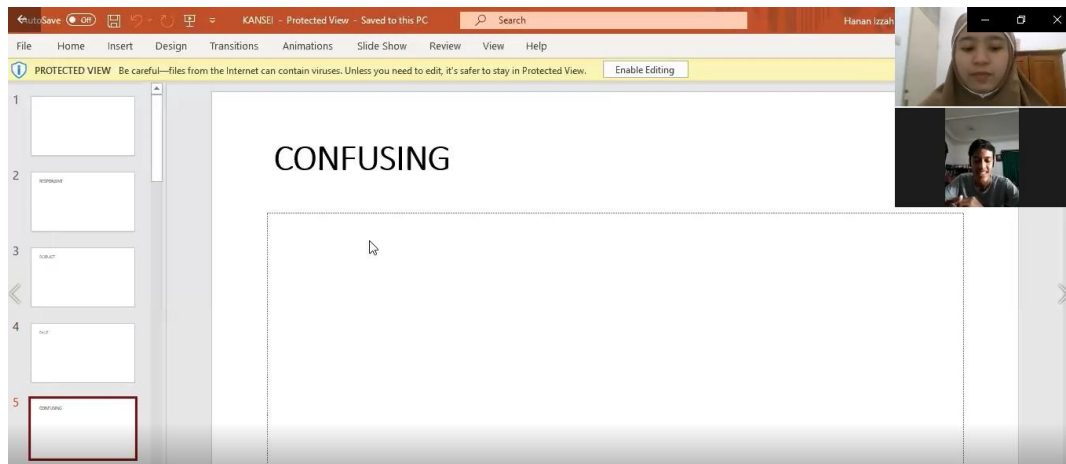
Figure 5.1 Kansei Words Evaluation - Interview

Not all Kansei Words has same tendency. Some words generated from user research has negative tendency. It is important to equalize the logic on scoring. Therefore, Kansei Words will be reviewed for its tendency.

Table 5.1 Tendency of KW

No.	Kansei Word	1	5	Tendency
1	Responsive	Unresponsive	Responsive	+
2	Robust	Fragile	Robust	+
3	Fast	Slow	Fast	+
4	Confusing	Clear	Confusing	-
5	Enjoyable	Unamusing	Enjoyable	+
6	Pricey	Affordable	Pricey	-
7	User-friendly	Inconvenient	User-friendly	+
8	Persuasive	Discouraging	Persuasive	+
9	Crowded	Uncrowded	Crowded	-
10	Fun	Boring	Fun	+
11	Mainstream	Extraordinary	Mainstream	-
12	Local	Foreign	Local	+
13	Simple	Complex	Simple	+
14	Friendly	Distant	Friendly	+
15	Creative	Uncreative	Creative	+
16	Trusted	Undependable	Trusted	+
17	Consistent	Inconsistent	Consistent	+
18	Informative	Uninformative	Informative	+
19	Ordinary	Extraordinary	Ordinary	-
20	Practical	Impractical	Practical	+
21	Varied	Unvaried	Varied	+
22	Attractive	Unattractive	Attractive	+
23	Underrated	Overrated	Underrated	-

No.	Kansei Word	1	5	Tendency
24	Comfortable	Uncomfortable	Comfortable	+
25	Modern	Old-fashioned	Modern	+
26	Minimalist	Embellished	Minimalist	+
27	Integrated	Unintegrated	Integrated	+
28	Secured	Loosen	Secured	+
29	Straightforward	Complicated	Straightforward	+
30	Easy	Difficult	Easy	+
31	Empowered	Disempowered	Empowered	+
32	Exciting	Boring	Exciting	+

There are six words with negative tendency; Confusing, Pricey, Crowded, Mainstream, Ordinary, and Underrated. Kansei Word with negative tendency will be converted into the positive by using the antonym word. For instance, 'ordinary' means there is nothing special in feature of Bukalapak compared to another e-commerce. The word show will be 'Extraordinary' and not 'Ordinary'. The following shows the result diagram from questionnaire.

1. Responsive
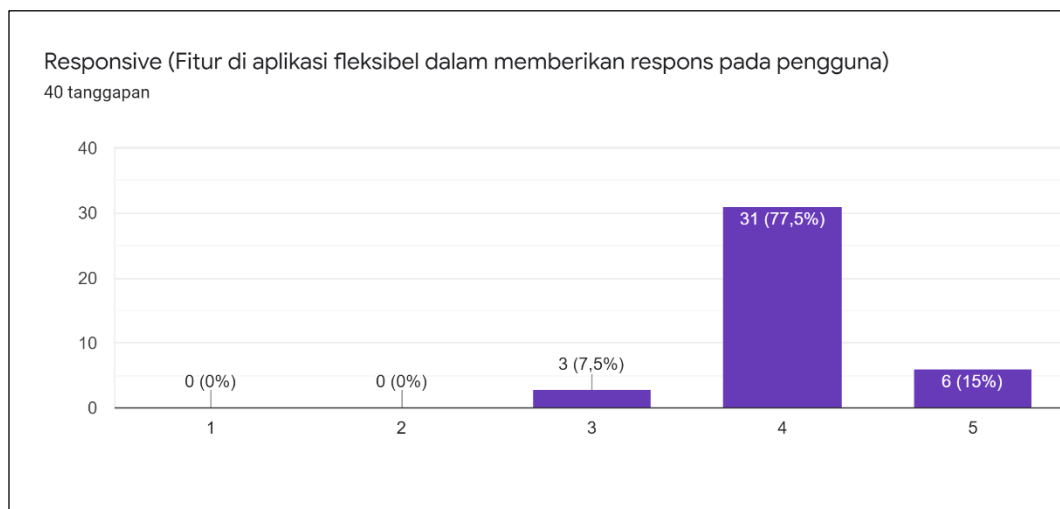
Figure 5.2 Result of Kansei Word - Responsive

There are 77.5% respondents who give point 4 to word of 'responsive'. Most of respondents believes that word of 'responsive' describe Bukalapak.

2. Robust
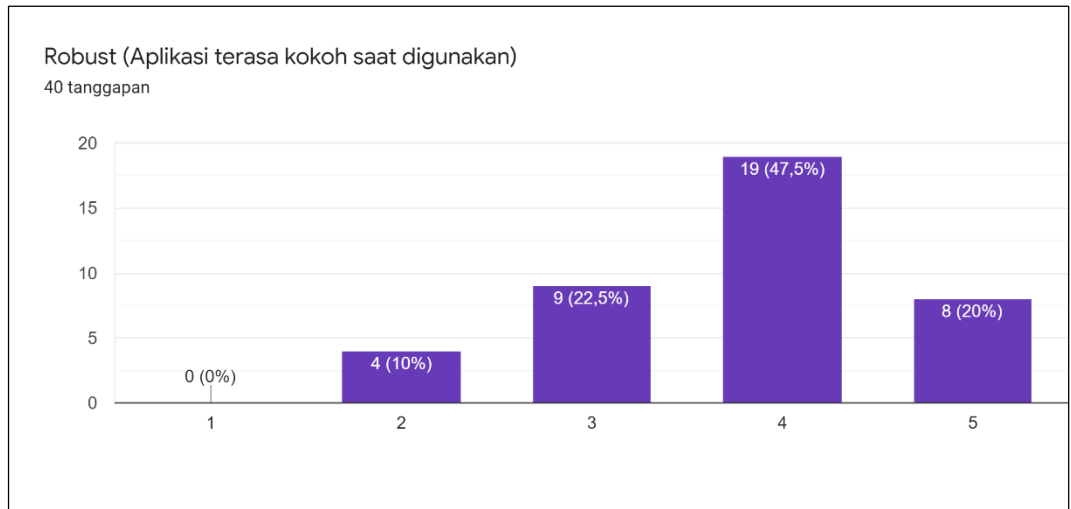
Figure 5.3 Result of Kansei Word - Robust

There are 47.5% respondents who give point 4 to word of 'robust.

Most of respondents believes that word of 'robust describe Bukalapak.

3. Fast

Figure 5.4 Result of Kansei Word - Fast

There are 45% respondents who give point 4 to word of 'robust.

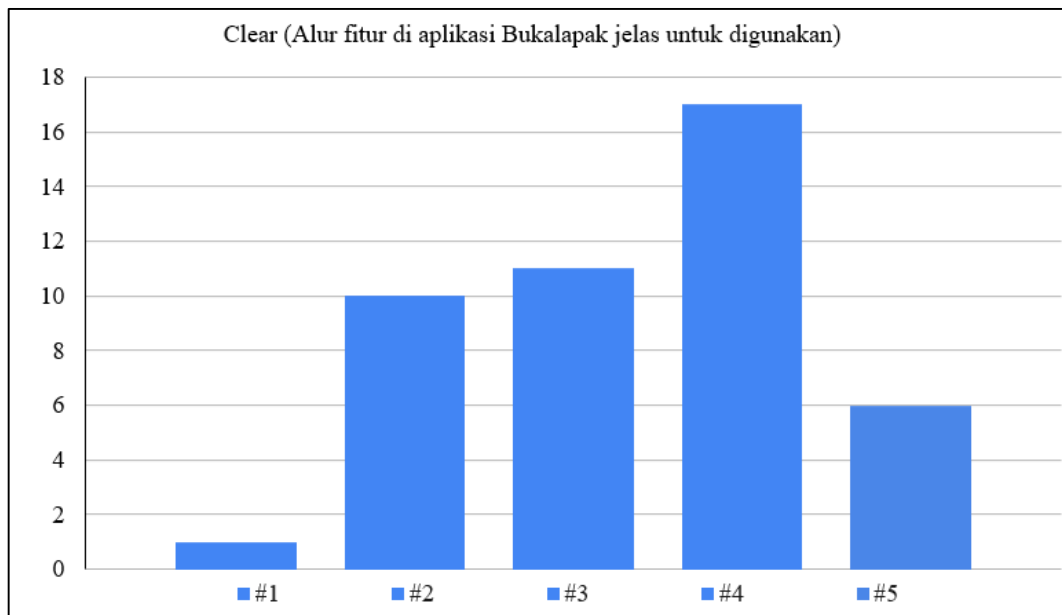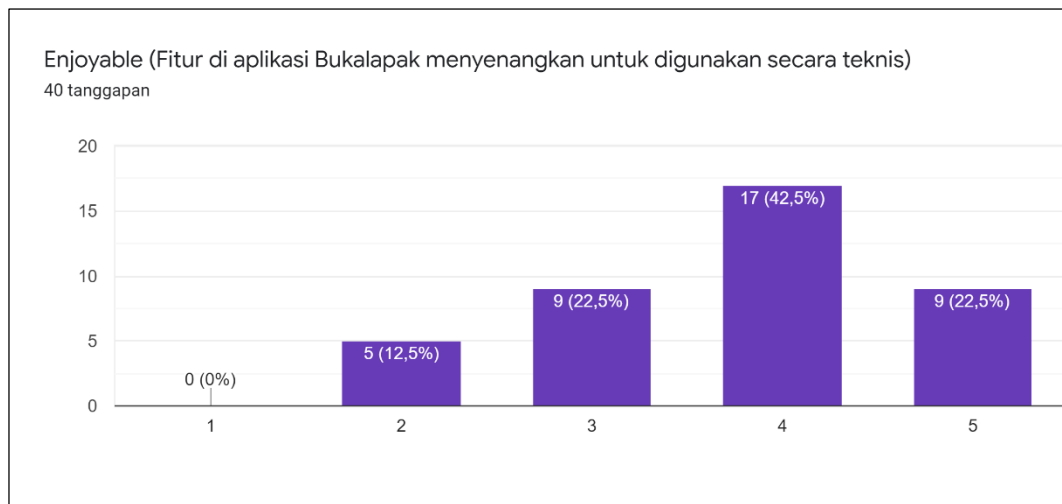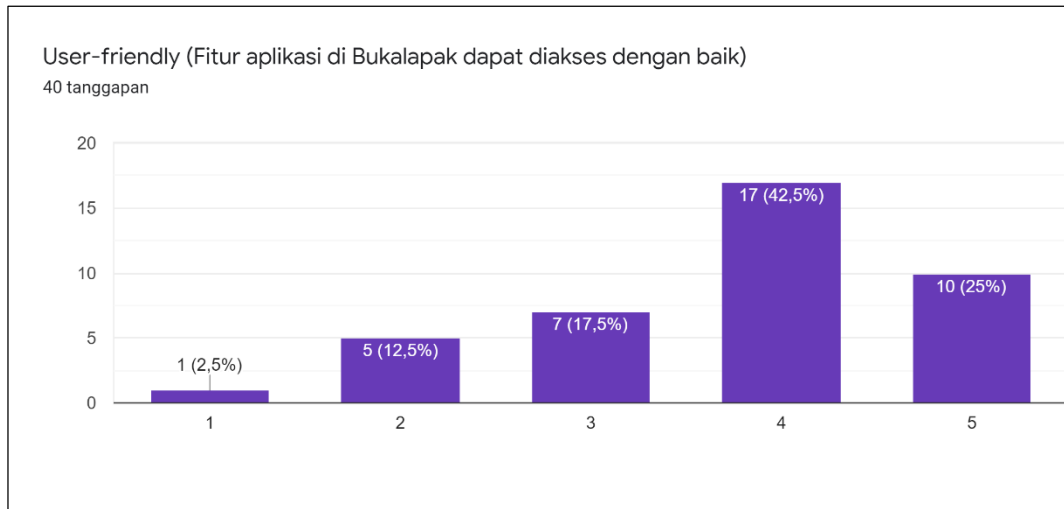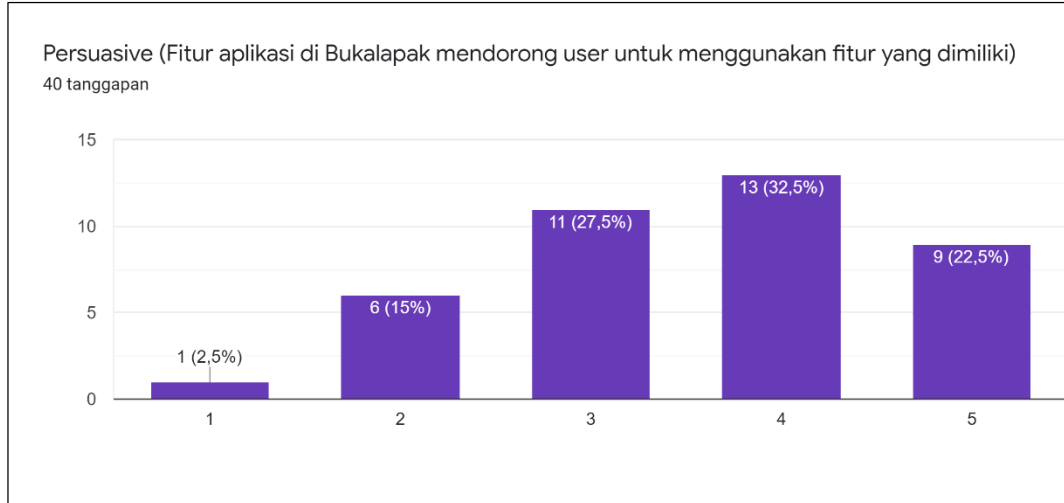Most of respondents believes that word of 'fast' describe Bukalapak.

4. Clear

Figure 5.5 Result of Kansei Word - Clear

There are 37.8% respondents who give point 42 to word of 'Affordable'. Most of respondents believes the following word is appropriate in describing Bukalapak.

5. Enjoyable

Figure 5.6 Result of Kansei Word - Enjoyable

44

There are 42.5% respondents who give point 4 to word of 'enjoyable. Most of respondents believes that the word 'enjoyable' describe Bukalapak.

6. Affordable

Affordable (Harga dari barang dan layanan seperti ongkir yang disediakan terjangkau)
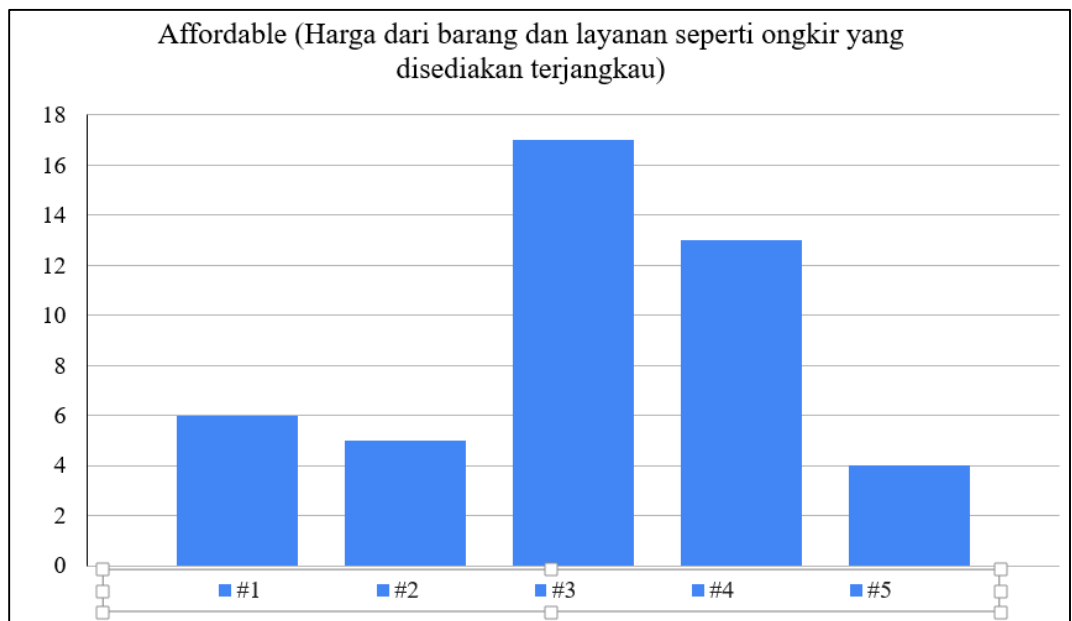
Figure 5.7 Result of Kansei Word - Affordable

There are 17 out of 45 respondents or 37.8% respondents who give point 3 to word of 'Affordable'. Most of respondents believes that the word 'Affordable' describe Bukalapak.

7. User-friendly

Figure 5.8 Result of Kansei Word - User-friendly

There are 42.5% respondents who give point 4 to word of 'User-friendly'. Most of respondents believes that word of 'responsive' describe Bukalapak.

8. Persuasive

Figure 5.9 Result of Kansei Word - Persuasive

There are 42.5% respondents who give point 4 to word of 'Persuasive'. Most of respondents believes that word of 'Persuasive' appropriate to describe Bukalapak.
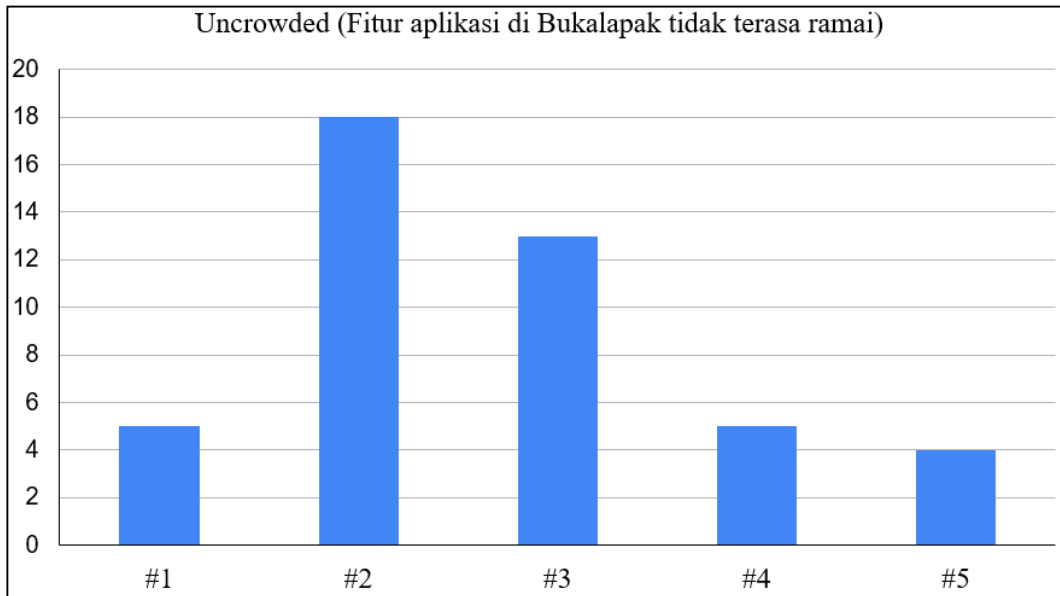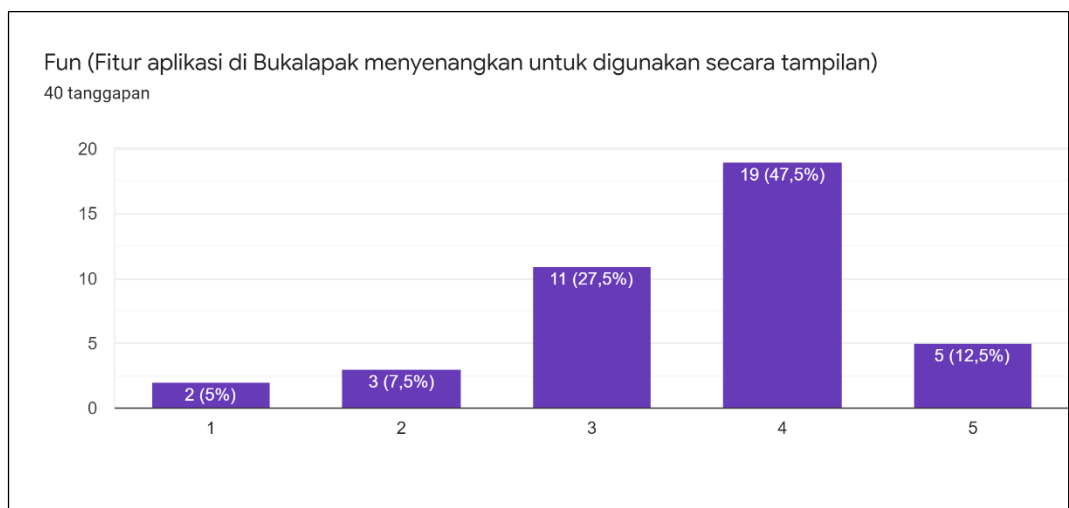
9. Uncrowded

Figure 5.10 Result of Kansei Word – Uncrowded

There are 18 out of 45 respondents or 40% respondents who give point 2 to word of 'Uncrowded'. Most of respondents believes that word of 'Uncrowded' appropriate to describe Bukalapak.

10. Fun

Figure 5.11 Result of Kansei Word - Fun

There are 47.5% respondents who give point 4 to word of 'Fun'. Most of respondents believes that word of 'Fun' appropriate to describe Bukalapak.
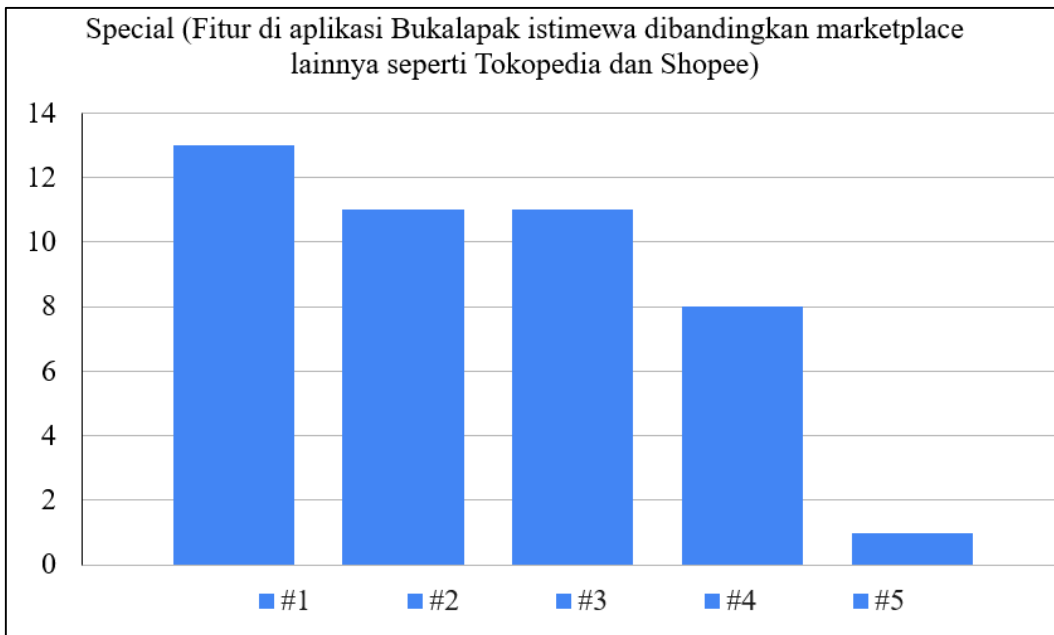
11. Special

Special (Fitur di aplikasi Bukalapak istimewa dibandingkan marketplace lainnya seperti Tokopedia dan Shopee)

Figure 5.12 Result of Kansei Word – Extraordinary

There are 13 respondents who give point 1 to word of 'Special'. Most of respondents believes that word of 'Special' is not compatible to describe Bukalapak.
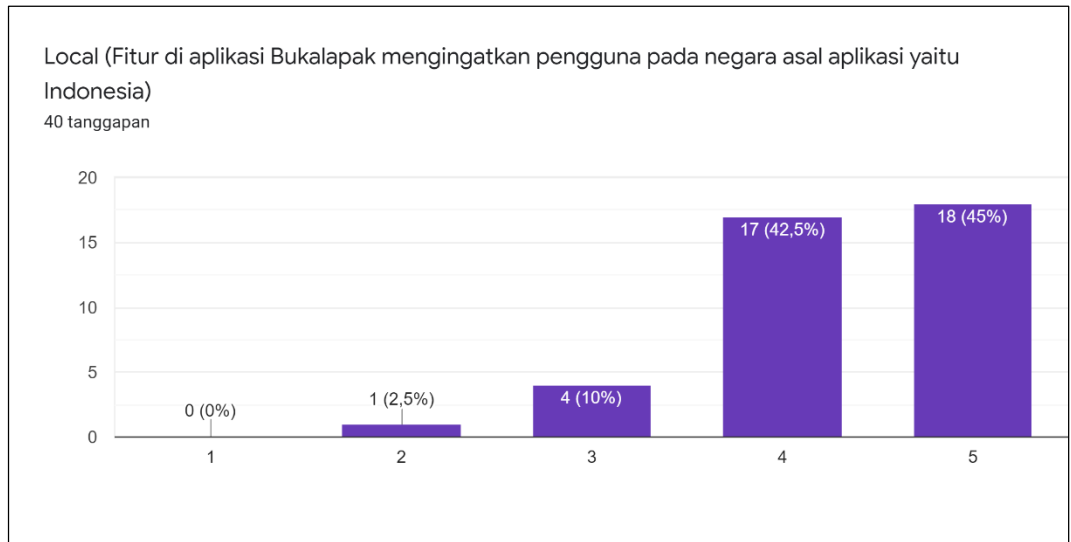
12. Local

Figure 5.13 Result of Kansei Word - Local

There are 42.5% respondents who give point 5 to word of 'Persuasive'. Most of respondents believes that word of 'Persuasive' appropriate to describe Bukalapak.
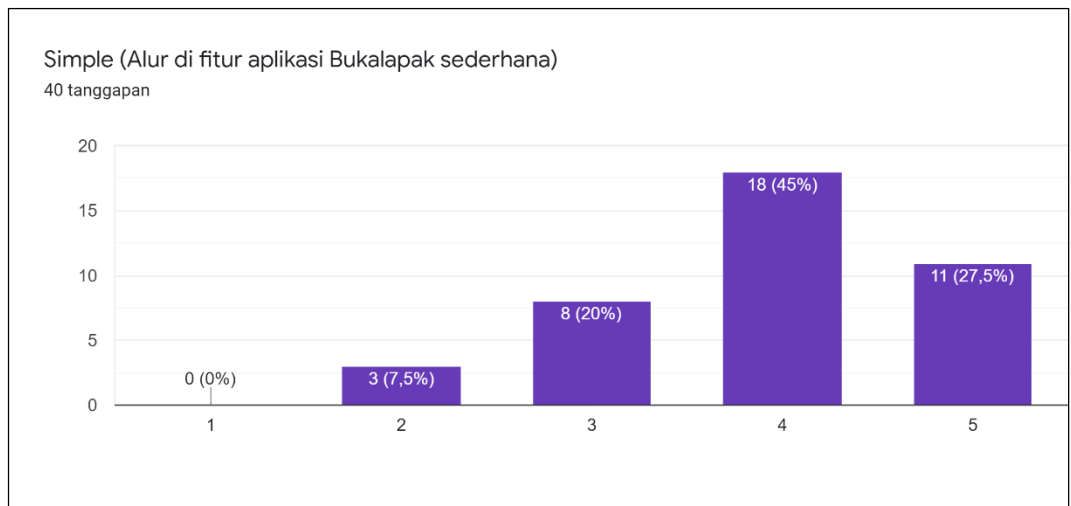
13. Simple

Figure 5.14 Result of Kansei Word - Simple

There are 45% respondents who give point 4 to word of 'Simple. Most of respondents believes that word of 'Simple' is appropriate to describe Bukalapak.
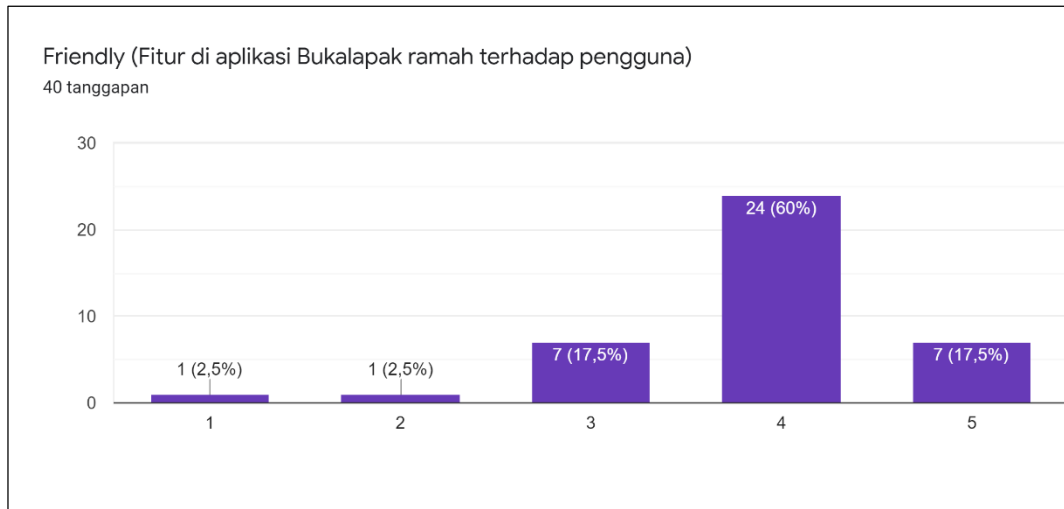
14. Friendly

Figure 5.15 Result of Kansei Word - Friendly

There are 60% respondents who give point 4 to word of 'Friendly'. Most of respondents believes that word of 'Friendly' appropriate to describe Bukalapak.
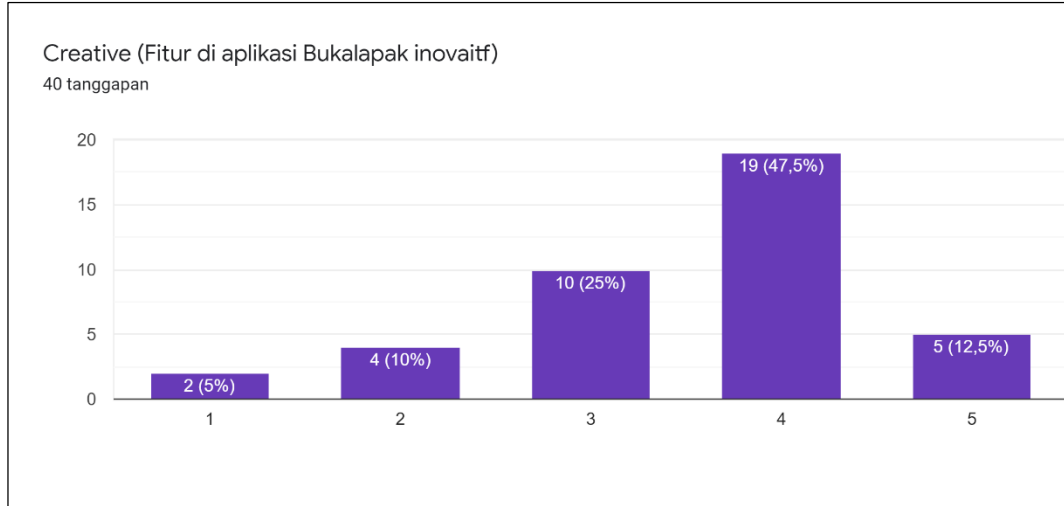
15. Creative

Figure 5.16 Result of Kansei Word - Creative

There are 47.5% respondents who give point 4 to word of 'Creative'. Most of respondents believes that word of 'Creative' appropriate to describe Bukalapak.
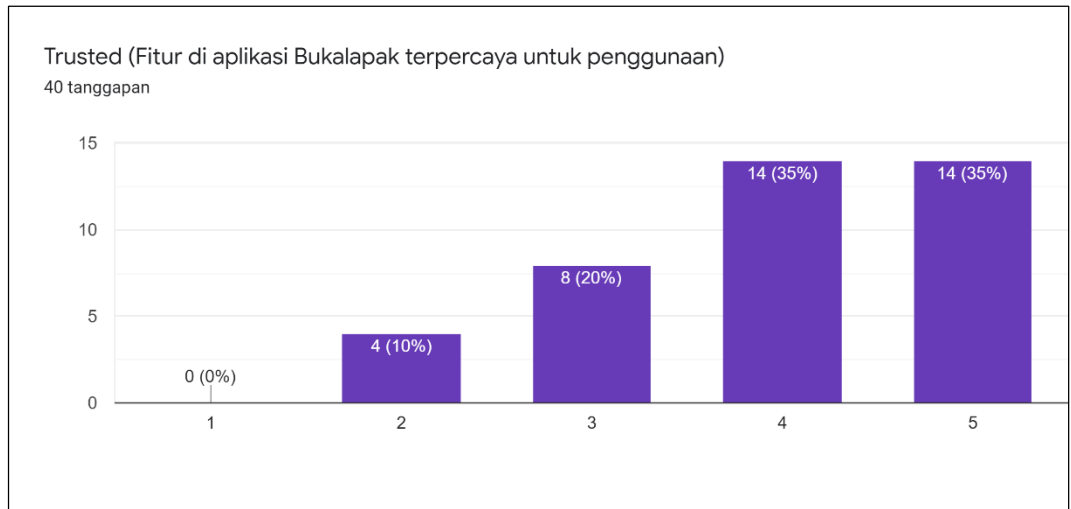
16. Trusted

Figure 5.17 Result of Kansei Word - Trusted

There are 35% respondents who give point 4 and same percentage who chose point 5 to word of 'Trusted'. Most of respondents believes that word of 'Trusted' appropriate to describe Bukalapak.
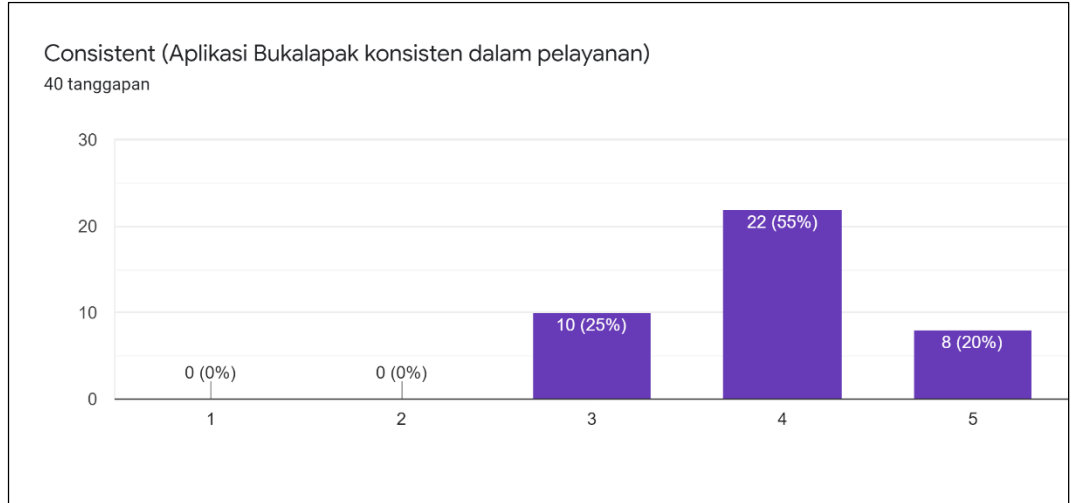
17. Consistent

Figure 5.18 Result of Kansei Word - Consistent

There are 55% respondents who give point 4 to word of 'Consistent'. Most of respondents believes that word of 'Consistent' appropriate to describe Bukalapak.
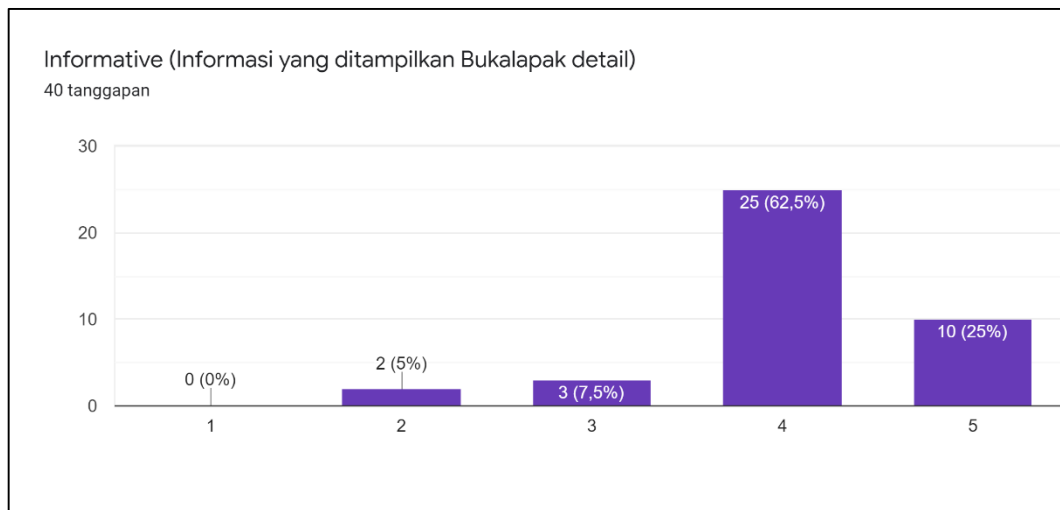
18. Informative

Figure 5.19 Result of Kansei Word - Consistent

There are 62.5% respondents who give point 4 to word of 'Trusted'. Most of respondents believes that word of 'Informative' is appropriate to describe Bukalapak.
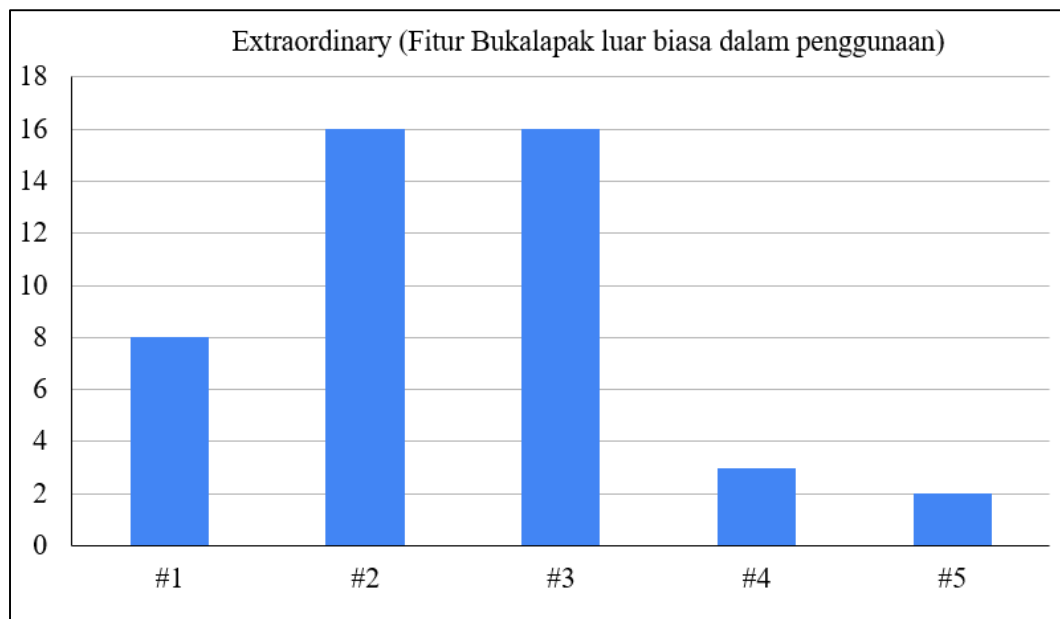
19. Extraordinary

Figure 5.20 Result of Kansei Word - Extraordinary

There are 16 respondents who give point 2 and another 16 to point 3. Most of respondents believes that word of 'Extraordinary' is not too compatible to describe Bukalapak.

20. Practical

Figure 5.21 Result of Kansei Word - Practical

There are 47.5% respondents who give point 4 to word of 'Practical'. Most of respondents believes that word of 'Practical' is appropriate to describe Bukalapak.

21. Varied

Figure 5.22 Result of Kansei Word - Varied

There are 40% respondents who give point 4 to word of 'Varied'. Most of respondents believes that word of 'Varied' is appropriate to describe Bukalapak.

22. Attractive

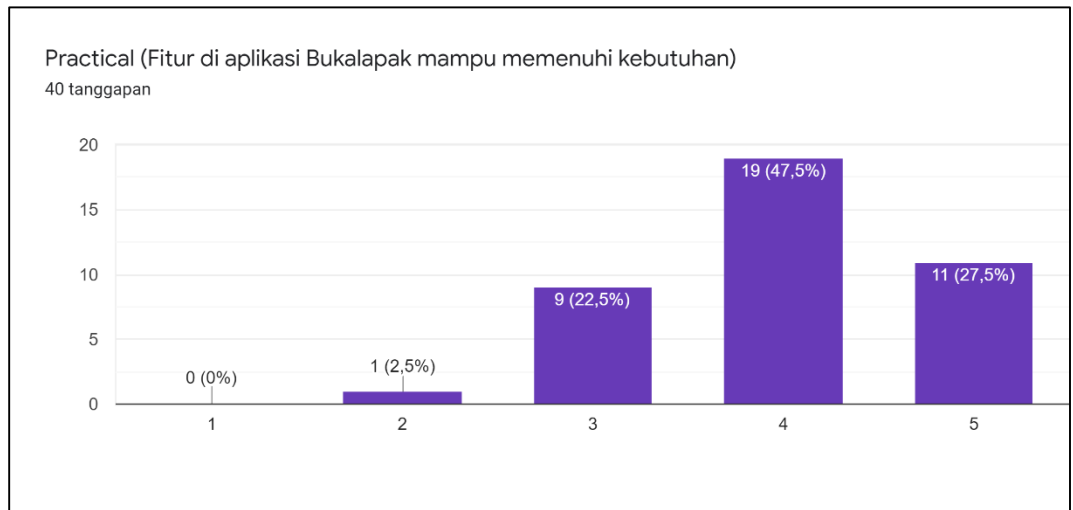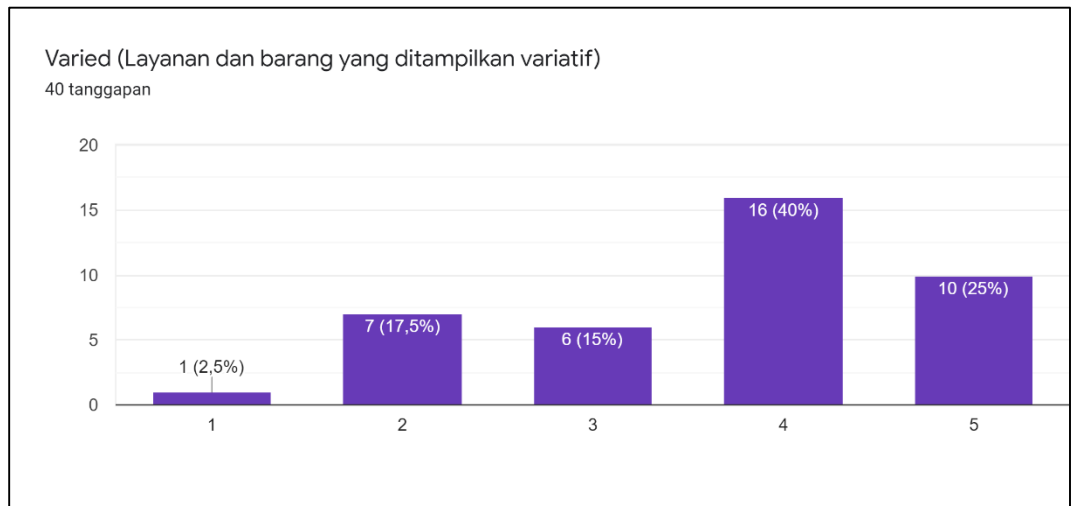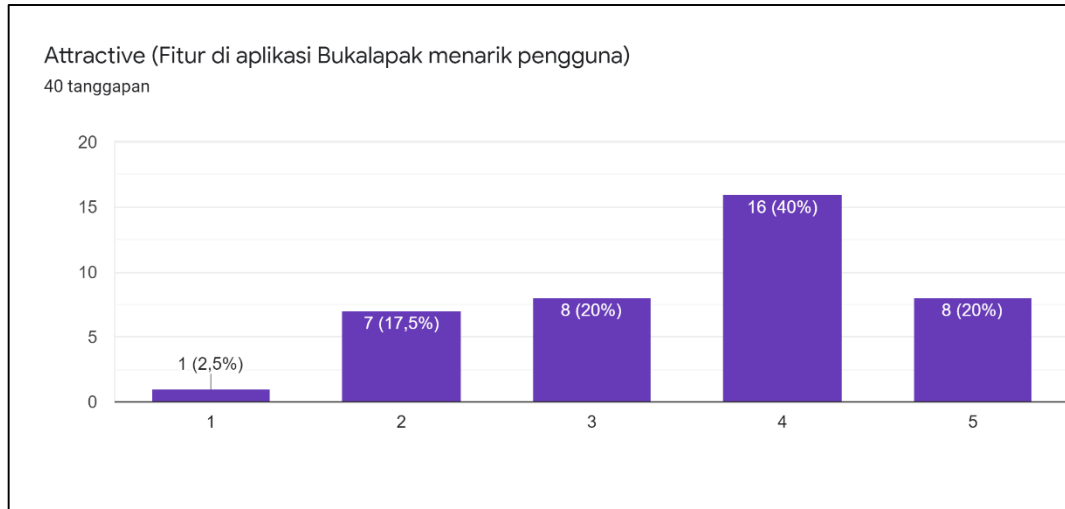Figure 5.23 Result of Kansei Word - Attractive

There are 40% respondents who give point 4 to word of 'Attractive'. Most of respondents believes that the following word is appropriate to describe Bukalapak.

23. Well-known

Figure 5.24 Result of Kansei Word - Well-Known

There are 15 out of 45 respondents who give point 2 to word of 'Well-Known' and another 15 respondents who give point 3. Most of

respondents believes that the following word is not too compatible to describe Bukalapak.

24. Comfortable

Comfortable (kenyamanan dalam menggunakan Bukalapak)
40 tanggapan

Figure 5.25 Result of Kansei Word - Comfortable

There are 50% respondents who give point 4 to word of 'Comfortable'. Most of respondents believes that the following word is appropriate to describe Bukalapak.

25. Modern

Modern (Fitur di Bukalapak ditampilkan dalam tampilan yang modern)
40 tanggapan

Figure 5.26 Result of Kansei Word - Modern

There are 32.5% respondents who give point 4 to word of 'Modern'. Most of respondents believes that the following word is appropriate to describe Bukalapak.
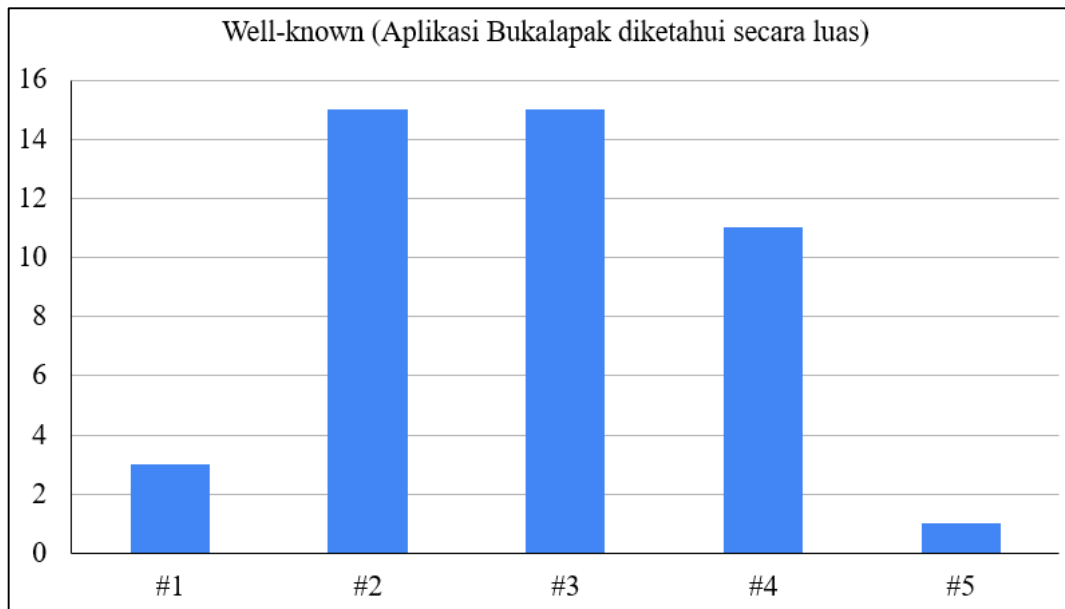
26. Minimalist

Figure 5.27 Result of Kansei Word - Minimalist

There are 40% respondents who give point 4 to word of 'Minimalist'. Most of respondents believes that the following word is appropriate to describe Bukalapak.

27. Integrated
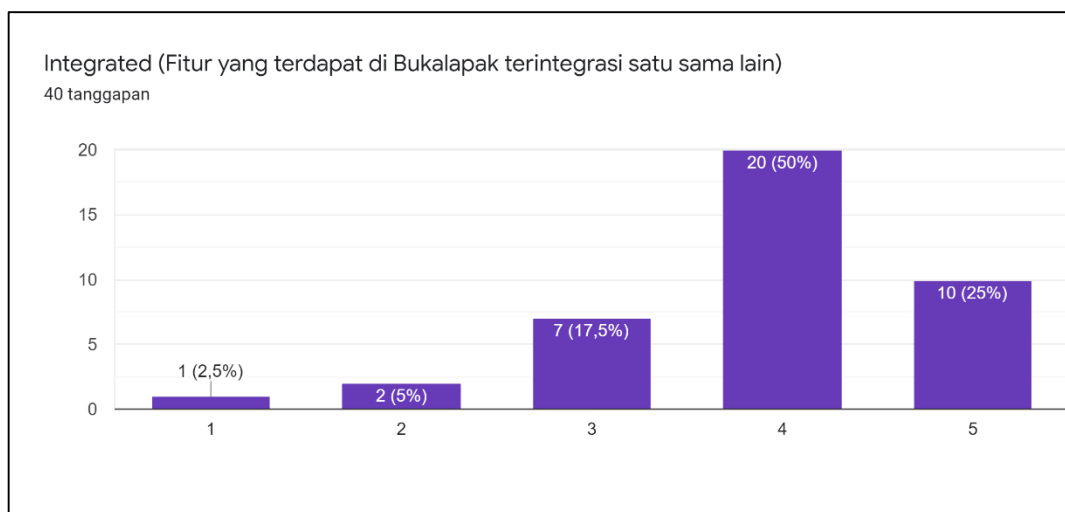
Figure 5.28 Result of Kansei Word - Integrated

There are 50% respondents who give point 4 to word of 'Integrated'. Most of respondents believes that the following word is appropriate to describe Bukalapak.
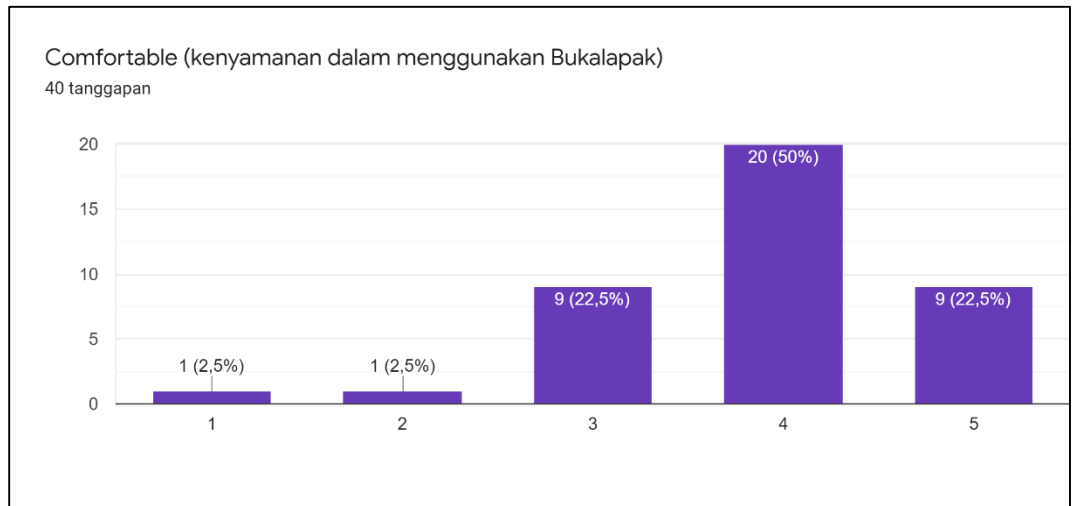
28. Secured
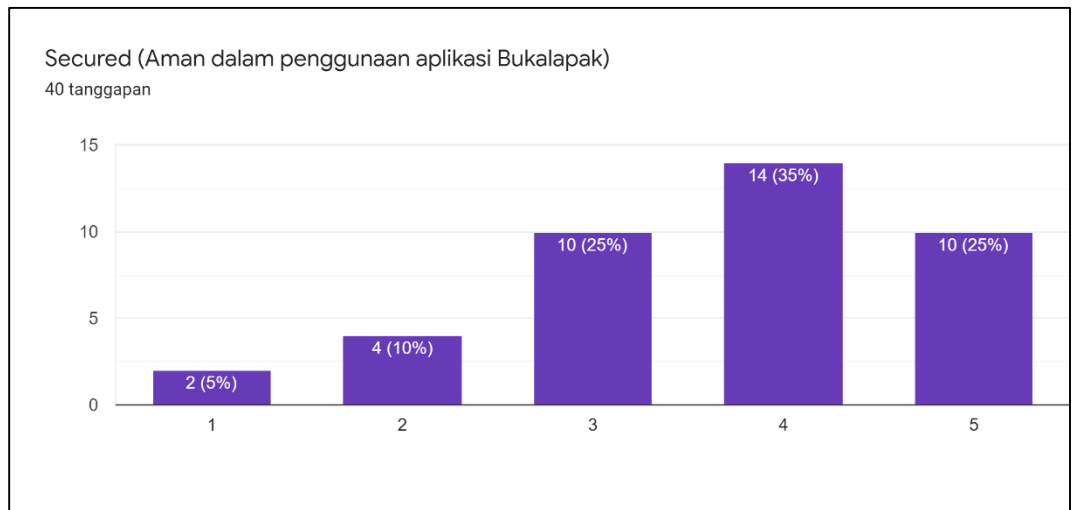
Figure 5.29 Result of Kansei Word - Secured

There are 35% respondents who give point 4 to word of 'Secured'. Most of respondents believes that the following word is appropriate to describe Bukalapak.

29. Straightforward
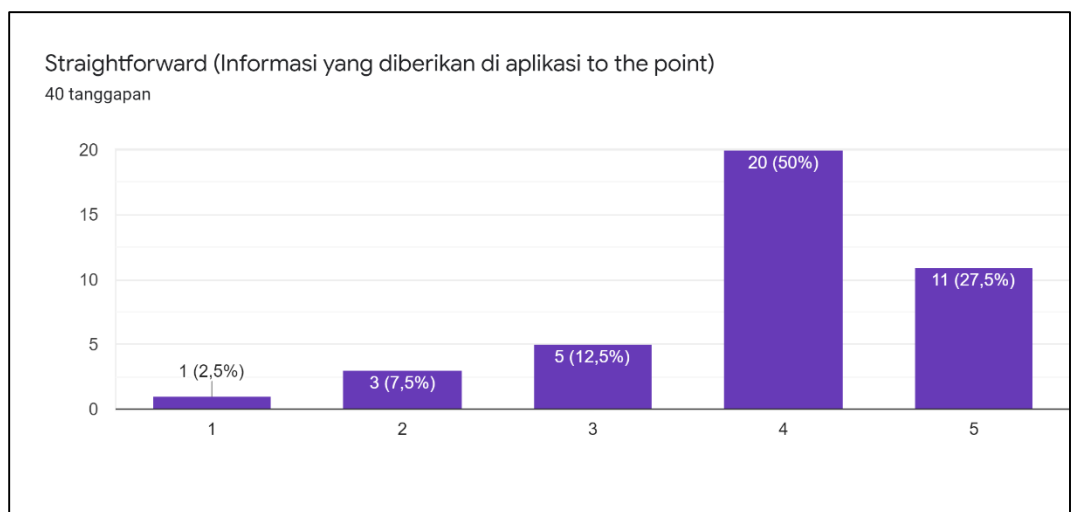
Figure 5.30 Result of Kansei Word - Straightforward

There are 50% respondents who give point 4 to word of 'Straightforward'. Most of respondents believes that the following word is appropriate to describe Bukalapak.
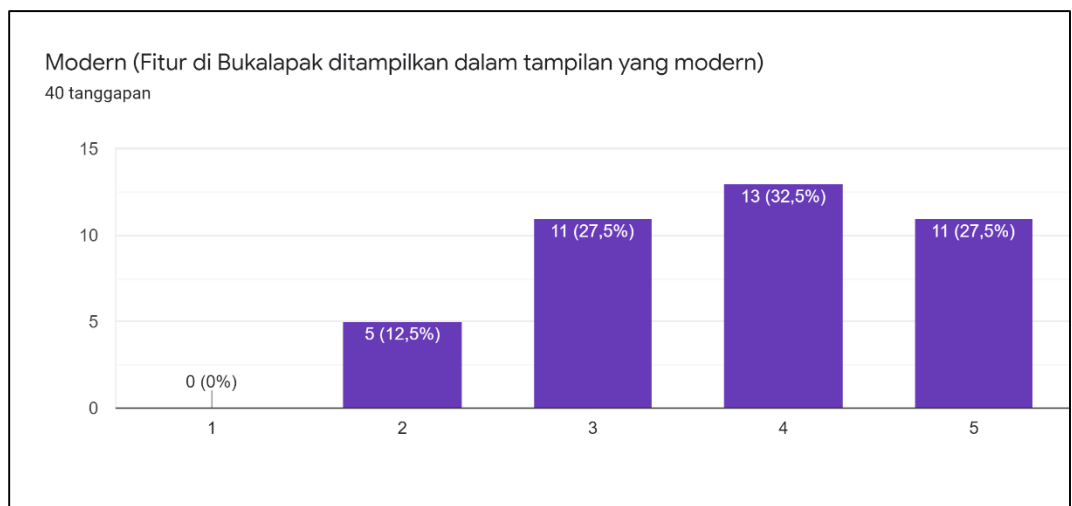
30. Easy
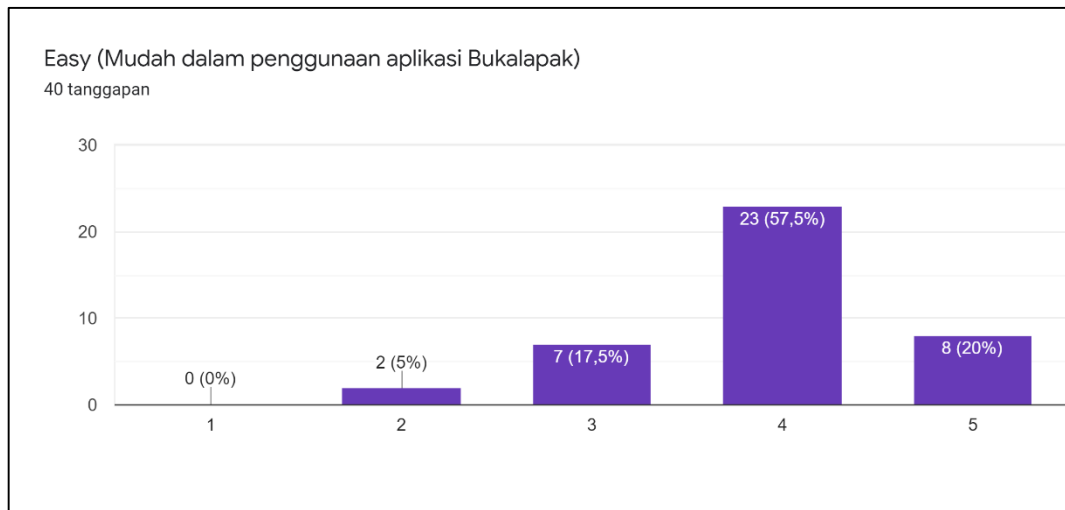
Figure 5.31 Result of Kansei Word - Easy

There are 57.5% respondents who give point 4 to word of 'Easy'. Most of respondents believes that the following word is appropriate to describe Bukalapak.

31. Empowered
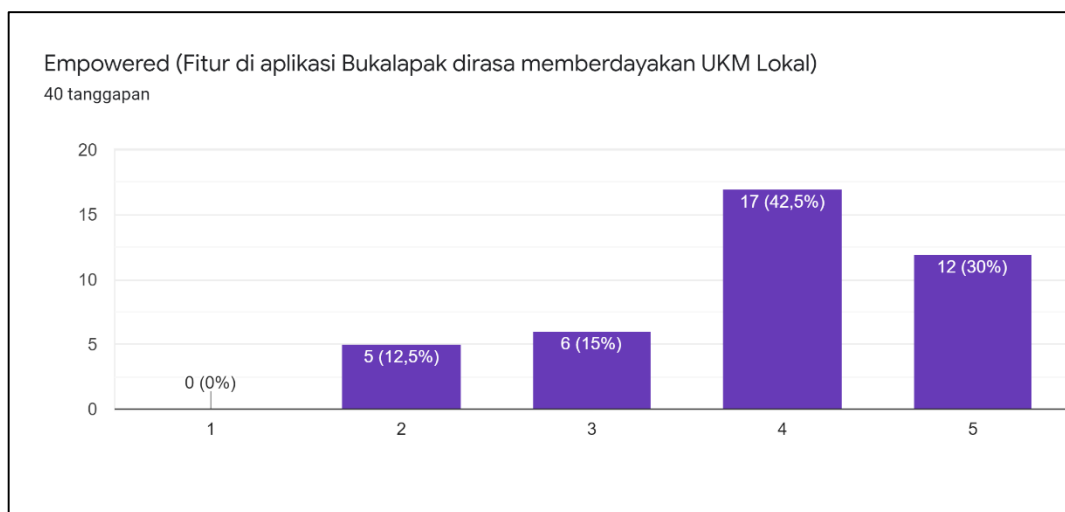
Figure 5.32 Result of Kansei Word - Empowered

There are 42.5% respondents who give point 4 to word of 'Empowered'. Most of respondents believes that the following word is appropriate to describe Bukalapak.
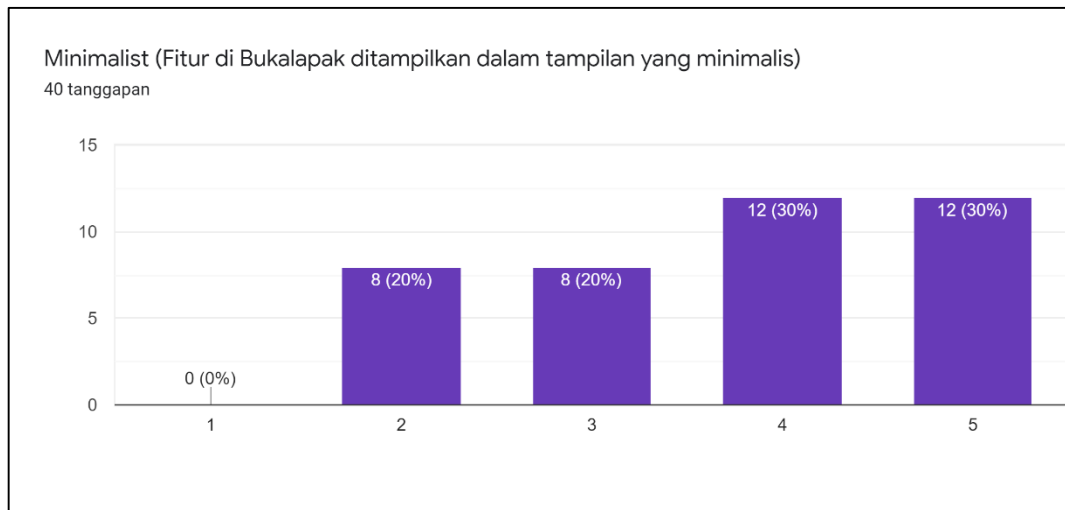
32. Exciting
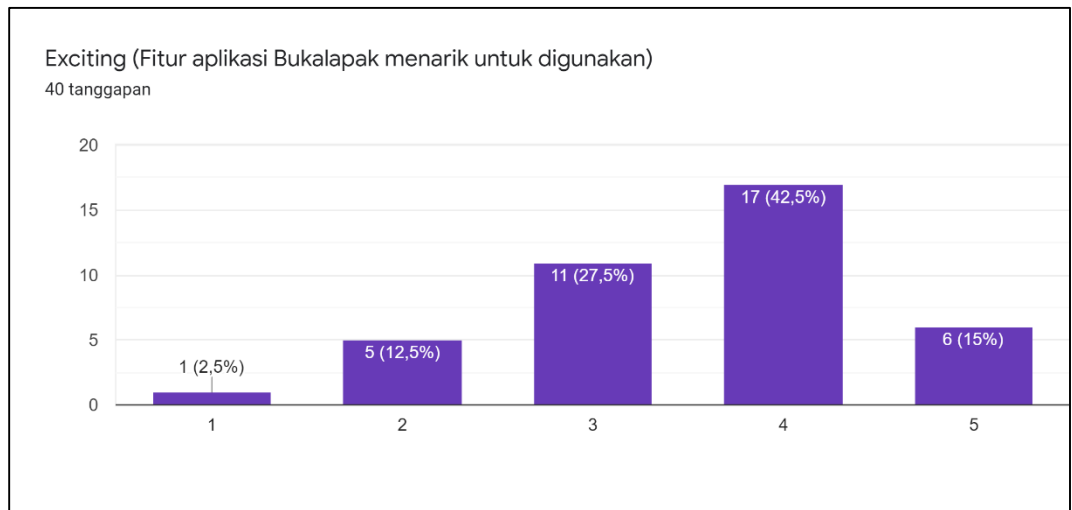
Figure 5.33 Result of Kansei Word - Exciting

There are 42.5% respondents who give point 4 to word of 'Exciting'. Most of respondents believes that the following word is appropriate to describe Bukalapak.

Next, the validity is tested to determine true the questionnaire compiled is valid or not. The results of questionnaire is validated by using Pearson correlation coefficient. The Pearson test performed by correlating each item questionnaire scores with the total score for each question. With total respondents (N) is 45 and the alpha applied is 1%, the r-table value is 0.38. The result is shown in Table 5.2.

Table 5.2 Validation of KW Evaluation

Question -	r-calculate	r-table	Decision
Q1	0.44	0.38	VALID
Q2	0.72	0.38	VALID
Q3	0.66	0.38	VALID
Q4	0.59	0.38	VALID
Q5	0.79	0.38	VALID
Q6	0.61	0.38	VALID
Q7	0.49	0.38	VALID

Question -	r-calculate	r-table	Decision
Q8	0.68	0.38	VALID
Q9	0.52	0.38	VALID
Q10	0.74	0.38	VALID
Q11	0.61	0.38	VALID
Q12	0.13	0.38	NOT VALID
Q13	0.54	0.38	VALID
Q14	0.64	0.38	VALID
Q15	0.65	0.38	VALID
Q16	0.43	0.38	VALID
Q17	0.38	0.38	NOT VALID
Q18	0.60	0.38	VALID
Q19	0.55	0.38	VALID
Q20	0.55	0.38	VALID
Q21	0.72	0.38	VALID
Q22	0.79	0.38	VALID
Q23	0.76	0.38	VALID
Q24	0.64	0.38	VALID
Q25	0.75	0.38	VALID
Q26	0.45	0.38	VALID
Q27	0.65	0.38	VALID
Q28	0.51	0.38	VALID
Q29	0.78	0.38	VALID
Q30	0.71	0.38	VALID
Q31	0.47	0.38	VALID
Q32	0.78	0.38	VALID

The result shows that the question number 12 and 17 that evaluates the word of Local and Consistent are no longer to be participated in further data processing. Therefore, the next step will eliminate 'Local' and 'Consistent' and have total of 30 Kansei Words.

5.2 Kansei Word Weight Scoring

The following shows the evaluation score of Kansei Words from the average of score from each word.

Table 5. 1 Kansei Words Sorted Score

No.	Kansei Word	AVERAGE
1	Special	2,40
2	Extraordinary	2,44
3	Uncrowded	2,67

No.	Kansei Word	AVERAGE
4	Well-known	2,82
5	Affordable	3,09
6	Clear	3,38
7	Persuasive	3,44
8	Exciting	3,44
9	Fun	3,49
10	Creative	3,49
11	Attractive	3,53
12	Varied	3,60
13	Minimalist	3,67
14	Secured	3,69
15	Enjoyable	3,73
16	Modern	3,73
17	User-friendly	3,78
18	Robust	3,84
19	Friendly	3,84
20	Straightforward	3,87
21	Empowered	3,87
22	Fast	3,89
23	Simple	3,89
24	Comfortable	3,89
25	Integrated	3,91
26	Easy	3,91
27	Informative	3,98
28	Practical	4,00
29	Trusted	4,02
30	Responsive	4,04

The four lowest words are Special, Extraordinary, Uncrowded, and Well-known. Therefore, these four Kansei Words will be the base to develop the feature.

5.3 Concept Generation & Selection

The following sub-chapter shows the concept generation & selection

First, the definition of the chosen Kansei Words is recalled to determine the parameters of each word.

Table 5.3 Parameter of Chosen KW

No	Kansei Words	Description	Parameters
1	Special	Has special feature from the application	Not found in any other e-commerce / only available in Bukalapak
2	Extraordinary	Has distinctive features	Innovative idea
3	Uncrowded	The features in Bukalapak is not filled by many elements	Sleek, minimalist design
4	Well-known	The feature is known widely	Easy to use

- Morphological Chart

Morphological chart generates the complete range of alternative design solutions for a product and hence to widen the search for potential new solution. The table 5.4 shows the options on how to represent each word.

Table 5.4 Morphological Chart

	Option 1	Option 2	Option 3
Special	Currently only available in Bukalapak		
Extraordinary	Never applied in Bukalapak	Innovative feature	Solving problem of users
Uncrowded	Sleek design	Organized	
Well-known	Tutorial given	Description in feature	

The next step is to generate concept based on the options of each word. The combination will be explained more in the section of Concept Generation.

- Concept Generation

    The section explains the process of generating concept to be developed further. The concept generation is derived from combination among options in each word.

1) Try on feature

Table 5.5 Concept Generation of Try On Feature

	Option 1	**Option 2**	**Option 3**
Special	Currently only available in Bukalapak		
Extraordinary	Never applied in Bukalapak	Innovative feature	Solving problem of users
Uncrowded	Sleek design	Organized	
Well-known	Tutorial given	Description in feature	

Special: Option 1 (Currently only available in Bukalapak)

Extraordinary: Option 2 (Innovative feature)

Uncrowded: Option 1 (Sleek design)

Well-known: Option 2 (Description in feature)

This option is based on pain point of user in the user persona that states when the item they ordered comes with condition under their expectation. This is caused by product display does not show the real condition of the product and the fact that the user does not have chance to try the product as one of the downside to shop online. Therefore, the concept of Try-On review that lets the user can try the products virtually appear as one of the idea.

The general procedure in the clothing product is as followed. User input upload photo then the result will show on how the clothes will fit on them. This may help them to choose right size of clothes. Also, this feature can give clearer picture of product fitness on user virtually.
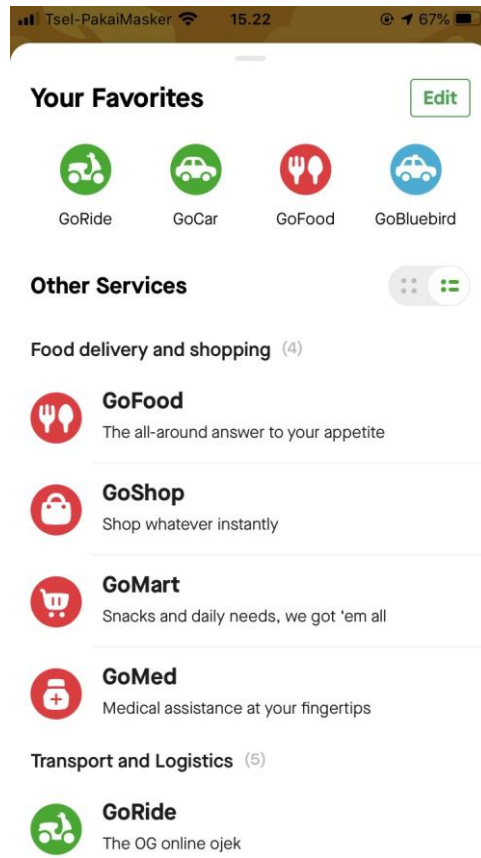
2) Favorite feature

Figure 5.34 Example of Favorite Features as seen on Gojek

Home in Bukalapak application directly shows all the features. By using this favorite feature, users can choose their favorite features to be shown first before other less-used feature.

Table 5.6 Concept Generation of Favorite Feature

	Option 1	**Option 2**	**Option 3**
Special	Currently only available in Bukalapak		
Extraordinary	Never applied in Bukalapak	Innovative feature	Solving problem of users
Uncrowded	Sleek design	Organized	
Well-known	Tutorial given	Description in feature	

Special: Option 1 (Currently only available in Bukalapak)

Extraordinary: Option 3 (Solving problem of users)

Uncrowded: Option 2 (Organized)

Well-known: Option 2 (Description in Feature)

This option is based on pain point of during interview that states the home of Bukalapak is crowded since the application has various services. Derived from the options of Morphological Chart and the pain point of crowded home, the concept to clean-up and sort the services on the Home page appears as the idea. Inspired by 'Your Favorite' feature of Go-jek, the concept of ''Favorite Feature' in Home of Bukalapak appears as one of the idea.

3) Personalized Quiz

The result of the quiz that shows recommendation of types of stuff to buy for the users. The results will encourage the users to explore shopping in the Bukalapak application.

Table 5.7 Concept Generation of Personalized Quiz

	Option 1	**Option 2**	**Option 3**
Special	Currently only available in Bukalapak		
Extraordinary	Never applied in Bukalapak	Innovative feature	Solving problem of users
Uncrowded	Sleek design	Organized	
Well-known	Tutorial given	Description in feature	

Special: Option 1 (Currently only available in Bukalapak)

Extraordinary: Option1 (Never applied in Bukalapak)

Uncrowded: Option 1 (Sleek design)

Well-known: Option 2 (Description in feature)

This option is based on pain point of during interview that states Bukalapak is lack on the section of gamification. Derived from the options of Morphological Chart and the user input during interview about gamification, the concept to have personalized quiz appears as one of the idea. The gamification strategy help Bukalapak to build continued engagement with the user and make them feel special and excited to use Bukalapak mobile application.

Next, the weight is judged by an expert. Concept with the biggest weight will be the chosen concept that will be developed.

Table 5.8 Concept Generation

KW	KW Weight	Try On	Score Weight	Quiz	Score Weight	Favorite Feature	Score Weight
Special	30%	5	1.5	4	1.2	5	1.5
Extraordinary	30%	4	1.2	2	0.6	2	0.6
Uncrowded	20%	3	0.6	4	0.8	3	0.6
Well-Known	20%	3	0.6	3	0.6	4	0.4
	Total		**3.9**		**3.2**		**3.1**
		CHOSEN		**CHOSEN**			

The chosen concept is Virtual Try-On with score of 3.9 out of 5. The second concept is the personalized quiz with score of 3.2 out of 5. The last is the Favorite Feature with score of 3.1 out of 5. Then, the final concept will choose idea of Personalized Quiz and Virtual Try On combined into one feature.

5.4 Analysis on Kansei and User Experience Application

The following shows the analysis on how methods of Kansei Engineering and User Experience approach are applied in the study to redevelop product of mature e-commerce which in this case is Bukalapak. User Experience approach comes in the form of design framework. The user experience design base on the Five Planes; Strategy Plane, Scope Plane, Structure Plane, Skeleton Plane, and Surface Plane. (Garret, 2011). However, the content of each plane is modified to match the Kansei Engineering concept. User Experience Design has role to make sure the design product solve the right problem efficiently and enjoyable.

Kansei Engineering is a method that unites Kansei (feelings) into engineering in order to realize product that match consumer's needs and desire. (Lokman, 2010). This is performed by analyzing consumer's Kansei and translates how the product design elicits this Kansei. This study use both interview and literature study to generate Kansei Words that collects consumer's Kansei experience. This process results in total 32 Kansei Words that some words are repeated frequently. From this process only, user's Kansei towards Bukalapak mobile application can be seen. To

strengthen the analysis, the 32 Kansei Words is scored by Semantic Differential. The result will be weighted to pick the redevelopment concept. The calculation establishes on how the Kansei is connected to product physical characteristics. The weight result shows 4 KW with lowest score to be selected; Special, Extraordinary, Uncrowded, and Well-Known.

The contribution of this research shows that Kansei Engineering and User Experience Design can be used in redeveloping product for mature e-commerce as an added-value tool to facilitate the understanding of consumers' desires in an objective matter. KE is a method specifically used to analyze consumer's implicit needs and associate them with product design characteristics (Lokman, 2010). User Experience Framework of Five Planes leads the study to keep uphold about creating product that provides relevant and meaningful experience to users. Therefore, Kansei Engineering and User Experience Method guiding to design a new concept of product can be established.

CHAPTER VI
SKELETON, SURFACE PLANE DATA COLLECTION AND ANALYSIS

This chapter shows the designing process of feature prototype.

6.1   Wireframe

This sub-chapter will show the wireframe of the proposed featured. The feature derived from concept of four chosen Kansei Words; are Special, Extraordinary, Uncrowded, and Well-known. The following figures will show the wirefame for the Personalized Quiz.
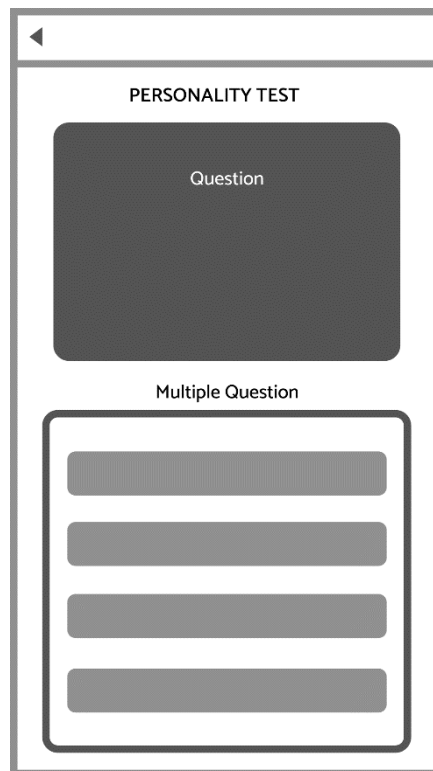

Figure 6.1 Wireframe - Personality Quiz

The figure 6.1 shows the questions given to the user and multiple choices for the answers.
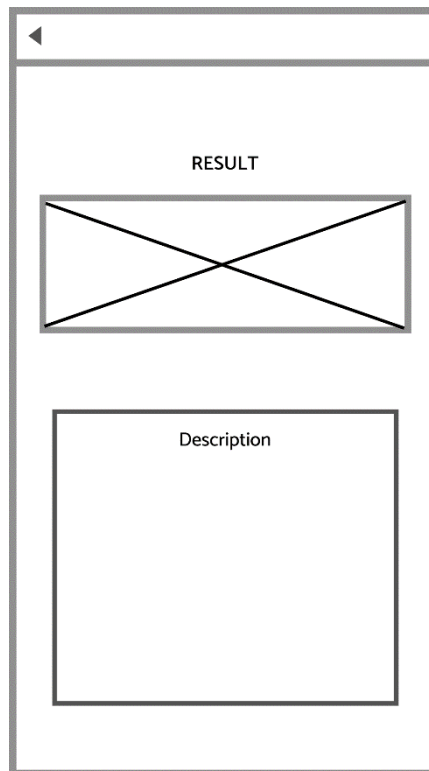
;

Figure 6.2 Wireframe - Quiz Result

The figure 6.2 shows the wireframe of quiz result. The result will show what kind of recommendation item for the users to shop. The recommendation also gives description about the personality derived from the answer choices. The result leads the respondent to buy products. The following figures will show the wireframe for the Virtual Try-On.
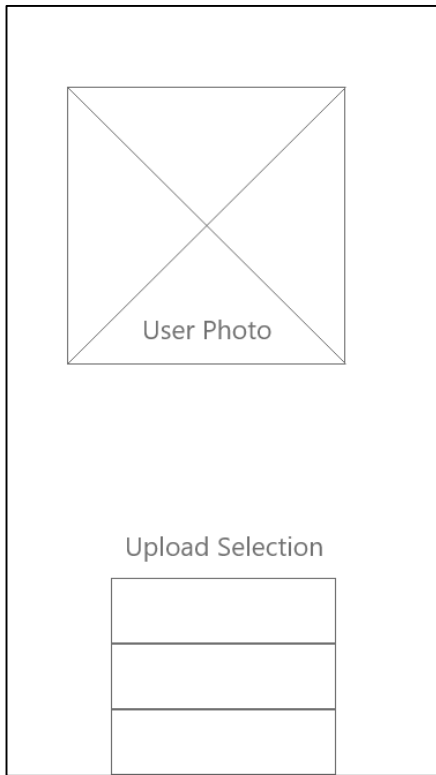
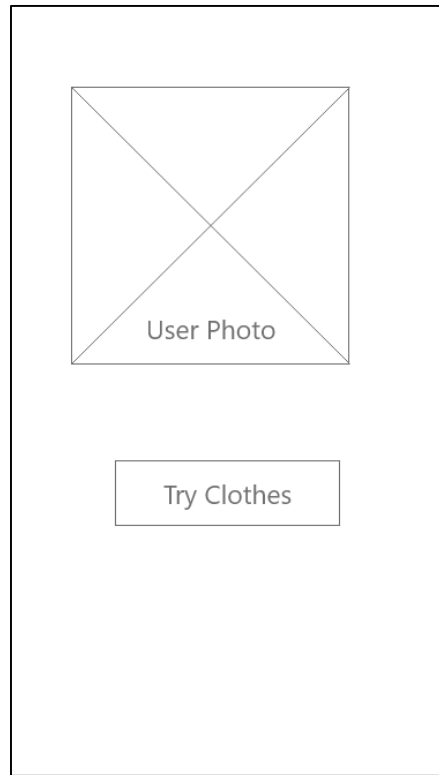Figure 6.3Wireframe - Upload Selection   Figure 6.4 Wireframe - Uploaded Photo

Figure 6.1 to 6.2 shows the wireframe of section of photo uploading of user. This photo will be fit into the clothes as the virtual try-on.
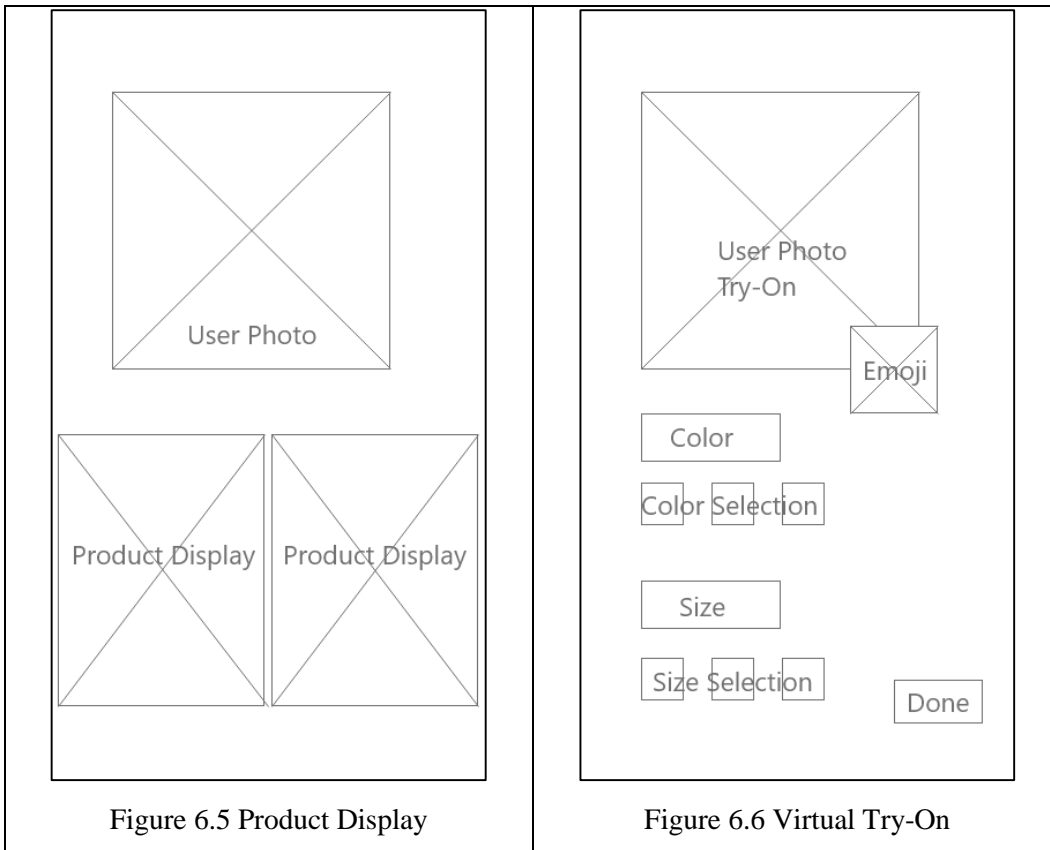
| Figure 6.5 Product Display | Figure 6.6 Virtual Try-On |

Figure 6.3 to 6.4 shows the section of Product Display and Virtual Try-On. The product display will show the selected product in shopping cart.The virtual try-on will show the clothes on the user photo. There are color and size selection to be adjusted according to the user. Also, there is emoji that shows the fit of clothes based on the size.

6.2 Prototype

This sub-chapter will show the interface of prototype of Personalized Quiz that is followed by the Online Fitting Room feature on Bukalapak.

Figure 6.7 Home - Place of Personalized Quiz Banner

Figure 6.8 Landing Page - Personalized Quiz

First, the user can find the banner of quiz in the home of Bukalapak. The banner is placed under the set of services. The banner is also design in striking color, a bright pink color, which is one of Bukalapak's main color. This placement has purpose to ease the user on finding the quiz. Then, the user will be welcomed with a landing page of the personalized quiz as shown in the Figure 6.7. The landing page includes the logo Bukalapak and the characteristic color. The quiz can be started with the button of 'Mulai' which means 'Start'.

Figure 6.9 Quiz Question 1

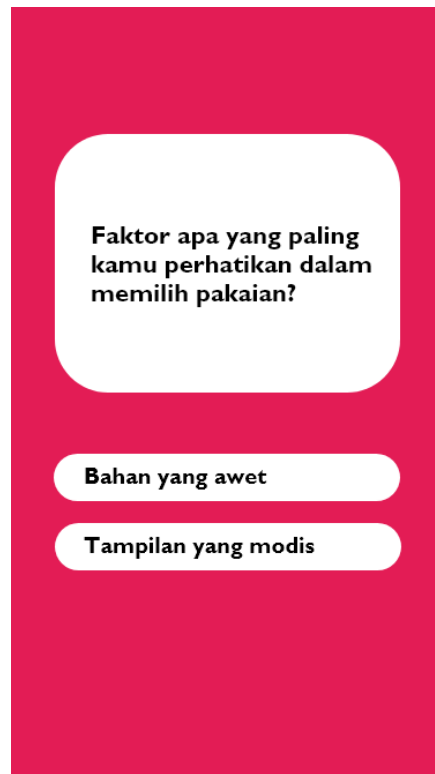Figure 6.10 Quiz Question 2

Figure 6.11 Quiz Question 3
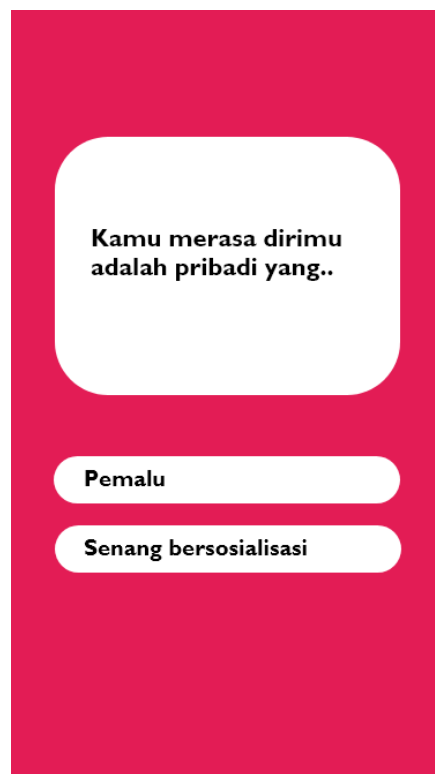
Figure 6.12 Quiz Question 4

Figure 6.13 Quiz Question 5

Figure 6.5 until 6.9 shows the five questions for the users. The questions cover topics about personality that leads to fashion choice of the user. The writing tone follows the characteristic of Bukalapak to be fun and friendly, therefore the writing comes in informal language.

Figure 6.14 Quiz Result 1

Figure 6.15 Quiz Result 2

Figure 6.16 Quiz Result 3

Figure 6.17 Quiz Result 3

Figure 6.10 to Figure 6.13 shows the result of the quiz. The quiz leads to recommendation of clothes with description of personality. This result will add experience for the customers in buying.
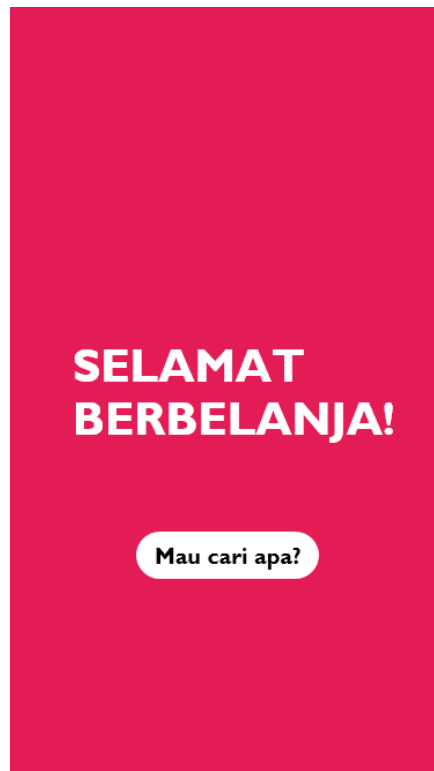
Figure 6.18 Quiz End

Then, the Personalized Quiz ends with Click-To-Action or CTA. The CTA comes in the form of greetings of '*Selamat Berbelanja'* or 'Happy Shopping' and button of 'Mau Cari Apa?' or 'What do you want to find?' that leads to the product display.
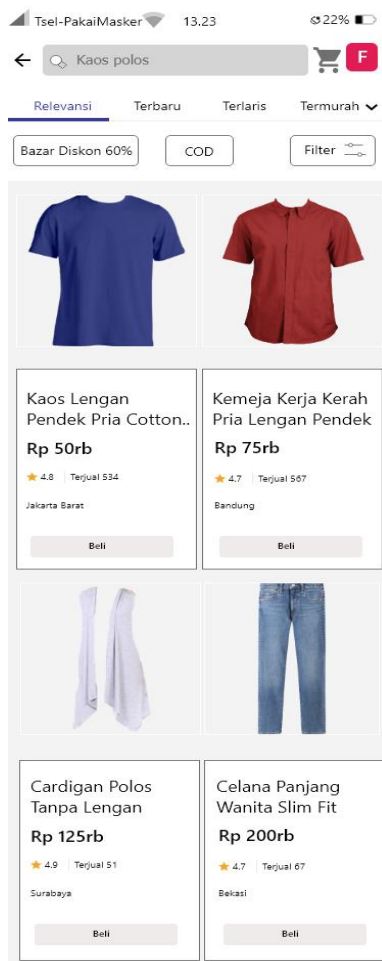
Figure 6.19 Product Display

Figure 6.19 shows the placement of button for Fitting Room. The button is placed besides the product search. Hence, after the user has placed the products in the shopping cart, they can easily use the Online Fitting Room. The reason of placement is to ease the users to find it when they want to try the clothes virtually. The button is symbolized with alphabet F in striking color to attract attention.
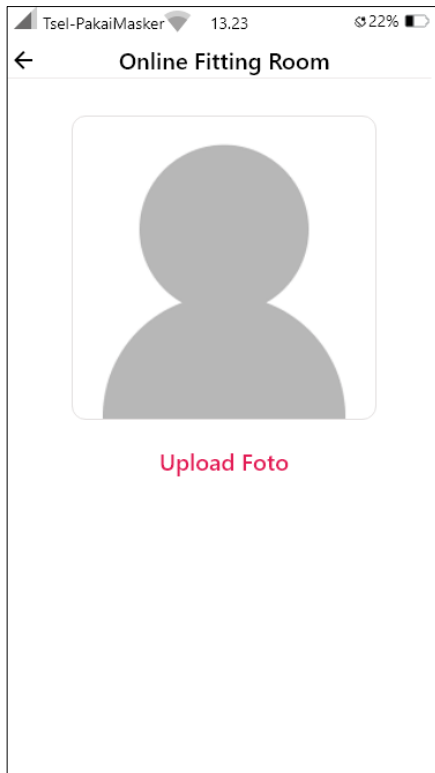
Figure 6.20 Upload Photo
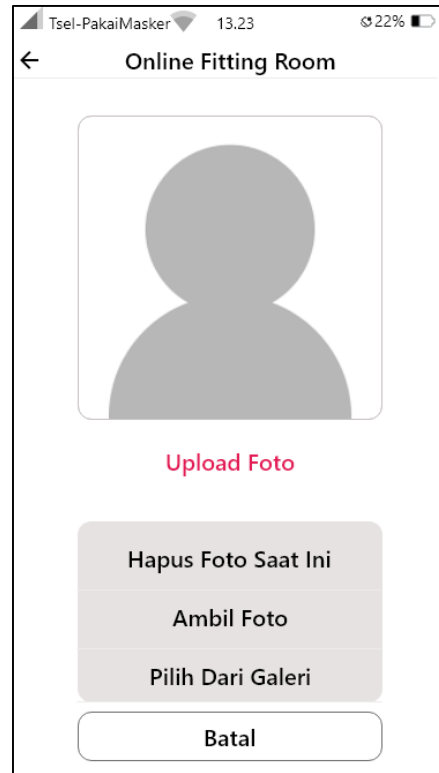
Figure 6.21 Upload Photo - Selection
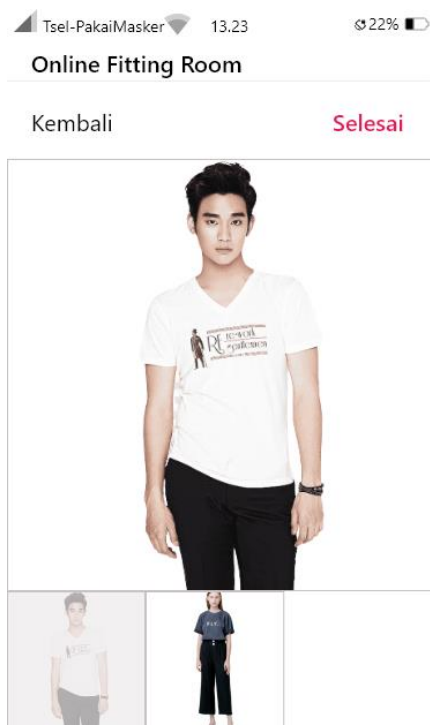
Figure 6.22 Upload Photo – Gallery 1

Figure 6.23 Upload Photo - Gallery 2

The Fitting Room is started with uploading photo for the users. There is option to delete the current photo, take new photo, or take from gallery. The example in prototype shows the option for choosing from the gallery.
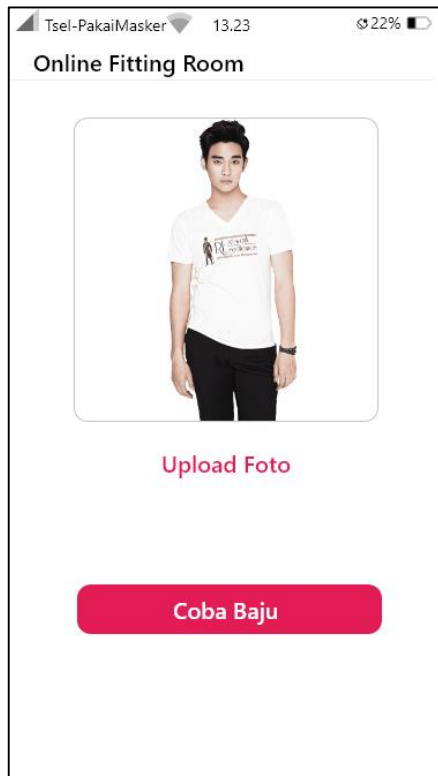
Figure 6.24 Upload Photo – Finish 1   Figure 6.25 Upload Photo - Finish 2
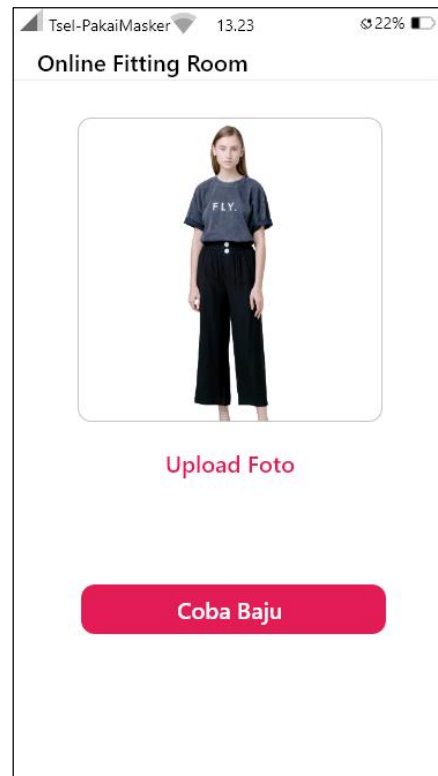
The photo upload ends in Click-To-Action to start the virtual fitting room. The CTA comes in form of button written as 'Coba Baju' or 'Try Clothes'.
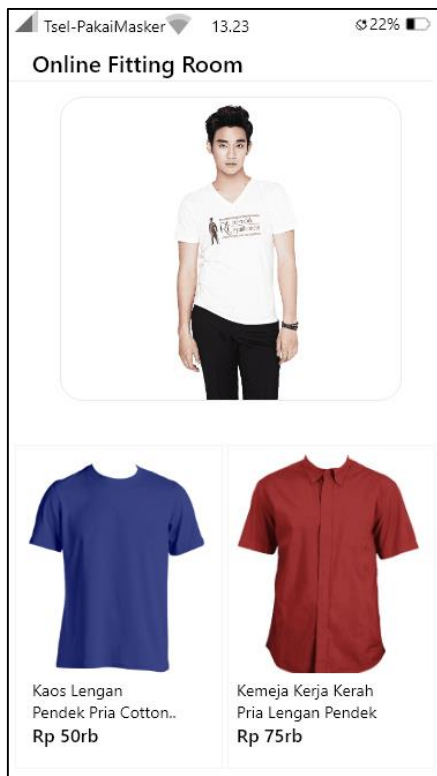
Figure 6.26 Fitting Room - Product
Display 1
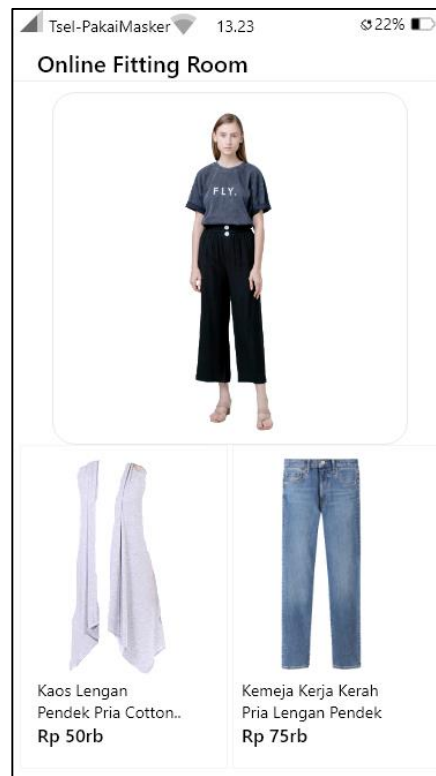
Figure 6.27 Fitting Room - Product
Display 2

Figure 6.22 and Figure 6.23 shows the products that will be try by the users. The product is the one that the user picks from the display before..
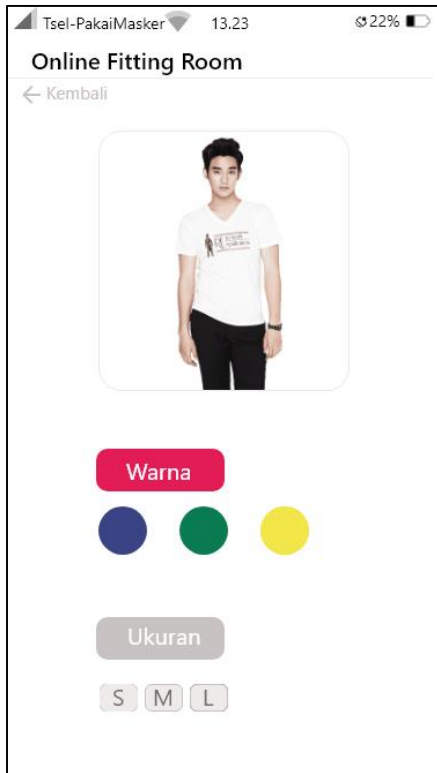
Figure 6.28 Fitting Room- Color
Selection 1
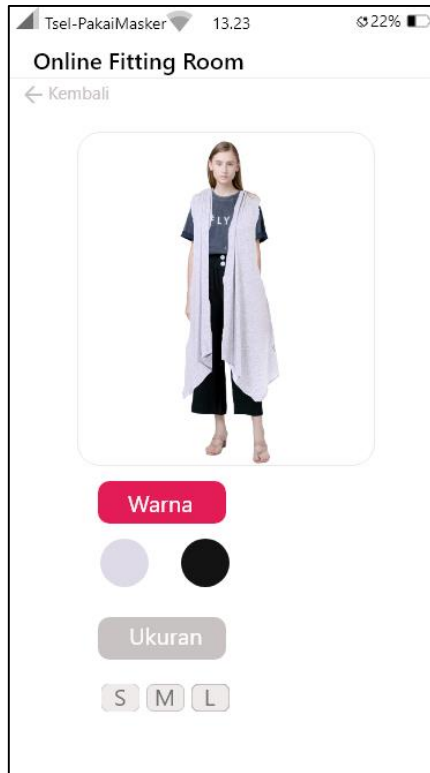
Figure 6.29 Fitting Room- Color
Selection 2

Figure 6.24 and Figure 6.25 shows the selection of clothes characteristics. The process will be started with selection of color. After the color is selected, the size will be selected. The clothes will match to the user photo to show how fit the clothes based on the size.
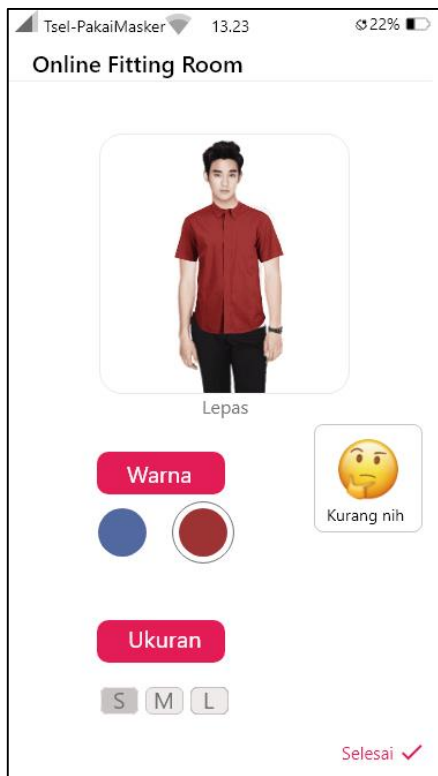
Figure 6.30 Fitting Room- Size Selection 1
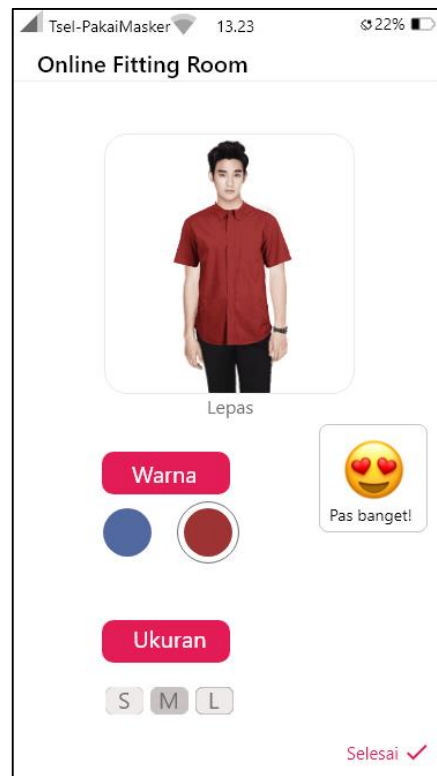
Figure 6.31 Fitting Room- Color Selection 2
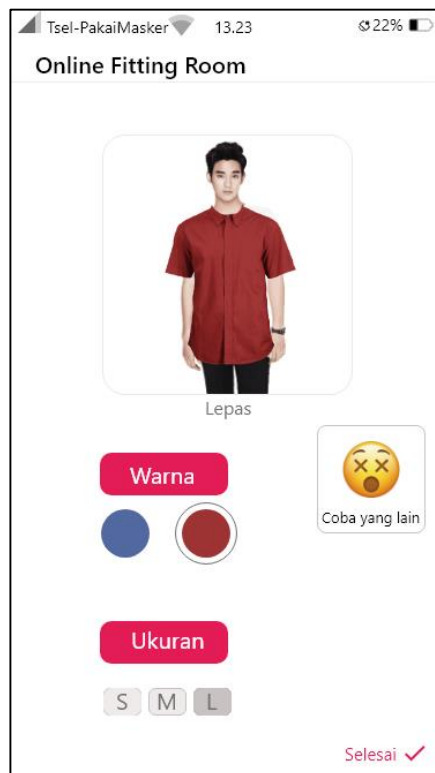
Figure 6.32 Fitting Room- Color Selection 3

The fitting room will show the clothes on the body of the user. The view will show on how fit the clothes on the user. In addition, there is emoticons that shows the fitness of the clothes. When the clothes fit perfectly, the emoji will shows heart-eyes emoji with expression of 'Pas Banget!' or 'Fit Perfectly'. When the clothes fit perfectly, the emoji will shows heart-eyes emoji with expression of 'Pas Banget!' or 'Fit Perfectly'. When the clothes is too small, the emoji will show the thinking emoji with expression of 'Kurang Nih' or 'A bit more'. When the clothes is too big, the emoji will show the thinking emoji with expression of 'Coba yang lain' or 'Try another'.

Due to limitation of the application, the prototype only show up to interface. The virtual fitting room is only shown in 2D form. In addition, this feature can be developed in another item including makeup and property with AR technology.

CHAPTER VII

PROTOTYPE EVALUATION

This chapter shows the prototype evaluation by using SUS Questionnaire. The respondents consist of 5 people with experience in using Bukalapak. For odd-numbered item, the score contribution is the scale position minus 1. For even-numbered items, the score contribution is 5 minus the scale position. Multiply the sum of the cores by 2.5 to obtain the overall SUS score. The interpretation of SUS scores will be 'not acceptable' for score under 50, 'marginal' for score of 50-70, and 'acceptable' for score more than 70. The evaluation is performed by sending the link of application to the users and ask them to give point 1 to 5 for each question.

1) Respondent 1

The table 7.1 shows the data collection of SUS Questionnaire for respondent 1. Here is the result of SUS Questionnaire of Respondent 1.

Table 7.1 Result of SUS Questionnaire of Respondent 1

No	Statement	1	2	3	4	5	SUS Score	SUS Score * 2.5
1	I think that I would like to use this system frequently				4		3	7.5
2	I found the system unnecessarily complex	1					4	10
3	I thought the system was easy to use					5	4	10
4	I think that I would need to support of a technical person to be able to use this system		2				3	7.5
5	I found the various functions in this system were well integrated				4		3	7.5
6	I thought there was too much inconsistency in this system	1					4	10
7	I would imagine that most people would learn to use this system very quickly				4		3	7.5
8	I found the system very cumbersome to use	1					4	10
9	I felt very confident using the system				4		3	7.5

No	Statement	1	2	3	4	5	SUS Score	SUS Score * 2.5
10	I needed to learn a lot of things before I could get going with this system	1					4	10
	TOTAL							87.5

The overall score gives result of 87.5 which interpreted to acceptable result. The respondent gives full score to the ease of usage which shows satisfaction in the aspect. In accordance to the statement of ease of the usage, the user also agree that the system is well integrated and very confident to use the system. The user would like to use the system frequently and would imagine that most people would learn to use the system very quickly. In addition, the user do not agree about the inconsistency in the system. Since the user think that the system is easy to use, the user do not feel cumbersome in using the system and learn a lot of things before they could get going with the system.

2) Respondent 2

The table 7.2 shows the data collection of SUS Questionnaire for respondent 2. Here is the result of SUS Questionnaire of Respondent 2.

Table 7.2 Result of SUS Questionnaire of Respondent 2

No	Statement	1	2	3	4	5	SUS Score	SUS Score * 2.5
1	I think that I would like to use this system frequently			3			2	5
2	I found the system unnecessarily complex			3			2	5
3	I thought the system was easy to use				4		3	7.5
4	I think that I would need to support of a technical person to be able to use this system		2				3	7.5
5	I found the various functions in this system were well integrated				4		3	7.5
6	I thought there was too much inconsistency in this system		2				3	7.5
7	I would imagine that most people would learn to use this system very quickly					5	4	10
8	I found the system very cumbersome to use	1					4	10

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No	Statement	1	2	3	4	5	SUS Score	SUS Score * 2.5
9	I felt very confident using the system				4		3	7.5
10	I needed to learn a lot of things before I could get going with this system	1					4	10
	TOTAL							77.5

The overall score gives result of 77.5 which interpreted to acceptable result. The overall score gives result of 77.5 which interpreted to acceptable result. The respondent gives full score to the aspect of learnability for most people. The user also agree with the ease of the system, the integration of the system, and the confidence in using it. The user still feels undecided whether to use the system frequently. The user also still feels undecided whether the user think that the system unnecessarily complex. Since the user agrees with the ease of the system, the user do not think that the user would need support of technical person to use the system. The user also do not agree about the inconsistency in the system. In addition, the user do not agree to statement about cumbersome system and do not need to learn a lot of things before could get going with the system.

3) Respondent 3

The table 7.3 shows the data collection of SUS Questionnaire for respondent 3. Here is the result of SUS Questionnaire of Respondent 3.

Table 7.3 Result of SUS Questionnaire of Respondent 3

No	Statement	1	2	3	4	5	SUS Score	SUS Score * 2.5
1	I think that I would like to use this system frequently			3			2	5
2	I found the system unnecessarily complex		2				3	7.5
3	I thought the system was easy to use				4		3	7.5
4	I think that I would need to support of a technical person to be able to use this system			3			2	5
5	I found the various functions in this system were well integrated			3			2	5
6	I thought there was too much inconsistency in this system		2				3	7.5

No	Statement	1	2	3	4	5	SUS Score	SUS Score * 2.5
7	I would imagine that most people would learn to use this system very quickly				4		3	7.5
8	I found the system very cumbersome to use		2				3	7.5
9	I felt very confident using the system					5	4	10
10	I needed to learn a lot of things before I could get going with this system			3			2	5
	TOTAL							67.5

The overall score gives result of 67.5 which interpreted to marginally acceptable result. The respondent gives full score to the aspect of confidence in using the system. The user also agree with the ease of the system and the learnability to use the system for most people. The user still feels undecided whether to use the system frequently. The user also still feels undecided whether the user would need support of technical person to be able to use the system. Also, the user feel undecided about the integration in the system. The user do not found the system unnecessarily complex. In addition, the user do not found the system has too much inconsistency. Also, the user do not find the system cumbersome to use.

4) Respondent 4

The table 7.4 shows the data collection of SUS Questionnaire for respondent 4. Here is the result of SUS Questionnaire of Respondent 4.

Table 7.4 Result of SUS Questionnaire of Respondent 4

No	Statement	1	2	3	4	5	SUS Score	SUS Score * 2.5
1	I think that I would like to use this system frequently				4		3	7.5
2	I found the system unnecessarily complex		2				3	7.5
3	I thought the system was easy to use				4		3	7.5
4	I think that I would need to support of a technical person to be able to use this system			3			2	5
5	I found the various functions in this system were well integrated		2				1	2.5

No	Statement	1	2	3	4	5	SUS Score	SUS Score * 2.5
6	I thought there was too much inconsistency in this system			3			2	5
7	I would imagine that most people would learn to use this system very quickly				4		3	7.5
8	I found the system very cumbersome to use		2				3	7.5
9	I felt very confident using the system					5	4	10
10	I needed to learn a lot of things before I could get going with this system			3			2	5
	TOTAL							65

The overall score gives result of 65 which interpreted to marginally acceptable result. The user agree to use the system frequently and also think that the system is easy to use. The user still feels undecided whether need support of a technical person to be able to use the system. The user is still undecided to think if there is too much inconsistency in the system. Also, the user is still undecided about need to learn a lot of things before the user could get going with the system. Accordance with the agreement on statement of ease in the system usage, the user do not find the system unnecessarily complex and the system to be very cumbersome. The fact that the user do not find the various functions in the system very well integrated can be an input for further development of the feature.

5) Respondent 5

The table 7.5 shows the data collection of SUS Questionnaire for respondent 5. Here is the result of SUS Questionnaire of Respondent 5.

Table 7.5 Result of SUS Questionnaire of Respondent 5

No	Statement	1	2	3	4	5	SUS Score	SUS Score * 2.5
1	I think that I would like to use this system frequently				4		3	7.5
2	I found the system unnecessarily complex		2				3	7.5
3	I thought the system was easy to use				4		3	7.5

No	Statement	1	2	3	4	5	SUS Score	SUS Score * 2.5
4	I think that I would need to support of a technical person to be able to use this system	1					4	10
5	I found the various functions in this system were well integrated				4		3	7.5
6	I thought there was too much inconsistency in this system		2				3	7.5
7	I would imagine that most people would learn to use this system very quickly					5	4	10
8	I found the system very cumbersome to use		2				3	7.5
9	I felt very confident using the system				4		3	7.5
10	I needed to learn a lot of things before I could get going with this system		2				3	7.5
	TOTAL							80

The overall score gives result of 80 which interpreted to acceptable result. The respondent gives full score to the aspect of learnability for most people. The user would like to use the system frequently. The user also agree with the ease and integration of the system. Since the user think that the system is easily used, the user does not find the system unnecessarily complex and too much inconsistency in the system. The user also does not find the system very cumbersome to use and does not think of needing to learn a lot of things before the user could get going with the system.

There are three out of five results that show the prototype has acceptable usability. The rest gives result of marginal that is understandable since the prototype can be explored further. Overall, it shows that even though the concept is still on prototype form, the users can accept the interface of Virtual Try-On to be a feature on Bukalapak.

CHAPTER VIII
CONCLUSION AND SUGGESTION

8.1 Conclusion

The following shows the conclusion of the study.

1. User needs is identified on e-commerce feature using the Kansei approach. There are 32 words chosen from interview and literature; Local, Easy, Fun, Simple, Enjoyable, Crowded, Responsive, Fast, Trusted, Ordinary, Underrated, Comfortable, Integrated, Confusing, Friendly, Informative, Practical, Robust, Pricey, User-friendly, Persuasive, Mainstream, Creative, Consistent, Varied, Attractive, Modern, Minimalist, Secured, Straightforward, Empowered, Exciting,

2. New function as service on Bukalapak is designed based on emotional aspects by using Kansei Engineering and User Experience approach. Derived from chosen Kansei Words (Special, Extraordinary, Uncrowded, and Well-known), the proposed featured is Personalized Quiz that gives result of recommended stuff to buy for the user that is continued to Virtual Fitting Room to try the clothes virtually.

3. Prototyping user interface for the new function on e-commerce. The prototype is designed by using Adobe XD

4. User interface of the new feature is evaluated using SUS Questionnaire filled by 5 people. Three out of 5 respondents' results score above 70 which is interpreted into acceptable system of the proposed feature.

8.2 Suggestion

The following shows the suggestions of the study.

1. Different approach of data processing can be applied to give more accurate result.

2. This application still needs to be developed not only in terms of function, but also from the user interface and additional features since the feature proposed in the study is only in mock-up design.

3. Expand the scope of respondents' domicile since Bukalapak also available in Singapore, Malaysia, Hongkong, Taiwan, and Brunei Darussalam.
4. Consider to develop the web version as another platform of Bukalapak.
5. Reuse Kansei Word from existed journal with similar product to reduce time and resource in developing set of Kansei Words.
6. Apply Likert scale with odd-numbered of options.

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ATTACHMENTS

Attachment 1. Kansei Words Questionnaire

Kansei Words

Terdapat 32 Kata Kansei yang mewakili perasaan pengguna dalam menggunakan Bukalapak. Silahkan diisi sesuai penilaianmu!

Responsive (Fitur di aplikasi fleksibel dalam memberikan respons pada pengguna) *

	1	2	3	4	5	
Unresponsive	O	O	O	O	O	Responsive

Robust (Aplikasi terasa kokoh saat digunakan) *

	1	2	3	4	5	
Fragile	O	O	O	O	O	Robust

Fast (Fitur di aplikasi dengan segera memberikan respons dari pengguna) *

	1	2	3	4	5	
Slow	O	O	O	O	O	Fast

Confusing (Fitur di aplikasi Bukalapak membingungkan untuk digunakan) *

	1	2	3	4	5	
Simple	O	O	O	O	O	Confusing

Enjoyable (Fitur di aplikasi Bukalapak menyenangkan untuk digunakan secara teknis) *

	1	2	3	4	5	
Unamusing	O	O	O	O	O	Enjoyable

Attachment 2. Kansei Words Questionnaire (cont'd)

Pricey (Harga dari barang dan layanan seperti ongkir yang disediakan mahal) *

	1	2	3	4	5	
Affordable	O	O	O	O	O	Pricey

User-friendly (Fitur aplikasi di Bukalapak dapat diakses dengan baik) *

	1	2	3	4	5	
Inconvinient	O	O	O	O	O	User-friendly

Persuasive (Fitur aplikasi di Bukalapak mendorong user untuk menggunakan fitur yang dimiliki) *

	1	2	3	4	5	
Discouraging	O	O	O	O	O	Persuasive

Crowded (Fitur aplikasi di Bukalapak ramai) *

	1	2	3	4	5	
Uncrowded	O	O	O	O	O	Crowded

Fun (Fitur aplikasi di Bukalapak menyenangkan untuk digunakan secara tampilan) *

	1	2	3	4	5	
Boring	O	O	O	O	O	Fun

Mainstream (Fitur di aplikasi Bukalapak tidak ada yang istimewa dibandingkan marketplace lainnya seperti Tokopedia dan Shopee) *

	1	2	3	4	5	
Extraordinary	O	O	O	O	O	Mainstream

Attachment 3. Kansei Words Questionnaire (cont'd)

Local (Fitur di aplikasi Bukalapak mengingatkan pengguna pada negara asal aplikasi yaitu Indonesia) *

	1	2	3	4	5	
Foreign	O	O	O	O	O	Local

Simple (Alur di fitur aplikasi Bukalapak sederhana) *

	1	2	3	4	5	
Complex	O	O	O	O	O	Simple

Friendly (Fitur di aplikasi Bukalapak ramah terhadap pengguna) *

	1	2	3	4	5	
Distant	O	O	O	O	O	Friendly

Creative (Fitur di aplikasi Bukalapak inovaitf) *

	1	2	3	4	5	
Uncreative	O	O	O	O	O	Creative

Trusted (Fitur di aplikasi Bukalapak terpercaya untuk penggunaan) *

	1	2	3	4	5	
Undependable	O	O	O	O	O	Trusted

Consistent (Aplikasi Bukalapak konsisten dalam pelayanan) *

	1	2	3	4	5	
Inconsistent	O	O	O	O	O	Consistent

Attachment 4. Kansei Words Questionnaire (cont'd)

Informative (Informasi yang ditampilkan Bukalapak detail) *

	1	2	3	4	5	
Uninformative	O	O	O	O	O	Informative

Ordinary (Fitur di aplikasi Bukalapak tidak ada yang istimewa dibandingkan marketplace lainnya seperti Tokopedia dan Shopee) *

	1	2	3	4	5	
Extraordinary	O	O	O	O	O	Ordinary

Practical (Fitur di aplikasi Bukalapak mampu memenuhi kebutuhan) *

	1	2	3	4	5	
Impractical	O	O	O	O	O	Practical

Varied (Layanan dan barang yang ditampilkan variatif) *

	1	2	3	4	5	
Unvaried	O	O	O	O	O	Variative

Attractive (Fitur di aplikasi Bukalapak menarik pengguna) *

	1	2	3	4	5	
Unattractive	O	O	O	O	O	Attractive

Underrated (Fitur di aplikasi Bukalapak tidak seterkenal kompetitor) *

	1	2	3	4	5	
Overrated	O	O	O	O	O	Underrated

Comfortable (kenyamanan dalam menggunakan Bukalapak) *

	1	2	3	4	5	
Uncomfortable	O	O	O	O	O	Comfortable

Modern (Fitur di Bukalapak ditampilkan dalam tampilan yang modern) *

	1	2	3	4	5	
Ancient	O	O	O	O	O	Modern

Minimalist (Fitur di Bukalapak ditampilkan dalam tampilan yang minimalis) *

	1	2	3	4	5	
Embellished	O	O	O	O	O	Minimalist

Integrated (Fitur yang terdapat di Bukalapak terintegrasi satu sama lain) *

	1	2	3	4	5	
Segregated	O	O	O	O	O	Integrated

Secured (Aman dalam penggunaan aplikasi Bukalapak) *

	1	2	3	4	5	
Loosen	O	O	O	O	O	Secured

Straightforward (Informasi yang diberikan di aplikasi to the point) *

	1	2	3	4	5	
Complicated	O	O	O	O	O	Straightforward

Attachment 6. Kansei Words Questionnaire (cont'd)

Straightforward (Informasi yang diberikan di aplikasi to the point) *

	1	2	3	4	5	
Complicated	○	○	○	○	○	Straightforward

Easy (Mudah dalam penggunaan aplikasi Bukalapak) *

	1	2	3	4	5	
Difficult	○	○	○	○	○	Easy

Empowered (Fitur di aplikasi Bukalapak dirasa memberdayakan UKM Lokal) *

	1	2	3	4	5	
Unauthorized	○	○	○	○	○	Empowered

Exciting (Fitur aplikasi Bukalapak menarik untuk digunakan) *

	1	2	3	4	5	
Boring	○	○	○	○	○	Exciting

AUTHOR PROFILE

The author name is Hanan Izzah Nabilah. She graduated high school at SMA Plus Negeri 17 Palembang. During her college life, she participated in Himpunan Mahasiswa Teknik Industri 2017/2018 and 2018/2019 at division of External Affairs as Staff and continued to be Department Secretary. She fulfilled internship at PT. GMF AeroAsia Tbk. Of TGC-6 Unit (Aircrafts Parts & Material Planning). In the beginning of 2019, she joined Delightful Istanbul Winter School studied Digital Marketing course at Istanbul Aydin University, Turkey.

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