FINAL PROJECT – TI 141501

IMPROVEMENT OF KAWAII-USABILITY EVALUATION (KUE) QUESTIONNAIRE WITH ITS VALIDITY AND RELIABILITY TESTING IN SMARTPHONE APPLICATIONS

RIZKI ADAM
NRP 024 1 14 40000 127

Supervisor
Dr. Adithya Sudiarno, S.T., M.T.
NIP. 198310162008011006

DEPARTMENT OF INDUSTRIAL ENGINEERING
Faculty of Industrial Technology
Institut Teknologi Sepuluh Nopember
Surabaya 2018

APPROVAL SHEET

IMPROVEMENT OF KAWAII-USABILITY EVALUATION (KUE) QUESTIONNAIRE WITH ITS VALIDITY AND RELIABILITY TESTING IN SMARTPHONE APPLICATIONS

FINAL PROJECT

Prepared and submitted in partial fulfilment of the requirements for the degree of

Bachelor of Engineering in Industrial Engineering

Department of Industrial Engineering

Faculty of Industrial Technology

Institut Teknologi Sepuluh Nopember

Surabaya, Indonesia

Author:

RIZKI ADAM

NRP 02411440000127

Acknowledged and approved by:

Supervisor

Dr. Adithya Sudiarno, S.T., M.T.

NIP. 198310162008011006

SURABAYA, JULY 2018

MODIFICATION AND IMPROVEMENT OF KAWAII USABILITY EVALUATION (KUE) QUESTIONNAIRE WITH ITS VALIDITY AND RELIABILITY TESTING IN SMARTPHONE APPLICATIONS

Name	: Rizki Adam
Student ID	: 02411440000127
Supervisor	: Dr. Adhitya Sudiarno, S.T., M.T.

ABSTRACT

In this modern era, the needs of internet and digital technology implementation constantly increases. In Indonesia itself, based on survey conducted by APJII (*Asosiasi Penyedia Jasa Internet Indonesia*) in 2017, the internet penetration has reach 54,7% of total population. This result in high intensity of internet and digital technology usage in daily activities, especially smartphones, which also trigger a very competitive smartphones application development market.

This is where developers should really consider one of the most vital aspect in application development, which is its usability, the extent a product can be used to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use (ISO 9241:11, 1998). This study tried to combine usability aspect in designing an application with a quite similar concept from Japan called Kansei Engineering and Kawaii Design. Both of these concepts will be combined to develop a tool that able to measure the usability parameters of a product, by also considering its kawaii feature, called KUE Questionnaire.

The previous research in developing the first KUE Questionnaire, done by Nugroho in 2018, had only been tested in a physical-educational game media for children about oral and dental health. However, several weaknesses were found in the questionnaire, such as an imbalance of usability-kawaii attributes in the questionnaire, and had not been tested in a more relevant case. In this research, the author will try to improve the KUE Questionnaire by reducing its weaknesses and test its validity and reliability towards a more relevant and general case, which is smartphone application. The Android applications chosen are GO-JEK and Mobile Legends.

Observation result shows that the new version of KUE Questionnaire is also able to provide a valid and reliable result. By the author being able to balance the parameters, measurements, and also adjust the question items for more general application, it is concluded that the new KUE Questionnaire is also able to provide more representative and precise evaluation towards the assessed mobile applications. The smartphone applications of GO-JEK and Mobile Legends have a average KUE score of 4.03 and 3.79 respectively. It means they have a fairly good KUE score, although several improvements are also suggested.

Keywords: kawaii, KUE, questionnaire, smartphone application, usability

(This Page is Intentionally Left Blank)

PREFACE

First of all, the writer wants to express great gratitude to Allah SWT, because of his bless and grace that the writer could finish this report on time. The writer could finish this report with the help and contribution from various parties, who gives continuous support for the writer. Therefore, in this opportunity the writer wants to express the gratitude towards,

1. Mr. Dr. Adithya Sudiarno, S.T., M.T., as author's supervisor who guided and gave advice for the author to improve the author's report.
2. Mrs. Diesta Iva Maftuhah, S.T., M.T., Mrs. Anny Maryani, S.T., M.T., Mrs. Dyah Santhi Dewi, S.T., M.Eng.Sc., Ph.D., and Mrs. Ratna Sari Dewi, S.T., M.T., Ph.D., as the examiner/assessor in author's proposal and final report presentasion, for giving any improvements, evaluations, and suggestions for author's research report.
3. Author's beloved family, especially parents (Dedi Ems and Syofina Yulius) and siblings (Nadia Karunia Rahmarinda. and Nadhila Qamarani) for the endless motivation and constant support for the author to finish this research report.
4. Mr. Nurhadi Siswanto, S.T., MSIE, Ph.D. as Head of Industrial Engineering Department, Mr. Dr. Adithya Sudiarno, S.T., M.T. as Head of Undergraduate (S-1) Program, Dr. Ir. Sri Gunani Pratiwi, MT., IPM as author's custodian supervisor, as well as all of the faculty members and academic staffs in Industrial Engineering Department for all the help and guidance during the author's study in Industrial Engineering Department.
5. Many others that cannot be mentioned one by one.

The Author realizes that this report is far from excellent, therefore comments and advices are accepted for future improvements. The author also apologizes if there is any mistake that exists in this report.

Surabaya, June 28th 2018

Rizki Adam

(This Page is Intentionally Left Blank)

TABLE OF CONTENTS

(This Page is Intentionally Left Blank)

LIST OF FIGURES

(This Page is Intentionally Left Blank)

LIST OF TABLES

(This Page is Intentionally Left Blank)

CHAPTER 1
INTRODUCTION

Several aspects related to the introduction of this final project will be explained in this chapter. These aspects include the background, problem formulation, research objective, benefit, limitation, assumption, and the report writing systematic.

1.1 Background

In this modern globalization era, people tendency in using digital technology is enormous and still increasing over time. Because of fast moving culture and high mobility, people more prefer to use anything that are easier, faster, and simpler to use. This is why the use of digital mobile application and smartphone technology in general becoming highly more substantial in everyday life. One of the top-leading smartphone and mobile software/operating system developer in the world right now is Android. Released in September 2008, Android has now become one of the most used platform for smartphone technology around the world. This high usage level of Android OS invites enormous amount of smartphone application developers to invest and compete to develop various applications that support social/communication, entertainment/game, until education as daily necessities in nowadays communities, from kids to elders also professionals to casual users. In competing in order to get as much users as possible, software developer has to understand what and how they should design their application in order to make an attractive, simple, easy to use, and effective application(s), so communities/markets will give positive feedback. One of the most notable parameters in how well community will accept a mobile application is its usability.

Usability, according to ISO 9241:11 (1998), is the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use. It mainly focused on the learnability, efficiency, memorability, errors, and satisfaction of a product (Bevan, 2006). High level in usability generally means that the product (application) is well comprehended and used by the application users. People's comprehension and

preference towards a product (application) is basically a “feeling” or “emotion”. That’s why usability is considered to be related to *Kansei* Engineering System (KES) (Schütte *et al.*, 2004).

The term ‘*Kansei*’ is a Japanese word which means a consumer's psychological feeling and image regarding a new product. *Kansei* Engineering is defined as translating technology of a consumer's ‘feeling’ (*Kansei* in Japanese) into the design elements of a product (Nagamachi, 1995), which in the case of this research, is a mobile software/application. *Kawaii* is one of the representative concepts of Japan-original *Kansei*. *Kawaii* is among the *Kansei* values that have become important in manufacturing in Japan (Sugano, Miyaji and Tomiyama, 2013). The term “*Kawaii*” represents an emotional value; it has positive meanings, such as cute, lovable, and small. In the 21st century, the emotional value accounts for a large part of consumers’ preference. The kawaii feeling might become a key factor for creating affective and pleasurable designs. Thus, investigation on the kawaii feeling is important (Yanagi *et al.*, 2014).

The ultimate goal of both usability evaluation and kansei concepts are similar, but somewhat different. Usability evaluation is generally done to improve the design of a product, or to measure the achievement on usability objectives of that product, by identifying its errors and flaws. Kansei engineering measure users’ emotions in using a product to be furtherly used to improve the design of the product. Both aim the same goal, which is to improve a design of a product, but usability and kansei measure different parameters. Usability parameters mostly come from the interaction of end-user with a software product and how a specific property of the product contributes to achieving a certain degree of usability. Meanwhile kansei is basically defined as translating consumer's emotions/feelings into a product’s design elements, and in kawaii design it is more specific towards the kawaii (cute) elements. Both have differences, but equally important to determine the performance of a product. Therefore, it is required to develop a tool that able to accomodate both usability and kawaii attributes measurement of a product.

Through the previous research, conducted by Nugroho (2018), a tool to measure or evaluate usability and *kawaii* attributes of a product is developed. This

tool is called Kawaii Usability Evaluation (KUE) Questionnaire. The KUE Questionnaire was developed based on a purpose to evaluate the effectiveness of a mixed-reality dental health educational media, called MR SIWA, by combining usability and *kawaii* aspects/parameters (Nugroho, 2018). This research concludes, based on the data processing result, it is found that all of the question items in the questionnaire are valid and reliable, and also, both the questionnaire result and test result show a positive trend, which means that MR SIWA has significant contribution in increasing student's knowledge about oral and dental health (Nugroho, 2018). Basically, this research proves that KUE Questionnaire is reliable enough to measure a product usability and *kawaii* attributes. Unfortunately, it is found that there are still several weaknesses of this evaluation tools (KUE). First of all, the question items between usability and *kawaii* parameters implemented in the questionnaire are unbalanced, as shown in the table 1.1 below.

Table 1.1 Parameters & Measurements Used in KUE Questionnaire

Parameter	Measurement		Question number	
	Usability	Kawaii	Usability	Kawaii
Memorability	Control System Easy to Remember	Memorable Mascot	1	2
Error	Error Occurrence	*(undefined)*	3	*(undefined)*
Satisfaction	Wants to use it again	Fun Design	6	7
	How good the system is	Cute Sound	13	8
		Fun Motion		12
		Color Scheme		11
Learnability	Easiness in using the media	Design helps in using the media	5	4
Efficiency	Content Comprehension	Funny video & hologram, also helps in understanding the content	9	10

Source: (Nugroho, 2018)

Table 1.1 above shows that the parameter "Error" had no kawaii measurement indicator and question item. It means that *kawaii* parameters are less represented in the questionnaire, which result in not all attributes were represented enough in the questionnaire. This imbalance could be a problem and weakens the

questionnaire validity towards the result. For example, even though that the data processing of the questionnaire shows a positive result, this imbalance might mean that from usability point of view the result is good, but is not necessarily from *kawaii* point of view. Despite the previous result already state that the questionnaire is valid and reliable enough (with assumption that the difference of number of attributes represented in the questionnaire is insignificant), it is still possible and of course preferable to improve the questionnaire in the future.

The second weakness of the previous research is, this KUE Questionnaire is still tested on a specific case study. Nugroho initially construct this questionnaire based on a purpose to measure a physical educational media, which is MR SIWA. Although this research already concludes that it is valid and reliable enough to measure a product such as MR SIWA, it is not yet determined whether the questionnaire can be used to measure other type product/media, for instance a digital program or a mobile phone application/software.

To cope with the mentioned weaknesses above, this research aims to improve and modify the current KUE Questionnaire. The goal are to make the attributes that exist in the questionnaire more balance, and to evaluate whether this questionnaire also able to measure the usability and *kawaii* attributes of other product type, in this case are two Android OS based applications, GO-JEK and Mobile Legends. GO-JEK is one of the top leading digital-based company in Indonesia which provides transportation, delivery, until one-stop-payment services in Indonesia. Mobile Legends is also one of the most played Multiplayer Online Battle Arena (MOBA) game franchise in smartphone platform in Asia, especially Indonesia. These two applications are chosen based on relatively wide range of users (people) that are nowadays using.

1.2 Problem Formulation

Based on the background explained in the previous subchapter, this research aims to modify and improve the current KUE Questionnaire from previous research, to have a better-balanced questionnaire attributes and to test its validity and reliability on other type of product.

1.3 Research Objective

By conducting this research, the author aims to achieve several objectives, such as:

1. To balance the parameters and measurements used in the KUE Questionnaire.
2. To modify and improve the KUE Questionnaire.
3. To test the validity and reliability of the modified KUE Questionnaire.
4. To evaluate the usability and *kawaii* aspects of GO-JEK and Mobile Legends as two Android OS based mobile applications in terms of performance and design.
5. To determine whether the modified KUE Questionnaire is able to evaluate a wider type of product.

1.4 Research Benefit

By conducting this research, the benefits that could be achieved are:

1. Able to expand the usage of KUE Questionnaire to other implementation in other type of product, in this case a mobile software/application.
2. Able to suggest improvements on the application's usability and kawaii aspects.

1.5 Research Limitation

The author conduct this research based on some consideration on the limitations, in order to increase the insight on the results. The limitations used in this research are:

1. Jgvtf tambahin limitasi
2. The usability and *kawaii* attributes testing are performed on two Android OS based applications that available on Android's Google Play Store, which are GO-JEK (Version 3.7.1, per May 25th, 2018) and Mobile Legends: Bang Bang (Version 1.2.80.2842, per May 29th, 2018).
3. The applications will be assessed through the modified KUE Questionnaire by spreading online questionnaire submission towards several online forums/communities on the websites and social media.

1.6 Research Assumption

The author conduct this research based on some consideration on the assumptions, in order to increase the insight on the results. The assumptions used in this research are:

1. There are no changes in knowledge regarding the chosen Android OS based applications among the respondents beside the intended changes occurred whilst conducting the research during research period.
2. All respondents have applied the auto-update feature on their Android smartphone that allows them to always possess the up-to-date applications.

1.7 Report Writing Systematic

The research report consisted of several systematical chapters that are used to record the process of research. The chapters used in this report are explained below.

CHAPTER 1 INTRODUCTION

This chapter consists of introduction towards the research process, including the research background that supports this research, problem formulation to identify the problems that is about to be solved, research objective, research benefit, research limitation, and report writing systematic.

CHAPTER 2 LITERATURE REVIEW

This chapter is comprised of explanation from the theories that is used to support the research process. Theories that are used comes from various references, such as books, papers/journals, and legitimate articles. The theories used for this research mainly comes from cognitive ergonomic study field. Specifically, the theories used in this research are *kawaii* design attributes from *kansei* engineering and usability testing which some focus on software and interface design.

CHAPTER 3 RESEARCH METHODOLOGY

This chapter consists of methods that will be used in the research. The research methodology will be used as the basic reference in conducting the research process so that it could run systematically. The research methodology will include the research phases and necessary steps that needs to be done in a research.

CHAPTER 4 DATA COLLECTION AND PROCESSING

This chapter consists of the data collection and processing that will be used in this research. The collected data includes primary and secondary data. The data will be collected and then processed using suitable method.

CHAPTER 5 DATA INTERPRETATION AND ANALYSIS

This chapter consists of data interpretation and analysis related to the processed data in previous chapter. The analysis would discuss about the KUE Questionnaire and the usability and kawaii attributes evaluation result on the chosen mobile applications.

CHAPTER 6 CONCLUSION AND SUGGESTION

This chapter consists of drawing the conclusions based on the conducted research and its objective that has been formulated in previous chapter, whilst giving suggestions and recommendations for future researches.

(This Page is Intentionally Left Blank)

CHAPTER 2
LITERATURE REVIEW

This chapter explains about the theories that are related and used in supporting this research.

2.1 Usability Evaluation Method

Usability Evaluation (Usability Professionals Association, 2007) is an attempt to measure the usability of the product, identifying the problems and flaws on an interface, which could possibly hinder the user in completely understanding the information available in it. Usability evaluation is generally done to improve the design of a product, or to measure the achievement on usability objectives of that product.

A usability evaluation method is a procedure which is composed of a set of well-defined activities for collecting usage data related to end-user interaction with a software product and/or how the specific properties of this software product contribute to achieving a certain degree of usability (Fernandez, Insfran and Abrahao, 2011). According to ISO 9241:11 (1998), usability is comprised of several factors that affect the measurement system, which are:

1. Learnability – a measure on how fast the user will be able to comprehend the system, and also the easiness in performing the available functions in order to achieve an objective.
2. Efficiency – a measure on how much resources used to achieve available objectives
3. Effectivity – whether people (users) can actually complete their tasks and achieve their goals.
4. Memorability – a measure on how long the user will be able to memorize on the system's functions and how to use it
5. Errors – a measure on how many misses made by the user and how the misses are done, to uncover the gap between user's perception and system's interface
6. Satisfaction – a measure on user's comfort and subjective impression toward the system

Joe Mvungi and Titus Tossy, in 2015, also conduct a usability measurement towards a quite similar object as an application/software, which is a website. Both mobile applications and websites are accentuating its visual attributes and ease of use (efficiency and effectivity). For a web, there are three important dimensions that any web developer has to focus on i.e. hypertext, data and presentation design each dimension consists of number of criteria this part there will be explanations on the mentioned dimensions which represent great impact on usability of any web application (Mvungi and Tossy, 2015). The criteria could be discussed as follows:

1. Content Visibility – Refer to the understanding of information structure offered by the application, and get oriented with the hypertext, user must be able to identify main conceptual classes of the contests of the application.
2. Ease of Content Access – After users have identified main classes of content the application deals with, they have to be provided with facilities for accessing the specific content items they are interested in.
3. Ease of Content Browsing – Usually the auxiliary contents related to each single core concept must be easily identified by users, as well as the available interconnections among different core concepts.

2.2 Kansei Engineering

The term '*Kansei*' is a Japanese word which means a consumer's psychological feeling and image regarding a new product. *Kansei* Engineering defined as translating technology of a consumer's 'feeling' (*Kansei* in Japanese) into the design elements of a product (Nagamachi, 1995). *Kawaii* is among the *Kansei* values that have now become important in manufacturing in Japan (Sugano, Miyaji and Tomiyama, 2013).

The term kansei itself does not have direct translation, as it roots from Japanese culture. Kansei consisted of two kanji characters of "kan" and "sei", meaning sensitivity or sensibility when it is combined.

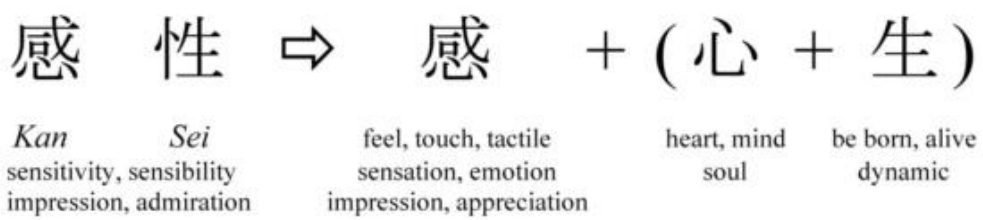


Figure 2.1 Etymology of Kansei
(Levy, Lee and Yamanaka, 2007)

As kansei is termed as sensitivity, it would be logical that every individual possesses different level of kansei itself. There will be group of people that have a high level of kansei, which is those who are rich in mental feelings like sentiment and emotion (Lokman and Mohd, 2010). To measure kansei as a parameter in product development, observer does not directly observe the kansei, but is approached by the causal factors and the consequences resulting from the kansei itself (Levy, Lee and Yamanaka, 2007). Since the Kansei is an internal sensation, the question arising is how the Kansei can be grasped and measured. Unfortunately, all the presently available measuring methods are external methods interpreting different body expressions. A series of measurement methods have been developed, such as (Schütte *et al.*, 2004):

- Physiological responses (e.g. heart rate, EMG, EEG)
- People's behaviour and actions,
- Factual and body expressions, and
- Words (spoken)

2.2.1 Kawaii Design

Kawaii is one of the representative concepts of Japan-original *Kansei*. "*Kawaii*" is a Japanese word that represents an emotional value; it has positive meanings, such as cute, lovable, and small (Yanagi *et al.*, 2014). The perception of *kawaii* is stimulated by the existence of *kawaii* objects or *kawaii* interfaces, which could result in measureable physiological response, such as heart beat change. Various studies have found that *kawaii* design is affected by several characteristics such as shapes, colors, materials, and combination of those characteristics.

Kawaii first emerged in Japanese culture during the Heian Period, ranging from 794-1185 AD. Originally, *kawaii* was termed as *kawayushi* during these period, with literal meaning of "pity". *Kawayushi* is first used in *Konjakumonogatarishu* (Tales of times now past), one of the biggest Buddhism literature in Japan created at the end of Heian Period. Kawayushi is also used during Taisho Period until the end of 1945, where it then changes into shorter term which is known as "*kawayui*". Then it changes once again, now into the word that is more familiar to youngster's ear, *kawaii*. Nowadays, kawaii becomes one of the kansei values that is critical in Japanese manufacturing companies. *Kawaii* is among the *Kansei* values that nowadays have become important in manufacturing in Japan (Sugano, Miyaji and Tomiyama, 2013).

2.2.2 Kawaii Factors

A book under the title "Art and Technology of Entertainment Computing and Communication" states that "cuteness includes the feelings and emotions that are caused by experiencing something that is lovable, charming, cheerful, happy, funny, or something that is very sweet, innocent, or pure. It can stimulate a feeling of adoration, sympathy, or stimulating the care response." (Cheok, 2010). Cheok, the author of this book, also elaborate several factors, obtained from his researches, that affect perception level of a kawaii products, such as (Cheok, 2010):

1. Color

Respondents were given the freedom to choose colors from 16 hues in the visible spectrum, the respondents selected as shown in Figure 2.2. This isolation of color values explored the limits of the trend towards bright and primary colors. The preferences focused on the primary and secondary hues of red, blue, purple with fewer respondent choosing green and yellow.

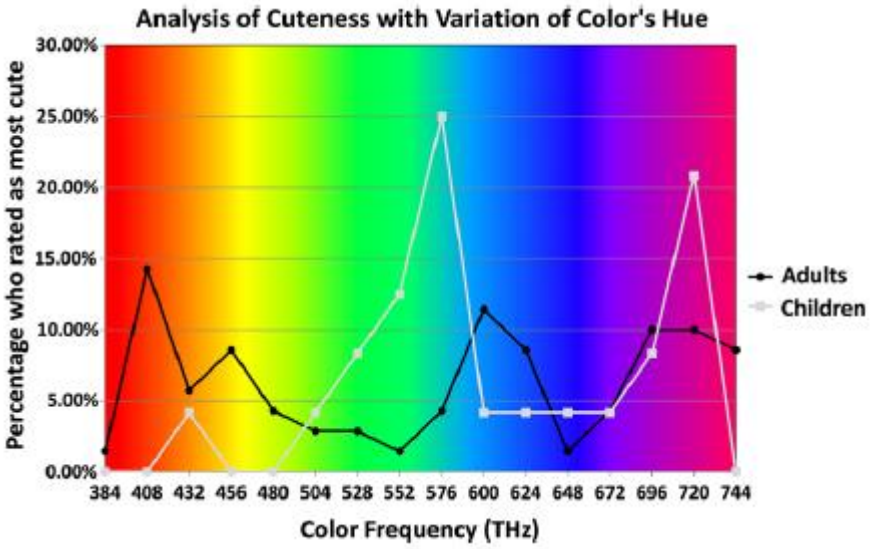


Figure 2.2 Color Spectrum in Kawaii Design Analysis
(Cheok, 2010)

The trend showed a stronger preference for primary hues and less preference for grey. Children showed a stronger preference for the greenish blue shade than the older respondents. They also shared a preference for the reddish shades as leading in the selection as shown in Figure 2.2.

2. Texture

To determine the best texture that is recognized as *kawaii*, the respondents are presented with multiple objects with various texture, where the respondents are required to feel the texture without looking at it. The respondents then select the *kawaii* rating for every texture with choices associated to likert scale, such as “very cute”, “somewhat cute”, “neutral”, “somewhat not cute”, and “not cute at all”.

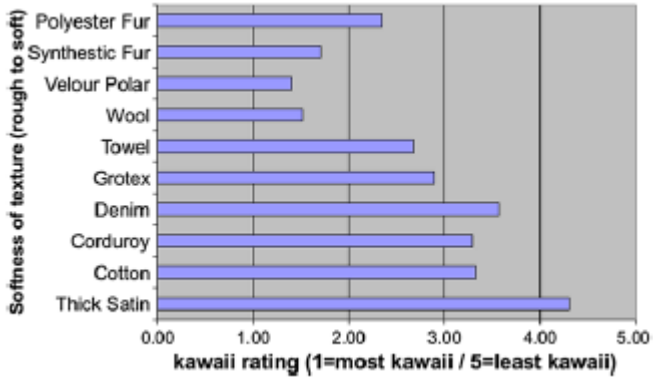


Figure 2.3 Results on Kawaii Level of Each Texture
(Cheok, 2010)

The results show that thick satin is the texture type with the highest *kawaii* level recognized by the respondents. This is caused by the instinctual perception with examples seen in nature. For example, respondents may perceive the texture of thick satin as the furs of kitten, puppy, or other furry animals. The perception and analogy to participant's experience could affect the participant's decision on *kawaii* level of a texture.

3. Motion

To measure kawaii level on motion factor, respondents were shown brief animations of black circle that moves around in the screen. The respondents will need to give "cute" rating for each motion clip that shows one kind of a movement. Beside ratings, the respondents are able to give open feedback on each motion clip. The result shows that the cutest motion is the horizontal movement (left to right) with small hopping motions. The open feedback also gives similar result, where the respondents prefers movement that depicts animal movement with small steps.

4. Sound

The respondents were given several audio clips that comes from same melody but with different range of notes (pitch). After listening to the audio clip, respondents were asked to give impressions by selecting "cute" rating. The respondents show preference in melody with high pitch.

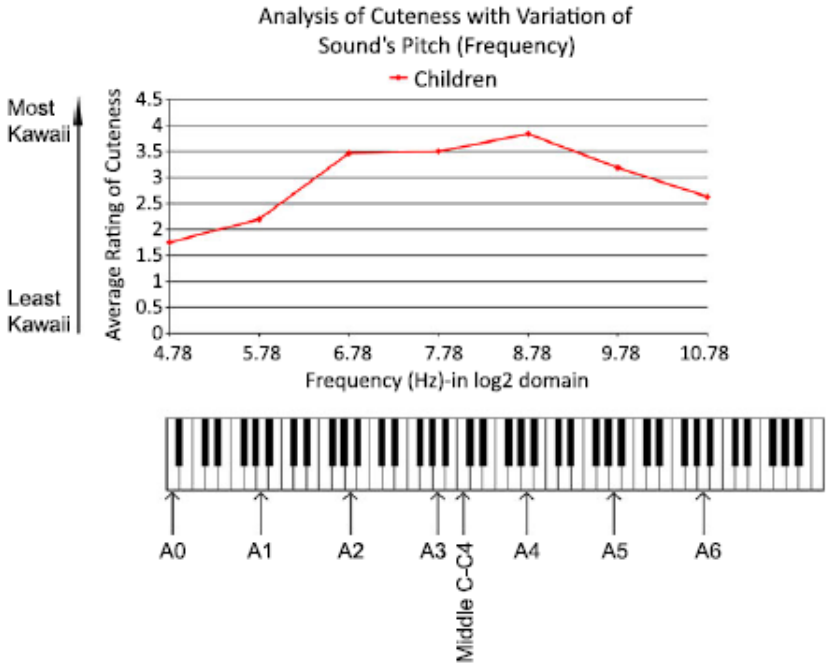


Figure 2.4 Result Chart of Sound Measurement in Terms of Kawaii (Cheok, 2010)

Beside pitch, there are several factors affecting the sound's cuteness level, such as tempo, rhythm, instrument or voice, sound envelope, echo, and timbre. Sound, in terms of cuteness, are also perceived through participant's experience with sounds occurring in nature. Most of sound-emitting objects in the nature gives a high sound frequency when is affected with positive feelings, such as happy and cuteness. But it does not mean that higher pitch means higher cuteness, but there are some limitations to the sound pitch, as shown in Figure 2.4.

5. Size and Proportion

In the test for size and proportion, the respondents are given 2 kinds of test to measure participant's preference towards size, head-body proportion, and relation with "cuteness". The first part of the test is started when the respondents were presented with three different scenes with several objects. The respondents will need to choose which object with specific size that is perceived as most "cute". The test is done several times with several other objects. The result of the test shows that objects with smaller size compared to other objects are preferred by the respondents.

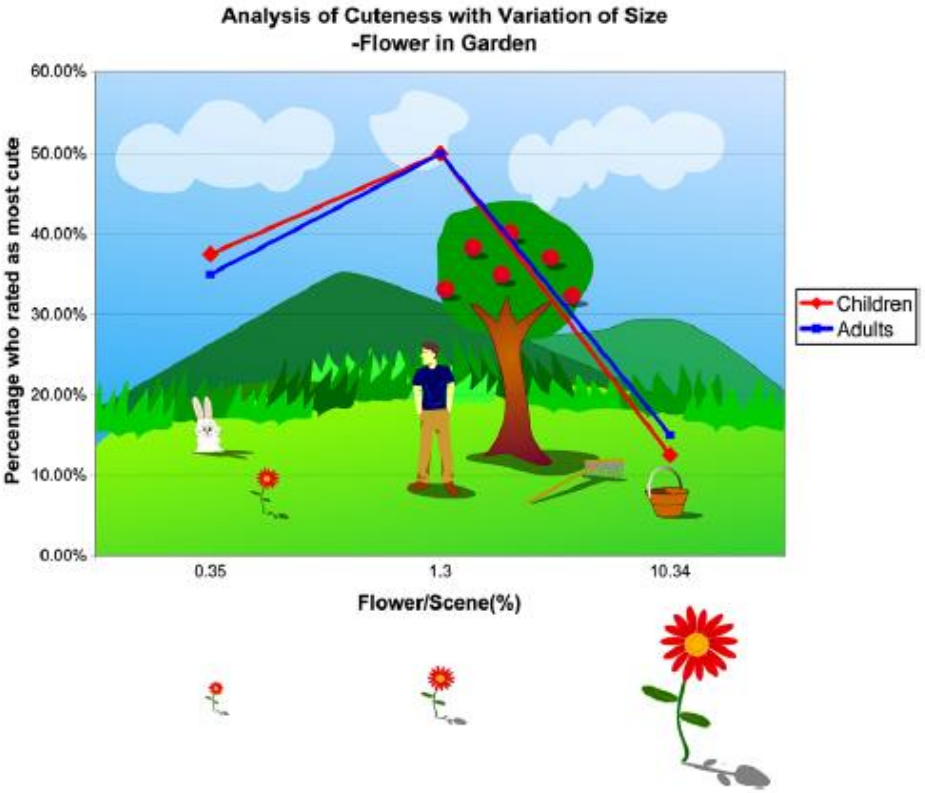


Figure 2.5 Participant's Preference on each Flower Size
(Cheok, 2010)

The second part of the test covers the participant's preference towards object's proportion. The test covers many kinds of objects with various proportions. The tested objects are human, cow-like animal, and mushroom, with 4 kinds of proportion. Between all variations, the respondents were asked to choose picture that is most "cute".

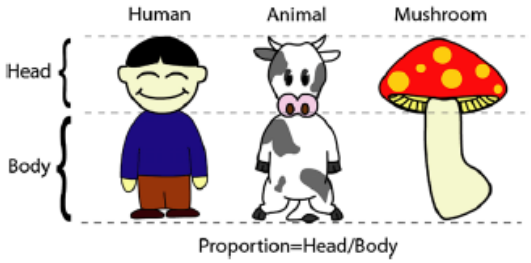


Figure 2.6 Body and Head Section for Each Object
(Cheok, 2010)

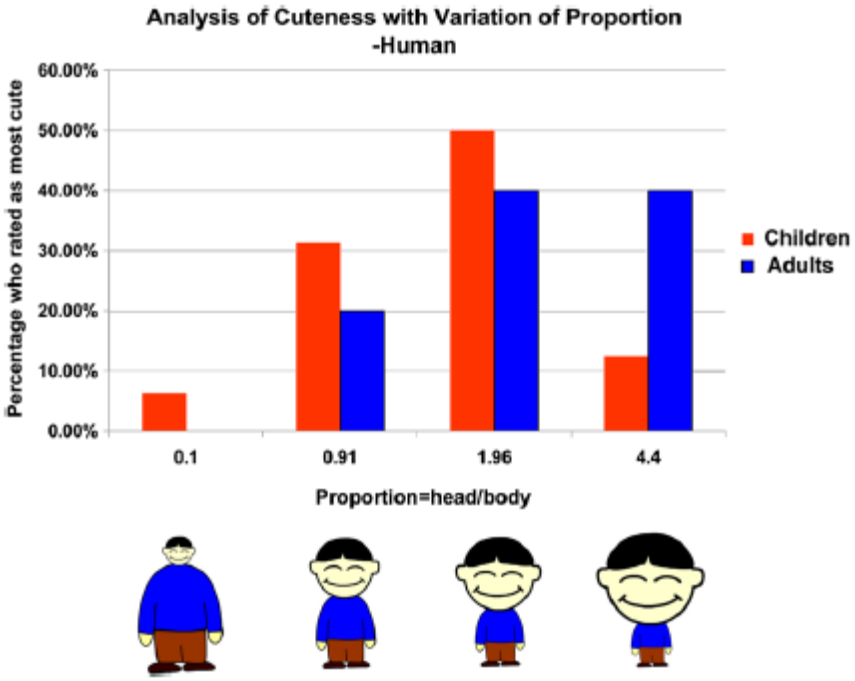


Figure 2.7 Human Proportion Result for Children and Adult Respondents (Cheok, 2010)

First, the respondents are presented with 4 proportion variation on human character design. Proportion is defined as the comparison between head size and body size, thus larger proportion value means larger head, otherwise smaller body. The result shows that most respondent prefers head-body proportion of 1.96, where the head is more or less two times bigger than the body.

But, there is a little difference occurred between adult and children respondent. Compared to adult respondents that choose designs with bigger head, children respondents prefer designs with a more “normal” head-body proportion. Half of children respondents choose head-body proportion of 1.96, while about 30% of children respondents choose proportion of 0.91.

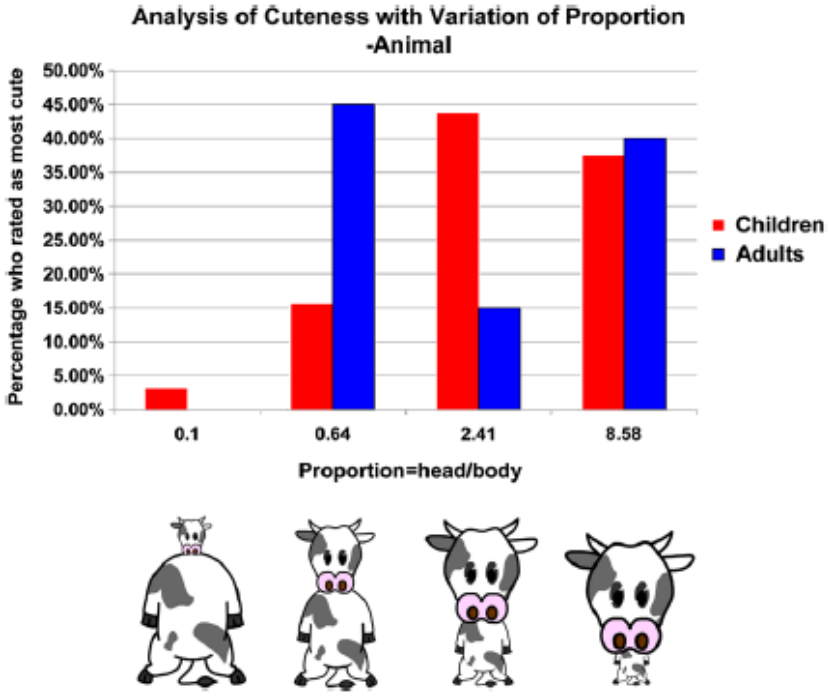


Figure 2.8 Animal Proportion Result for Children and Adult Respondents (Cheok, 2010)

Then, the respondents are presented with 4 proportion variations of animal character, which is shown in figure 2.8. Similar with the human object, the respondents tend to choose animal characters with larger head, except that there are adult respondents who prefer characters with small head which is 0.64.

Then, the last test uses mushroom character as the subject. The respondents are also presented with 4 types of head-body proportion from mushroom character, and the result shows no significant difference with previous two tests, where the respondents prefers bigger head, but with a certain limit. In this test, the respondents mostly choose the design with head-body proportion of 4.48.

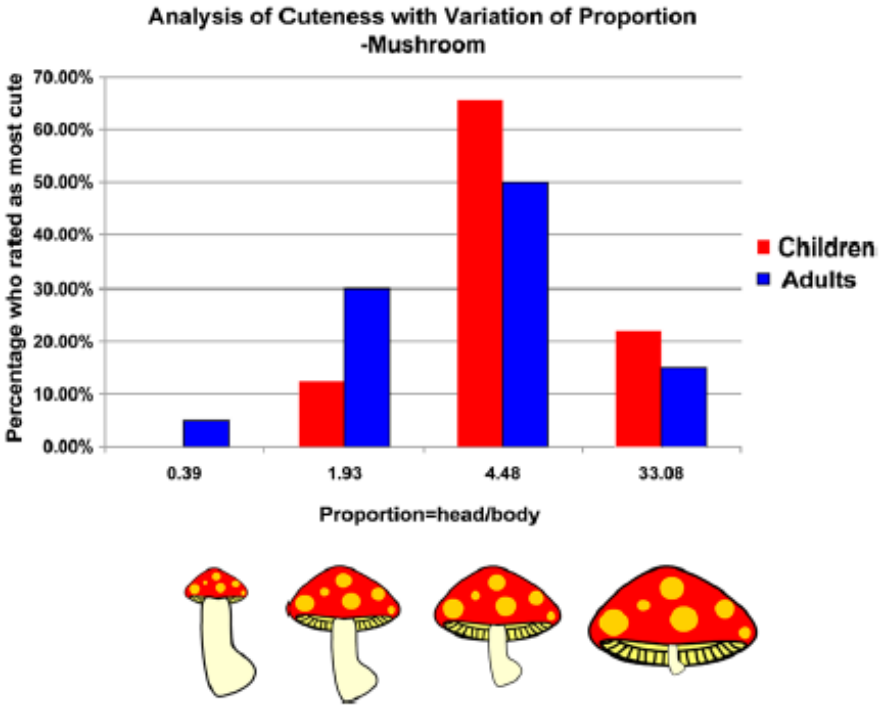


Figure 2.9 Mushroom Proportion Result for Children and Adult Respondents (Cheok, 2010)

The result shows that there are several differences for children and adults. Children respondent shows similar tendency in choosing proportion type, while adult respondents show tendencies into selecting objects with larger head, except for animal object.

Generally, most of the respondent chooses designs with larger head, which is usually related to several natural analogies, such as proportions of a baby. Usually, babies have a bigger head-body proportion compared to other age groups, and most of the people thinks that babies are cute.

6. Shapes and Form

The measurement for shapes and forms are done by instructing the respondents to choose between shapes with different roundness in the corners and edges. The result for cuteness level on corner's roundness shows consistent result, where the respondent tends to choose rounder objects. As for cuteness level test on edge's roundness, there is one result that shows interesting fact. It is shown on the children's response towards edge roundness. Even though that the highest cuteness level is on an object with round edge, but there are several respondents who are

choosing objects with sharper edges, maybe because of its association with star-shaped object.

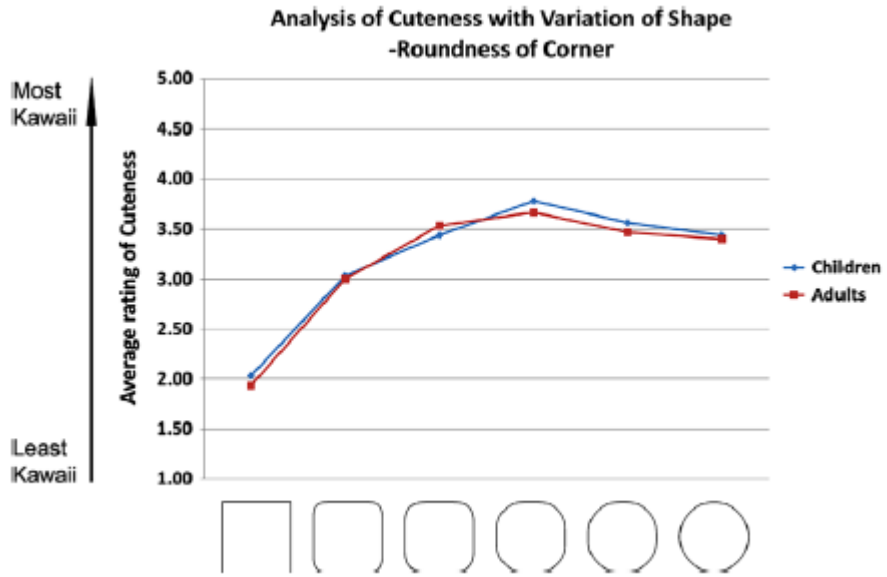


Figure 2.10 Test Result on Effect of Corner's Roundness on Cuteness (Cheok, 2010)

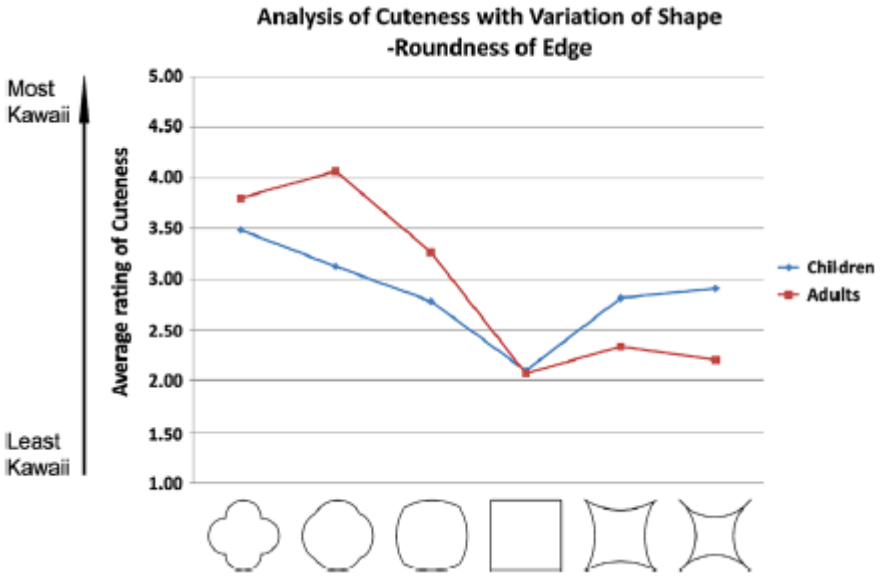


Figure 2.11 Test Result on Effect of Edge's Roundness on Cuteness (Cheok, 2010)

Figure 2.10 and Figure 2.11 show that most of the respondents prefer an object rounder edges.

7. Smell and Taste

There are no research results available that specifically measures the cuteness level on smell and taste as of date, but it has been made evident that smell could affect the information absorption, where stimulus could be stored in the brain for a longer period if it is obtained along with smell stimulus. Those facts could be affected by the anatomy of smell senses. Olfactory (smell) and gustatory (taste) sense are connected with each other, and both of the senses have short & simple connection to the brain.

2.3 Previous KUE Questionnaire

Like previously mentioned before, one of the goals of this research is to modify the old KUE Questionnaire that has been constructed by Nugroho F. in previous research. The parameters for evaluation in the previous KUE Questionnaire come from two concepts, consisting of usability and *kawaii* design. In general theories, usability usually consisted of several parameters, which are learnability, efficiency, memorability, error, and satisfaction. On the other hand, *kawaii* design is often associated with cute, which is defined as a characteristic of a product, person, thing, or context that makes it appealing, charming, funny, desirable, often endearing, memorable, and/or (usually) non-threatening (Nugroho, 2018).

The previous KUE questionnaire integrated the usability parameters with the kawaii factors, which are consisted of color, motion, shape and form, and sound, into 13 items of questions, since other parameters would either be quite irrelevant to be used in his research which involved an educational media for child use. The integrated parameters and factors then used to produce list of question items, which each of parameters and factors represent several question items, which will be shown in the Table 2.1 below.

Table 2.1 Parameters & Measurements Used in Previous KUE Questionnaire

Parameter	Measurement		Question number	
	Usability	Kawaii	Usability	Kawaii
Memorability	Control System Easy to Remember	Memorable Mascot	1	2
Error	Error Occurrence	*(undefined)*	3	*(undefined)*
Satisfaction	Wants to use it again	Fun Design	6	7
	How good the system is	Cute Sound	13	8
		Fun Motion		12
		Color Scheme		11
Learnability	Easiness in using the media	Design helps in using the media	5	4
Efficiency	Content Comprehension	Funny video & hologram, also helps in understanding the content	9	10

Source: (Nugroho, 2018)

In table 2.1, there is one cell that is shaded yellow. It means that there is no kawaii parameter that could be related into that category to measure the error usability parameter of MR SIWA (previous research case study). This parameter absence which cause imbalance in the questionnaire attributes become a weakness for this version of KUE and therefore become the objective of the author to modify and improve the questionnaire. However, Nugroho F., in his research, assume that even there is a difference in the question item quantity for each parameter, there will be no significant difference on the final result of evaluation.

The previous KUE Questionnaire itself has also gone through a development phase, which implement several ideas into the questionnaire design to improve its effectivity in gathering answer from children. The ideas are:

1. Use of Images and Visual Representations

The use of images and visual representations are intended to increase the attention of children since questionnaires with only texts are usually boring, moreover for children. Thus, images and visual representations are useful for capturing students' attention in filling the questionnaire questions.

2. Short Questions

Short questions are used to increase the data accuracy by increasing children's comprehension on what is being asked by the question. As children's cognitive ability is still undergoing development process, long explanations may make the children confused.

3. Attributes in Answer Alternatives

Usually, answer choices in questionnaire are only consisted of answer types, such as agree or disagree. But sometimes, it is cognitively difficult for the children disagreeing to negatively phrased questions, or phrases with negative meaning. For example, when the question asked if error is rarely occurred, disagreeing to such questions means that the error occurrence is high, but it is cognitively difficult for the children to perceive that. To prevent that, attributes are added to the answers, so that the children could understand the question easier, while at the same time choose the intended answer accordingly.

4. Use of Simple Language

Simple language means that the questions used in the questionnaire uses only words that could be understood easily by the children. The language in questionnaire is adjusted to the vocabularies of elementary school children, who are the target respondents of the previous research.

Therefore, the overall design of the previous KUE Questionnaire that used in Nugroho F.'s research will be shown in Figure 2.12 below.

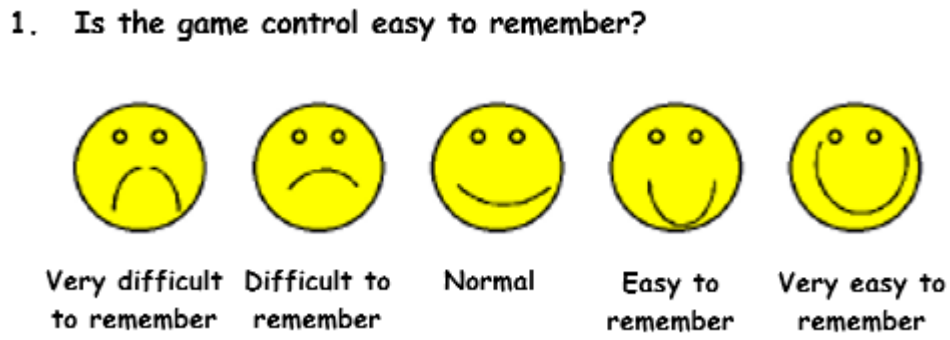


Figure 2.12 Overall Design of the Previous KUE Questionnaire
(Nugroho, 2018)

Previous research tested its KUE Questionnaire towards 20 elementary school 4th and 5th grade students. The questionnaire result of the previous research conducted by Nugroho F. is shown below.

Table 2.2 Summary of KUE Questionnaire Result

Total	Average Response (Score) for Each Question Item/Number												
	1	2	3	4	5	6	7	8	9	10	11	12	13
20 Respondents	3.8	3.8	4	4	4.2	4.5	4.4	3.8	3.9	4.2	4.2	4	4.3
Average	4.072												
Description	1 = Very Bad					3 = Neutral				5 = Very Good			
	2 = Bad					4 = Good							

Source: (Nugroho, 2018)

Based on the previous KUE questionnaire results, the average questionnaire score for all of the respondents is around 4.072, which means a good qualitative result. Similar result is also given when the data are classified based on gender. The average score for male and female respondents are 4.022 and 4.103 respectively (Nugroho, 2018).

Data validity and reliability testing are also conducted towards the data collected result, which concludes that the questionnaire has gathered a valid and reliable data regarding to the case study MR SIWA. The validity and reliability result is shown in Table 2.3 below.

Table 2.3 Summary of KUE Questionnaire Result and Testing

Respondents	Validity Testing	Reliability Testing	Questionnaire Score	Testing Conclusion	KUEQuestionnaire Score Conclusion
All	All Significant	0.898	4.072	Valid & reliable for all respondents	MR SIWA has a good rating for all respondents
Male	All Significant	0.920	4.022	Valid & reliable for male respondents	MR SIWA has a good rating for male respondents
Female	All Significant	0.881	4.103	Valid & reliable for female respondents	MR SIWA has a good rating for female respondents

Source: (Nugroho, 2018)

This result proves that the previous KUE Questionnaire is considered able to measure usability and kawaii attributes of the case study, MR SIWA.

2.4 Android OS Based Applications

Android is a software stack for mobile devices which includes an operating system, middleware and key applications (Gandhewar and Sheikh, 2010). Since its official public release in September 2008, Android has captured the interest from companies, software developers and the general audience. From that time up to now, this software platform has been constantly and significantly improved either in terms of features or supported hardware and, at the same time, extended to new types of devices different from the originally intended mobile ones.

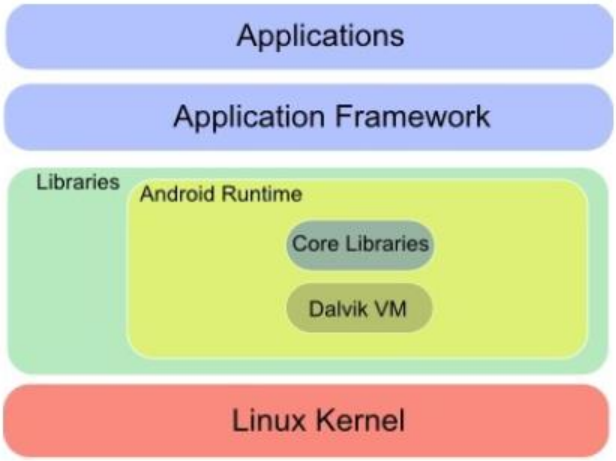


Figure 2.13 Android Architecture
(Gandhewar and Sheikh, 2010)

Android Architecture consist of number of layers such as Applications, Application framework, Libraries, Android runtime & Linux kernel. Application layer is the uppermost layer which provides a set of core applications including an email, SMS program, calendar, maps, browser, contacts, and others. All applications are written using the Java programming language. It should be mentioned that applications can be run simultaneously; it is possible to hear music and read an email at the same time. The Application Framework is a software framework that is used to implement a standard structure of an application for a specific operating system (Android) (Gandhewar and Sheikh, 2010).

2.4.1 GO-JEK

PT GO-JEK Indonesia doing business as GO-JEK is an Indonesian hyperlocal transport, ride hailing, logistics and payments startup founded in 2010 by Nadiem Makarim, Michaelangelo Moran, and Kevin Aluwi. It is the first startup of Indonesian origin to be classified as a transport system company after closing a round of funding in August 2016. GO-JEK's fleet now exceeds 400,000 drivers and includes motorcycles, cars and trucks. It is the largest Unicorn company based in Jakarta, Indonesia. The company is valued at about $5 billion as of February, 2018. A survey, that was published by news company The Jakarta Post through its online website, revealed it as the most popular ride-hailing app in Indonesia (Aravindan, 2018).

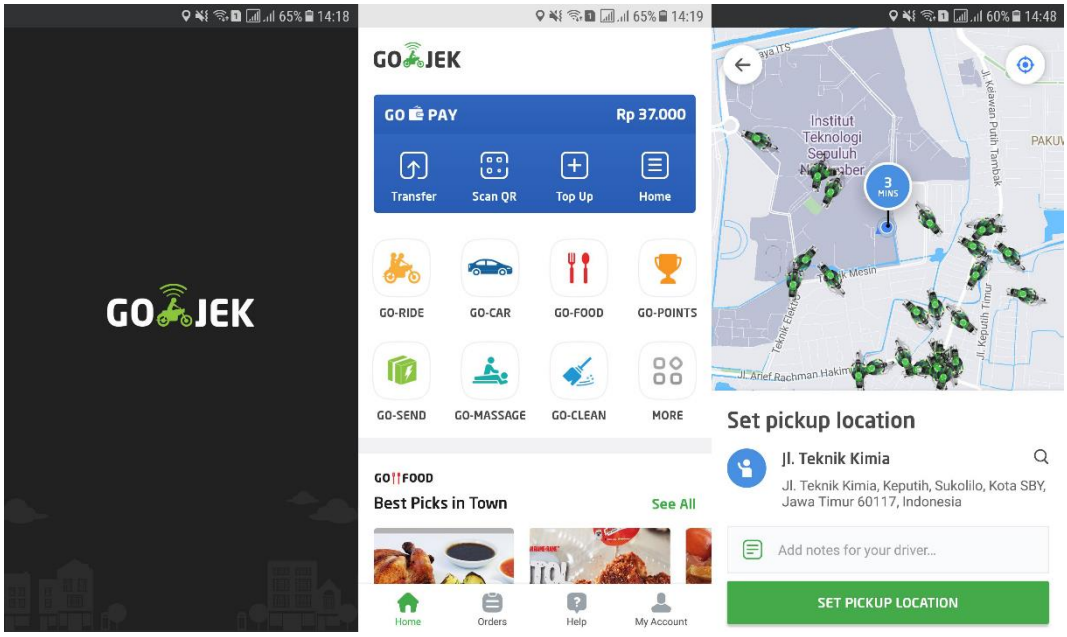


Figure 2.14 GO-JEK Version 3.3.1 Android Mobile Application Interface (Author Documentation)

GO-JEK has its own mobile application, which where most of their business values came from. Their mobile application is basically a media they used to interact with their stakeholders, including customers all over Indonesia. Through the mobile application, GO-JEK offers up to 12 kinds of services, such as Go-Ride, Go-car, and Go-BlueBird for transportation services; Go-Food for food and beverage delivery service; Go-Send and Go-Box for goods delivery (logistics)

service; Go-Pulsa, Go-Bills, and Go-Tix for one-stop-payment services; Go-Shop and Go-Mart for groceries shopping and delivery services; and Go-Point.

According to TechCrunch, with more than 900.000 fleets and 125.000 merchant partners, GO-JEK serves more than 15 million active user each week (Bohang and Nistanto, 2017). And with more than 10 million download, GO-JEK Android application now hold the first rank as Top Free Travel & Local App in Android's Google Play Store. It proves that the performance of GO-JEK application has a significant role in maintaining GO-JEK's enormous users and business activities in Indonesia.

The version of GO-JEK mobile application used is the GO-JEK Version 3.7.1, per May 25th, 2018.

2.4.2 Mobile Legends: Bang Bang

Mobile Legends: Bang Bang is a multiplayer online battle arena (MOBA) game designed for mobile phones. Moontoon, the game developer, release this mobile game on Android OS and IOS platform in the 2016. The game is mainly about two opposing teams (5 vs 5) fight to reach and destroy the enemy's base while defending their own base for control of a path, the three "lanes" known as "top", "middle" and "bottom", which connects the bases, or in other words a tower defense game.

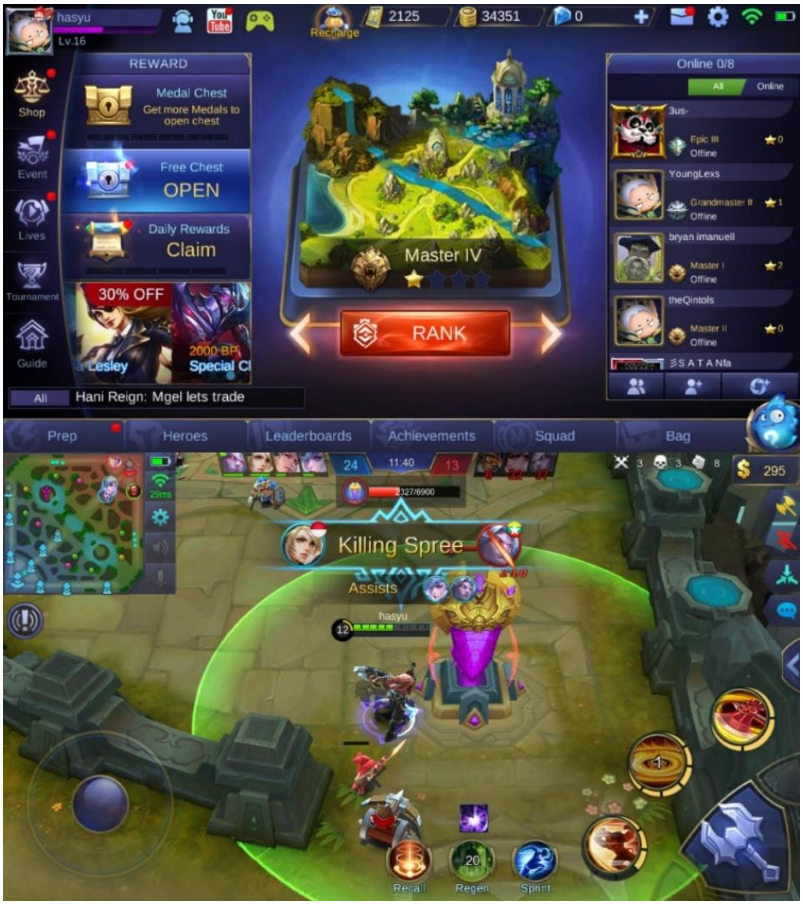


Figure 2.15 Mobile Legends Bang Bang Version 1.2.65.2662 Android Mobile Application Interface
(Author Documentation)

With 100 million downloads worldwide, Mobile Legend now hold the first rank as Top Free Action Game in Android's Google Play Store, where in Indonesia this game has been downloaded over 35 million times with more than 8 million active users every day per December 2017 (Panji and Yordan, 2017). This numbers prove that how well the game application/software perform is vital to maintain users and their business market.

The Mobile Legends: Bang Bang application used is the Mobile Legends Version 1.2.80.2842, per May 29th, 2018.

2.5 Statistical Test Methods

To show that the result obtained in this research are reliable and valid, several statistical tests need to be conducted, such as Validity Testing, Reliability Testing, and Data Adequacy Testing.

2.5.1 Validity Testing

Validity expresses the degree to which a measurement measures what it purports to measure. Several varieties have been described, including face validity, construct validity, content validity and criterion validity (which could be concurrent and predictive validity) (Bolarinwa, 2015). These validity tests are categorized into two broad components namely; internal and external validities. Internal validity refers to how accurately the measures obtained from the research was actually quantifying what it was designed to measure whereas external validity refers to how accurately the measures obtained from the study sample described the reference population from which the study sample was drawn.

In this research, the author will conduct validity testing towards the questionnaire result using Microsoft Excel. The measurement for validity testing is done by using the Pearson or Correlation functions in Excel, looking at the correlation between each question item with the total result. The result would be called significant when the calculated parameter r is higher than the critical r, which means that the item has significant effect to the total score.

2.5.2 Reliability Testing

Reliability refers to the degree to which the results obtained by a measurement and procedure can be replicated. Though reliability importantly contributes to the validity of a questionnaire, it is however not a sufficient condition for the validity of a questionnaire. Lack of reliability may arise from divergence between observers or instruments of measurement such as a questionnaire or instability of the attribute being measured which will invariably affect the validity of such questionnaire (Bolarinwa, 2015). There are three aspects of reliability, namely: Equivalence, stability and internal consistency (homogeneity). It is important to understand the distinction between these three aspects as it will guide the researcher on the proper assessment of reliability of a research tool such as questionnaire. Figure 2.16 below shows graphical presentation of possible combinations of validity and reliability.

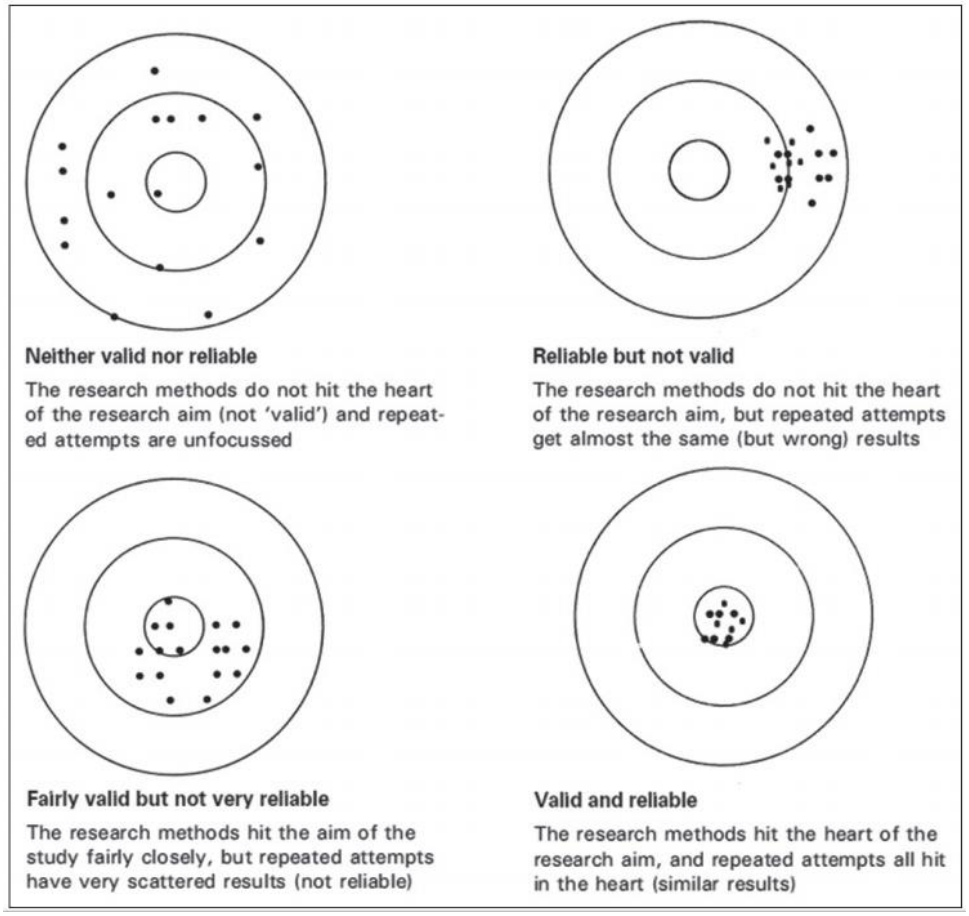


Figure 2.16 Graphical presentation of possible combinations of validity and reliability
(Bolarinwa, 2015)

Similar with validity testing, the author will also conduct reliability testing towards the questionnaire result by using Microsoft Excel. A reliability coefficient obtained from the Excel processing, which is called Cronbach's Alpha, of .70 or higher is considered "acceptable" in most social science research situations (UCLA: Statisitcal Consulting Group, 2014).

2.5.3 Data Adequacy Testing

Typically, the main objective for conducting a statistical test of hypothesis is to gather evidence to reject the null hypothesis of "no difference". If the samples are too small, the power of the test may not be adequate to detect a difference between the percent defectives that actually exists, which results in a Type II error.

It is therefore crucial to ensure that the sample sizes are sufficiently large to detect practically important differences with high probability (Minitab, 2008).

Therefore, data adequacy test is also necessary to be conducted at the questionnaire result, to ensure that this research has enough data to furtherly processed and interpreted throughout the research. In this research, the author will conduct data adequacy test by using Microsoft Excel.

2.6 Previous Research

This research is made by combining various principles and knowledges that has been explored deeply in many researches that are done prior to this one. The idea of this research also arose from the previous research about KUE Questionnaire, conducted by Nugroho F. in 2018. In general, the ideas that become the focus in this research are to modify and improve the KUE Questionnaire, and also to test the KUE Questionnaire towards other case study which is Android OS based application.

Table 2.4 Previous Researches

Researcher	Title	Year
Michiko Ohkura & Tetsuro Aoto	Systematic Study of Kawaii Products: Relation Between Kawaii Feelings and Attributes of Industrial Products	2010
Michiko Ohkura, Tsuyoshi Komatsu, Somchanok Tivatansakul, Saromporn Charoenpit, Sittapong Settapat	Comparison of Evaluation of Kawaii Ribbons between Genders and Generation of Japanese	2012
Asbjørn Følstad & Effie Law	Analysis in practical usability evaluation: a survey study	2012
Joel Mvungi & Titus Tossy	Usability Evaluation Methods and Principles for the Web	2015
Fachreza Reynaldi Nugroho	Incorporating Kawaii Design into Usability Evaluation Special for Children Respondents (Case Study: Mr Siwa)	2018

The first research is titles as “Systematic Study of Kawaii Products: Relation Between Kawaii Feelings and Attributes of Industrial Products” by Ohkura and Aoto in 2010. This research is aimed to measure the kawaii value of

products with different shapes, sizes, and colors, towards the consumers (product users). This research also aimed to conduct new trials to clarify the relation between kawaii feeling and biological signals. Ohkura and Aoto (2010), also stated that in the 21st century, kawaii as one of kansei values is becoming more important and crucial for future industrial products, especially in Japanese.

The second research is titled as "Comparison of Evaluation of Kawaii Ribbons between Genders and Generation of Japanese" by Ohkura, et al. in 2012. This research is aimed to prove the effect of pattern and color towards kawaii level of a ribbon across the generations on Japanese population. The respondents are consisted of men and women which age are about 20s and 40s. The research is done by using a web-based questionnaire that are accessible using web browsers such as internet explorer and google chrome.

The third research is titled as "Analysis in practical usability evaluation: a survey study" by Asbjørn Følstad & Effie Law in 2012. This research aimed to obtain more knowledge about analysis state-of-practices in usability evaluation and consequently knowledge about how the research-based methods and tools support such practices.

The fourth research is titled as "Usability Evaluation Methods and Principles for the Web" by Joe Mvungi and Titus Tossy in 2015. This research is aimed to design and conduct a usability measurement towards an online website. Joe and Titus use two evaluation methods, which are Website Evaluation (WSEMs) and Web Evaluation Methods (WEMs). The method used depends greatly on the purpose of the evaluation.

The fifth research is titled as "Incorporating Kawaii Design into Usability Evaluation Special for Children Respondents (Case Study: Mr Siwa)" by Fachreza Reynaldi Nugroho in 2018. The author use this research as the main fundamental of conducting further research. Nugroho F. first initiated to develop the KUE Questionnaire to measure the usability and kawaii attributes of mixed-reality educational media, MR SIWA, based on its kawaii attributes. The author found that this research still has some weaknesses such as the imbalance of attributes represented in the questionnaire and its validity to be used to test other case study which is an Android OS based application.

Based on mentioned researches, the author will aim to modify and improve the current KUE Questionnaire in order to balance the attributes represented in the question items, so that the questionnaire become more valid and reliable to evaluate a product's usability and kawaii attributes based on its kawaii attributes. The author will also aim to test the modified KUE Questionnaire to other case study which is Android OS based applications. The Android applications chosen to be tested in this research are GO-JEK and Mobile Legends: Bang Bang. The question items will be derived from both potential parameters in usability and kawaii concepts. The designed tool will then be used in evaluation process to measure the usability and kawaii attributes performance of an Android mobile application, in terms of usability and design (kawaii).

(This Page is Intentionally Left Blank)

CHAPTER 3

RESEARCH METHODOLOGY

A scientific research needs to follow a framework as the fundamental part in conducting a systematic and structured research process. In this chapter, the methodology for conducting the research will be explained.

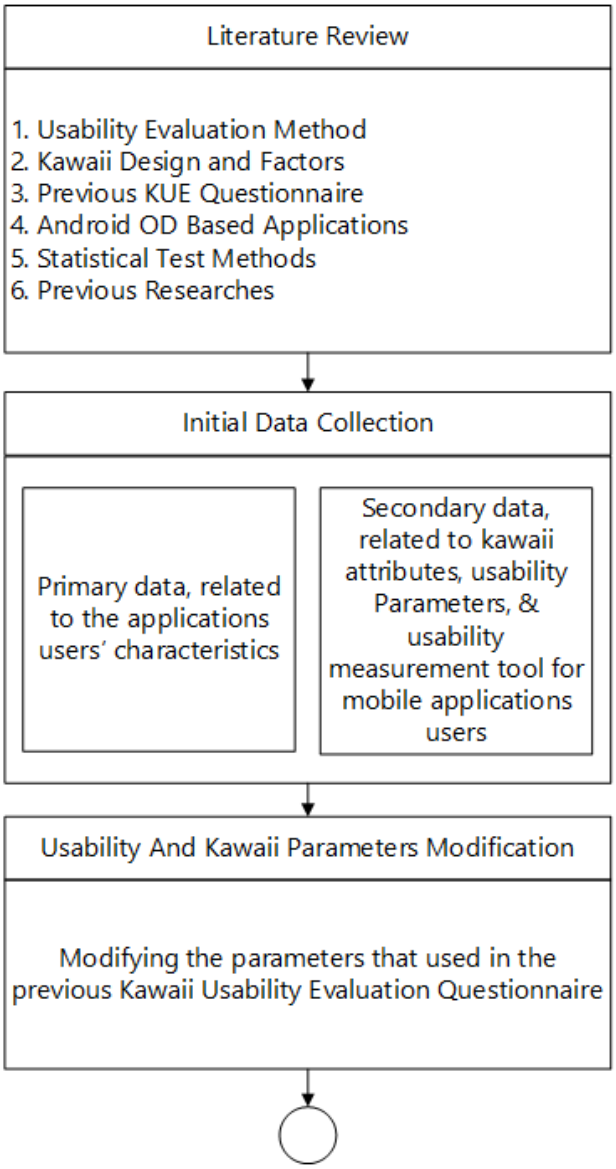


Figure 3.1 Research Methodology

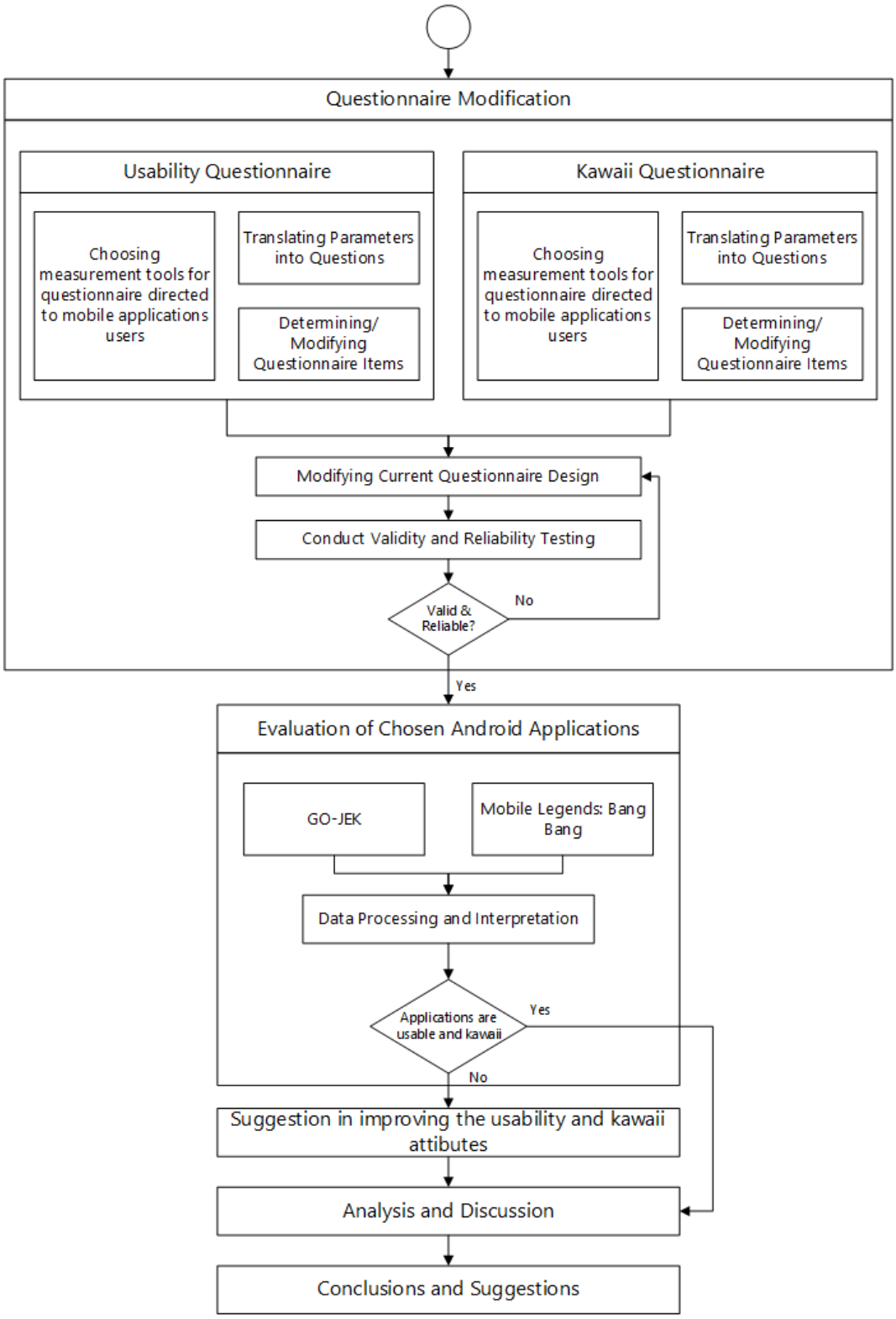


Figure 3.1 Research Methodology (continued)

3.1 Literature Review

Literature review is necessary in any research, as the fundamental part that will support the research process. Literature review consisted of base knowledge that are related to the research topic. In this research, the literature review is done on several topics such as usability evaluation method, Kawaii design and factors, the previous KUE Questionnaire, Android OS based applications, the statistical method used. In this phase, the several previous researches related to usability evaluation based of kawaii attributes.

3.2 Initial Data Collection

The next step is to do the data collection for the research, which are divided into two types of data, primary and secondary. The primary data are about the applications users' characteristics, such as usage intensity, gadget (smartphone) type and screen sizes, and how long has the user use the application(s). As for the secondary data, the collected data are the appropriate usability parameters and kawaii attributes that can be used for mobile applications users.

3.3 Usability Parameter Modification

After collecting all data related to the research, next the parameters that will be used in this research will be determined. There are several parameters that will be taken and used in the evaluation phase, consisting of both media usability and kawaii design parameters.

3.4 Questionnaire Modification

Based on the usability parameters and kawaii factors used in the previous questionnaire, the KUE Questionnaire will then be modified to balance the parameters and attributes represented in the question items, and to be able to be used in assessing Android mobile applications.

When the questionnaire has been modified, its validity and reliability test will be conducted to see whether the questionnaire could be used for Android mobile applications users or not. When it is evident that the questionnaire is valid

and reliable, the research could move to the next step, and if it is not validated, the questionnaire will need to be redesigned.

3.5 Evaluation of Chosen Android Applications

The next step in conducting this research is by evaluating the chosen Android OS based application by using the KUE questionnaire prior to this phase. The evaluation is done to through online forums on the w ebsites and social media. The data collection starts by explaining the respondents about what is usability and kawaii design, the goals of this research, and a short description of the mobile applications tested. After that, the respondents will be directed to the main KUE Questionnaire to start assessing the applications by filling the questionnaire.

3.6 Suggestion in Improving the Usability and Kawaii Attributes

After evaluating both of the chosen Android mobile applications, several suggestions in improving its usability and kawaii attributes will be listed. The author will not try to improve the applications as the main objectives, but still will give suggestions as the result of the evaluation phase.

3.7 Analysis and Discussion

The result from evaluation will then be used in analyzing the application's usability and kawaii attributes (design), and the performance of the modified KUE Questionnaire itself in assessing the applications. The analysis will also be related to the collected users' characteristic data which hopefully will enhance the insight of the research.

3.8 Conclusion and Suggestion

By finishing the analysis and discussion phase, conclusions and suggestions could be taken. In this phase, the conclusions to answer research objectives are taken, as well as suggestions or recommendations to improve future researches.

CHAPTER 4
DATA COLLECTION AND PROCESSING

This chapter provides an explanation related to each phase of the questionnaire modification, data collection, and data processing.

4.1 Questionnaire Modification

This subchapter gives explanation on the KUE Questionnaire modification processes, including the usability-kawaii parameters modification and the questionnaire design modification. Keep in mind that the previous KUE Questionnaire, along with its parameters measurements, question items, and questionnaire design, were designed to evaluate a specific type of product, which is MR SIWA, a physical educational game that used to teach dental and oral health to elementary school children. The parameters measurements, question items, and the questionnaire design were developed and adjusted to enhance children interest and comprehension toward to questionnaire. Therefore, this subchapter will cover the modification processes of the parameters measurements, question items, and questionnaire design.

4.1.1 Questionnaire Parameters Modification

As the chapters above mentioned, there are several parameters and measurements that have been implemented in the initial KUE Questionnaire by Nugroho. The parameters and measurements used in the previous questionnaire is reviewed in the Table 4.1 below.

Table 4.1 Parameters & Measurements Used in The Existing KUE Questionnaire

Parameter	Measurement		Question number	
	Usability	Kawaii	Usability	Kawaii
Memorability	Control System Easy to Remember	Memorable Mascot	1	2
Error	Error Occurrence	*(undefined)*	3	*(undefined)*
Satisfaction	Wants to use it again	Fun Design	6	7
	How good the system is	Cute Sound	13	8
		Fun Motion		12
		Color Scheme		11

Parameter	Measurement		Question number	
	Usability	Kawaii	Usability	Kawaii
Learnability	Easiness in using the media	Design helps in using the media	5	4
Efficiency	Content Comprehension	Funny video & hologram, also helps in understanding the content	9	10

(Source: Nugroho, 2018)

It can be seen from Table 4.1 (and also has been explained in Subchapter 2.3 about Previous KUE Questionnaire) that there is an imbalance amount of usability and kawaii-related question items. One of kawaii parameters also has undefined measurement which make it more imbalance (see Subchapter 2.3 for more detailed explanation). Overall, this imbalance is one of the main causes of the questionnaire modification.

As mentioned at the beginning of Subchapter 4.1, the previous parameters measurements were developed and adjusted to enhance children interest and comprehension in filling the questionnaire. Therefore, since this research aims a quite different type of objects to be evaluated, its parameters measurements also need some adjustments. This research aims to evaluate the usability and kawaii factors of a general mobile software or applications, which is GO-JEK and Mobile Legends. The application GO-JEK and Mobile Legends itself are different, where GO-JEK main objective is to provide transportation and delivery services, and Mobile Legends main objective is to provide entertainment through a Multiplayer Online Battle Arena (MOBA) gameplay. Please refer to Appendix 5 for a complete preview of the previous KUE Questionnaire version by Nugroho.

Because of these differences, the author need to adjust the parameters measurements and the context of the question items. The adjustments are basically done by discussing with Nugroho as the previous researcher and the author's research supervisor. Several online articles and literatures are also used as the references, as there is not many research about kawaii design measurement on a product since it is still a quite new topic.

After gathering and considering several information regarding usability and kawaii measurements, the author comes up with a new draft of parameters measurements. The modified/adjusted parameters measurements is shown in the Table 4.2 below.

Table 4.2 Parameters & Measurements Used in The Proposed KUE Questionnaire

Parameter	Measurement		Question number	
	Usability	Kawaii	Usability	Kawaii
Memorability	How easy to remember the system control is	How memorable the mascot/logo is	1	2
Error	How rare the system error(s) occurred	How easy it is to see the image or interface's visual (color)	3	4
Satisfaction	How much the user wants to recommend the apps to someone else	How fun/attractive the design is	5	6
	How much the user wants to recommend the apps to someone else	How fun/attractive the motion/animation is	7	8
	How much the user are willing or able to give any suggestion(s) for the apps improvement, if any	How fun/attractive the color Scheme is	9	10
Learnability	How fast the user can comprehend (learn) the system's content, control, and function	How animation, movement, and transition can help to understand the system's content, control, and function	11	12
Efficiency	How the user can use the system easily to achieve their goal(s)	How the system's visual design (interface) helps user uses the system more easily	13	14
Effectivity	How the users can actually complete their task(s) and achieve their goal(s) well	How good the visual design is when users can complete task(s) and achieve goal(s) well	15	16
Overall	How good the system's content, control, and function are	How attractive the system's visual design is	17	18

: Completely new parameters/measurements and question item(s)

From the Table 4.2 above, it can be seen that a set of modified/new parameters and measurements has been drafted. This draft was derived from the previous draft, where the previous set of parameters measurements has been adjusted to make it more applicable to be used in more general cases (mobile application). The new parameter, measurements, and question items is shown with yellow-shadowed cells in Table 4.2.

Joe Mvungi and Titus Tossy, in 2015, also conduct a usability measurement towards a quite similar object as an application/software, which is a website. Both mobile applications and websites are accentuating its visual attributes and ease of use (efficiency and effectivity). For a web, there are three important dimensions that any web developer has to focus on i.e. hypertext, data and presentation design each dimension consists of number of criteria this part there will be explanations on the mentioned dimensions which represent great impact on usability of any web application (Mvungi and Tossy, 2015). The criteria could be discussed as follows:

1. Content Visibility – Refer to the understanding of information structure offered by the application, and get oriented with the hypertext, user must be able to identify main conceptual classes of the contests of the application.
2. Ease of Content Access – After users have identified main classes of content the application deals with, they have to be provided with facilities for accessing the specific content items they are interested in.
3. Ease of Content Browsing – Usually the auxiliary contents related to each single core concept must be easily identified by users, as well as the available interconnections among different core concepts.

The author use Myungi and Tossy's (2015) research as the reference to modify the parameters, measurements, and question items in the new KUE Questionnaire, since the evaluated objects is considered the same type, which is a digital product.

Further explanation regarding each of the modification done on the parameters, measurements, and question items will be presented as follows (per parameters). The definition of each parameter already discussed in Subchapter 2.1.

1. Memorability

There is no significant modification done on this parameter. The usability and kawaii measurements used is basically still the same as the previous draft. The only adjustment is done on the contextual of the question items. The overall memorability parameter is represented in two question items.

2. Error

Error parameter is where one of the flaws of previous KUE was existed in. Nugroho was unable to provide kawaii measurement of this parameter, which become one of the reasons in modifying the questionnaire. There is no significant change in the usability measurement. Meanwhile in kawaii measurement, after considering several articles, the author decided to set the easiness to see image or information (interface) to become the kawaii measurement. This is because kawaii is closely related to visual appearance of the product, and the author consider that if the visual appearance is hard to see or understand, error is most likely to occur when using the application(s). This new kawaii measurement leads to a new question items in the questionnaire, which makes the error parameter is represented in two question items.

3. Satisfaction

In the previous questionnaire, this parameter had two usability measurements and 4 kawaii measurements which represented in total of 6 question items for each measurement. This is where the other flaw of the previous questionnaire existed. The different amount of measurements representing one parameters in the questionnaire could cause bias or imbalance on the result.

In the new questionnaire, the author tried to set the same amount of measurements for each of usability and kawaii. For the usability measurements, the author considered that users are satisfied with a product when they want to use it again/more, want to recommend someone else to use it, and willing or able to give suggestions for product improvement. Although it can be seen as a disappointment towards the product, by being able or willing to give suggestions for product improvement, the users can also be considered to be satisfied. This is because the users are attracted and cared about the product, and willing to spent their time and

thought to give feedback for improvement. The previous usability measurement, which is “how good the system is” is moved from the satisfaction parameter to the overall parameter/question, which will be discussed later. There are no significant changes for kawaii measurements. The author still use the measurements from previous KUE, but removed the cute sound measurement as it was considered as a similar measurement with the design. These changes lead to adding two new question items to the questionnaire, which make satisfaction parameter is represented in six question items.

4. Learnability

There is also no significant modification in learnability parameter. The author use the measurements from the previous KUE and only apply some minor adjustment to the contextual of the measurements and the question items to make it more understandable. Learnability parameter is represented in 2 question items, just like the previous KUE.

5. Efficiency

The author move the previous usability measurement of this parameter to the learnability parameter because “content comprehension” or easiness in understanding the system’s content makes more sense in the learnability parameter. Therefore, the author adds a new usability measurement which is how easy the user(s) can use the system or application, which also make more sense to the definition of efficiency itself. This leads to a new question items. There is no major adjustment to the kawaii measurement. The efficiency parameter is represented in two question items.

6. Effectivity

This parameter is a newly added parameter in the new KUE Questionnaire. John Brooke (1986) made a tool called System Usability Scale (SUS) Questionnaire, a reliable tool for measuring the usability. It consists of a 10 items questionnaire with five response options for respondents; from Strongly disagree (1 point) to Strongly disagree (5 point). Originally created by John Brooke in 1986, it allows us to evaluate a wide variety of products and services, including hardware, software, mobile devices, websites and applications (Brooke, 2013). By this

definition, the author considered Brooke's SUS as one of the references in modifying the KUE Questionnaire.

Brooke mainly used three usability parameters in his questionnaire, which is satisfaction, efficiency, and effectiveness. Effectiveness or effectivity does not exist in Nugroho's previous questionnaire. Meanwhile, effectiveness in particular will always need to be defined in terms of the tasks the system (software) is being used for (Brooke, 2013). Therefore, the author add effectivity as new parameter for the new KUE questionnaire.

By the definition of "Effectiveness" in ISO 9241:11 (1998), which is a measure on how much resources used to achieve available objectives, the author creates new measurements for this parameter. The usability measurement is how the users can actually complete their task and achieve their goal(s), and the kawaii measurement is how well the visual design (interface) is when the users is actually completed their task. This leads to two new question items in the questionnaire, as effectivity is also a totally new parameter in the KUE Questionnaire.

7. Overall

This is actually not a parameter stated in ISO 9241:11 (1998). But, the author decided to put "overall" questions in the questionnaire to summarize all the previous parameters, measurements, and question items in 2 final questions. The overall usability measurement is how good the system is, which is moved from the previous satisfaction parameter because it makes more sense. And the new overall kawaii measurement is how attractive the system's visual appearance is, which leads to a new question item. Each measurement represented in one question, which make it two overall questions available.

According to Table 4.2, the new KUE Questionnaire has main 18 question items. From the originally 13 question items from the previous KUE, there are 7 new added question items. Also, the author adds 2 extra open-questions outside the previous 18 questions, that will provide the respondent a space to give a qualitative evaluation regarding the application. The first extra question asked the respondent to give a qualitative or evaluation in form of sentence, and the second one asked the respondent to give an overall score for the application in general, in scale of 0-100. The newly modified questionnaire will be shown in Appendix 4.

4.1.2 Questionnaire Design Modification

Since this is the Kawaii-Usability Evalution Questionnaire, the term "kawaii" or "cute/cool" makes it necessary to create an also cute/cool questionnaire design. On the previous KUE Questionnaire by Nugroho, the questionnaires spread to the respondents (children) by handing out a printed questionnaire. The design of the previous questionnaire also pretty plain and standard. Below is the example from one of the questions in the previous KUE Questionnaire by Nugroho.

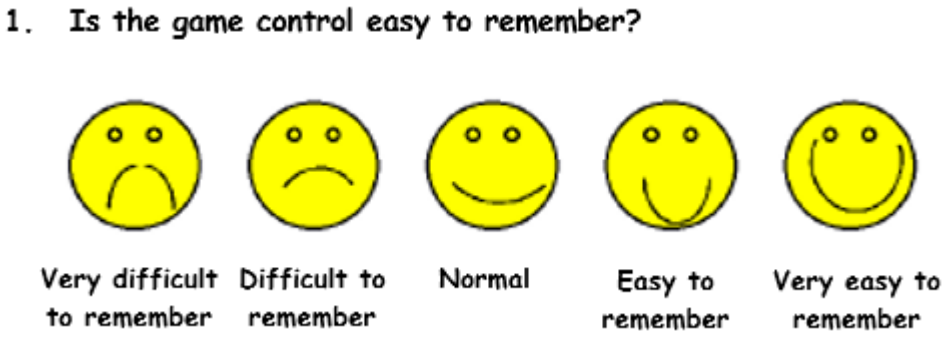


Figure 4.1 Overall Design of the Previous KUE Questionnaire
(Nugroho, 2018)

The previous design is basically just a regular questionnaire, with a Comic Sans font (from MS. Word) and customized response-options picture created from smiley faces. There is nothing really "kawaii" in the previous design of KUE Questionnaire.

In this research, since the plan is to make an online questionnaire form and distribute it through online forums and social media, the author tries to optimize the customization possibilities on the design perspective. By also considering the references used in the previous research and the references discussed in the literature review, here are several key steps done by the author in designing and distributing the online KUE Questionnaire.

1. Survey Monkey (surveymonkey.com) as the online questionnaire platform.

Instead of just using a regular online questionnaire platform like Google Form, the author decided to apply for premium subscription in one of the top rated

online questionnaire website, which is surveymonkey.com. SurveyMonkey is an online survey development cloud-based software as a service company, founded in 1999 by Ryan Finley. SurveyMonkey has a quite high customization level in terms of the design and logic. The author takes the benefit of creating a customized background, font, animation, color scheme, and etc. to improve the design element in the questionnaire.

2. New customized response-options picture.

Instead of just a regular smiley faces as the response-options, the author decided to create a new response-options pictures to improve the design element. The author created 5 pictures to represent 5 response level, generally from Strongly Disagree (1), Disagree (2), Normal (3), Agree (4), and Strongly Agree (5). The new customized response-options picture is shown below.

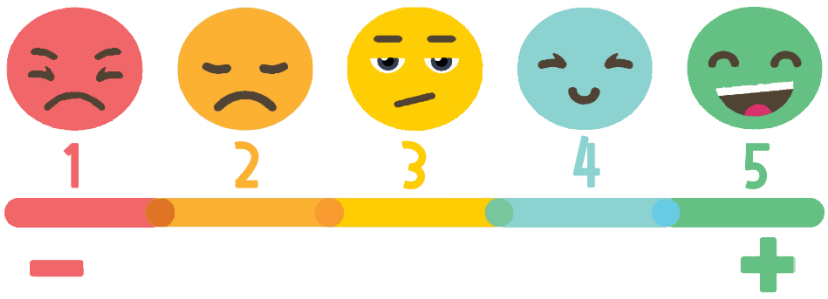


Figure 4.2 New Customized Response-Options Pictures for The New KUE Questionnaire

The Figure 4.2 is created through combining graphics from the internet and editing it through application Adobe Photoshop CS6.

3. Optimizing the online forums and social media.

To optimize the scope of the respondents, the author has joined several online forums related to the GO-JEK and Mobile Legends application users. There, the author has distributed the new KUE Questionnaire by sharing the questionnaire link that can be accessed by the users. The new KUE Questionnaire link can be accessed at *bit.ly/gopayxdiamondgratis*. Below are several appearance previews of the questionnaire, if accessed from PC web browser. Complete preview of the new KUE Questionnaire can be seen in the Appendix 4.

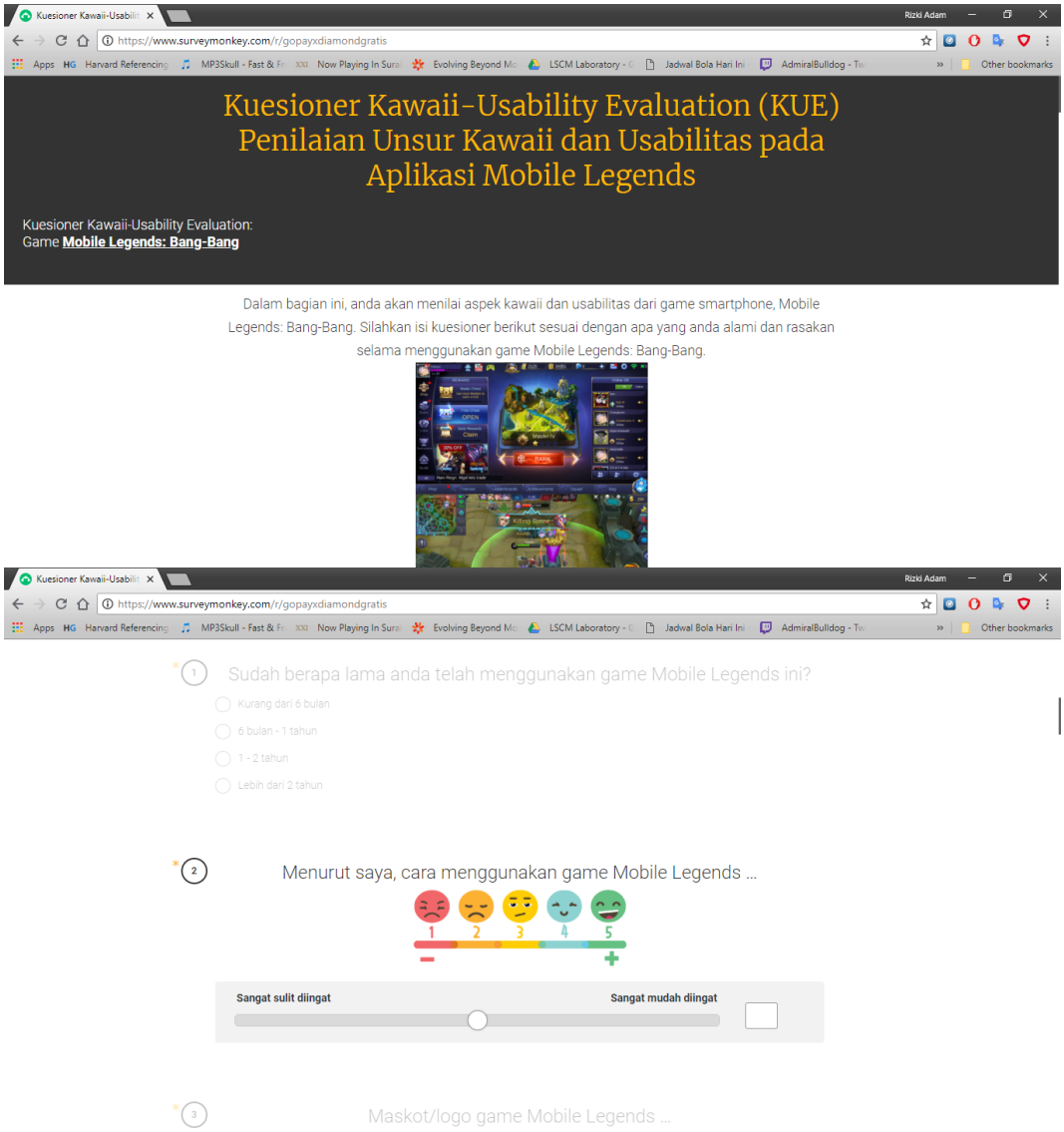


Figure 4.3 Overall Design of The New KUE Questionnaire
(Source: Author's Documentation)

The complete preview of the new KUE Questionnaire, from the design view and the contextual of each question items, can be seen in the Appendix 4.

4.2 Questionnaire Result and Test

This subchapter will explain about the questionnaire data result and testing of the modified KUE Questionnaire, which will include data adequacy test, validity test, and reliability test. The author managed to collect a total of 197 respondents, consisting of 103 respondents for GO-JEK and 94 respondents for Mobile Legends.

4.2.1 Data Collection Result

In this research, there are 2 kinds of data collected for each of GO-JEK and Mobile Legends respondents, consisting of the main quantitative questionnaire data and two extra qualitative responses. A glance of preview of collected questionnaire data for each of GO-JEK and Mobile Legends respondents are shown below in Table 4.3 and Table 4.4 respectively. Please refer to the Appendix 2 & 3 for a complete preview of collected data/table.

Table 4.3 Summary of KUE Questionnaire Result for GO-JEK (Refer to Appendix 2 for Complete Table)

n^{th}	Respondent ID	Length of Use	Question Number (GJK)																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	10068121873	1-2 years	4	5	4	5	4	4	4	4	4	5	4	4	4	5	5	5	5	4
2	10070434770	Below 6 months	4	5	4	4	4	4	4	3	4	3	3	3	4	4	4	4	5	4
3	10048089702	1-2 years	4	5	4	4	5	4	4	3	3	3	4	3	4	4	3	3	4	4
4	10043252034	6-12 months	4	5	4	4	4	4	5	3	3	5	5	5	4	4	5	4	4	4
5	10050161101	Below 6 months	4	5	4	3	3	4	3	4	3	4	4	4	4	3	4	3	4	4
6	10050702721	6-12 months	5	5	4	4	5	4	4	5	3	5	3	4	5	5	4	4	4	4
7	10050128638	Below 6 months	4	4	5	5	3	4	3	4	3	4	5	4	4	5	3	3	4	4
8	10051817372	Above 2 years	5	5	3	4	5	3	3	3	3	4	5	3	5	3	3	3	4	4
…	…	…	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
102	10050755916	Above 2 years	5	5	3	4	4	4	2	3	3	4	4	4	4	4	4	4	4	4
103	10050562693	1-2 years	4	4	2	3	3	3	3	3	3	3	3	3	4	4	4	4	3	3
Average			4.034519957																	
Description			1=Very Bad				2=Bad				3=Neutral			4=Good			5=Very Good			

(Refer to Appendix 2 for Complete Table)

Table 4.4 Summary of KUE Questionnaire Result for Mobile Legends

No.	Respondent ID	Length of Use	Question Number (GJK)																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	10068121873	6-12 months	4	2	3	2	3	4	3	2	2	2	2	2	2	3	4	4	4	3
2	10070434770	6-12 months	4	4	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4
3	10048089702	6-12 months	4	4	4	3	3	4	3	3	4	3	4	4	3	3	4	4	4	4
4	10043252034	Below 6 months	4	3	3	3	4	4	4	5	4	4	5	5	5	4	4	4	5	5
5	10050161101	1-2 years	5	5	4	5	5	5	5	4	5	5	5	5	5	4	4	4	5	5
6	10079520789	6-12 months	4	4	3	3	4	3	4	4	4	3	3	4	4	3	3	3	4	4
7	10079517953	1-2 years	5	3	4	4	3	3	2	3	4	3	4	4	4	3	3	3	3	3
8	10079493476	6-12 months	4	4	2	3	3	4	4	3	4	4	5	4	5	4	3	3	3	4
…	…	…	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
93	10079493415	1-2 years	4	4	3	4	5	4	4	4	2	4	3	4	3	4	3	4	4	4
94	10079491974	1-2 years	3	5	4	4	4	4	3	4	3	4	4	3	3	4	4	4	4	4
Average			3.795508274																	
Description			1=Very Bad				2=Bad				3=Neutral			4=Good			5=Very Good			

(Refer to Appendix 2 for Complete Table)

Based on the questionnaire data result, the average questionnaire score for all 194 respondents is 3.92, which means as fairly good in qualitative result. This qualitative result will later be discussed further in data interpretation and analysis chapter. Similar result is also given when the data are classified based on the applications assessed. The average score of GO-JEK is 4.034, and the average score of Mobile Legends is 3.796, which also mean that both of them has a good qualitative result.

4.2.2 Data Adequacy Test

Here, a test will be conducted to determine whether the collected data samples is adequate for further data processing and analysis. Data adequacy test is calculated using Microsoft Excel by following the formula below.

$$N' = \left[\frac{Z.S}{\overline{X}.k} \right]^2,$$

(Equation 4.1 Data Adequacy Test Formula)

Information:

N’ = The minimum number of sample needed

Z = level of confidence (level of confidence 95% ≈ Z = 1.96)

s = Standard deviation of the data

$\overline{x}$ = Mean of data

k = Level of error (5%)

The calculation was done using Microsoft Excel by following the formula above. The summary of the data adequacy test for each of the GO-JEK and Mobile Legends respondents are shown in the Table 4.5 and Table 4.6 below respectively.

Table 4.5 Data Adequacy Test Result for GO-JEK Respondents

DATA ADEQUACY TEST (per question item)																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
s	0.522	0.676	0.836	0.742	0.710	0.740	0.861	0.825	0.815	0.822	0.760	0.777	0.659	0.746	0.763	0.737	0.704	0.690
$\bar{x}$	4.495	4.398	3.709	4.087	4.350	4.039	3.942	3.650	3.485	4.010	3.990	3.942	4.379	4.146	4.078	3.922	4.068	3.932
Z	1.96																	
k	0.05																	
N'	20.69	36.36	78.05	50.69	40.95	51.58	73.35	78.48	83.99	64.64	55.81	59.78	34.76	49.80	53.80	54.23	46.00	47.28
N	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103
DATA ADEQUACY TEST (overall)																		
s	0.74366																	
$\bar{x}$	4.03452																	
Z	1.96																	
k	0.05																	
N'	52.207387																	
N	103																	

Table 4.6 Data Adequacy Test Result for Mobile Legends Respondents

DATA ADEQUACY TEST (per question item)																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
s	0.788	0.914	0.927	0.969	1.012	0.780	1.009	0.821	1.013	0.921	0.966	0.846	0.816	0.892	0.816	0.815	0.807	0.851
$\bar{x}$	4.117	3.883	3.181	3.755	3.830	3.809	3.596	3.947	3.649	3.766	3.947	3.840	3.979	3.819	3.745	3.787	3.840	3.830
Z	1.96																	
k	0.05																	
N'	56.26	85.16	130.52	102.37	107.33	64.42	120.94	66.54	118.41	91.86	92.00	74.62	64.67	83.74	72.90	71.13	67.90	75.79
N	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94
DATA ADEQUACY TEST (overall)																		
s	0.886778819																	
$\bar{x}$	3.795508274																	
Z	1.96																	
k	0.05																	
N'	83.88085942																	
N	94																	

After performing data adequacy test, it can be seen from the Table 4.5 (for GO-JEK result) above that the total of N = 103 respondents (N = number of samples collected) is exceeding the N' (N' = the minimum number of sample needed) for each question, with the average of N' = 52 to 53 (52.207) samples. It also can be seen from the Table 4.6 (for Mobile Legends result) above that the total of N = 94 respondents (N = number of samples collected) is exceeding the N' (N' = the minimum number of sample needed) for each question, with the average of N' = 83-84 (83.88) samples. Therefore, it is concluded that overall data collected for GO-JEK and Mobile Legends samples are adequate and it can be furtherly processed.

4.2.3 Validity Testing for Questionnaire Data

Validity testing is performed to estimate the extent to which variance in the measure reflects the variance in the underlying construct (Westen & Rosenthal, 2003). The data validity testing in this research is done by using Microsoft Excel's function "=PEARSON" into each of the individual question item, separately between GO-JEK and Mobile Legends respondents. The Pearson function in can determine the correlation between each question item with the total result. The result would be called significant when the calculated r (Pearson Correlation) is higher than the critical r (obtained from the correlation r-table), which means that the item has significant effect to the total score. The r-critical is obtained by referring to the r-table in Appendix 1, and also considering the significance level = 0.05 and the n = 103 samples for GO-JEK; n = 94 samples for Mobile Legends. A valid questionnaire means that the question items could measure the things that are intended to be measured.

Table 4.7 The Summary of Data Validity Testing Result for GO-JEK Questionnaire Result

DATA VALIDITY TESTING FOR GO-JEK RESPONDENTS																		
Pearson Correlation (calculated r)	0.564	0.413	0.348	0.722	0.392	0.761	0.605	0.690	0.464	0.648	0.593	0.712	0.683	0.732	0.504	0.576	0.597	0.783
Average of calculated r	0.5993																	
Correlation r-Table (r-critical)	0.194																	

Table 4.8 The Summary of Data Validity Testing Result for GO-JEK and Mobile Legends Questionnaire Result

DATA VALIDITY TESTING FOR MOBILE LEGENDS RESPONDENTS																		
Pearson Correlation (calculated r)	0.459	0.614	0.314	0.731	0.676	0.762	0.784	0.754	0.666	0.727	0.668	0.747	0.626	0.728	0.728	0.708	0.732	0.771
Average of calculated r	0.6775																	
Correlation r-Table (r-critical)	0.203																	

From the Table 4.7 above, it can be seen that the Person Correlation (calculated r) for each of the question item is already determined by using the "=PEARSON" function in Excel. The r-critical (correlation) is obtained from r-Table by following the significance level of 0.05 with n consisted of 103 samples for GO-JEK and 94 samples for Mobile Legends. The r-critical obtained for GO-JEK and Mobile Legends samples are 0.194 and 0.203 respectively, also all the calculated r parameter for each response of GO-JEK and Mobile Legends respondents are already exceeding the determined r-critical. Therefore, the overall GO-JEK and Mobile Legends questionnaire result can be considered as valid and has significant effect to the total score. It is concluded that the modified question items could measure the things that are intended to be measured.

4.2.4 Reliability Testing for Questionnaire Data

The reliability testing is conducted to see whether the questionnaire has similar result when it is used on repeated trials (Carmines & Zeller, 1979). The data reliability testing is done by determining Cronbach's Alpha through Excel calculation. The formula to determine Cronbach's Alpha is shown below.

$$r = \left(\frac{n}{n-1}\right) \times \left(1 - \frac{\Sigma\sigma_i^2}{\sigma_t}\right)$$ (Equation 4.2 Cronbach's Alpha Formula)

Information:

r = Reliability (Cronbach's Alpha)

n = Total of question item(s)

$\Sigma\sigma_i^2$ = Total of individual variance $_i$

σ_i^2 = Variance of the result's total

The reliability test result of KUE questionnaire for all respondents is then compared to the standard of acceptable alpha, which is commonly around 0.65 to 0.8 at minimum (Goforth, 2015). If the reliability (Cronbach's Alpha falls in the range of 0.65 to 0.8 or even higher, then the question items can be considered as reliable. The summary of the reliability testing conducted on both GO-JEK and Mobile Legends questionnaire result is shown in Table 4.8 below.

Table 4.9 The Summary of Data Reliability Testing Result for GO-JEK and Mobile Legends Questionnaire Result

DATA RELIABILITY TESTING FOR GO-JEK RESPONDENTS																		
Variance	0.272	0.458	0.699	0.551	0.504	0.547	0.742	0.681	0.664	0.676	0.578	0.604	0.434	0.557	0.582	0.543	0.495	0.476
$\Sigma\sigma_i^2$	10.06320198																	
σ_i^2	64.21797068																	
n	18																	
n-1	17																	
Reliability (Cronbach Alpha r)	0.892901827																	
Standard	0.65-0.8																	
DATA RELIABILITY TESTING FOR MOBILE LEGENDS RESPONDENTS																		
Variance	0.621	0.836	0.859	0.939	1.024	0.608	1.018	0.675	1.026	0.848	0.933	0.716	0.666	0.795	0.665	0.664	0.652	0.723
$\Sigma\sigma_i^2$	14.26790208																	
σ_i^2	116.8647907																	
n	18																	
n-1	17																	
Reliability (Cronbach Alpha r)	0.929552854																	
Standard	0.65-0.8																	

The test result of the modified KUE questionnaire for all respondents using Excel calculation shows that the Cronbach's Alpha result is 0.893 for GO-JEK questionnaire result, and 0.929 for Mobile Legends questionnaire result. Therefore, it means that the modified KUE questionnaire has a good reliability, since it is exceeding the 0.8 mark. A reliable questionnaire means that it could be used many times, and still yield similar result for each iteration.

4.2.5 Summary of Questionnaire Data Result and Testing

Based on the data collection and processing on previous chapters above, several results could be obtained, starting from the data adequacy test, validity testing, reliability testing, and also the average KUE Questionnaire score for all respondents from both of GO-JEK and Mobile Legends questionnaires. The summary of those results could be seen in table 4.9 below.

Table 4.10 Summary of The Modified KUE Questionnaire Result and Testing

Respondents	Data Adequacy Test	Data Validity Testing	Data Reliability Testing	Average Questionnaire Score		Testing Conclusion	KUE Questionnaire Score Conclusion
				Usability Questions	Kawaii Questions		
All	Adequate	All Significant	0.91752	3.9165	3.9244	Questionnaire valid & reliable for all respondents	The chosen mobile applications generally have a good KUE rating/score
				3.92047			
GO-JEK	Adequate	All Significant	0.89290	4.055	4.014	Questionnaire valid & reliable GO-JEK respondents	GO-JEK has a good KUE rating/score
				4.034			
Mobile Legends	Adequate	All Significant	0.92955	3.765	3.826	Questionnaire valid & reliable Mobile Legends respondents	Mobile Legend has a good KUE rating/score
				3.796			

CHAPTER 5
DATA INTERPRETATION AND ANALYSIS

This chapter explains about the interpretation and analysis from the collected data in previous chapter. The interpretation and analysis are done on the results and the main data testing/processing conducted from the questionnaire results, as well as the two extra qualitative questions mentioned before.

5.1 Analysis of Questionnaire Result Data Processing

All the data processing results show that the author has collected enough or adequate amount of sample size and the new modified KUE Questionnaire is valid and reliable. Thus, it can be concluded as the new KUE Questionnaire is able to be used for public/general respondents (users) to evaluate the performance of mobile applications/software, in term of the usability and kawaii aspects. The validity of the questionnaire result is proven by determining its Pearson Correlation (r parameter) and comparing it to the r-critical, meanwhile the reliability of the questionnaire is proven by determining the Cronbach's Alpha whether it is exceeding the 0.8 mark or not.

5.1.1 Analysis of Questionnaire Result Validity Testing

Based on Table 4.7 and Table 4.8 from previous chapter, it can be seen that with the significance level of 0.05 and the n size are 103 and 97 for GO-JEK and Mobile Legends data respectively, the Pearson Correlations for the questionnaire validity testing shows that all of the 18 question items have significant effect to the total score, on significance level of 0.05. The 18 question items have the average calculated r of 0.5993 and 0.6775 for GO-JEK and Mobile Legends respectively, and it is exceeding the r-critical at 0.194 and 0.203. Thus, it can be concluded that the questionnaire is valid and could measure things that are intended to be measured, which are the usability and kawaii aspects of the mobile applications. The higher the value of calculated r exceeding the r-critical means that the stronger the questionnaire is. Each question item would be considered stronger or having more significant impact towards the final result.

5.1.2 Analysis of Questionnaire Result Reliability Testing

The questionnaire reliability testing also shows similar result, where the questionnaire is proven to be reliable. Based on the Table 4.9, the Cronbach's Alpha value of GO-JEK questionnaire is 0.89290 and the Cronbach's Alpha value of Mobile Legends is 0.92955. Both of the determined Cronbach's Alpha value are exceeding the acceptable level which is 0.65-0.8, therefore it can be concluded that the modified KUE Questionnaire is able to give a reliable result. A reliable questionnaire means that it could be used many times, and yield similar result. The higher the Cronbach's Alpha value means that the questionnaire is better, thus it is considered more reliable.

5.1.3 Analysis of The Questionnaire Result's Average

The score from respondents' responses also shows a positive result, with the average value of 3.92047 for both of the evaluated applications (refer to Appendix 2 for complete summary of questionnaire result) for all respondents. For GO-JEK result itself, the average KUE score is 4.034. Meanwhile for the Mobile Legends itself, the average KUE score is 3.796. It means that the GO-JEK application has insignificantly better usability and kawaii score than the Mobile Legends has. But, both of the scores can be categorized as fairly good. The overall rating of the respondents towards various aspects the chosen mobile applications is also good enough. The questionnaire result is furtherly be supported by the two extra qualitative questions provided by the author at the end of the questionnaire. Which will be discussed in the next section.

Therefore, after performing several data processing, the new KUE Questionnaire can be considered as able to give a valid and reliable result in measuring the usability and kawaii or design elements of mobile applications, which in this research is GO-JEK and Mobile Legends.

5.2 Analysis of The Questionnaire Data Processing Result Summary

Table 5.1 below shows the summary of the questionnaire data processings that have been conducted in the previous chapter. It can be seen that the new KUE Questionnaire is valid, reliable, and has a fairly good average evaluation result of the applications GO-JEK and Mobile Legends.

From the result of both applications, it can bee seen that the average result for both usability and kawaii measurements is 3.92047, a fairly good overall score. The individual average results of the usability and kawaii measurements have a quite similar value, which are 3.9165 for usability and 3.9244 for kawaii.

Same results are also can be seen from the individual result of each application. Both of the GO-JEK and Mobile Legends' average usability and kawaii measurements are quite similar individually (can be seen by the groon-shadowed cells). But, it is found that GO-JEK has slightly better score in term of the usability aspect, meanwhile Mobile Legends has slightly better score in term of the kawaii aspect. Although the difference is very small (insignificant), it can be said that GO-JEK has a slightly better overall score in its usability aspect rather than its kawaii aspect. There is a qualitative assessment fron Respondent ID 10050128638, that says,

"***GO-JEK application is easy to use*** *because its main menu already provides all the services available from GO-JEK.* ***It eases the users to make any request that the users want****. The* ***interface is visually good****,* ***but still need to be improved*** *so it will be more attractive*."

The same thing goes for Mobile Legends, where it has a slightly better overall score in its kawaii aspect rather than its usability aspect. There is a qualitative assessment fron Respondent ID 10050162284, that says,

"*In term of the* ***visual design is pretty simple and has a consistent color scheme****. But it terms of* ***way to navigate the menu is still pretty hard and complex****, since there are a lot of sub-directories.*"

Table 5.1 Summary of The New KUE Questionnaire Result and Testing

Respondents	Data Adequacy Test	Data Validity Testing	Data Reliability Testing	Average Questionnaire Score	
				Usability Questions	Kawaii Questions
All	Adequate	All Significant	0.91752	3.9165	3.9244
				3.92047	
GO-JEK	Adequate	All Significant	0.89290	4.055	4.014
				4.034	
Mobile Legends	Adequate	All Significant	0.92955	3.765	3.826
				3.796	

Overall, GO-JEK has a better average KUE score than Mobile Legends. GO-JEK and Mobile Legends have 4.034 and 3.796 average KUE scores respectively. It can be caused by several reasons. First, GO-JEK can be said as the more mature company/developer since it has been established for 6 years longer than Mobile Legends, so that GO-JEK has been facing the voices of customers more and has been evaluating its application even more.

One of the main reasons of combining usability and kawaii aspects measurement in a single evaluation tool is because the current measurement in usability measurement tools only focused on the parameter that describe the "usability" of a product, while lacking a more detailed evaluation of its design elements. Therefore, here are the main difference of usability and kansei-kawaiii aspects evaluated in this research.

Table 5.2 Head-to-Head Comparison of Usability and Kawaii

Evaluation	
Usability	Kansei – Kawaii Concept
• Focused on the interaction of end-user with a product and how a specific property of the product contributes to achieving a certain degree of usability	• Focused on translating consumer's emotions/feelings into a product's design elements. • Kawaii design more specific towards the kawaii (cute) elements.

On the individual scores, GO-JEK has a slightly better usability score because the users are using the application occasionally, only when the users need the service(s). So, the GO-JEK users do not really care or paying attention towards its design elements, but really care about the easiness or usability. Meanwhile Mobile Legends has a slightly better kawaii score because since it is a adventure/role-playing-games, the users will spent more time when using the application at one usage. Therefore, a good design elements to ease the eyes of the users are more vital to the users.

5.3 Analysis of Questionnaire Qualitative Result

As mentioned in the previous chapter above, in order to support the KUE Questionnaire quantitative result, the author decided to provide 2 extra qualitative questions in the questionnaire. It is done because of the KUE Questionnaire only implement a 5-level response for each of the first 18 questions.

Table 5.3 Extra Qualitative Questions in GO-JEK and Mobile Legends Questionnaires

Extra Qualitative Questions for GO-JEK and Mobile Legends Questionnaire	
19	State your opinion on how easy the applications can be used and how attractive their interface visual design is!
20	In scale of 0-100, how easy do you think it is to use the applications and how attractive their interface visual design is?

Table 5.1 shows the 2 extra qualitative questions added to the end of the GO-JEK and Mobile Legends questionnaires. Some of the selected responses from the GO-JEK questionnaire will be shown in the Table 5.2 below.

Table 5.4 Some of The Chosen Qualitative Reponses, and Average Score on GO-JEK Questionnaire

Respondent ID	Length of Use	Question Number (GJK)
		19
10050702721	6-12 months	The user interface is simple and easy to comprehend, along with a clear and straight-forward icons
10050128638	Below 6 months	GO-JEK application is easy to use because its main menu already provides all the services available from GO-JEK. It eases the users to make any request that the users want. The interface is visually good, but still need to be improved so it will be more attractive.
10051817372	Above 2 years	It is easy to use, but I think the latest version of GO-JEK application has too many features which I rarely use. I think it also causes lags
10050146884	1-2 years	The application is very updated, especially the feature GO-Food. GO-JEK able to give various color scheme and theme in several events, like Star Wars, New Year, or Iedul Fitri. I think it is very interesting how they show such customization so that users won't be bored with the app.
10043147265	6-12 months	Its main feature is very easy to use, but the voucher and token feature is still not well arranged.
Total GO-JEK Respondents		Average score (scale 0-100)
103		81

Five selected qualitative assessments from the GO-JEK questionnaire is shown above. Please refer to Appendix 3 for the complete preview of the responses. Generally, the respondents can provide assessments of what is the strength of GO-JEK, and also state its weaknesses and what needs to be improved. The average result of the 0-100 scale question from all 103 GO-JEK respondents is 81, which can be considered as a good score.

Table 5.5 Some of The Chosen Qualitative Reponses, and Average Score on Mobile Legends Questionnaire

Respondent ID	Length of Use	Question Number (ML)
		19
10050161101	1-2 years	I think the game interface is a lot better than the other similar MOBA games on mobile phone. The content and events given by Mobile Legends are things that make this game fun and interesting.
10050702721	Below 6 months	For the similar games, the user interface of Mobile Legends is clear and simple enough so it is easy to understand. But, there are several design elements, like the font, that looked boring.
10050156135	1-2 years	The control and how to play this game is easy to understand for beginners, so it is good. From the graphical quality point of view, I think it still bad. So, it needs to be improved.
10050162284	1-2 years	In term of the visual design is pretty simple and has a consistent color scheme. But it term of way to navigate the menu is still pretty hard and complex, since there are a lot of sub-directories.
10080424087	6-12 months	I think this game is easy to use and pretty entertaining.
Total Mobile Legends Respondents		Average score (scale 0-100)
94		77

Five selected qualitative assessments from the Mobile Legends questionnaire is shown above. Please refer to Appendix 3 for the complete preview of the responses. Same with the GO-JEK respondents, the Mobile Legends respondents generally can provide assessments of what is the strength of the game, and also able to state its weaknesses and what needs to be improved. The average result of the 0-100 scale question from all 94 GO-JEK respondents is 77. It is a lower score if compared to the average score of the GO-JEK application. But, although it has slight difference, the score of 77 is still can be considered as a good score.

5.4 Improvements

In order to find the weaknesses, present in each of the GO-JEK and Mobile Legends applications, the average score for each of question item in the

questionnaire is calculated, and shown in the Table 5.5 and Table 5.6 below. As stated in Subchapter 4.1.1, each of the question represent different parameters and measurements. Therefore, by analyzing each of the average result, the weaknesses evaluated in the questionnaire can be spotted.

Table 5.6 The Average Score of Each Question Item in GO-JEK Questionnaire

n	Question Number (GJK)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
94	4.5	4.4	3.7	4.1	4.3	4.0	3.9	3.7	3.5	4.0	4.0	3.9	4.4	4.1	4.1	3.9	4.1	3.9

From the Table 5.4 above, it can be seen that the 3 least average score in GO-JEK questionnaire appeared in the 3rd, 8th, and 9th questions. From the Table 4.2 in the previous chapter, it can be seen that the 3rd question tried to measure the error parameter by using usability measurement. By the 3rd question having a low score, it means that the GO-JEK application still considered to be having several errors/crash problems by the respondents. The 8th and 9th questions are both tried to measure the satisfaction parameter by using both usability and kawaii measurements. By the 8th and 9th questions having a low score, it means that the GO-JEK application is not satisfying enough to be used by the respondents, in term of the performance (usability) and design (kawaii) perspective. Therefore, improvements that can be suggested to GO-JEK is for them to improve their mobile application reliability (since it crashes a lot) and their application performance and design.

Table 5.7 The Average Score of Each Question Item in Mobile Legends Questionnaire

n	Question Number (ML)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
94	4.1	3.9	3.2	3.8	3.8	3.8	3.6	3.9	3.6	3.8	3.9	3.8	4.0	3.8	3.7	3.8	3.8	3.8

From the Table 5.5 above, it can be seen that the 3 least average score in Mobile Legends questionnaire appeared in the 3rd, 7th, and 9th questions. From the Table 4.2 in the previous chapter, it can be seen that the 3rd question tried to measure the error parameter by using usability measurement. By the 3rd question having a low score, it means that the Mobile Legends application still considered to be

having several errors/crash problems by the respondents. The 7th and 9th questions are both tried to measure the satisfaction parameter by using usability measurements. By the 7th and 9th questions having a low score, it means that the Mobile Legends application is not satisfying enough to be used by the respondents, in term of the performance (usability) perspective. Therefore, improvements that can be suggested to GO-JEK is for them to improve their mobile application reliability (since it crashes a lot) and their application performance.

(This Page is Intentionally Left Blank)

CHAPTER 6
CONCLUSION AND SUGGESTION

This chapter explains about the conclusions that could be taken from the research process that has been conducted. Several suggestions will also be given as a reference for improvement of future researches that is related to this research.

6.1 Conclusion

Based on previous chapters about data processing and analysis, there are several conclusions that could be taken, considering the objectives that have been stated in the beginning of this research. Those conclusions are:

1. The new modified KUE Questionnaire now has a total of 18 question items (from the previous one only 13 question items). These 18 question items are representing 7 modified parameters and 18 modified measurements from the last KUE Questionnaire. In the previous version of KUE Questionnaire, the usability aspect has 6 measurements represented by 6 questions, and the kawaii aspect has 7 measurements represented by 7 questions, which why the imbalance occurred. In the new KUE Questionnaire, both of the usability and kawaii aspects now have 9 measurements, and each of them are represented by one question, making it has 18 question items in total. The new KUE Questionnaire is now can be considered balanced and able to provide better result/evaluation than the previous version.
2. The new KUE Questionnaire has 7 new question items representing 7 new usability and kawaii measurements that were not available in the previous version of the questionnaire. Now, it also has one new parameter to be evaluated in the product, that also not available in the previous version of the questionnaire, which is Effectivity. The effectivity parameter is added by following the research by John Brooke in 1986 that has been reposted as a journal by JUS (Journal of Usability Studies) Vol. 8, Issue 2, February 2013 pp. 29-40. These new parameters, measurements, and question items, are considered to have been able to modify and improve the previous KUE Questionnaire, proven by the result of this research.

3. In this research, the new KUE Questionnaire is used to evaluate two chosen Android mobile applications, which are GO-JEK and Mobile Legends. The collected questionnaire result then has been tested its adequacy, validity, and reliability. After conducting several data processing by using an adequate data, the new KUE Questionnaire is proven to be able to give a valid and reliable result. The data is considered as valid when the calculated r (Pearson Correlation) is exceeding the r-critical obtained from the r-table. The r-critical for GO-JEK and Mobile Legends data are 0.194 and 0.203 respectively. As shown in Subchapter 4.2.2, each of the calculated r of each question items are exceeding the r-critical. Therefore, the result is considered as a valid result and each question has significant effect on the total result. The data is considered as reliable when the calculated Cronbach's Alpha of the data is exceeding the acceptable level which is at 0.65-0.8. The calculated Cronbach's Alpha for both of the GO-JEK and Mobile Legends are 0.892 and 0.929 respectively. Therefore, since both of the alpha are exceeding the acceptable level, the results are considered to be reliable, and able to provide consistent results even after many iterations.
4. As stated in Subchapter 5.3, several weaknesses of each of the GO-JEK and Mobile Legends applications is determined by the average score of each question item in the questionnaire. For GO-JEK and Mobile Legends, it is found that both of the applications have weakness in the Error and Satisfaction parameters. But, GO-JEK has low average scores on both usability and kawaii measurements in the satisfaction parameter. Meanwhile Mobile Legends has low average scores only on the usability measurements in the satisfaction parameter. It determines that Mobile Legends has somewhat better kawaii score than GO-JEK, since Mobile Legends is only lacking score on the usability measurements.
5. After modifying the KUE Questionnaire, improving it by balancing its parameters and measurements, collecting data, processing data by testing its adequacy; validity; and reliability, and also analyzing it, the author can conclude that all the results are proving that this new modified KUE

Questionnaire is able to evaluate a wider type of product, which in this research is used to evaluate Android mobile applications and games.

6.2 Suggestion

Suggestions that could be given for future researches related to using or improving usability-kawaii questionnaire for evaluation products are:

1. Improving the questionnaire by adding additional feature to increase its attractivity, such as increasing color alternative for each answer alternative, or changing the emoticon shape and picture by matching the context of each question item.
2. Besides distributing the questionnaire via online form to online forums and groups, it is also suggested to perform a direct observation or data collection by approaching potential respondents directly to fill in the questionnaire.
3. It is also recommended for the later similar researches about kawaii-usability evaluation to create a better evaluation tool, by implementing more representative parameters and measurements in the questionnaire (tool) and by providing better product description and introduction for the respondents (e.g. more pictures about the usage/gameplay, video that shows the evaluated aspect(s) in the the usage/gameplay, etc).
4. Since it is pretty hard to gather scientific information regarding the kawaii concept in kansei engineering, it is recommended to look for more references in official supporting articles in advance.

(This Page is Intentionally Left Blank)

REFERENCE

Aravindan, A. (2018) *Go-Jek most popular ride-hailing app: Survey*, *The Jakarta Post*. Available at: http://www.thejakartapost.com/life/2018/02/20/indonesias-most-popular-ride-hailing-app-survey.html (Accessed: 10 April 2018).

Bevan, N. (2006) 'International Standards for HCI', *Encyclopedia of Human Computer Interaction*, 55(May), pp. 1–15. doi: 10.1006/ijhc.2001.0483.

Bohang, F. K. and Nistanto, R. K. (2017) *Berapa Jumlah Pengguna dan Pengemudi Go-Jek?*, *Kompas.com*. Available at: https://tekno.kompas.com/read/2017/12/18/07092867/berapa-jumlah-pengguna-dan-pengemudi-go-jek (Accessed: 10 April 2018).

Bolarinwa, O. (2015) 'Principles and methods of validity and reliability testing of questionnaires used in social and health science researches', *Nigerian Postgraduate Medical Journal*, 22(4), p. 195. doi: 10.4103/1117-1936.173959.

Brooke, J. (2013) 'SUS : A Retrospective', *Journal of Usability Studies*, 8(2), pp. 29–40. doi: 10.1074/jbc.R115.675280.

Cheok, A. D. (2010) *Art and technology of entertainment computing and communication: Advances in interactive new media for entertainment computing*, *Art and Technology of Entertainment Computing and Communication: Advances in Interactive New Media for Entertainment Computing*. doi: 10.1007/978-1-84996-137-0.

Fernandez, A., Insfran, E. and Abrahao, S. (2011) 'Usability evaluation methods for the web: A systematic mapping study', *Information and Software Technology*, 53, pp. 789–817. doi: 10.1016/j.infsof.2011.02.007.

Gandhewar, N. and Sheikh, R. (2010) 'Google Android: An Emerging Software Platform For Mobile Devices', *International Journal on Computer Science and Engineering (IJCSE)*, (Special Issue), p. 6. doi: 10.1007/s003810050241.

Levy, P., Lee, S. and Yamanaka, T. (2007) 'On Kansei and Kansei Design a Description of Japanese Design Approach', *Proceedings of the 2nd World*

Conference on Design Research, pp. 1–18. Available at: https://www.sd.polyu.edu.hk/iasdr/proceeding/papers/On Kansei and Kansei Design - A Description of Eastern Design Approach.pdf.

Lokman and Mohd, A. (2010) 'DESIGN & EMOTION : THE KANSEI ENGINEERING The Definition of Kansei', *Malaysian Journal of Computing*, 1(1), pp. 1–11.

Minitab (2008) 'Chi-Square Tests', *Statistics*, (X), pp. 64–67. doi: 10.1002/0470011815.b2a10013.

Mvungi, J. and Tossy, T. (2015) 'Usability Evaluation Methods and Principles for the Web', *International Journal of Computer Science and Software Engineering*, 4(7), pp. 2409–4285. Available at: www.IJCSSE.org.

Nagamachi, M. (1995) 'Kansei Engineering: A new ergonomic consumer-oriented technology for product development', *International Journal of Industrial Ergonomics*, 15(1), pp. 3–11. doi: 10.1016/0169-8141(94)00052-5.

Nugroho, F. R. (2018) *INCORPORATING KAWAII DESIGN INTO USABILITY EVALUATION SPECIAL FOR CHILDREN PARTICIPANTS (CASE STUDY: MR SIWA)*. Institut Teknologi Sepuluh Nopember.

Panji, A. and Yordan, J. (2017) *Di Indonesia, Mobile Legends Dimainkan 8 Juta Pengguna Aktif*, *Kumparan*. Available at: https://kumparan.com/@kumparantech/di-indonesia-mobile-legends-dimainkan-8-juta-pengguna-aktif (Accessed: 10 April 2018).

Schütte, S. T. W. *et al.* (2004) 'Concepts, methods and tools in kansei engineering', *Theoretical Issues in Ergonomics Science*, 5(3), pp. 214–231. doi: 10.1080/1463922021000049980.

Sugano, S., Miyaji, Y. and Tomiyama, K. (2013) 'Study of Kawaii-ness in Motion – Physical Properties of Kawaii Motion of Roomba', (December 2008), pp. 620–621.

UCLA: Statisitcal Consulting Group (2014) *SPSS FAQ: What does Cronbach's alpha mean?, Institude for Digital Research and Education*.

Usability Professionals Association (2007) *Usability Evaluation Methods, Usability Body of Knowledge*. Available at: http://www.usabilitybok.org/usability-evaluation-methods (Accessed: 9

April 2018).

Yanagi, M. *et al.* (2014) ‘Physiological Responses Caused by Kawaii Feeling in Watching Photos’, (July), pp. 839–848.

(This Page is Intentionally Left Blank)

APPENDIX

Appendix 1: Previous KUE Questionnaire

Kuesioner MR SIWA

Halo teman teman, nama saya Mas Reza. Disini, saya mau adik adik untuk mengisi kuesioner tentang aplikasi MR SIWA. Adik – adik bisa pilih satu jawaban untuk setiap nomor, sesuai dengan pendapat adik – adik tentang MR SIWA. Ketika memilih, gambarkan bulat pada kata yang mau adik pilih. Tidak ada jawaban yang benar ataupun salah, jadi pilihlah sesuai dengan apa yang adik – adik rasakan ketika memakai MR SIWA.

Nama :
Umur :
Kelas :
Jenis Kelamin :

Contoh:

1. **Bagaimana menurutmu tentang cerita di dalam game ini?**

Apakah Adik bersedia mengisi kuesioner ini? YA / TIDAK

1. **Is the game control easy to remember?**

Very difficult to remember | Difficult to remember | Difficult to remember | Mudah Diingat | Sangat Mudah Diingat

2. Apakah maskot game nya mudah diingat?

Sangat Susah Diingat | Susah Diingat | Biasa | Mudah Diingat | Sangat Mudah Diingat

3. Apakah sering terjadi error dalam pemakaian game?

Sangat Sering | Sering | Biasa | Jarang | Sangat Jarang

4. Apakah desain mempermudah pemakaian game?

Sangat Menyulitkan | Menyulitkan | Biasa | Memudahkan | Sangat Memudahkan

5. Apakah game nya mudah digunakan?

Sangat Susah | Susah | Biasa | Mudah | Sangat Mudah

6. Apakah kamu mau menggunakan alat ini lagi untuk belajar?

Sangat Tidak Mau | Tidak Mau | Biasa | Mau | Sangat Mau

7. Menurutmu apakah desain nya sudah menyenangkan untuk dipakai?

Sangat Tidak Menyenangkan | Tidak Menyenangkan | Biasa | Menyenangkan | Sangat Menyenangkan

8. Apakah suara di game nya lucu dan menyenangkan?

Sangat Tidak Lucu | Tidak Lucu | Biasa | Lucu | Sangat Lucu

9. Apakah menurutmu materi di game nya mudah dipahami?

Sangat Susah Dipahami | Susah Dipahami | Biasa | Mudah Dipahami | Sangat Mudah Dipahami

10. Apakah video dan hologram membantu pemahaman materi?

Sangat Tidak Membantu | Tidak Membantu | Biasa | Membantu | Sangat Membantu

11. Apakah warna di game nya sudah sesuai?

Sangat Tidak Sesuai | Tidak Sesuai | Biasa | Sesuai | Sangat Sesuai

12. Apakah gerakan di video lucu?

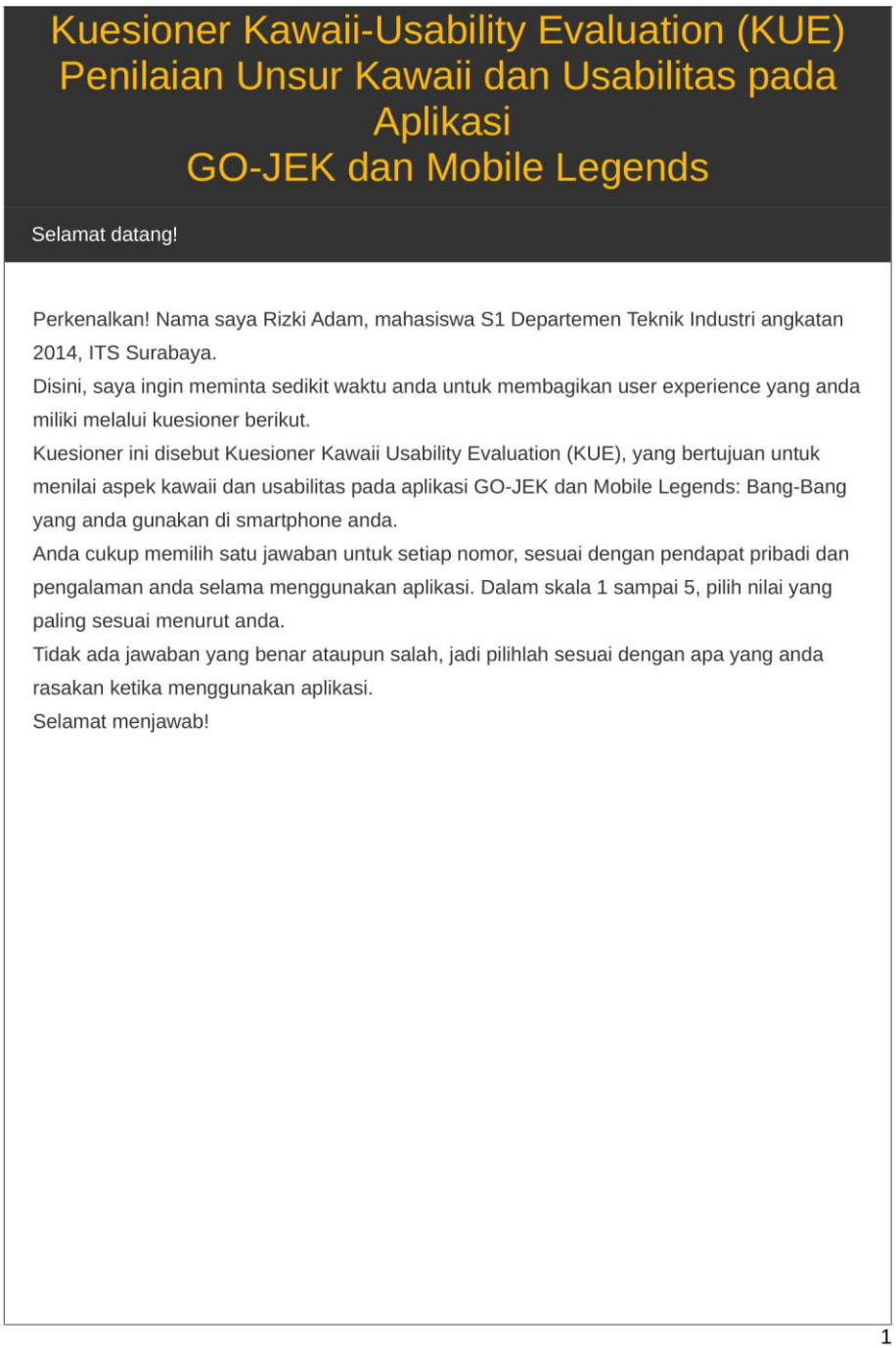
Sangat Tidak Lucu | Tidak Lucu | Biasa | Lucu | Sangat Lucu

13. Bagaimana pendapatmu tentang game ini secara keseluruhan?

Sangat Jelek	Jelek	Biasa	Bagus	Sangat Bagus

Appendix 2: The New Modified KUE Questionnaire Online Form

Can be accessed at: bit.ly/gopayxdiamondgratis



Kuesioner Kawaii-Usability Evaluation (KUE)
Penilaian Unsur Kawaii dan Usabilitas pada Aplikasi
GO-JEK dan Mobile Legends

Selamat datang!

Perkenalkan! Nama saya Rizki Adam, mahasiswa S1 Departemen Teknik Industri angkatan 2014, ITS Surabaya.
Disini, saya ingin meminta sedikit waktu anda untuk membagikan user experience yang anda miliki melalui kuesioner berikut.
Kuesioner ini disebut Kuesioner Kawaii Usability Evaluation (KUE), yang bertujuan untuk menilai aspek kawaii dan usabilitas pada aplikasi GO-JEK dan Mobile Legends: Bang-Bang yang anda gunakan di smartphone anda.
Anda cukup memilih satu jawaban untuk setiap nomor, sesuai dengan pendapat pribadi dan pengalaman anda selama menggunakan aplikasi. Dalam skala 1 sampai 5, pilih nilai yang paling sesuai menurut anda.
Tidak ada jawaban yang benar ataupun salah, jadi pilihlah sesuai dengan apa yang anda rasakan ketika menggunakan aplikasi.
Selamat menjawab!

1

Kuesioner Kawaii-Usability Evaluation (KUE) Penilaian Unsur Kawaii dan Usabilitas pada Aplikasi GO-JEK dan Mobile Legends

Hi!

Silahkan memulai dengan mengisi identitas anda!

1 Nama

2 Usia

3 Pekerjaan

- Pegawai/Karyawan
- Wiraswasta
- Pelajar
- Other

4 Apa merk/brand smartphone yang anda gunakan?

5 Apa tipe/seri smartphone yang anda gunakan?

(Contoh: Galaxy J7 Prime, Redmi 4, Zenfone 3, Xperia XZ, dll)

"Dengan melanjutkan ke bagian selanjutnya, saya setuju untuk mengisi kuesioner ini"

2

Kuesioner Kawaii-Usability Evaluation (KUE) Penilaian Unsur Kawaii dan Usabilitas pada Aplikasi GO-JEK dan Mobile Legends

1 Apakah anda menggunakan aplikasi GO-JEK dan Mobile Legends: Bang-Bang?

- ◯ Ya, saya menggunakan GO-JEK dan Mobile-Legends
- ◯ Tidak, saya hanya menggunakan GO-JEK
- ◯ Tidak, saya hanya menggunakan Mobile Legends: Bang Bang
- ◯ Saya tidak menggunakan keduanya

3

Kuesioner Kawaii-Usability Evaluation (KUE) Penilaian Unsur Kawaii dan Usabilitas pada Aplikasi GO-JEK dan Mobile Legends

Kuesioner Kawaii-Usability Evaluation:
Aplikasi **GO-JEK**

Dalam bagian ini, anda akan menilai aspek kawaii dan usabilitas dari aplikasi smartphone, GO-JEK. Silahkan isi kuesioner berikut sesuai dengan apa yang anda alami dan rasakan selama menggunakan aplikasi GO-JEK.

(Gambar: Contoh tampilan pada aplikasi GO-JEK)

Pilih salah-satu dari 5 tingkat skala penilaian anda terhadap pernyataan yang diajukan.

1 Sudah berapa lama anda telah menggunakan aplikasi GO-JEK ini?

- ○ Kurang dari 6 bulan
- ○ 6 bulan - 1 tahun
- ○ 1 - 2 tahun
- ○ Lebih dari 2 tahun

4

2 Menurut saya, cara menggunakan aplikasi GO-JEK …

Sangat sulit diingat — Sangat mudah diingat

3 Maskot/logo aplikasi GO-JEK …

Sangat sulit diingat — Sangat mudah diingat

4 Saat saya menggunakan aplikasi GO-JEK, …

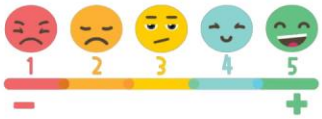
Sering terjadi crash/error — Hampir tidak pernah terjadi crash/error

5 Desain tampilan aplikasi GO-JEK … saya

Sangat menyulitkan pengelihatan — Sangat memudahkan pengelihatan

5

6 Saya ingin menggunakan aplikasi GO-JEK ini lagi di lain waktu



Sangat tidak setuju Sangat setuju

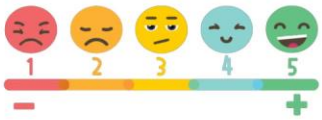
7 Desain tampilan aplikasi GO-JEK menarik dan menyenangkan saat digunakan

Sangat tidak setuju Sangat setuju

8 Saya ingin merekomendasikan aplikasi GO-JEK ini pada orang lain

Sangat tidak setuju Sangat setuju

9 Menurut saya, gerakan animasi, video, dan transisi pada aplikasi GO-JEK …



Sangat jelek dan tidak menarik Sangat bagus dan menarik

6

6 Saya ingin menggunakan aplikasi GO-JEK ini lagi di lain waktu

Sangat tidak setuju — Sangat setuju

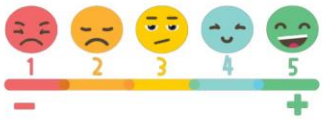
7 Desain tampilan aplikasi GO-JEK menarik dan menyenangkan saat digunakan

Sangat tidak setuju — Sangat setuju

8 Saya ingin merekomendasikan aplikasi GO-JEK ini pada orang lain

Sangat tidak setuju — Sangat setuju

9 Menurut saya, gerakan animasi, video, dan transisi pada aplikasi GO-JEK …



Sangat jelek dan tidak menarik — Sangat bagus dan menarik

6

14 Saya bisa dengan mudah melakukan pesanan pada aplikasi GO-JEK

Sangat tidak setuju Sangat setuju

15 Desain tampilan aplikasi GO-JEK mempermudah saya untuk melakukan pesanan

Sangat tidak setuju Sangat setuju

16 Saya merasa puas pada saat berhasil melakukan pesanan pada aplikasi GO-JEK

Sangat tidak setuju Sangat setuju

17 Saya merasa puas dengan desain tampilan layar saat pesanan saya ditanggapi

Sangat tidak setuju Sangat setuju

8

18 Secara keseluruhan, konten, fungsi, serta kontrol aplikasi GO-JEK bisa dikatakan berfungsi dengan …

Sangat buruk — Sangat baik

19 Secara keseluruhan, desain tampilan aplikasi GO-JEK ...

Sangat jelek dan tidak menarik — Sangat bagus dan menarik

20 Beri pendapat anda tentang seberapa mudahnya aplikasi GO-JEK bisa digunakan dan seberapa menariknya tampilan aplikasi GO-JEK!

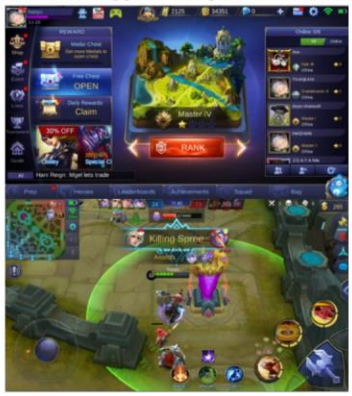
21 Dalam skala 0 - 100, menurut anda seberapa mudahnya aplikasi GO-JEK bisa digunakan dan seberapa menariknya tampilan aplikasi GO-JEK?

0 — 100

Kuesioner Kawaii-Usability Evaluation (KUE) Penilaian Unsur Kawaii dan Usabilitas pada Aplikasi GO-JEK dan Mobile Legends

Kuesioner Kawaii-Usability Evaluation:
Game **Mobile Legends: Bang-Bang**

Dalam bagian ini, anda akan menilai aspek kawaii dan usabilitas dari game smartphone, Mobile Legends: Bang-Bang. Silahkan isi kuesioner berikut sesuai dengan apa yang anda alami dan rasakan selama menggunakan game Mobile Legends: Bang-Bang.



(Gambar: Contoh tampilan pada permainan Mobile-Legends)

Pilih salah-satu dari 5 tingkat skala penilaian anda terhadap pernyataan yang diajukan.

10

1 Sudah berapa lama anda telah menggunakan game Mobile Legends ini?

- ○ Kurang dari 6 bulan
- ○ 6 bulan - 1 tahun
- ○ 1 - 2 tahun
- ○ Lebih dari 2 tahun

2 Menurut saya, cara menggunakan game Mobile Legends …

Sangat sulit diingat — Sangat mudah diingat

3 Maskot/logo game Mobile Legends …

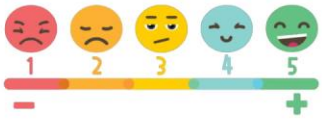
Sangat sulit diingat — Sangat mudah diingat

4 Saat saya menggunakan game Mobile Legends …

Sering terjadi crash/error — Hampir tidak pernah terjadi crash/error

11

5 Desain tampilan game Mobile Legends … saya



Sangat menyulitkan pengelihatan — Sangat memudahkan pengelihatan

6 Saya ingin menggunakan game Mobile Legends ini lagi di lain waktu

Sangat tidak setuju — Sangat setuju

7 Desain tampilan game Mobile Legends menarik dan menyenangkan saat digunakan

Sangat tidak setuju — Sangat setuju

8 Saya ingin merekomendasikan game Mobile Legends ini pada orang lain

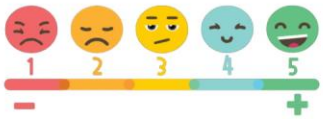
Sangat tidak setuju — Sangat setuju

12

9 Menurut saya, gerakan animasi, video, dan transisi pada game Mobile Legends…

Sangat jelek dan tidak menarik — Sangat bagus dan menarik

10 Saya … memberikan saran untuk perkembangan dan kemajuan game Mobile Legends, jika ada



Tidak bisa dan sangat tidak ingin — Bisa dan sangat ingin

11 Warna pada game Mobile Legends cocok dan menarik

Sangat tidak setuju — Sangat setuju

12 Konten (gambar/teks), kontrol, dan fungsi pada game Mobile Legends …

Sangat sulit dipahami — Sangat mudah dipahami

13

13 Desain animasi, pergerakan, dan transisi tampilan game Mobile Legends … saya dalam memahami konten, kontrol, dan fungsinya

Sangat menyulitkan — Sangat membantu

14 Saya bisa dengan mudah memasuki permainan pada game Mobile Legends

Sangat tidak setuju — Sangat setuju

15 Desain tampilan game Mobile Legends mempermudah saya untuk memasuki permainan

Sangat tidak setuju — Sangat setuju

16 Saya merasa puas pada saat berhasil memasuki permainan pada game Mobile Legends

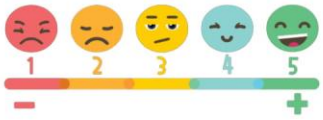
Sangat tidak setuju — Sangat setuju

14

17 Saya merasa puas dengan desain tampilan layar saat berhasil memasuki permainan

Sangat tidak setuju — Sangat setuju

18 Secara keseluruhan, konten, fungsi, serta kontrol game Mobile Legends bisa dikatakan berfungsi dengan …



Sangat buruk — Sangat baik

19 Secara keseluruhan, desain tampilan game Mobile Legends ...

Sangat jelek dan tidak menarik — Sangat bagus dan menarik

20 Beri pendapat anda tentang seberapa mudahnya game Mobile Legends bisa digunakan dan seberapa menariknya tampilan game Mobile Legends!

15

21 Dalam skala 0 - 100, menurut anda seberapa mudahnya game Mobile Legends bisa digunakan dan seberapa menariknya tampilan game Mobile Legends?

0 100

16

Kuesioner Kawaii-Usability Evaluation (KUE) Penilaian Unsur Kawaii dan Usabilitas pada Aplikasi GO-JEK dan Mobile Legends

Eits tenang, akan ada reward bagi kalian yang beruntung!

Sebagai ucapan terima kasih karena anda telah meluangkan waktu untuk mengisi kuesioner ini, saya ingin memberikan reward untuk anda yang beruntung!

Reward berupa:
1. 4x Voucher GO-Pay (GO-JEK) sebesar Rp 25.000 untuk 4 responden beruntung
2. 5x Voucher Diamonds (Mobile Legends) sebanyak 74 diamonds untuk 5 responden beruntung

Undian reward ini akan saya lakukan pada saat kuesioner online ini saya tutup, yaitu pada tanggal 28 Juni 2018.
Anda cukup memberikan nama dan nomor HP yang bisa saya hubungi, dan nanti saya akan menghubungi anda yang beruntung! Anda bisa menghubungi saya via Direct Message Instagram di @rzkadam.

1 Nama

2 Nomor HP

Sekali lagi terima kasih atas waktu anda! Semoga amal ibadah anda dibalas oleh Tuhan.

Semoga hari anda menyenangkan!

Ttd,
Rizki Adam - 02411440000127
Mahasiswa S1 - Departemen Teknik Industri ITS Surabaya

30

Appendix 3: R Table for Pearson Correlation

PEARSON'S CORRELATION COEFFICIENT *r* (Critical Values)

	Level of Significance for a One-Tailed Test										
	.05	.025	.01	.005	.0005		.05	.025	.01	.005	.0005
	Level of Significance for a Two-Tailed Test										
df=(N-2)	.10	.05	.02	.01	.001	*df*=(N-2)	.10	.05	.02	.01	.001
1	0.988	0.997	0.9995	0.9999	0.99999	21	0.352	0.413	0.482	0.526	0.640
2	0.900	0.950	0.980	0.990	0.999	22	0.344	0.404	0.472	0.515	0.629
3	0.805	0.878	0.934	0.959	0.991	23	0.337	0.396	0.462	0.505	0.618
4	0.729	0.811	0.882	0.971	0.974	24	0.330	0.388	0.453	0.496	0.607
5	0.669	0.755	0.833	0.875	0.951	25	0.323	0.381	0.445	0.487	0.597
6	0.621	0.707	0.789	0.834	0.928	26	0.317	0.374	0.437	0.479	0.588
7	0.582	0.666	0.750	0.798	0.898	27	0.311	0.367	0.430	0.471	0.579
8	0.549	0.632	0.715	0.765	0.872	28	0.306	0.361	0.423	0.463	0.570
9	0.521	0.602	0.685	0.735	0.847	29	0.301	0.355	0.416	0.456	0.562
10	0.497	0.576	0.658	0.708	0.823	30	0.296	0.349	0.409	0.449	0.554
11	0.476	0.553	0.634	0.684	0.801	40	0.257	0.304	0.358	0.393	0.490
12	0.457	0.532	0.612	0.661	0.780	60	0.211	0.250	0.295	0.325	0.408
13	0.441	0.514	0.592	0.641	0.760	120	0.150	0.178	0.210	0.232	0.294
14	0.426	0.497	0.574	0.623	0.742	∞	0.073	0.087	0.103	0.114	0.146
15	0.412	0.482	0.558	0.606	0.725						
16	0.400	0.468	0.542	0.590	0.708						
17	0.389	0.456	0.529	0.575	0.693						
18	0.378	0.444	0.515	0.561	0.679						
19	0.369	0.433	0.503	0.549	0.665						
20	0.360	0.423	0.492	0.537	0.652						

1) Decide if you should use a One-Tailed or Two-Tailed Test: **(MSLS: 38.2)**
   a. One-Tail: if you have an *a priori*: hypothesis as to the sign (- or +) of the correlation.
   b. Two-Tail: if you have no *a priori*: hypothesis as to the sign of the correlation.
2) Calculate *df* (degrees of freedom) = N (sample size) - 2). **(MSLS: 31)**
3) Locate this *df* in the table.
4) Use this row of threshold values.
5) Read across this row from left to right until you find a value greater than your calculated *r* statistic.
6) The *P*–value for your observation is the *P*–value at the top of the first column to the left of your value.
   e.g. if *r* for *df* = 15 is 0.523, then $P < 0.025$ for a One-Tailed Test; if *r* is 0.599, then $P < 0.01$.
7) A $P < 0.05$ (or smaller) value indicates that you can reject the null hypothesis that the two variables are not correlated. In other words, you have evidence the variables are significantly related. If your *r* statistic value lies to the left of the 0.05 column, then your results are not significant (n.s. $P > 0.05$). You cannot reject the null hypothesis that the variables are unrelated.

Source:http://www.life.illinois.edu/ib/203/Fall%2009/PEARSONS%20CORRELATION%20COEFFICIENT%20TABLE.pdf

Appendix 4: KUE Questionnaire Result Complete Data Recapitulation

KUE Questionnaire's result complete data recapitulation except for number 19

Respondent ID	Name	Age (years old)	Occupation	Length of Use	Question Number (GO-JEK)																		
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20
10043147265	Dionisius Andre	22	Student	6-12 months	5	5	4	4	5	4	4	3	4	4	4	4	4	4	4	4	3	4	80
10039653643	Diva	18	Student	1-2 years	4	4	3	3	4	3	3	3	3	3	3	3	3	3	3	3	3	3	70
10050255314	M. K. Fakhri S	22	Student	Above 2 years	4	4	3	3	4	3	4	3	3	4	3	3	4	3	4	4	4	3	85
10045649497	FATMA CAHYANI	21	Student	6-12 months	4	4	4	3	3	3	4	3	2	3	3	3	4	4	4	4	4	4	70
10039931726	Fauzi Firmansyah	22	Student	Above 2 years	4	5	4	5	4	4	4	5	4	4	4	4	5	4	4	5	5	5	80
10041219572	Fazat	20	Student	1-2 years	5	5	4	4	4	4	4	3	4	4	5	5	5	4	4	4	4	4	90
10050149312	Furqon Adi Premono	20	Student	1-2 years	4	3	4	4	4	4	4	4	5	5	4	4	4	4	4	4	4	4	85
10039687743	Desak Gede Gita	19	Student	1-2 years	5	5	3	5	5	5	5	4	4	5	5	5	5	4	4	4	4	4	85
10043170755	Habieb	21	Student	Above 2 years	5	4	3	5	5	5	5	4	5	3	4	5	5	5	5	5	4	5	80
10050156135	Haris Resky P	21	Student	Above 2 years	5	5	4	4	4	3	3	3	3	3	3	4	4	4	5	5	4	3	75
10039076640	Iko	22	Student	1-2 years	5	5	4	4	3	3	3	2	2	4	4	3	4	3	4	3	4	4	80
10050170613	jaka fitriansyah	18	Student	Below 6 months	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	60
10039051802	Muhammad Fauzan	23	Student	1-2 years	4	4	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4	80
10039266996	Noval	22	Student	Below 6 months	5	5	5	5	5	5	3	4	4	5	5	5	5	5	3	3	4	5	90
10050162284	Kina F. Cahyani	17	Student	6-12 months	4	5	2	1	4	2	4	1	4	2	1	2	5	3	4	5	4	2	45

Respondent ID	Name	Age (years old)	Occupation	Length of Use	Question Number (GO-JEK)																		
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20
10039237722	Dina	22	Student	1-2 years	5	5	4	5	4	4	4	5	4	5	4	4	5	5	4	4	4	5	80
10041466678	Dinda Nurul Fariza	21	Student	1-2 years	5	5	4	5	5	5	5	4	3	4	4	4	5	4	4	4	5	4	85
10050163848	Dwi	22	Student	Above 2 years	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	85
10041249897	Fahmi rizal	23	Student	Above 2 years	5	5	4	4	5	5	4	4	3	5	5	5	5	5	4	5	4	5	90
10039047328	Farras Rahardini A	21	Student	6-12 months	5	4	3	4	5	4	4	3	4	4	4	5	5	5	4	4	4	4	80
10039037048	felicius rindy kurniawan	22	Student	1-2 years	4	4	4	4	4	5	5	4	3	4	4	4	5	4	4	4	4	4	75
10041371467	Fihan	22	Student	1-2 years	5	4	3	4	5	4	5	4	4	4	4	4	4	4	5	4	4	4	90
10039137157	Firliani Sarah	21	Student	1-2 years	5	5	5	4	5	4	5	4	2	3	4	4	4	5	4	4	4	4	90
10039688896	rizky gian pratama	22	Student	1-2 years	4	4	3	5	3	4	4	2	4	5	4	2	4	4	3	4	4	4	75
10041142378	Harrys	20	Student	1-2 years	4	5	3	4	5	4	3	4	4	4	4	4	3	3	2	3	3	3	70
10054347521	Hendra yoga wiguna	29	Employee	1-2 years	5	5	4	5	5	5	5	4	5	5	5	5	5	5	5	5	5	5	90
10039679963	Isabella Sekarwangi	20	Employee	Above 2 years	5	5	4	4	4	4	5	4	3	4	5	4	5	5	5	5	5	4	80
10040481416	Janitra	21	Student	1-2 years	5	5	5	5	4	5	5	4	3	4	5	4	5	5	5	4	5	4	100
10039557611	S	20	Student	Above 2 years	5	5	4	4	5	4	4	4	3	4	4	3	5	4	5	4	4	4	75
10039637586	Mayang K	22	Student	Above 2 years	5	5	3	4	5	4	3	4	4	4	4	4	4	4	4	4	4	4	85
10039051824	Merghan Markle	22	Student	1-2 years	4	5	3	4	5	4	4	4	4	4	4	4	4	5	4	3	3	4	80
10039942033	JS	22	Student	6-12 months	4	3	2	4	5	3	4	3	4	4	3	3	4	2	4	3	4	3	75
10039624080	Mona	22	Student	Above 2 years	5	5	3	5	4	5	5	4	5	5	3	5	5	5	5	5	3	4	75
10039340249	Alif Hamonangan	21	Student	1-2 years	5	4	3	5	5	5	5	4	3	4	4	5	4	4	5	5	4	4	95

Respondent ID	Name	Age (years old)	Occupation	Length of Use	Question Number (GO-JEK)																		
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20
10039349162	Wijono imam pamudji	57	Employee	6-12 months	4	4	3	4	4	4	4	3	3	4	4	4	4	4	3	3	3	3	80
10041255679	Winahyu Tyas Wicaksana	21	Student	Above 2 years	5	3	4	4	5	5	5	4	5	5	3	3	5	5	3	3	5	4	80
10048109543	Radifan Fitrach Muhammad	21	Student	1-2 years	4	5	4	4	4	4	5	4	3	4	4	4	5	5	4	4	4	5	85
10039695178	Lazuardi Al-Muzaki	21	Student	6-12 months	5	4	4	5	4	4	2	5	3	5	4	5	5	4	4	5	2	4	90
10039114530	Zulfa Keva	22	Student	6-12 months	4	4	4	3	4	3	4	3	3	4	3	4	5	4	5	3	4	4	80
10040173535	Zulyano R.	20	Student	Above 2 years	5	4	3	4	5	3	5	3	3	3	4	3	5	5	5	5	5	4	80
10041236583	Reza	21	Student	6-12 months	4	3	5	5	3	4	3	4	5	5	5	5	5	5	4	4	5	4	80
10039681927	alya	21	Student	1-2 years	4	3	4	3	5	4	5	3	2	3	4	4	4	4	5	5	4	4	90
10039334669	Naisha	21	Student	1-2 years	4	4	4	3	4	4	5	2	4	3	4	3	4	4	5	4	4	3	75
10039020347	Badruddin	22	Student	6-12 months	4	3	4	3	5	4	3	2	2	4	5	3	4	4	3	3	2	3	60
10039018010	prajoko	21	Student	1-2 years	4	4	4	3	4	3	3	3	3	3	3	3	3	3	3	3	3	3	60
10050126320	Mohammad Fajri	20	Student	Above 2 years	5	5	5	5	4	4	5	5	4	5	5	5	5	5	5	4	5	5	100
10048492735	Laily	19	Student	Below 6 months	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	100
10039042728	nina	22	Student	1-2 years	5	5	2	4	5	5	5	4	3	5	4	4	5	5	5	5	4	4	75

Respondent ID	Name	Age (years old)	Occupation	Length of Use	Question Number (Mobile Legends)																	
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20
10039653643	Diva	18	Student	6-12 months	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	70
10050255314	M. K. Fakhri S	22	Student	Above 2 years	5	5	2	5	5	4	4	4	3	3	3	3	4	4	4	3	4	4	90
10045649497	FATMA CAHYANI	21	Student	6-12 months	4	3	3	4	4	5	4	5	3	5	4	4	3	4	4	4	3	4	70
10039931726	Fauzi Firmansyah	22	Student	1-2 years	5	4	3	4	5	5	4	4	5	4	5	5	4	5	5	5	5	5	90
10041219572	Fazat	20	Student	6-12 months	5	5	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	95
10050149312	Furqon Adi Premono	20	Student	1-2 years	5	5	3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	100
10039687743	Desak Gede Gita	19	Student	6-12 months	3	3	4	5	5	5	5	5	5	2	4	4	4	4	4	4	5	5	65
10043170755	Habieb	21	Student	1-2 years	3	5	2	5	5	5	5	4	5	5	5	5	3	5	4	4	4	4	85
10050156135	Haris Resky P	21	Student	1-2 years	5	4	2	4	4	4	3	4	4	3	5	4	4	5	4	4	2	2	80
10039076640	Iko	22	Student	Above 2 years	4	5	2	4	3	4	4	4	4	3	3	5	2	2	2	3	4	4	70
10050170613	jaka fitriansyah	18	Student	6-12 months	4	3	3	3	3	3	4	4	3	3	4	4	4	3	3	4	4	4	80
10039051802	Muhammad Fauzan	23	Student	Below 6 months	3	3	4	2	1	2	2	2	4	1	3	4	4	3	4	2	4	2	45
10039266996	Noval	22	Student	6-12 months	4	3	2	4	3	5	3	5	4	5	5	4	5	5	4	5	5	5	85
10050162284	Kina F. Cahyani	17	Student	1-2 years	1	5	1	1	5	4	2	5	5	2	1	4	2	5	4	5	4	4	75
10050121250	Reza Ega	21	Employee	Below 6 months	5	4	3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	90
10056199536	Rinanda aulia Rafi	22	Student	Below 6 months	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	80
10050468092	Riuges Gautama	13	Student	1-2 years	5	5	3	5	5	3	5	5	5	3	5	5	5	5	3	3	5	3	100

Respondent ID	Name	Age (years old)	Occupation	Length of Use	Question Number (Mobile Legends)																	
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20
10080314192	Bagus	22	Student	1-2 years	4	4	4	4	5	2	2	4	2	4	2	2	4	2	3	3	3	3	75
10080313936	Nabila ulfa	22	Student	6-12 months	3	5	2	5	4	4	4	5	5	5	2	2	4	3	4	4	4	4	85
10080241065	Kurokami	19	Student	6-12 months	4	3	3	3	2	2	1	2	3	3	4	2	3	3	3	3	2	1	30
10080221054	Fitri	22	Student	Below 6 months	4	4	4	4	3	4	5	5	4	5	4	5	5	5	4	4	4	4	80
10080211653	Cahyo Permadi	22	Employee	Below 6 months	4	4	3	4	3	3	2	3	3	4	3	3	3	3	3	3	3	3	75
10079863109	Pandu	24	Entrepreneur	6-12 months	5	2	2	4	4	4	4	4	2	4	4	4	3	2	4	4	3	4	65
10079814261	Hans Stevanus	21	Student	Below 6 months	4	3	4	4	3	4	3	4	2	4	4	4	3	4	4	4	4	4	75
10079744510	Nabila	21	Student	6-12 months	4	4	4	4	3	3	3	4	3	4	4	4	4	4	3	3	4	4	55
10079738319	Kharis putra indrayatna	22	Student	Below 6 months	4	3	2	3	3	3	3	4	3	3	2	2	4	4	4	4	3	3	80
10079735292	Endar Adi Sasmito	21	Student	6-12 months	5	4	4	5	3	3	3	4	3	3	4	3	4	5	3	3	4	5	85
10079699067	Jason Albert	16	Student	1-2 years	5	5	2	4	5	4	4	4	5	4	5	3	4	2	3	4	2	5	80
10079668618	Zsuren	21	Student	1-2 years	4	4	2	3	4	4	4	4	3	3	3	4	4	4	4	3	3	4	80
10079649876	Fajrin	21	Student	Below 6 months	4	5	4	4	4	5	5	5	3	4	3	3	5	4	4	3	4	5	80
10079608392	Marisa	23	Student	6-12 months	4	4	3	4	5	4	4	4	4	4	4	4	4	4	4	4	4	4	75
10079588991	Mahardika	20	Student	Below 6 months	4	4	4	4	5	4	3	5	4	4	5	4	4	4	3	4	5	4	85
10079581734	Darmawan Nugraha	23	Student	1-2 years	5	1	3	2	3	3	3	2	2	1	1	2	4	1	2	2	2	2	20
10079581526	Dika	23	Student	Below 6 months	4	5	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	70
10079536366	Dwi Wahyu Ramadhan	22	Student	6-12 months	4	4	4	4	4	4	3	4	3	4	4	4	4	4	4	4	4	4	85
10079520789	Nindy	21	Student	6-12 months	4	4	3	3	4	3	4	4	4	3	3	4	4	3	3	3	4	4	75
10079517953	Paksi ario	20	Student	1-2 years	5	3	4	4	3	3	2	3	4	3	4	4	4	3	3	3	3	3	70

Respondent ID	Name	Age (years old)	Occupation	Length of Use	Question Number (Mobile Legends)																	
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20
10039852893	Ardhan	22	Student	6-12 months	4	3	2	3	3	2	4	4	3	3	5	4	5	4	3	4	3	2	60
10051303638	Odie	32	Entrepreneur	1-2 years	5	5	4	4	4	4	4	4	3	4	4	4	4	3	3	3	3	3	75
10048100214	alif	22	Student	Below 6 months	5	3	2	3	1	4	2	2	4	4	4	3	4	3	3	4	3	4	70

Appendix 5: KUE Questionnaire Result Complete Data Recapitulation

KUE Questionnaire's result complete data recapitulation for number 19 only

Respondent ID	Name	Question Number (GO-JEK)
		19
10050755916	Arya	Mudah mencari driver secepat kilat
10050562693	ASW	Biasa saja
10050109547	Aufa	Ntapz
10050146884	Danang Permana	Sangat update, terutama pada fitur gofood, menarik setiap event tampilan sekalu berbeda, contoh : event star wars. Pada event tersebut semuan pengendara diubah tampilannya di aplikasi tersebut dengan pesawat star wars
10048115052	Daniel William Manurung	Cuma orang yang baru pegang internet yang kesulitan menggunakan aplikasi GO-JEK dan nggak suka sama tampilannya
10050121134	Danu Wardoyo	Mudah dipakai karena mantap
10043147265	Dionisius Andre	Fitur utama nya sudah mudah digunakan, tapi fitur voucher dan token nya masih tidak tersusun dengan baik
10039653643	Diva	Saya suka go food

Respondent ID	Name	Question Number (GO-JEK)
		19
10050162284	Kina F. Cahyani	Pengunaannya mudah tetapi dengan tatanan layout seperti itu sangat menyusahkan bagi yg memiliki kesulitan penglihatan, membuat tema mungkin bisa menjadi salah satu solusi
10050121250	Reza Ega	Good sangat membantu, mudah digunakan, generasi2 tua pun tidak kesusahan. Sudah menarik motornya bisa gerak2 begitu SEMANGAT DAM
10056199536	Rinanda aulia Rafi	Sudah sangat baik
10050468092	Riuges Gautama	Pendapat saya tntg gojek adalah bagus, karna memper!udah segalanya
10039044211	Rizki	Gojek sering melakukan perbaikan pada appnya. Dan sampe skrg app gojek semakin sederhana dan mudah digunakan
10051325716	Ach. Nafila Rozie	Cukup mudah digunakan, interface baik, kustomisasi tinggi jadi sesuai dengan kebutuhan penggunanya.
10039050144	Sandi Widyatama	Mudah
10039639741	Yusuf dimas hermawan	Lumayan mudah untuk digunakan dengan user interface yang membantu user lebih memahami fungsi dan cara kerjanya
10050220224	Zam	Sangat mempermudah kepentingan masyarakat karena memberikan solusi yg d butuhkan
10050710513	Luluk	Pada saat memperbarui aplikasi gojek yg baru agak bingung, tp ketika sudah melakukan cara cara nya jadi lebih dipermudah dengan adanya perbaruan tersebut
10049941758	aldi	bagus bagus saja
10039692818	Ahmad	Mudah euy
10041249897	Fahmi rizal	Icon mudah dipahami. Semua menu yang paling seting digunakan diperlukan ditampilkan di layar utama, dapat memikih prioritas layanan yang sering digunakan untuk ditampilkan di menu utama

Respondent ID	Name	Question Number (GO-JEK)
		19
10039047328	Farras Rahardini A	Pilihan layanan sudah langsung ada di halaman utama, sehingga tidak perlu susah mencari. Pada saat melakukan pemesanan, petunjuk dan icon mudah dipahami. Secara keseluruhan prosesnya sederhana. Dari sisi tampilan sudah cukup bagus
10039037048	felicius rindy kurniawan	penggunan gojek membantu pelanggan dengan mudah melakukan pesanan dan praktis cocok untuk zaman sekarang mungkin kedepan lebih ditambahkan beberapa menu untuk yang dapat mengakomodir pelanggan lagi contohnya bengkel berjalan desain dan tampilan cukup menarik mungkin perlu ditambahkan ukuran fontnya agar lebih mudah dilihat khususnya untuk yang rabun jauh atau dekat
10041371467	Fihan	Aplikasi Go-Jek midah digunakan, tombol navigasinya jelas, begitu pula tampilan penggunanya. Animasi cukup cepat. Tampilan tidak ribet.
10039137157	Firliani Sarah	Yang sekarang simpel banget sukaaa gak ribet
10039688896	rizky gian pratama	cukup lanjutkan ekspansi oke
10041142378	Harrys	Harap diperbaiki app nya sehingga tidak terjadi crash
10054347521	Hendra yoga wiguna	Desain interface yang simple mempermudah user untuk menggunakan aplikasi ini. Tanpa harus kebingungan untuk mencari icon untuk melakukan pemesanan
10039679963	Isabella Sekarwangi	Tampilannya jadi mirip dengan grab versi dulu. Jadi tidak ada uniknya. Lebih suka dengan tampilan gojek yg mengikuti trend spt tema starwars saat itu.
10040481416	Janitra	GO-JEK sekarang bisa beli tiket online Liga1
10039557611	S	Sangat mudah untuk penggunaannya tp tampilannya biasa saja
10039637586	Mayang K	tampilan gojek yang sekarang sudah lebih baik dan membatu saya dalam memilih tools yg saya perlukan (gofood/goride/gocar) dan bisa lebih fokus pada yang sering saya gunakan. tampilannya juga menarik dan selalu ada notifikasi ketika pesanan saya diterima maupun diantar. Tetapi go-life sudah menjadi aplikasi yang berbeda dengan gojek menyebabkan saya kadang bolak balik aplikasi gojek-golife karena fitur2 yang dipisahkan

Respondent ID	Name	Question Number (GO-JEK)
		19
10039051824	Merghan Markle	Menarik krn sekarang malah ada fitur chatnya. Dan petunjuk otomatis
10039942033	JS	Nice
10039624080	Mona	Mudah dan banyak fitur, pengaduan cepat ditanggapi, tetapi ketika pesan goride atau gocar kurang bisa diliat rider sudah sampai mana karna tertutupi harga, dan tidak bisa untuk memesankan orang lain jika posisi ho saya tidak berada di tempat tersebut, sehingga kurang efisien
10039340249	Muhammad Alif Hamonangan	Inprovement aplikasi gojek cepet, segmentasi jasanya luas, marketingnya menarik
10039323584	Nabilla Qhusna	Sebenernya udah bagus sekarang, tapi lebih mudah dipahami yang dulu daripada sekarang navigasinya
10039540788	Nadya ARA	Lebih mudah dari aplikasi yg lain
10050387289	Naufal	Sangat mudah digunakan, tutorial di internet maupun youtube juga banyak
10041722129	nian qisthi	aplikasi tidak terlalu rumit dan mudah digunakan????tampilan juga memudahkan kita menggunakannya.
10040164413	Niar	Cara pemesanan sudah didesain step by step sehingga mudah untuk dipahami. Bagian yang menarik adalah ketika ada event tertentu, tampilan armada pada gojek akan berubah mengikuti tema.
10039675524	Nur Fitria Ningsih	Sangat mudah digunakan namun pernah terjadi error, tampilan aplikasi gojek semakin menarik saat ini
10039793157	Ochi	Menurut saya, Gojek merupakan aplikasi yang efektif dan efisien dalam membantu aktivitas sehari-hari masyarakat. Tampilannya pun lumayan bagus dalam menggunakan Gojek
10039675821	Putra	Cukup baik, cukup menudahkan penggunaan
10039681884	Regita	Simple, informatif, easy use

Respondent ID	Name	Question Number (GO-JEK)
		19
10048109543	Radifan Fitrach Muhammad	Mantap lah gojek
10039695178	Lazuardi Al-Muzaki	Sangat inventif, aplikasi Gojek memiliki interface yang sederhana namun appealing bagi user bahkan awam sekalipun
10039114530	Zulfa Keva	Bisa digunakan kapan saja Tampilannya menarik tapi perubahan yang paling baru agak membingungkan (tiap logo beda warna dan ada pemilihan top 5 layanan yg selalu digunakan shg yg lain tidak selalu muncul)
10040173535	Zulyano R.	Bagus dan mudah
10041236583	Reza	Menarik, dan sejauh ini bersahabat dengan koneksi terbatas
10039681927	alya	mudah digunakan&membantu pengguna karena di home app banyak tawaran2 yg menarik&banyak dibutuhkan pengguna
10039334669	Naisha	User friendly
10039020347	Badruddin	Mudah, tapi sulit untuk orang tua
10039018010	prajoko	sekarang mahal
10050126320	Mohammad Fajri Satriawansyah	saya selama ini sangat mudah menggunakan aplikasi gojek dan tampilannya menarik #gojekid #lezatnikmat
10048492735	Laily	mudah digunakan dari saat pertama kali di install, sangat user friendly
10039042728	nina	good

Respondent ID	Name	Question Number (Mobile Legends)
		19
10045649497	FATMA CAHYANI	-
10039931726	Fauzi Firmansyah	Game Mobile Legends jauh lebih menarik dan lebih mudah dioperasikan dibandingkan game se-tipe lainnya

Respondent ID	Name	Question Number (Mobile Legends)
		19
10041219572	Fazat	Gamenya bisa dimainin di hp itu udah emang enak bgt. Warna dan grafisnya nggak ngganggu mata. Character designnya menarik. Pemula akan langsung paham cara memainkannya. Karena ada tutorial di awal yang juga membantu
10050149312	Furqon Adi Premono	gameplay yang mudah dipahami serta beberapa tutorial untuk pengguna baru mempermudah user
10039687743	Desak Gede Gita Dian Kirana	Asyik soro
10043170755	Habieb	Pemain yang gabisa main diapus aja akunnya
10050156135	Haris Resky P	Untuk kontrol dan cara bermainya mudah di pahami bagi pemula jadi sangat bagus. Dari segi grafik itu menurut kurang. Jadi harus di tinggkatkan dari segi grafik nya
10039076640	Iko	Kadang bingung sama tampilanya
10050170613	jaka fitriansyah	Lumayan
10039051802	Muhammad Fauzan	terlalu 2d, tidak ada pembaruan interface,
10039266996	Noval	Terdapat paduan manual pada permainan awal. Sehingga dasar2 permainan dapat difahami secara langsung oleh pemain, atau semacam buku manual dalam game. Dalam hal tampilan, sudah memuaskan.
10050162284	Kina F. Cahyani	Secara tampilan emang sih rada kuno plus waena" yg digunakan masih dalam monokrom yang sama, kebiru ungu an , secara navigasivsedikit rumit karena terlalu banyak sub direktori
10050121250	Reza Ega	Goood
10056199536	Rinanda aulia Rafi	Sudah lumayan
10050468092	Riuges Gautama	Menurut saya game mobile legends itu adalah game moba klasik di hp yg sangat mudah dimainkan, menariknya karna di hp kita bisa main bareng teman
10039044211	Rizki	Walaupun msh ada sedikit kekurangan pada saat penggunaan, seperti lag, lambat, dll, tp scr overall ml msh bagus

Respondent ID	Name	Question Number (Mobile Legends)
		19
10051325716	Ach. Nafila Rozie	Interface bagusss, heronya banyak, banyak improvement jadi ga gampang lag kayak pas awal2 terbit
10039050144	Sandi Widyatama	Kurang menarik, Pindah AOV aja
10039639741	Yusuf dimas hermawan	Mudah digunakan dan lumayan menarik
10050220224	Zam	Sangat menarik karena menjadi slaah satu alternatif untuk sarana hiburan
10050710513	Luluk	Mobile legends membuat lupa akhirat
10049941758	aldi	biasa saja
10081165486	clara cynthia deby	user friendly, ga ribet maininnya
10081052460	Anargya Widyadhana	Terdapat petunjuk-petunjuk saat pertama kali membuka aplikasi yang disampaikan lengkap, fitur-fitur dalam aplikasi mudah dipahami, memiliki tampilan dan warna yang menarik dan menarik minat orang untuk bermain.
10080876391	Samuel Theophilus	Cukup mudah
10080600261	Danny	Cukup mudah dipahami, hanya saja tampilan atau grafisnya masih kurang bagus
10080599339	Anne	-
10080592393	Imanuel	Bisa bermain bersama temen dan bersosialisasi dengan orang lain
10080578080	Sarah	-
10080424087	Aulia	Easy to use and entertaining
10080422329	Wahda	Bagus
10080368045	Qaedi Amani	Game moba secara umumnya
10080343708	Desthri Rhamawati	semua ada petunjuknya
10080327928	Anindya	Mudah dan menarik
10080314192	Bagus	Thanks

Respondent ID	Name	Question Number (Mobile Legends)
		19
10079581734	Darmawan Nugraha	Gamenya buat ngisi waktu luang aja. Jadi ya biasa saja
10079581526	Dika	Simple menarik
10079536366	Dwi Wahyu Ramadhan	Secara keseluruhan grafis, game play, update beberapa figur dan kemudahan login sudah cukup baik, good job
10079520789	Nindy	Biasa aja
10079517953	Paksi ario	Game nya mudah digunakan walaupun ada kekurangan karena menggunakan smartphone, lalu tampilannya menarik tetapi menurut saya tampilan saat dimenu awal terlalu banyak hal yang dipaksakan untuk ada
10079493476	Wisnu	Game ML mudah dipahami karna simple nya permainan dan fungsi tiap hero dan menariknya dari game ini tier dari tiap permainan yg dapat naik turun sesuai kemenangan
10079493415	Zaky	Gambar menjadi semakin baik. Ada mode2 game tambahan juga. Permainan sepeeti miba pada umumnya.
10079491974	Firdha Pristiyanti	Ga ada yang mudah di mobile legend, udah hampir 2thn main masih stuck di rank epic
10079401356	Rachma Dwi	Menarik pol
10079385737	Fabiano	bagus, seru dimainkan
10070413237	Akbar Prihadi J.	Fungsi aim advance nya lumayan memuaskan
10050452789	Aaliyah	Mudah mainnya kau emang sering di mainkan. Tampilannya juga menarik dan bikin betah main
10050171541	Edo Setiawan	Game gratis, bisa di download kapan aja, dimainkan oleh siapa saja, dan bisa di mainkan dg spek hp tidak terlalu tinggi Tampilan cukup menarik karena selalu update
10054194299	Iim	Uinya dibuat dengan apik, untuk uxnya juga mudah dimengerti, dengan memberikan tutorial diawal, memberikan tanda notifikasi membuat saya lebih mudah memahami alur dari game ini. Tampilannya sudah cukup, warna tidak menyakiti mata, tata letak juga sudah baik.
10050158251	sasa	keren lah
10048091149	Mohammad Iqbal K G	Mudah dioperasikan tapi terlalu rame
10048274355	Kathleen	Moblie legend itu adalah sebuah game yang menari sekali untuk di mainkan terutama gamers

Respondent ID	Name	Question Number (Mobile Legends)
		19
10050568909	fadli	perlu pembiasaan untuk orang awam, namun untuk mantan pemain dota cepat membiasakan
10051511937	Pandu Surya	Sangat mudah, sangat menarik
10045302250	Rahmat Hamidin Shaleh	Sangat mudah, dengan tampilan yang cukup menarik dan posisi dari control nya mudah untuk dijangkau oleh jari
10039932869	Semut	bagus
10050370430	Simao N Cardoso	Mantap
10050170943	Misbah	.
10039852893	Ardhan	Kalau saja server dan matchmakingnya tidak ngaco mungkin saya masih main
10051303638	Odie	Mudah, tampilan kurang smoot
10048100214	alif	mudah dan toxic

AUTHOR'S BIOGRAPHY

Rizki Adam was born in Padang, April 21st 1996. Author was the son of three siblings from Dedi Ems and Syofina Yulius. The author had graduated from formal education in a public kindergarten school in Surabaya, SDN Barata Jaya Surabaya, SMP Al Hikmah Surabaya, SMA Al Hikmah Surabaya, and is currently studying as Undergraduate (S1) Student in Industrial Engineering Department of Institut Teknologi Sepuluh Nopember Surabaya. Author has many organizational experiences, some of them such as the staff & expert staff of Social Department in HMTI ITS and the leader of Akatara UMTI. The author currently enlisted as the assistant of Logistic and Supply Chain Management Laboratory. The author has a professional work experience from the internship in PT Pertamina EP, South Jakarta. The author could be contacted from several media, which is listed below.

Address : Jl. Bratang Gede 6E/31, Ngagelrejo, Wonokromo, Surabaya
Email : rizkiadam2104@gmail.com / rizki.adam14@mhs.ie.its.ac.id