

**UNIVERSITI TEKNOLOGI MARA**

**A CONCEPTUAL MODEL OF  
STUDENT ACADEMIC AFFAIR  
CHATBOT PERSONALITY-  
KAPFERER BRAND IDENTITY  
PRISM INTEGRATION IN  
ORGANIZATIONAL BRANDING**

**NUR KHALEEDA BINTI MOHD AMIN**

**BACHELOR OF INFORMATION  
TECHNOLOGY (Hons.) INFORMATION  
SYSTEMS ENGINEERING**

**JANUARY 2019**

**Universiti Teknologi MARA**

**A Conceptual Model of Student  
Academic Affair Chatbot Personality-  
Kapferer Brand Identity Prism  
Integration in Organizational Branding**

**Nur Khaleeda binti Mohd Amin**

**Thesis submitted in fulfilment of the requirements  
for Bachelor of Information Technology (Hons.)  
Information Systems Engineering  
Faculty of Computer and Mathematical Sciences**

**January 2019**

## **SUPERVISOR APPROVAL**

### **A CONCEPTUAL MODEL OF STUDENT ACADEMIC AFFAIR CHATBOT PERSONALITY- KAPFERER BRAND IDENTITY PRISM INTEGRATION IN ORGANIZATIONAL BRANDING**

By

**NUR KHALEEDA BINTI MOHD AMIN  
2016577571**

This thesis was prepared under the supervision of thesis supervisor, Dr. Elin Eliana binti Abdul Rahim and co-supervisor, Dr. Hazlifah binti Mohd Rusli. It was submitted to the Faculty of Computer and Mathematical Sciences and was accepted in partial fulfilment of the requirements for the degree of Bachelor of Information Technology (Hons) Information Systems Engineering.

Approved by

.....  
Dr. Elin Eliana Binti Abdul Rahim  
Project Supervisor

.....  
Dr. Hazlifah Binti Mohd Rusli  
Project Co-Supervisor

JANUARY, 2019

## **STUDENT DECLARATION**

I certify that this report and the project to which it refers is the product of my own work and that any idea or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.

.....  
NUR KHALEEDA BINTI MOHD AMIN  
2016577571

JANUARY, 2019

## **ACKNOWLEDGEMENT**

Alhamdulillah, praises and thanks to Allah because of His Almighty and His utmost blessings, I was able to finish this research within the time duration given. I am grateful to Him for the good health and wellbeing that were necessary to complete this research. Firstly, I would like to express my sincere gratitude to my supervisor, Dr. Elin Eliana binti Abdul Rahim and my co-supervisor, Dr. Hazlifah binti Mohd Rusli for aiding and guiding me throughout the year. I could not have imagined having a better supervisor and co-supervisor for my research study. I am indebted for their valuable comments, involvement and advices on this research.

I must express my very profound gratitude to my beloved parents, Mohd Amin Zakaria and Zaharatul Laily binti Mohd Yusof as well as my family for their endless emotional and financial supports given to me from the beginning until the end of my journey in finishing this research especially when I feel like giving up. None of this could have happened without them.

Finally, I would like to give my gracious gratitude to my dearest friends and classmates for their encouragement and insightful feedbacks. I really appreciate all of the cooperation given to me, particularly with the problems that I had encountered during the process of completing this research.

This accomplishment would not have been possible without them. May Allah bless all of you.

Thank you.

## ABSTRACT

Chatbot has grown immensely popular through the years in assisting people to navigate their daily task. Chatbot can be understood as a software that interacts with human by using natural language. Numerous of big companies implement chatbot on their daily operation to provide timeless and fast response to their customers, which usually available on mobile phone or web. However, lack of personality element in chatbot leads to boring conversation and become less memorable since it has no unique characteristics to differentiate the chatbot from one another. In addition, less research related to chatbot personality is conducted. With the intention of solving the problems, a research on chatbot personality is done. A chatbot prototype is developed with the inclusive of personality traits and attributes. The personality traits are determined by using the Five Factor Model of Personality (FFM). Daniel chatbot is designed to mimic one of the student academic affair staffs. An experiment was conducted with 20 participants using two chatbots, one without personality (Chatbot A) and one with personality (Chatbot B), followed by answering a set of questionnaires and one-to-one interviews with the participants discussing their experience with each of the chatbots. The evaluation of user perception was analyzed in both qualitative and quantitative methods. The results show that most of them prefer the chatbot with personality on account of its friendliness and appear to be less robotic, as well as provides clear and useful information. On the other hand, this research is using t-test to assess the hypothesis between the relationship of chatbot personality and user experience. A conceptual model of chatbot personality is developed based on the analyzed data. The recommendation for this research is to validate and enhance the chatbot personality conceptual model.

# TABLE OF CONTENTS

<b>CONTENT</b>	<b>PAGE</b>
<b>SUPERVISOR APPROVAL</b>	ii
<b>STUDENT DECLARATION</b>	iii
<b>ACKNOWLEDGEMENT</b>	iv
<b>ABSTRACT</b>	v
<b>TABLE OF CONTENTS</b>	vi
<b>LIST OF FIGURES</b>	x
<b>LIST OF TABLES</b>	xi
<b>LIST OF ABBREVIATIONS</b>	xii
<b>CHAPTER ONE: INTRODUCTION</b>	1
1.1 Background of Study	1
1.2 Problem Statement	6
1.3 Research Aim	7
1.4 Research Objectives	7
1.5 Project Scope	7
1.6 Research Significance	8
1.7 Expected Outcome	9
1.8 Outline of Research	9
1.9 Summary	9
<b>CHAPTER TWO: LITERATURE REVIEW</b>	11
2.1 Chatbot	11
2.1.1 Applications of Chatbot	13
2.1.2 Advantages of Chatbot	14
2.1.3 Challenges of Chatbot	15
2.2 Review of Existing Chatbots	16

2.2.1	Bus Uncle	16
2.2.2	RHB Chatbot	17
2.2.3	Replika	19
2.2.4	Comparison Between the Chatbots	20
2.3	Brand Identity	22
2.3.1	Importance of Brand Identity	23
2.4	Existing Brand Identity Conceptual Models	24
2.4.1	Kapferer Brand Identity Prism	25
2.4.1.1	Kapferer Brand Identity Prism – ‘Personality’ Element	27
2.4.2	De Chernatony Brand Identity Model	29
2.4.3	Aaker Brand Identity Model	31
2.4.4	Comparison of Brand Identity Conceptual Model	32
2.5	Personality	33
2.5.1	The Five Factor Model of Personality	35
2.5.2	Discussion on Personality Theory	37
2.6	Relationship Between Chatbots and Brand Identity	39
2.7	User Experience	39
2.8	Discussion	40

## **CHAPTER THREE: METHODOLOGY** 43

3.1	Research Design	43
3.1.1	Experimental Design	43
3.1.2	Survey	43
3.1.3	Pilot Test	44
3.2	Research Approach	45
3.2.1	Qualitative Approach	45
3.2.2	Quantitative Approach	46
3.3	Phases of Research Process	46
3.4	Knowledge Acquisition	48
3.4.1	Review and Analyze on The Existing Brand Identity Conceptual Model	48
3.4.2	Study the Existing Chatbots	49
3.5	Prototype Development	50
3.5.1	Design the Chatbot Prototype	50
3.6	Data Collection	51

3.6.1	Recruit Participants	51
3.6.2	Prepare Experiment Plan	52
3.6.3	Conduct the Experiment	52
3.7	Data Analysis	52
3.7.1	Data Gathered from the Experiment	53
3.7.2	Develop a Conceptual Model Based on the Analyzed Data	53
3.8	Summary	53
<b>CHAPTER FOUR: FINDINGS AND ANALYSIS</b>		<b>54</b>
4.1	Knowledge Acquisition	54
4.1.1	Review and Analyze the Existing Brand Identity Conceptual Model	54
4.1.2	Study the Existing Chatbots	56
4.1.3	Information Regarding Brand Identity and Existing Chatbots	58
4.2	Prototype Development	58
4.2.1	Designing Chatbot Personality	58
4.2.2	Chatbot Character and Appearance Description	60
4.2.3	Personality of the Chatbot based on The Five Factor Model	61
4.2.4	Platform to Build Chatbot	62
4.2.5	Chatbot Prototype Conversational Flow	64
4.2.6	Chatbot with Personality versus Chatbot without Personality	66
4.2.7	Chatbot Prototype	67
4.3	Data Collection	68
4.3.1	Recruit Participant	69
4.3.2	Experiment Plan	69
4.3.3	User Experience (UX) Questionnaire	71
4.3.4	Personality Traits Questionnaire	72
4.3.5	Interview	74
4.3.6	Procedure	75
4.3.7	Conduct the Experiment	75
4.3.8	Experiment Data	76
4.4	Data Analysis	78
4.4.1	Results	78
4.4.2	Statistical Analysis of the Data Gathered from the Experiment	84
4.4.3	Develop a Conceptual Model Based on the Analyzed Data	85

4.4.4	Conceptual Model of Chatbot Personality	87
<b>CHAPTER FIVE: CONCLUSION AND RECOMENDATION</b>		<b>88</b>
5.1	Research Conclusion	88
5.2	Research Limitations	89
5.3	Recommendations for Future Work	90
5.4	Summary	91
<b>REFERENCES</b>		<b>92</b>
<b>APPENDICES</b>		<b>105</b>
APPENDIX A: USER EXPERIENCE QUESTIONNAIRE (UEQ-S)		105
APPENDIX B: PERSONALITY TRAITS QUESTIONNAIRE		107
APPENDIX C: INTERVIEW QUESTIONS STRUCTURE		109
APPENDIX D: PARTICIPANTS' EVALUATION EVIDENCE		111
APPENDIX E: T-TEST FOR UEQ-S DATA ANALYSIS		113

## LIST OF FIGURES

<b>FIGURE</b>	<b>PAGE</b>
1.1 Kapferer Brand Identity Prism	2
2.1 A sample of conversation with ELIZA	12
2.2 Bus Uncle	17
2.3 RHB Chatbot	18
2.4 Replika	19
2.5 Brand Identity conceptual models	25
2.6 Kapferer Brand Identity Prism	25
2.7 'Personality' element in Kapferer Brand Identity Prism	27
2.8 David Beckham - one of the Pepsi's spokesperson	28
2.9 De Chernatony Brand Identity Model	29
2.10 Aaker's Brand Identity Model	31
2.11 Standard Chartered Chatbot	42
3.1 DialogFlow chatbot template	51
4.1 Kapferer Brand Identity Prism	56
4.2 BotFather interface to create chatbot account on Telegram	63
4.3 Creating intents in Dialogflow.api	63
4.4 Predefined small talks questions and answers	65
4.5 Defining humour questions and answers	65
4.6 Interface of Daniel chatbot on Telegram	66
4.7 Flow of the data collection process for the experiment	69
4.8 User Experience questionnaire	72
4.9 Personality traits questionnaire	74
4.10 Comparison between two chatbots based on qualitative study	76
4.11 The conceptual model of chatbot personality	86

## LIST OF TABLES

<b>TABLE</b>	<b>PAGE</b>
1.1 Outline of Research	9
2.1 Comparison Between Chatbots And Their Personality Traits	21
2.2 Kapferer Brand Identity Prism Elements Description	26
2.3 De Chernatony Brand Identity Model Aspects	30
2.4 Aaker's Brand Identity Model Perspectives	32
2.5 Conceptual Models and Its Components	33
2.6 The Five Factor Dimension and Its Traits	37
2.7 Comparison Between Two Personality Theories	38
3.1 Chatbot Personality Phases	47
4.1 Five Factor Model and High Range Personality Traits	57
4.2 Five Factor Model dimension and description	62
4.3 Example of FAQs for Student Academic Affair	64
4.4 Difference of The Chatbots In Responding to User's Request	67
4.5 Set of Predefined Questions	70
4.6 Scales of UEQ-S	71
4.8 User Experience Data Collection	77
4.9 Personality Traits Data Collection	77
4.7 Interview Data	79
4.10 Participants' Level of Agreement for User Experience Questionnaire	80
4.11 Participants' Level of Agreement for The Personality Traits Questionnaire	82
4.12 <i>P</i> -Value for Each Statement	84

## **LIST OF ABBREVIATIONS**

UiTM	Universiti Teknologi Mara
FAQ	Frequently Asked Question
UX	User Experience
FFM	Five Factor Model
UEQ-s	User Experience Questionnaire

# CHAPTER 1

## INTRODUCTION

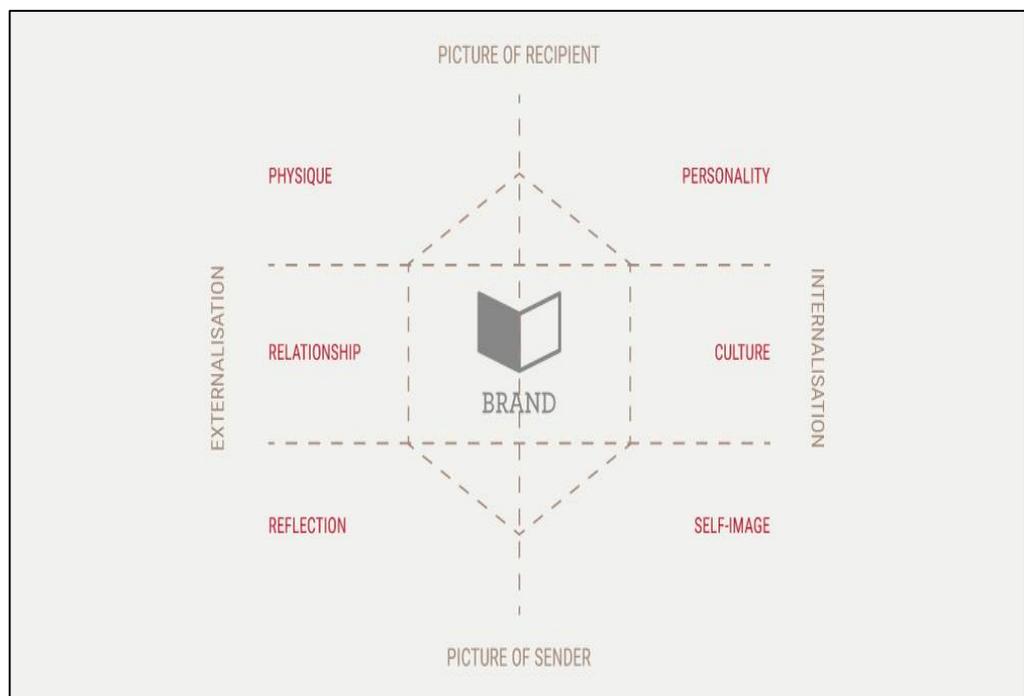
Chapter 1 provides an overview of the research on chatbot personality in the context of organizational brand identity which is in the background of study, problem statement, aim, objective, scope, significance, expected outcome and summary of the research.

### 1.1 Background of Study

Organization can be well-defined as individual or group that work together towards achieving certain goals. There are two major types of businesses, profit business and non-profit business. Profit business is where they generate income and profit to the owner, whereas non-profit is a business that serves for public purposes. For instance, Apple Inc. is a famous profit business company and for non-profit business, Universiti Teknologi Mara (UiTM) Jasin is known as an organization that has approximately 5,000 local students and consists of 16 departments (academic and non-academic) such as Student Academic Affair, College Management Unit, Library, Counselling unit and others. Nonetheless, both utilize resources to support public demand and raise money since all business have commercial objectives.

An organization is being represented through its brand. A brand could be distinguished by name and symbol such as logo which is intended to determine the product or service offered by the organization and to differentiate those product or service from its competitors (Ghodeswar, 2008). These elements are known as brand identity. The first look through the brand identity, the customer can reflect the image of the organization and perceive clearly of what the organization does. For example, UiTM is recognized by its slogan, *Usaha, Taqwa, Mulia* and the organization's iconic colour which

are vivid violet and Prussian blue portrays their logo colour. On the other hand, famous company such as Apple Inc. is identifiable by the apple logo and it depicts their iconic product such as iPhone and iPad. However, in some organization, brand identity does not necessarily depend on the name and symbol such as logo to represent them. In fact, their brand identity is defined by the human in the organization itself, such as the employee and manager. For instance, Uniqlo is best known by the way their employees greet the customer with “*Welcome to Uniqlo*” as soon as the customer enters the shop. Therefore, brand identity can be defined as a unique set of characteristics that makes the brand exclusive (Mahdi, Mobarakabadi & Hamidi, 2015).



**Figure 1.1** Kapferer Brand Identity Prism

(Source: Kapferer, 1996)

Jean-Noel Kapferer is a specialist of marketing strategy. He introduced the Brand Identity Prism (refer to Figure 1.1) in his book called the Strategic Brand Management. Brand identity can be identified as the conception of brand identity that includes uniqueness, meaning and value, thus, making it different from its competitor. It portrays the unity and resilience of the brand.

Another explanation of brand identity is a brand relationship that the organization wish to make and establish strong relationship among the customer and brand (Sääksjärvi and Samiee, 2011). Harris & De Chernatony (2001) suggests that brand identity comprises values and goals of the organization, which together create a distinct brand that differs from one another.

Brand identity is important as it makes the organization special and promotes recognition to the customer. People tend to feel comfort and secure to deal with the company that they are familiar with. According to Jean-Noel Kapferer in his brand identity prism, he highlighted six main elements of prism which are physique, personality, culture, relationship, reflection and self-image. All of those core elements in brand identity prism will be used so that it can communicates to the customers (Kapferer, 2004).

Kapferer (2004) highlighted ‘personality’ in of the core elements in his brand identity prism (refer to Figure 1.1). Currently, personality is being represented in human such as the employees and managers of the organization. In context of business organization, it is really important to provide a good customer service since it will give first impression and it would have an impact to the customer’s perception. A study by De Haan (2018) stated that personality traits of employee is expected to be the key factor for customer satisfaction since it provides quality interaction. When a company hire a worker for customer service, they would hire a person with a good personality to sit at the front desk so that they can provide satisfying interaction and engage better with the customer rather than a worker with no personality, which may cause bad experience to the customer. Moreover, the brand personality indicates how the brand would communicate with the customer if it were to be represented as human in the organization, especially through human personality characteristics (Kapferer, 2008).

The recent growth in technology has shown an increase use of robots to assist human to perform task in easier and faster way. One example is the use of digitized human known as chatbot. Common usage of chatbot is to contact retailers, get recommendation, complete purchase and much more. For example, AirBnB, Evernote and Spotify have been using chatbots on Twitter to provide customer service all the time by quickly responding to question, attend customer complaints or simply track the status of an order. On the other hand, inspired by artificial intelligence technology, RHB bank have introduced a chatbot that assist the customer to apply for personal loan (Mat Rahim, Mohamad, Abu Bakar, Mohsin & Md Isa, 2018). This system is a partnership between RHB bank and RinggitPlus.com financial comparison website to assist their customer in applying personal loan. In addition, Bauer (2010) suggests technology leverage benefits not only to the customer, but also the employees to gain information quickly in a self-service manner.

Chatbot has come a long way and growing popular among business and consumer market in supporting people to navigate their task. A chatbot technology can be best visualized as a computer program that is used to interact with human in assisting them to complete a task and make them feel as if they are communicating with a real person. The basic idea of chatbot is using natural language processing (NLP) to respond to users' input such as over voice or text and recommend suitable information to the user. There are two primary ways where chatbots are available, via web-based application or standalone apps. Some popular example of chatbot include Siri for Apple product, Microsoft's Cortana and Cleverbot. Chatbots is a machine that is using natural language in order to interact with human (Shawar & Atwell, 2005).

In university, student academic affair is responsible in handling curriculum, monitoring academic management, manage student registration and course registration. Students need to be able to trust and rely on them especially when it is related to their journey of study in the university. It is one of the

most important organization in university. Students spend more time at student academic affair department especially during the beginning of the semester by asking question such class registration and timetable class. Some of the questions are frequently asked and the staffs of student academic affair have to answer the same questions repeatedly. Chatbot is a suitable application to answer the frequently asked questions (FAQ).

While chatbot have been widely used in organizations, many studies related to chatbot are focusing on the back end of the chatbot which include the engine and the logic algorithm. Less research is being done in focusing on the chatbot personality in a sense where it is a version of a digitized human. Schlicht (2016) reports that a successful chatbot is the one that the customer would use regularly if it maintains reliable value. Kapferer brand identity prism emphasized that an organization should have a personality. If human personality is being used to represent an organization, this raises the need to focus on the personality of chatbot as the representation of an organization. According to Abdul-Kader (2015), developing chatbot personality includes how the service may think and behave. Meanwhile, Yu, Xu, Black & Rudnicky (2016) stated that chatbot personality is referred on how the chatbot performs while interacting with its user. Therefore, why does chatbot that represent organization are not being focused on personality? The way chatbots are presented would have an impact on the customers' perception (Ciechanowski, Przegalinska, Magnuski & Gloor, 2018). This is considered important as chatbot is now in the same level as human since both are representing organization. Therefore, in order to gain trust and confidence from the customers, chatbot ought to be endowed with personality (Qian, Huang, Zhao, Xu & Zhu, 2017).

## 1.2 Problem Statement

Firstly, Chantarotwong (2006) stated that lacking of personality in chatbot leads to boring conversation. Qian et al., (2017) added that lack of personality is one of the most challenging problems to design chatbot. According to Norman (2007), inconsistency of chatbot personality can lead to frustration. Chatbot without personality interacts in robotic and cold manner. This way, user does not feel emotionally connected to them, risking the chatbot to failure (Brandtzaeg & Folstad, 2017). As studied by Smestad (2018), developing chatbot personality can be a great instrument as it can help to establish reliability on the chatbot and increase user satisfaction. Consider this, chatbot can be depicted as a digitized human, therefore it is considered as the ambassador of the organization (Michiels, 2017). Chatbot is considered as the organization's representative in helping the customer to assist in specific n task (Wright, 2016). It is important for the chatbot to have personality as it represents the organization. The way chatbots are presented would have an impact on the customers' perception (Ciechanowski et al., 2018). Personality leads to communication. By having personality, it can produce an effective communication between chatbot and human. Currently, there are thousands of chatbots available but only a few are memorable.

De Haan (2018) stated that the research on chatbot personality is still rare in scientific study. Most of the studies are focusing on the back end of the chatbot which include the engine and the logic. Less research is being done in focusing on the chatbot personality in a sense where it is a version of a digitized human. As eloquently stated by Seeger & Heinzl (2018), trustworthiness is established when the chatbot is more humanized. Chatbot personality is crucial as it gives emotional connection to the user (Brandtzaeg & Folstad, 2017). Moreover, without personality, it gives no unique character to a chatbot and impossible to differentiate them from one another. Chatbot with personality in context of organizational brand identity helps to connect

with human complex emotion, thus making it memorable and provide richer user experience.

### **1.3 Research Aim**

The purpose of this research is to enhance the Kapferer Brand Identity Prism conceptual model with the inclusion of chatbot personality in context of organizational brand identity.

### **1.4 Research Objectives**

- i. To identify the core element of chatbot personality.
- ii. To develop a prototype that include chatbot core element personality.
- iii. To evaluate user perception toward the chatbot prototype developed in (ii).
- iv. To develop a conceptual model of chatbot personality and integrate to Kapferer Brand Identity Prism.

### **1.5 Research Scope**

The scope for this research is focused within UiTM Jasin and the students of Faculty of Computer and Mathematical Sciences. This research will be conducted in context of the student academic affair department where chatbot is particularly used in every counter to assist student and staff by responding to their requests and recommend useful information.

## **1.6 Research Significance**

This research will would help organization, student and staff in understanding the chatbot personality in context of organizational brand identity. Hence all features and studies in this research can be helpful in further development.

### **a) UiTM Jasin:**

By conducting a research towards chatbot personality in context of organizational brand identity, it will assist the stakeholder which in this research will be focusing in UiTM Jasin. Chatbot personality elements will be studied so that it can provide improvement to their current business process to cater the needs of the students and staffs by using chatbot.

### **b) Students:**

This research would benefit students in navigating their task. Chatbot is useful to the student by responding to their request and provide useful information. Not only that, student is able to interact with chatbot by using natural conversational language.

### **c) Staff:**

Chatbot is assisting human in organization where it is viewed as a digitized human. Chatbot acts as intermediary between the customer and organization and usually manage FAQs of a department. Therefore, it will assist the task being done by the staff in an organization.

## 1.7 Expected Outcome

The expected outcome for this research is to enhance the integration of Kapferer Brand Identity Prism with chatbot personality. A prototype of chatbot with the above criteria will be developed.

## 1.8 Outline of Research

The arrangement of this research is as below:

**Table 1.1** Outline of Research

<b>Chapter</b>	<b>Description</b>
Chapter 2	This chapter discuss on literature review which focuses on several subjects that conforms to the project begins with an overview of the organization, chosen conceptual model and chatbot studies.
Chapter 3	This chapter discuss on the chosen methodology that will be used in this planned project. In addition, each phases of the methodology will be covered in this chapter.
Chapter 4	This chapter present the analysis for each phase in research methodology to find significant result.
Chapter 5	This chapter discuss on the summary of the research, limitation and recommendations for future work.

## 1.9 Summary

In a nutshell, the motivation of this research has been to understand the brand identity in an organization. Brand identity is a special characteristic of an organization that they tend to create and maintain. These association represent the image and reputation of an organization and imply a promise to customers through their brand identity. According to Kapferer, the brand identity prism is a suitable framework tool for studying brands. Kapferer Brand Identity Prism consists of physique, personality, culture, relationship, reflection and self-image. This particular research will cover the ‘personality’ core element and to be applied in a rising technology called chatbot. A

chatbot is a digitized human that is widely used in marketing to assist customer and provide useful information to them. However, the absence of personality in chatbot leads to lack of engagement between chatbot and human. In order to minimize the gap, this research is aimed to enhance the Kapferer Brand Identity Prism conceptual model with the inclusion of chatbot personality in context of organizational brand identity. The objectives of this project are first to identify the core element of chatbot personality, to develop a prototype that include chatbot core element personality, to evaluate user perception toward the chatbot and to develop a conceptual model of chatbot personality and integrate to Kapferer Brand Identity Prism

## CHAPTER 2

### LITERATURE REVIEW

This chapter consists of discussion on several subjects pertinent to the project. The discussion starts with chatbots, related works of chatbots, brand identity, conceptual models of brand identity, Kapferer Brand Identity Prism, personality, relationship between chatbot and brand identity, user experience and discussion.

#### 2.1 Chatbot

The recent growth in technology has shown a strong interest in chatbots. A chatbot is a computer program that allow human to interact with robot through messaging applications or using voice recognition. The immense growth in messaging application allow the user to interact with chatbot by using natural language (Bapat, 2017). Abu Shawar & Atwell (2007) agree that chatbot is a software that interacts with human by using natural language. Chatbot assist human in providing information to user. Its goal is to cater user requests and respond to them in natural language (Bapat, 2017). The other terms used to understand chatbot include virtual agent, chatter bot and machine conversation system (Abu Shawar & Atwell, 2007).

Contrary to popular belief, many people think that chatbot is a current growing technology these days while actually the technology has been evolving since 1960s. The technology has existed since the first chatbot called ELIZA was developed (Shah, Warwick, Vallverdu & Defeng, 2016; Asher, 2017). Joseph Weizenbaum created ELIZA to assist in clinical treatment specifically in psychotherapist area. The idea is simple yet very interesting. The user key in an input and the chatbot will find the keyword, compare the input with their pre-defined keyword and match it to the user input. If the keyword is present, the chatbot will return the relevant response.

For example, when the user key in the word “mother”, chatbot can respond to the user input, in a way to encourage the user to open up more by asking about their mother and family. ELIZA does not necessarily recognize the user’s emotion through the user statement. However, if the words do not match, ELIZA will response by using fixed sentence such as “Very interesting. Please carry on” which in a way will encourage the user to express their emotions.

```
Human: Men are all alike.
ELIZA: In what way?
Human: They're always bugging us about something.
ELIZA: Can you think of a special example?
Human: Well, my boyfriend made me come here.
ELIZA: Your boyfriend made you come here?
Human: He says I'm depressed much of the time.
ELIZA: I'm sorry to hear that you are depressed much of the time.
Human: It's true. I'm unhappy.
ELIZA: Do you think coming here will help you not to be unhappy?
Human: I need some help, that much seems certain.
```

**Figure 2.1** A sample of conversation with ELIZA

(Source: Jurafsky & Martin, 2000)

At the early stage, chatbot was developed to entertain user and mimic human conversation (Shawar & Atwell, 2007). It integrates a set of pre-defined language and algorithm to match the conversation between human and computer using natural language (Shawar & Atwell, 2005). Over the years, the chatbot technology has been evolving with more sophisticated and improved techniques to respond to user request with relevant responses and carry the conversation between chatbot and human.

Today, popular chatbot like Siri and Cortana have been used as personal assistant in helping human to navigate different tasks through various platforms of communication such as speech recognition and graphics (Bapat, 2017). Asher (2017) states that chatbot allows access to information through text and sound. Chatbot is implemented in two platforms as for now. First, based on social media messenger such as Telegram or Facebook messenger.

For example, Bus Uncle chatbot. Next platform is via web-based such as ALICE chatbot.

### **2.1.1 Applications of Chatbot**

Chatbot applications are popularized in many fields. The applications can be found in businesses, telecommunications, maps navigation and healthcare. Chatbot also provides customer service (Quach, 2016), emotional support and entertainment.

For fields like the business, due to rapid technology development, the customer prefers having a self-service alternative rather than interacting with human in the organization. They would prefer to make transaction, purchase product or get information from the chatbot. Therefore, the use of chatbot in the business field is important in improving customer communication (Oracle, 2016). According to Kurilchik (2017), three major benefits of using chatbot in business are fast response, reducing stress and extending service. For example, calling the business company via hotline is costly and if the customer service is busy at the moment, the customer needs to wait for a couple minutes. Instead of going through all those hassles, chatbot provides the solution by being available every day in anytime so that the customer can use the service and get the response as fast as possible. For instance, AirBnb<sup>1</sup> and Spotify<sup>2</sup> have been using chatbot via Twitter to provide timeless customer service.

In healthcare, specifically in psychology field, chatbot has been developed to offer interactive cognitive behavioural therapy to the user. It is used to assist people that suffer from depression and other psychological issues. Chatbot that is used in this area is also known as virtual therapist (Knight, 2017). Woebot and ELIZA are some of the examples of chatbots in this field.

---

<sup>1</sup> <https://twitter.com/AirbnbHelp>

<sup>2</sup> <https://twitter.com/spotifycares>

Last but not least, chatbot is also used to provide direction and navigation. It gives customers an immediate response and guide them in finding the nearest bus stations and directions especially in a foreign country. A telegram-based chatbot called “Bus Uncle” is developed to find bus station and direction in Singapore.

### **2.1.2 Advantages of Chatbot**

Chatbot provides numerous advantages especially in assisting human in their daily lives. Abu Shawar & Atwell (2007) suggest that in order for the chatbot to be successful among user, it needs to help user in solving their tasks and achieving their goal in proper manner. Overall, chatbot needs to be easy to use, fast in response and convenient to the users.

Many users stated that chatbot helps them in reducing time, providing faster service and making it convenient to retrieve information or help. Chatbot offers faster response upon user request and provides related information in the nick of time. Not only that, it is reported that user prefers help from chatbot rather than asking humans in the organization (Shah et al., 2016). For some people, asking help from unknown people can be intimidating. Therefore, they opted to request help from chatbot as it is easier to ask simple and frequent questions.

Next, chatbot enhances the interaction between humans for social purposes. The users stated that chatbot helps them to increase productivity. Productivity is considered important as the user wants a fast and consistent feedback when they request for assistance (Abu Shawar & Atwell, 2007). For example, users view chatbot as a platform to avoid loneliness and accomplish social desire.

### **2.1.3 Challenges of Chatbot**

Despite the fast-growing popularity in chatbot, there are still a lot of issues that the existing chatbot face. The main issue is the interactions between the chatbot and the users are not natural where often the requests made by the users are not being answered in a natural way. This is due to the fact that chatbot process requests by using natural language understanding component.

There are two types of techniques for chatbot to understand the variety of user request which are rule-based technique and machine language technique. Chatbot finds it challenging in understanding and providing related information although it has great number of rules and training data (Bapat, 2017). The user is free to request whatever they want using natural language. This is because the user expresses themselves via natural way such as typing and speaking. Ciechanowski et al., (2018) made a similar argument for the criteria in developing human-like chatbot. However, it has become a challenge for the chatbot to understand the long tail of user request since it is usually programmed with a set of short pre-defined questions. When the chatbot cannot understand the input, in return, the answer is often incorrect. This makes the interaction between the user and chatbot unnatural and often leads to frustration.

The user prefers to interact naturally rather than having to follow the sequence of pre-defined ways while interacting with chatbot. Therefore, natural language processing (NLP) and natural language understanding (NLU) are some suitable approaches that allow the personalization of chatbot, which is a way to overcome this challenge.

Chatbot needs to interact naturally in order for the user to feel engaged and make them believe as if they are talking to a real human. This way, the user experience can be increased. For example, chatbot is widely used in counselling area. Since it is perceived as a digitized therapist, chatbot needs understand human's emotion (Lee, Oh & Choi, 2017). This will help to

improvising the user experience who needs mental healthcare. According to Knight (2017), chatbot is the best approach in for emotional support.

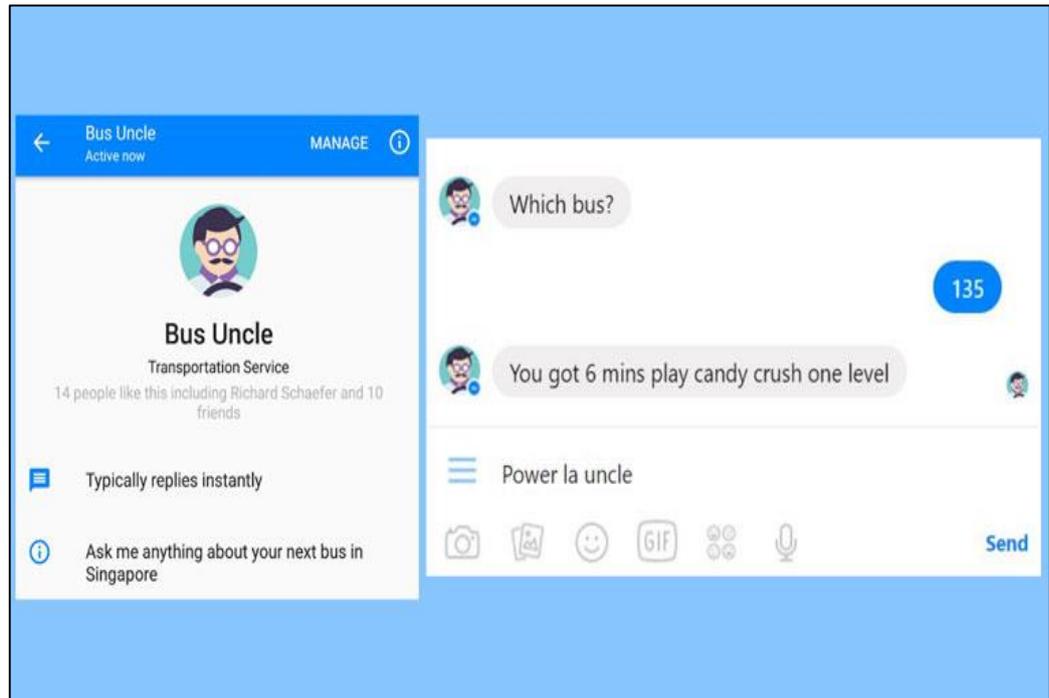
## **2.2 Review of Existing Chatbots**

Some existing chatbot such as RHB chatbot, Bus Uncle and Replika will be compared and studied. The main focus of the review is to see if the ‘personality’ element is presented in the chatbots below.

### **2.2.1 Bus Uncle**

Bus Uncle is a popular chatbot that provides information on the time arrival of buses and directions in Singapore. It is a chatbot that is available in Facebook Messenger and Telegram.

The chatbot main feature is to give direction to the user by sending the address of the requested destination and responding by providing the address and Google Map location. There is also another application to find directions and bus arrival time such as “SingaBus” and “MyTransport Singapore”. The applications allow the user to access all bus arrival timing at the bust stop. Bus Uncle is not like those applications. It only provides information of the bus arrival time as requested by the specific information and destination entered by the user. Bus Uncle use the crowd-sourcing that allow the user to add or update the new bus route and suggest them to the chatbot so that the new data can be integrated.



**Figure 2.2** Bus Uncle

(Source: <https://www.busuncle.sg/>)

Bus Uncle uses the Singapore-English (Singlish) slang, which is a common accent used by the local in Singapore. The reason why people love using chatbot is because of its personality when interacting with the user. Bus Uncle has humour, sarcasm and also empathy which in a way makes the user feel engaged to the chatbot.

### 2.2.2 RHB Chatbot

Inspired by the captivating chatbot technology, RHB Bank is cooperating with RinggitPlus in venture that allows the customer to apply 'RHB Easy-Pinjaman Ekspres' through chatbot. RHB Bank is now enforcing chatbot in assisting the customer to apply for personal loan and they can receive the result via Short Messaging System (SMS) in less than a day (Mat Rahim et al., 2018).

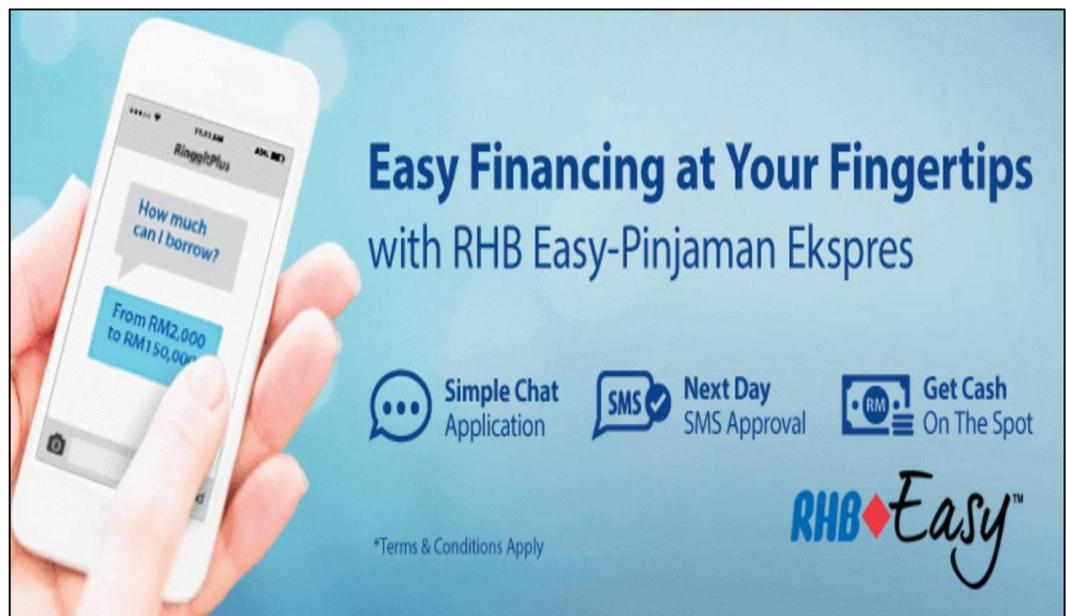
Their aim is to deliver an improvised version of applying personal loan to the customer. Previously, the customer needs to submit their forms and the

related documents and need to visit the bank to complete the loan application and obtain the result whether their personal loan is approved or rejected. Now that the bank introduced the chatbot, it permits the customer to send their application without having to go through all the hassle of filling and submitting the forms.

Chatbot offers timeless services to the customer in handling daily banking or transaction activities. Application of chatbot in banking is strongly related to the usage of Artificial Intelligence (AI) in financial institution. According to Mat Rahim et al., (2018), chatbot provides few main services to the customer in three main areas:

- i. Customer service: responding to common questions or request from the customer.
- ii. Transaction: assist in personal financial management such as paying monthly bills and deposit money into bank accounts.
- iii. Product sales: categorize the customer into several banking products.

Utilizing chatbot in banking helps to fasten loan application time and shorten the approval process.



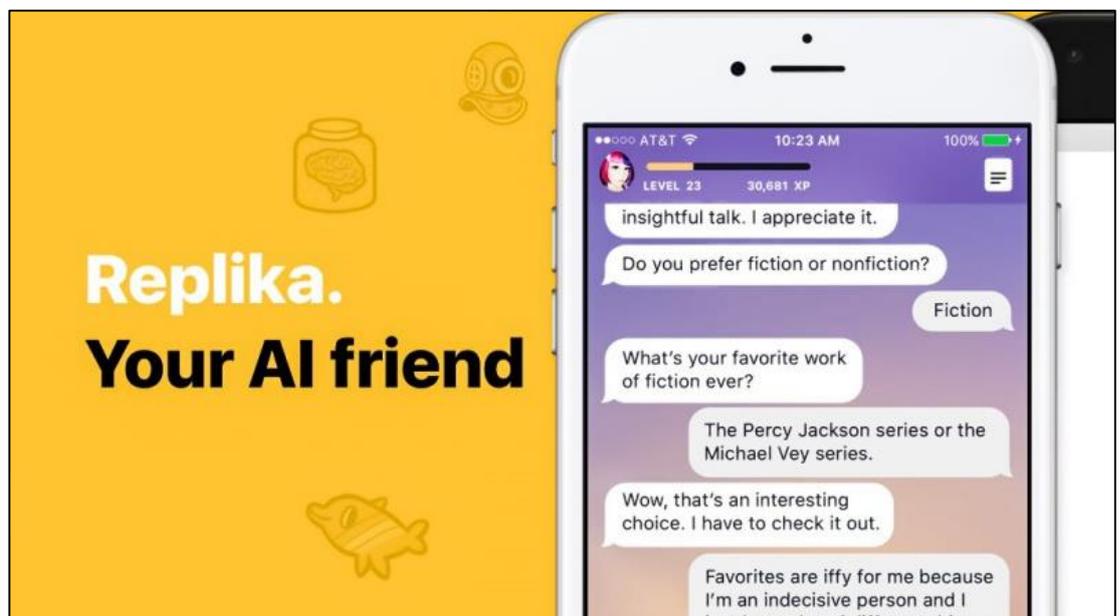
**Figure 2.3** RHB Chatbot

(Source: <https://ringgitplus.com>)

### 2.2.3 Replika

Replika is a chatbot that can be best known as a personalized friend (refer to Figure 2.4). This chatbot requires emotional recognition through images and texts (Lee, Oh & Choi, 2017). The chatbot and user grow closer through series of interactions. Replika's goal is to provide a digitized friend that helps the user to confide in and support them emotionally.

The main feature of this chatbot is to encourage the user to confide in and unwrap their bottled feelings so that the user feels better. The more the user interacts with the chatbot, the more they become like the user in imitating the user in terms of personality. The chatbot learns to understand the user's emotion based on their personal information like gender (Lee, Oh & Choi, 2017). Replika is based on neural networks where it is a type of AI that uses statistics to find explicit or implicit patterns in data.



**Figure 2.4** Replika

(Source: <https://replika.ai/>)

## 2.2.4 Comparison Between the Chatbots

There are three chatbots that are being studied in this research which are Bus Uncle, RHB Chatbot and Replika. Table 2.1 shows the comparison between those chatbots personality.

### i. **Bus Uncle**

Bus Uncle portrays a fun, humorous and sometimes grumpy personality which reflects the human bus driver. Since it is intended to be used to find bus station in Singapore, the chatbot interacts using Singapore-English (Singlish) slang in order to engage better with the locals.

### ii. **RHB Chatbot**

Banking chatbot is straightforward and use formal language. It is not chatty compared to other chatbots since it focuses on the context of the task that the user desired to do. However, the personality needs to be flexible (Mostafa, Crick, Calderon and Oakley, 2016) between robotic and chatty. Being too robotic would makes the user feels dehumanized meanwhile too chatty would leave the user feels odd.

### iii. **Replika**

Replika is considered as personal therapist with friendly and compassionate personality as it encourages the user to open up to them (Kuyda & New, 2017). It mimics the user's personality through the user input. This way, the user engagement is improved over the time.

**Table 2.1** Comparison Between Chatbots And Their Personality Traits

<b>Chatbot</b>	<b>Personality Traits</b>
Bus Uncle	Fun, humourous and grumpy.
RHB Chatbot	Straightforward and formal.
Replika	Friendly and compassionate.

## 2.3 Brand Identity

In recent years, brand have becoming a crucial subject in the marketing study. Brand is considered as the main asset to an organization (Davis, 2002). This is because the organization realize that branding is a strategic instrument as it brings benefits in creating and sustaining a strong brand. A strong brand does not only beneficial to the organization, but also capable of attracting customer (Christensen & Askegaard, 2001).

A brand is being represented through name, symbols and packaging that distinguish from its competitor and create relationship between customer and the product (Brassington & Pettitt, 2000). These elements are known as brand identity. Brand identity portrays an organization's exclusiveness, uniqueness and value (Mahdi et al., 2015). It is envisioned to differentiate from one products or services from their competitors (Ghodeswar, 2008). The first look through the brand identity, the customer can reflect the image of the organization and perceive clearly of what the organization does.

The term "brand" can be best understood as the company's ability in delivering consistent services and experiences to the customers. Meanwhile, "identity" is defined as an entity that has identity which remain consistent over a period of time (Franzen & Moriarty, 2009). Helin (2014) states that, "brand identity" is a unique characteristic of the brand that the organization aspire to stand for and to be recognized with in the mind of the customer.

An organization is responsible for creating a distinguished product with exclusive characteristics. Therefore, Mahdi et al., (2015) concludes that brand identity is an establishment of unique characteristics that makes the brand meaningful and it communicates with the customer through its brand. The products, services, people in the organization or place is considered successful when the customer finds it unique and match to their needs the most (De Chernatony & McDonald, 1998).

Several researchers have applied the concept of “brand identity” while highlighting its characteristics of being consistent and unique (Huynh, 2016). Aaker (1996) suggests that brand identity is the most vital factor in developing a strong brand. The fundamental of building the identity for each brand can be viewed from multiple perspectives such brand-as-organization and brand-as-person.

Brand identity can help to clarify the values, motivation and purpose of the organization (Konttinen & Elbanna, 2013). Failure in acknowledging those will result to external trap such as weak brand strategy and employees not understanding the goal of the organization (Aaker, 1996).

### **2.3.1 Importance of Brand Identity**

According to Killian (2015), there are so many organizations operating and competing with one another. In order for a product to be recognized, it needs to stand out and be unique so that it is distinguishable from its competitor. Not only that, brand identity is responsible in creating strong relationships between the customer and the organization.

The organization has to highlight the consistency of their brand concept along with the identity through the organization’s strategic decision. This way, it will enable the recognition and can be recalled by the customer in a competitive environment (Sonnier & Ainslie, 2011). Brand identity is also understood as brand image in customer’s minds. Therefore, through brand identity, the organization will gain customer’s loyalty and the willingness of the customer to pay more for their product (Cristina & Rodrigues, 2011). A resilient brand identity is not only consistent, but also reflects the brand in the mind of the customer. It also benefits the organization by increasing their value significantly, which is important for the company to plan their strategy in order to sell their products or collaborate

with the other entity. Therefore, it is vital for the organization to have strong identity as it gives impact towards the customer's mind (Killian, 2015).

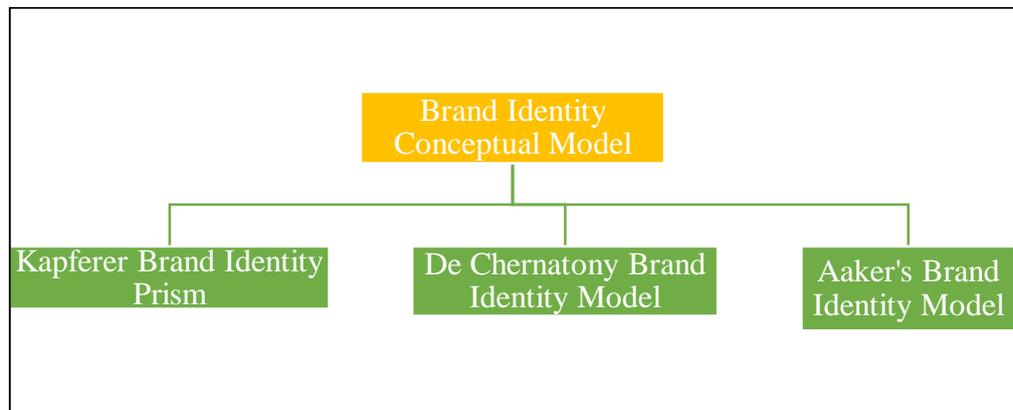
According Alreck (1999), the primary goal of branding is to establish a relationship between customer and the brand which creates brand loyalty. Aaker (1996) suggests that a brand is considered vulnerable without loyal customer. Loyal customer base is crucial as it is considered as an asset to the organization. Andersson & Otterheim (2003) state that loyal customer can be expected to generate sales and profit.

## **2.4 Existing Brand Identity Conceptual Models**

Generally, conceptual model can be understood as a representation of idea and their related complex relationship or a set of concepts. It is often used an abstraction representation of real-world object.

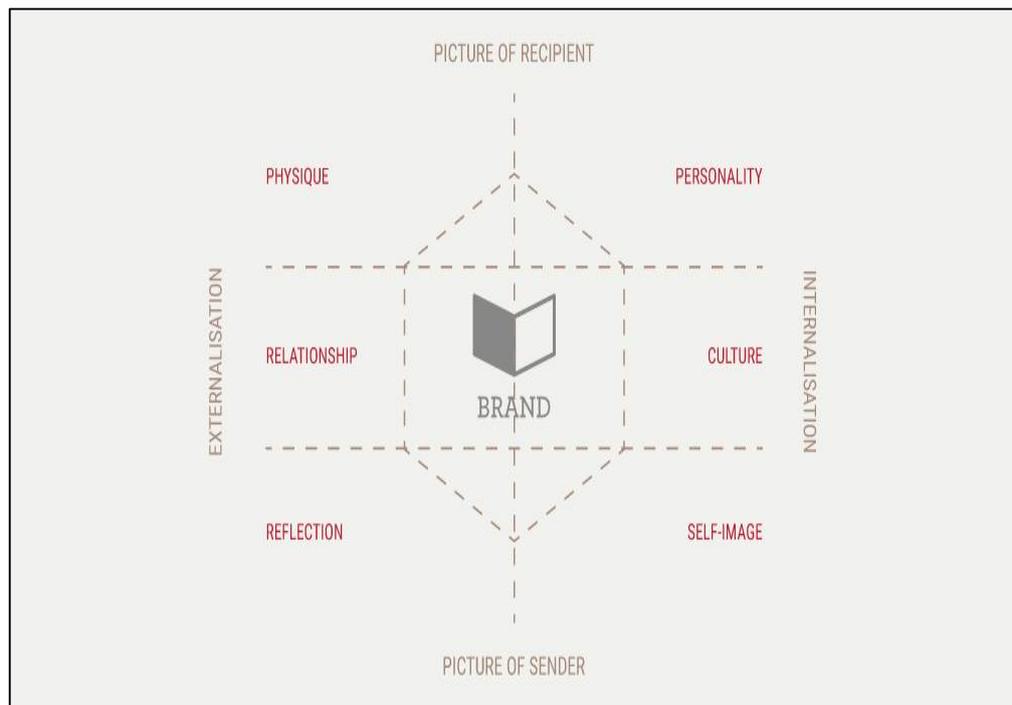
Brand identity can be easily simplified as a method to create a set of concepts for the organization's brand. Huynnh (2016) suggests that brand identity conceptual model emphasize on the steps to build a brand identity strategy, meanwhile some other models are focusing on introducing and unfolding the elements of brand identity. Overall, the model is used by the organization as a framework that helps to identify the communication gaps (Lindeberg, Blomkvist & Johansson, 2012). The 'personality' element is being focused primarily through out this research.

As shown in Figure 2.5 are the lists of brand identity conceptual models:



**Figure 2.5** Brand Identity conceptual models

### 2.4.1 Kapferer Brand Identity Prism



**Figure 2.6** Kapferer Brand Identity Prism

*(Source: Kapferer, 1996)*

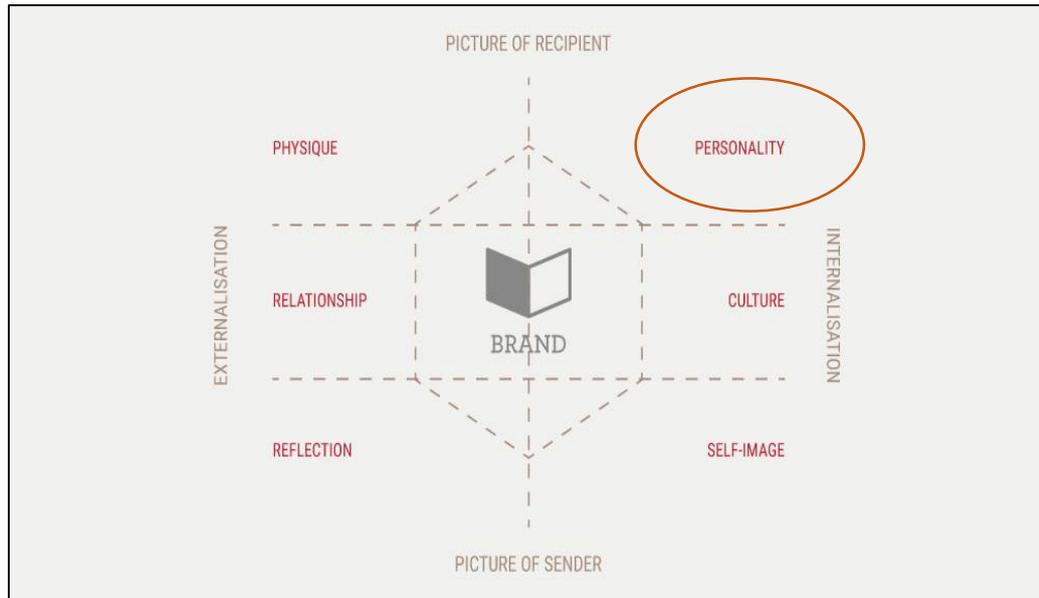
Jean-Noel Kapferer, a professor of marketing strategy has introduced the Brand Identity Prism (refer to Figure 2.6) in his book called “Strategic Brand Management”. Kapferer emphasizes on analyzing the structure of a brand

identity. According to Jean-Noel Kapferer in his brand identity prism, he highlighted six core elements in the prism. The brand identity prism is divided into two-part, externalization and internalization. Externalization consist three elements, physique, relationship and reflection meanwhile internalization consist the remaining elements which are personality, culture and self-image. These elements together define the brand identity that can communicate with customer through the organization's brand (Kapferer, 2004). Brief explanation for each of the elements are stated as follows in Table 2.2:

**Table 2.2** Kapferer Brand Identity Prism Elements Description

<b>Kapferer Brand Identity Prism Elements</b>	<b>Description</b>	<b>Example</b>
Physique	The brand's physical features. Customer can perceive clearly of what the organization does when the brand name is mentioned.	Coca Cola emphasize on its unique logo, red colour and the classic bottle design.
Personality	The brand's unique characters. The way the organization demonstrates its product describes how the product would be represented if they were human including its characteristic and attitude. Currently, the 'personality' element is being represented in human context such as the employees and managers in the organization.	A carbonated drink, Mountain Dew promise adventures and sports. Therefore, it always involves ambassadors that are active in sports to represent the carbonated drink commercial.
Culture	Values and principles of the brand. This can be understood as the origin of the product, the values of what the brand stands for and the view of the organization as whole.	The Olympic ring logo represent 5 worlds continents, Africa, Asia, America, Europe and Oceania.
Relationship	The way how the brand is to be depicted on the customer perception. It may represent beliefs and association in the human world.	The Dior brand symbolize a relationship that is luxury and extravagant, with the desire to shine like a gold.
Reflection (of the customer)	The way customer wants to be seen as an outcome of using a particular brand.	Coca Cola describes its target customer with values such as fun, sporty and friendship.
Self-Image	The customer's attitudes toward a brand when they purchase a product and wants the other to picture them as someone they want to be.	A BMW driver, who want the other people to think that he is rich because he drives a luxury car.

### 2.4.1.1 Kapferer Brand Identity Prism – ‘Personality’ Element



**Figure 2.7** 'Personality' element in Kapferer Brand Identity Prism

(Source: Kapferer, 1996)

The research that will be conducted is based on Kapferer Brand Identity Prism, primarily focusing on the ‘personality’ core element. The brand identity prism (refer to Figure 2.7) is divided into two-part, externalization and internalization. Externalization consist three elements, physique, relationship and reflection meanwhile internalization consist the remaining elements which are personality, culture and self-image. ‘Personality’ element belongs to right part of the prism along with ‘culture’ and ‘self-image’ elements, which are considered as the “soul” of the brand rather than physically visible (Kapferer, 2008).

Currently, personality is being represented in human such as the employees and managers of an organization. Personality is perceived as something dynamic and seen it as something strong and steady over the time. According to Huynnh (2016), ‘personality’ element is rather considered as the emotional and instinctive part of a brand, it signifies how the brand would communicate with the customer if it were to be represented as human in the organization, especially through human personality characteristics (Kapferer, 2008). The

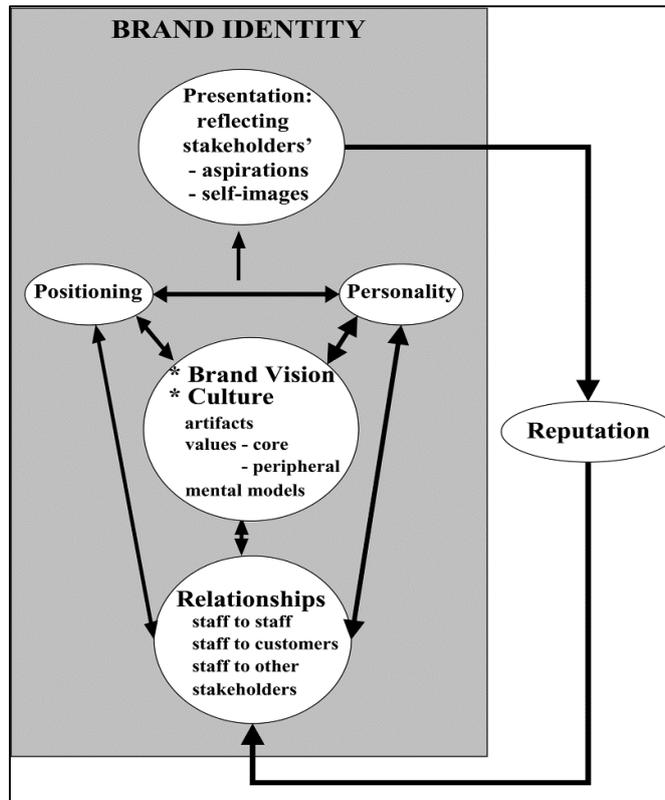
‘personality’ element communicates with customer in certain way, giving them a sense of the brand “talking” to them as if it were a human with specific traits.

Developing brand personality can be done in many ways. Kapferer (2008) suggests that brand personality can be portrayed through the spokesperson that represent the brand, either a real person or fictional character. For instance, Pepsi hired several famous celebrities to be the brand’s ambassador in advertisement or commercial (refer to Figure 2.8). Kapferer (2008) points out another way to create ‘personality’ of the brand, by using specific style of lettering, colour schemes and design.



**Figure 2.8** David Beckham - one of the Pepsi's spokesperson  
(Source: pepsi.co.uk)

## 2.4.2 De Chernatony Brand Identity Model



**Figure 2.9** De Chernatony Brand Identity Model

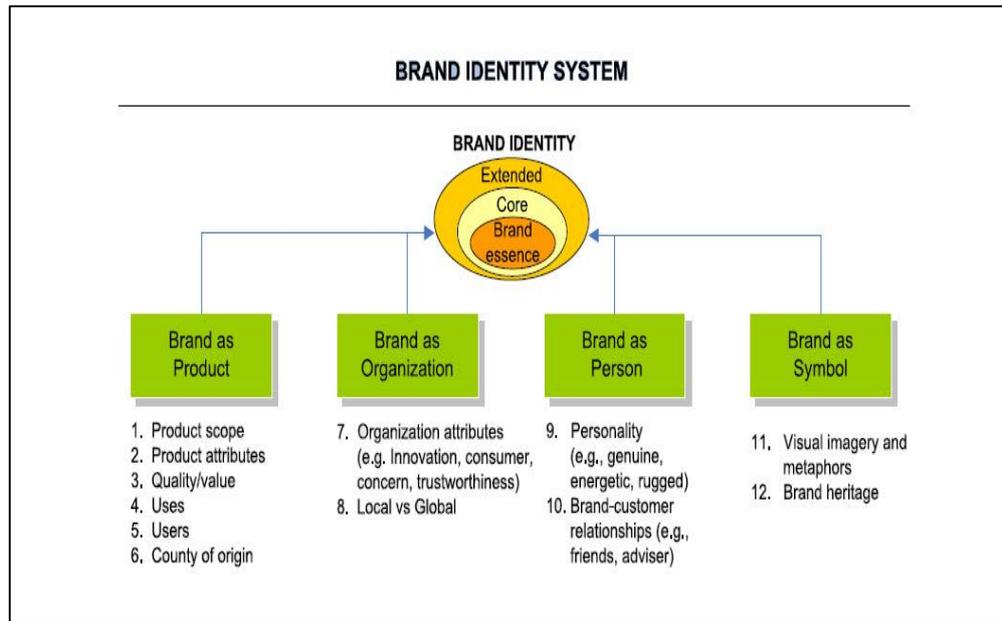
(Source: De Chernatony, 1998)

Ever since Kapferer introduced the concept “Brand Identity” was introduced in 1986, many theorists come out with their conceptual frameworks based on the necessary concept of brand identity. De Chernatony was one of them when he developed a conceptual model called “the process of managing a brand”. According to the model (refer to Figure 2.9), De Chernatony emphasized on four aspects; Personality, Relationship, Vision & Culture and Positioning. All aspects influence each other. Brand’s vision and culture is the core aspect that identify the brand’s desired positioning, personality and the subsequent relationship (Mahdi et al., 2015). Brief explanation for each of the aspects are stated as follows in Table 2.3:

**Table 2.3** De Chernatony Brand Identity Model Aspects

<b>Aspect</b>	<b>Description</b>
Personality	The brand personality establishes specific and unique characteristic that distinguish an organization from one another.
Positioning	Emphasize the distinguished characteristic according to the positioning that makes it attractive to customer and differentiate them from its competitors. Positioning influences the customers' perception of the brand and their memory (Sujan & Bettman, 1989).
Vision and Culture	Describes a clear direction of what the brand wants to achieve. The brand culture defines the values to the brand's inspiration, as well as describes from where the product come from (Kapferer, 2008).
Relationship	Interaction between customers' attitude towards the brand and the brand's attitude towards the customers. According to Blackston (1992), customer's perception is important into the brand communication. Meanwhile, Kapferer (2008) and Lannon and Cooper (1983) agrees that brands should be the voice that the customers hears.

### 2.4.3 Aaker Brand Identity Model



**Figure 2.10** Aaker's Brand Identity Model

(Source: Aaker, 1996)

Aaker (1996) has developed a conceptual model to formulate the application of brand identity. According to the model (refer to Figure 2.10), the brand can be divided in four distinct elements such as brand as product, brand as organization, brand as person and brand as symbol. This model provides advantage in developing a unique brand identity as well as enriching the brand elements. Nonetheless, brand identity does not necessarily have to follow all four perspectives as stated in the model since (Aaker, 1996) suggests that brand strategist should search for proper perspective based on how the brands should be reflected in the mind of the customer. However, Andersson & Otterhiem (2003) argue that those four perspectives should be followed in order to ensure depth and consistency in brand identity.

Table 2.4 describe four perspectives in Aaker’s Brand Identity model:

**Table 2.4** Aaker’s Brand Identity Model Perspectives

<b>Perspective</b>	<b>Description</b>
Brand as Product	Consist the product scope, attributes, quality and the link of the product with a region or country (Aaker, 1996). The main objectives of connecting a brand with the product is to have the customer responding to the brand when the product is mentioned. This element deal with the tangible and intangible characteristic of the product and the way where customer can relate to it. (Aaker 1996; Moorthi 2002).
Brand as Organization	Associate with the organization’s attributes such as concern and innovation (Aaker, 1996). They also deliver credibility of the product. Andersson & Otterheim (2003) point out that organizational value is more robust to competition.
Brand as Person	Brand is perceived as human with unique personality and features. This perspective is also known as brand personality (Moorthi, 2002). Moreover, brand-customer relationship helps to communicate a product attribute, thus provide functional benefit (Aaker, 1996).
Brand as Symbol	Visual imagery of the product is unforgettable as it reflects the brand in the customer’s mind. Meanwhile, metaphor gives meaning to a brand’s symbol and provides emotional benefits. Brand heritage presents the core of the brand such as the organization tag line (Aaker, 1996).

#### **2.4.4 Comparison of Brand Identity Conceptual Model**

The understanding of brand identity should not be derived from the conceptual models, which specify the brand identity’s building elements (Franzen & Moriarity, 2009). As stated, there are three of the most used brand identity conceptual models are used such as Kapferer Brand Identity Prism, De Chernatony Brand Identity Model and Aaker Brand Identity model. Those models are applicable conceptual model that have been used in developing brand identity. Table 2.5 shows the conceptual models and components:

**Table 2.5** Conceptual Models and Its Components

<b>Conceptual Model</b>	<b>Brand Identity Components</b>
Kapferer Brand Identity Prism (1996)	Physique, Personality, Culture, Relationship, Reflection and Self-Image.
De Chernatony Brand Identity Model (1999)	Personality, Culture and Relationship., Positioning and Vision.
Aaker's Brand Identity Model (1996)	Brand as product, brand as organization, brand as people and brand as symbol.

Kapferer Brand Identity Prism is being chosen as a guidance throughout this research. Kapferer Brand Identity Prism offers detailed study of the brand as it provides different elements in the prism (refer to Table 2.2). The prism act as a tool to identify the weak and the strength point of the organization through six core elements in the brand identity prism (Kuoksa, 2017). Moreover, Kapferer Brand Identity Model is widely used and implemented in organization. This model also gives direct and simple description regarding the 'personality' elements as compared to the other two models.

## **2.5 Personality**

Personality is a unique characteristic which make a human different in term of the way they feel and behave. Scherer (1984) states that personality is the consistent characteristics and typical behaviour of human such as anxious or aggressive.

In human life, a person with personality engage easily with other people. For example, a person with interesting personality encourage other people to talk more and the conversation tend to last longer, compared with a person with bland personality where people lose interest and wish the conversation would end quickly.

In context of business organization, people with excellent personality play an important role in providing good customer service since they make an impact to the customer's perception. In the perspective of human himself, when hiring an employee for a customer service, the company usually hire a person with a good personality to sit at the front desk so they can really engage with the customer by providing better customer service. A good customer service experiences are more valuable meanwhile the bad experience tends to have permanent effect to the customer (ZenDesk, 2013). De Bod (2016) states that great customer service help to increase profitability, maintain company reputation and increase customer retention through the loyalty of the customer.

Hence, the same could be applied in this study when it comes to discussing the personality of a chatbot. As chatbot is now broadly used in the world of E-Commerce, the company have to think on how to fully utilize the chatbot in every aspect so that they can gain benefit such as increase profit and earn customer loyalty (Holtgraves, Ross, Weywadt & Han, 2007). In term of personality, chatbot is just mainly a computer program that does not inherent any personality of their own. Lack of personality means lack of character. There are thousands of chatbots available across the country and the personality of a chatbot distinct them from one another. Personality is influenced with emotion (Zelenski, 2007). It is vital for chatbot to connect emotionally with user as the inability of the chatbot to do so would lead to failure (Brandtzaeg & Folstad, 2017).

Chatbot personality could help to enrich user experience by understanding user emotionally, making the chatbot more dependable and pertinent to the user. Not only that, it can also enhance customer engagement and adds credibility to the organizational branding.

### **2.5.1 The Five Factor Model of Personality**

Personalities are categorized in terms of traits, which refers to the characteristic of a person that affects the way they behave in any situation. According to Allport & Odbert (1936), there are numerous personalities exist to describe human. Thus, the researchers came out with the most relevant and validated personality trait model which is known as the Five Factor Model (FFM) or Big Five model that categorized the most human traits into five dimensions (Rolland & Cedex, 2002). The five dimensions of personality traits are openness to experience, conscientiousness, extraversion, agreeableness and neuroticism. All of the dimensions signify personality at the widest level of abstraction and in each dimension, it specifies plentiful of unique and detailed personality traits (John & Srivastava, 1999; Gosling, Rentfrow & Jr, 2003).

The strength of this model is the ability to capture the common personality traits and provide descriptive model for research purpose (John & Srivastava, 1999). According to Deyoung (2015), many researches are using the Big Five model to do research on personality. Furthermore, Gosling, Rentfrow & Jr (2003) agree that the Five Factor Model is widely used to study personality. McCrae & Costa (1996) state that the model has valid empirical support. Not only that, the model has been used by researchers since it shows good cross-culture (e.g.: language) validity (Rolland & Cedex, 2002).

The five dimensions of the Five Factor Model are:

**i) Openness to Experience**

This dimension is suitable with people who have self-direction (Roccas, Sagiv, Schwartz & Knafo, 2002). Individual with this trait tend to focus on finding new experience, willingness to learn new thing and think creatively. According to Gosling, Rentfrow & Jr (2003), they are also very imaginative (reflective and open minded).

**ii) Conscientiousness**

Reliable and very systematic, disciplined, aiming to achieve goal and favour planned behaviour rather than spontaneous (Mostafa, Crick, Calderon and Oakley, 2016). Individual act in organized manner and tend follow rules (John & Srivastava, 1999).

**iii) Agreeableness**

A tendency to be concerned and tolerable to suit with other people in their surroundings. This trait reflects compassionate towards others. It is also a measure of trust, able to adapt into a community and friendly (John & Srivastava, 1999). Individual with this trait tend to keep positive vibe in social situation (Therasa & Vijayabanu, 2015).

**iv) Extraversion**

Individual with this trait tend to seek contentment other than themselves and enjoy the company of others. Extroverts are often linked to popularity and attractiveness (Ozer & Benet-Martínez, 2006). Tok (2011) states that this trait is likely to involve to do adventurous and risky sport.

**v) Neuroticism**

Mostafa, Crick, Calderon and Oakley (2016) state that neuroticism refer to the degree of emotional stability. Individual have the tendency to be easily engage in negative emotions such as anger and anxiety and unable to control impulse (Therasa & Vijayabanu, 2015).

Each of the dimension and its traits are discussed further in the table below:

**Table 2.6** The Five Factor Dimension and Its Traits

<b>Dimension</b>	<b>High Range Personality Traits</b>	<b>Low Range Personality Traits</b>
Openness to experience	Intellectual, imaginative, sensitive and open-minded.	Insensitive and down-to-earth.
Conscientiousness	Careful, thorough, responsible, organized and scrupulous.	Irresponsible, disorganized and unscrupulous.
Neuroticism	Impatient, depressed, angry, insecure.	Calm and emotionally stable.
Agreeableness	Good-natured, compliant, modest, gentle and cooperative.	Ruthless, suspicious, irritable and inflexible.
Extraversion	Sociable, talkative, assertive and active.	Retiring, reserved and cautious.

*Source: Roccas et.al, 2002*

## **2.5.2 Discussion on Personality Theory**

There are two theories that can be used to study personality for this research which are the Five-Factor Theory, which is also known as the Five-Factor Model and Jung Personality Theory.

**Table 2.7** Comparison Between Two Personality Theories

<b>Personality Theory</b>	<b>Element of the Personality Theory</b>
<b>Five Factor Model</b>	<ul style="list-style-type: none"><li>i. Openness to Experience</li><li>ii. Conscientiousness</li><li>iii. Extraversion</li><li>iv. Agreeableness</li><li>v. Neuroticism</li></ul>
<b>Jung Personality Theory</b>	<ul style="list-style-type: none"><li>i. Extroverted or Introverted: sensation-thinking</li><li>ii. Extroverted or Introverted: sensation-feeling</li><li>iii. Extroverted or Introverted: intuition-thinking</li><li>iv. Extroverted or Introverted: intuition-feeling</li></ul>

In order to identify the chatbot personality model for this research is based on the Five Factor Model (FFM). Firstly, FFM is widely known and broadly used as a framework model to study the personality traits of human over the past years (Mairesse & Walker, 2009; Ivanov, Riccardi, Sporka & Franc, 2011). Secondly, this model can be applied in numerous countries and culture as it has been validated by researchers (Rolland & Cedex, 2002). Since this study is conducted within UiTM Jasin, this model is appropriate to be used in assessing the personality traits since there are many research studies in Malaysia that are using this model to study to personality (Yunus, Najmuddin & Md Saad, 2018; Eswaran, Islam & Yusuf, 2011). Next, FFM is an easily understood model since it provides clear classification of personality traits. The list of traits would be helpful in developing the chatbot personality. Since chatbot is now widely used in an organization, it is vital to provide good user experience through personality as it benefits both organization and the user.

## **2.6 Relationship Between Chatbots and Brand Identity**

The rapid growth of chatbot used in organization has increased over the years as it is reported that 57% of organizations around the world are implementing chatbot or plan to use one (Ask, Facemire & Hogan, 2016). Brand needs to start thinking to utilize chatbot technology as it can benefit the organization in many ways. In organization, chatbot is used to assist in customer service and helps to increase the sales.

Brand identity is unique characteristics that makes the brand meaningful and it communicates with the customer through its product, service and chatbot. Chatbot is considered as the organization's representative in helping the customer to assist their task (Wright, 2016). Brand identity present in chatbot through its unique characteristic. The way chatbot is represented would give impact towards the customer's perception (Ciechanowski et al., 2018). For example, Siri for Apple personality is feisty and Alexa chatbot is appealing. A poor branding of chatbot can cause damage to the organization's reputation (Etlinger, 2017). Therefore, chatbot needs to be in sync with its brand identity to provide consistency and value to the organization (Wright, 2016). Since chatbot is vigorously used in customer service field in the business area, it needs to have personality as it can increase user satisfaction (Smestad, 2018). Therefore, it is crucial to utilize chatbot in the organization as it can benefits them in many ways.

## **2.7 User Experience**

User Experience (UX) defined as the overall effect of a product towards the end user (Rauschenberger, Schrepp, Perez-Cota, Olschner & Thomaschewski, 2013). As studied by Hellweger & Wang (2015), UX is made of three dimension which are user, product and interaction. UX has becoming crucial aspect in designing a product because it is intended to provide optimistic

experience that can gain loyalty from user. All in all, UX can be understood as any activity that can provide better experience from user (Orlova ,2016).

Chatbot has grown immensely popular over the time. The way to improve user experience through chatbot is by understanding the user in term of using the previous interaction and use it in the current messaging context. The personality of the chatbot which include the style, tone and the way chatbot interact with its user creates a better user experience. Fadhil (2018) stated that chatbot personality is the new UX for conversational application.

## **2.8 Discussion**

Currently, the organizations are vigorously implementing chatbot to provide greater service or product to the customer. This is due to numerous advantages of chatbot such as it offers timeless service to the customer and provide fast response. The existence of chatbot in organization is primarily to assist the customer by delivering a better customer service.

Based on the literature review, this research will be conducted according to the chosen conceptual model which is the Kapferer Brand Identity Model. This is because the model is widely used in organization in order to help them defining their brand identity so that it can have their own distinct and unique brand. Moreover, this model provides direct and simple understanding of the core elements. For this research, it is solely focusing on the ‘personality’ core element, which is located at the right side of the prism (refer to Figure 2.7).

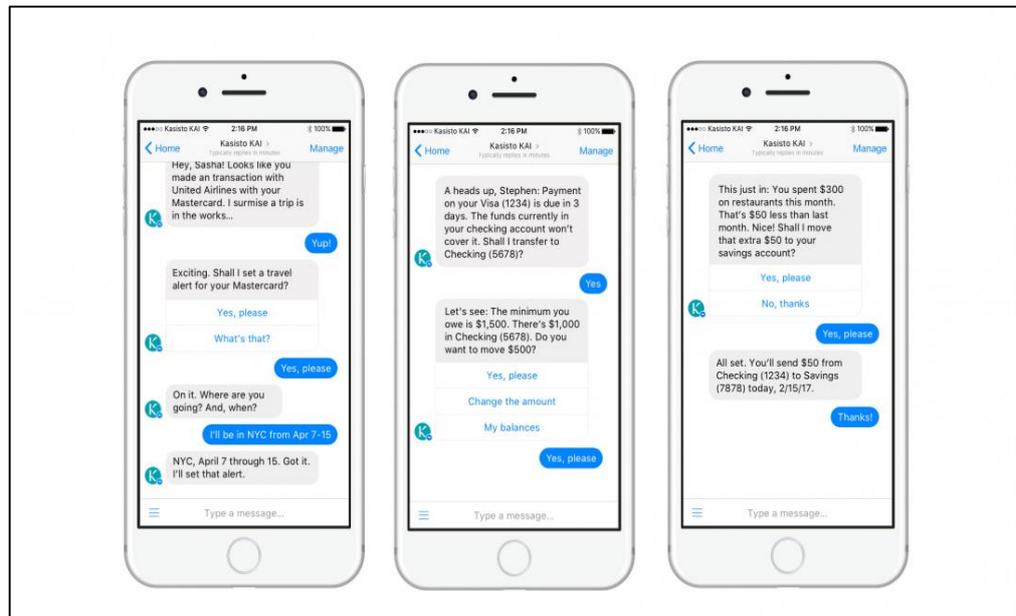
The issue that has been rising for this research is that the chatbot is lack of personality. In Kapferer Brand Identity Prism, the ‘personality’ element is being represented as human such as the employee or manager in an organization. Since the technology has been taking place in the marketing industry, chatbot is a great alternative to be operated with human in providing customer service. In the organization, unique personality in human reflect the

customer's impression to the organization. Good customer service will engage better with the customer as compared to bad customer service which will lead to dissatisfaction and frustration to the customer. Thus, it shows the importance of having personality in organization. In the meantime, chatbot is in the same level with human. Therefore, chatbot needs to have personality just like human such as outgoing, helpful, empathetic and calm.

This research is intended to study the personality of chatbot. A prototype of a chatbot will be developed by using web-based chatbot interface template and integrate with Telegram to present the chatbot with personalities. The scope for the chatbot is based on the student academic affair department. Later, a study of user perception will be evaluated based on the chatbot personalities based on the Big Five Theory, which is also known as Five Factor Model. Lastly, the personalities evaluated will be integrated with the 'personality' element in Kapferer Brand Identity.

Based on the comparison on chatbots and its personality traits in Table 2.1, there are numerous of chatbot personalities exist in different area of interest. For example, the personality for Replika is compassionate and friendly meanwhile Bus Uncle is fun and humorous.

Organization tend to include ‘personality’ element in chatbot. However, there is no standard guideline that would assist in the implementation of the personalities. For instance, the RHB Chatbot is straightforward and formal. On the other hand, the Standard Chartered Bank Chatbot is chatty (refer to Figure 2.11)



**Figure 2.11** Standard Chartered Chatbot

(Source: <https://kasisto.com>)

Therefore, this shows the need to have a standardize guideline to ensure the chatbot is appropriate for their intended use. This research aims to come out with a chatbot personality conceptual model that can help the developer or researcher to define personality elements when developing chatbot.

## **CHAPTER 3**

### **METHODOLOGY**

This chapter discusses about the methodology used for this research in order to achieve objectives. It consists of research design (section 3.1), research approach (section 3.2), phases of research process (section 3.3) and summary (section 3.4).

#### **3.1 Research Design**

The structure of this research needed to be planned precisely in order to align the result of activities and the objectives. For this research, there are two areas of research design that will be used which are the experimental design and survey.

##### **3.1.1 Experimental Design**

Experimental design is defined as a plan to assign participant in distinct situation of the experiment. This method is concerned with the strength of the experiment. Finney (1978) suggests experimental design is crucial as much as data analysis method in research study.

##### **3.1.2 Survey**

Isaac & Michael (1997) suggest that survey is a process of answering questions that arise, measure the goals and determine if the objective is met. Survey is a simple method that is conducted among participants and require them to answer a set of questions. This method is intended to study human influence and their environment (Krosnick, 1999). It provides a wider range of information since survey method is associated with the individual's opinion and attitudes. However, the limitation of this method is that

participant tend to be biased and inability to interpret information very well due to lack of knowledge. Example of survey method is verbal survey such as questionnaire and conduct interview.

Based on the objectives and aim of the research, experimental design and survey are chosen because this research involves on analyzing the chatbot personality and evaluating the user perception toward chatbot personalities that is different in each area of study.

### **3.1.3 Pilot Test**

Leon, Davis & Kraemer (2009) indicated that pilot test is an important phase in the process of research study. The aim of this test is to verify the possibility of a method in a small scale before it is to be used in a larger scale of study. Paul (2011) in his study revealed that pilot test is meant to be tested on few people of the target audience to see if they can understand the data collection method to be used in a study.

For this research, a pilot test will be used to demonstrate the flow of the experiments with the intention of assessing the student's perception towards the personality of the student academic affair before the experiment will be conducted to a larger number of intended target audience.

## 3.2 Research Approach

Based on the research design, the qualitative and quantity approach will be used in this research.

### 3.2.1 Qualitative Approach

Qualitative approach is an approach that is commonly used to dig deeper into the problem associated with the research. It requires small group of participants or respondents. According to Merriam (2009), this approach is interested in studying people and the significance of their activity and experience.

On the other hand, this approach requires critical understanding of the method in exploring the problem that arise in the research, which allow to develop clear view of the participant and usually perform the study in natural environment (Bacon-Shone, 2015). Several methods associated with this technique is group discussion and observation. The outcome of this technique is a feedback obtained by the participant. This will help the researcher to understand the participant opinion on how they feel toward something.

**Interview.** Interview is a crucial method that can assist in gaining understanding on people's perception and experience (Frances, Ryan & Coughlan, 2009). In this research, the user's perception towards the chatbot personality is crucial as a support for the set of questionnaires. Therefore, the data obtained can be used to analyzed in order to find significant study on chatbot personality.

### 3.2.2 Quantitative Approach

Quantitative approach is a research approach that deals with figures and numbers that is collected through questionnaires and later to be transformed into statistic. Usually, this approach either ends with approval or disapproval of the assumption made at the beginning of the research (Perumal, 2014). This approach focuses primarily on collecting numeric data and used to explain the phenomenon that is studied in the research. The objective of this approach is to identify the relationship of one thing (dependent data) to another thing (independent data).

**T-test.** It is used to assess the hypothesis by finding the mean and the p-value. Two sample t-test is used to compare the mean values for both samples. As stated by Rajagopal & Bojin (2003), t-test is suitable when the relationship between variables need to be measured. This method can be used to generalize the concept widely and able to forecast the future outcome. Not only that, it is used to classify specific features and construct statistical model in order to clarify what is being observed in this research. This research is using t-test to assess the hypothesis of chatbot personality and user experience.

### 3.3 Phases of Research Process

As discussed in the previous chapter (Chapter 2: Literature Review), Kapferer Brand Identity Prism conceptual model is chosen for the research. This is because the brand identity conceptual model consists of ‘personality’ core element which is to be integrated with the chatbot in order to carry out this research.

The idea of this research is to include the personality elements highlighted in the Kapferer Brand Identity Prism into chatbot. This could be achieved by identifying the suitable personality elements and develop a chatbot prototype

with the inclusion of these identified personality elements. The details of the activities involved in this research are included in table below:

**Table 3.1** Chatbot Personality Phases

<b>Phase</b>	<b>Activities</b>	<b>Deliverables</b>	<b>Objective</b>
Knowledge Acquisition	<ol style="list-style-type: none"> <li>1. Review and analyse the existing brand identity conceptual model.</li> <li>2. Study the existing chatbot.</li> </ol>	<ol style="list-style-type: none"> <li>1. Information regarding brand identity and adapt the chosen conceptual model.</li> <li>2. Information regarding existing chatbots with different personality elements.</li> </ol>	Objective 1: To identify the core element of chatbot personality
Prototype Development	<ol style="list-style-type: none"> <li>1. Design the chatbot prototype</li> </ol>	Chatbot prototype.	Objective 2: To develop a prototype that include chatbot core element personality.
Data Collection	<ol style="list-style-type: none"> <li>1. Recruit participants</li> <li>2. Prepare experiment plan - participant's evaluation of chatbot prototype with different personalities.</li> <li>3. Conduct the experiment.</li> </ol>	Experiment data.	Objective 3: To evaluate user perception toward the chatbot.
Data Analysis	<ol style="list-style-type: none"> <li>1. Analyse the data gathered from the experiment.</li> <li>2. Develop a conceptual model based on the analysed data.</li> </ol>	Conceptual model of chatbot personality.	Objective 4: To develop a conceptual model of chatbot personality and integrate the model to Kapferer Brand Identity Prism.

### **3.4 Knowledge Acquisition**

The first phase of this research is knowledge acquisition. Knowledge acquisition is a process where the new information is absorbed and processed in the memory. It reflects on the way the information is presented and organized. The process of storing and retrieving the information depends solely on how the information is represented. In this phase, several activities will be conducted in order to achieve the first objective which is to identify the core element of chatbot personality.

#### **3.4.1 Review and Analyze on The Existing Brand Identity**

##### **Conceptual Model**

In this activity, brand identity models are used by brand strategist in order to create a unique and valuable product or service produced by an organization. There are three conceptual models that were studied in order to determine which model is suitable to be used as guideline throughout this research. First, the Kapferer Brand Identity model consists of six core elements which are physique, relationship, reflection, personality, culture and self-image. Next, De Chernatony Brand Identity model contains four aspects which are personality, positioning, vision & culture and relationship. Lastly, the Aaker Brand Identity Model have four perspectives, brand as product, brand as organization, brand as person and brand as symbol.

The chosen conceptual model for this research is Kapferer Brand Identity Prism. As stated previously, this research is conducted to integrate chatbot with the 'personality' core element in Kapferer Brand Identity prism. Kapferer provide a simple yet understandable description about 'personality' element as compared to the other two brand identity models. Moreover, majority of the researches regarding brand identity are using Kapferer Brand

Identity Prism in order to assist the researcher or brand strategist to define the organizational brand.

### **3.4.2 Study the Existing Chatbots**

During this activity, a study of the existing chatbots has been conducted. The primary reason to study several chatbots is to identify and understand the personality of the chatbots. Some chatbots are being represented with personalities while some are not. Based on a study, it has found that the chatbot with personality tends to increase user satisfaction. This is because the customer feels like they are communicating with a real human instead of talking to a machine.

The customers prefer friendly chatbot with sense of humour, spontaneous and have characteristics that mimic human. For example, a telegram-based chatbot called Bus Uncle is widely used in Singapore and it assists the customer to find bus top and direction. Bus Uncle communicate by using Singapore-English slang with the customer. The customers love to use this particular chatbot because his humour, jokes and spontaneous reaction, which in a way, portrays the human-like personality in chatbot. Some of the customers stated that they use Bus Uncle just to have casual conversation rather than asking for direction because they feel engaged to the chatbot as if it is a human. Not only that, Bus Uncle has been rated five stars in Facebook by the customer.

Compared to chatbot with cold and bland personality such as a weather-chatbot called Weabo, the customer is expecting to have a short conversation before asking the question regarding the weather in a particular region. It is crucial for chatbot to engage with the customer (Brandtzaeg & Folstad, 2017) else they would only use the chatbot only if they want or opt for other alternatives that produce the same result.

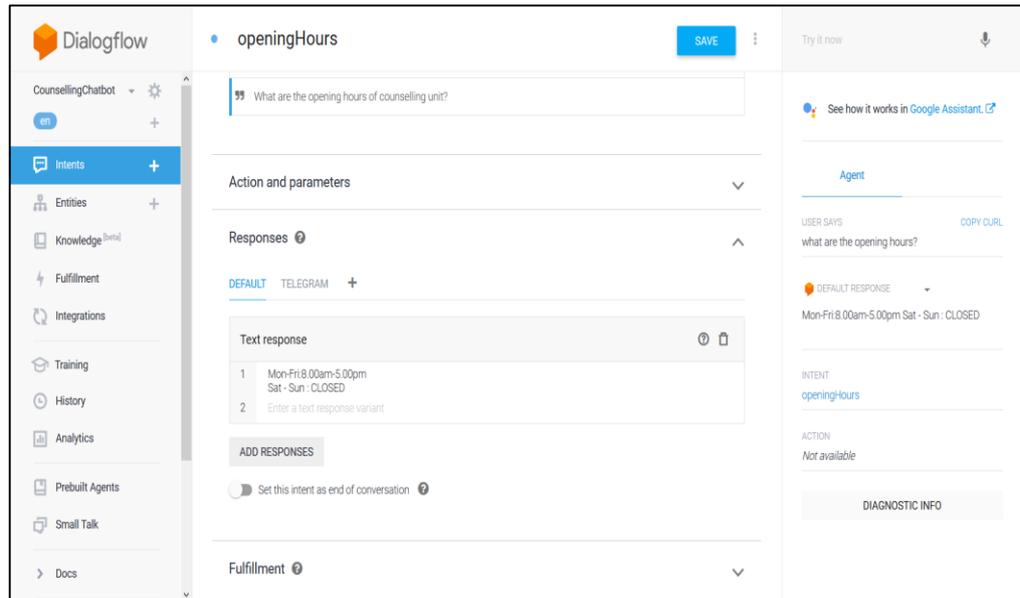
## **3.5 Prototype Development**

After the knowledge acquisition phase, the prototype of chatbot with personality elements will be developed focusing on the FAQs of student academic affair department.

### **3.5.1 Design the Chatbot Prototype**

In this activity, a chatbot template will be used to conduct the research. This chatbot is using a template instead of building from scratch and it is not focusing on the engine and the back end of the chatbot. Currently, there are numerous chatbot templates available online. Some of the chatbot prototype can be integrated with social media platform such as Facebook Messenger and Viber.

The chatbot template is built using Dialogflow.api. Basically, Dialogflow.api lets the developer to customize the chatbot according to their preferences. The user interface is really simple, allowing the developer to create chatbot easily without any hassle. The advantages of Dialogflow.api is that it creates chatbot without any coding and is based on natural language conversation.



**Figure 3.1** DialogFlow chatbot template

(Source: <https://dialogflow.com/>)

## 3.6 Data Collection

During this phase, data collection procedure will be conducted. Data collection is a systematic technique to collect and measure the information that is obtained from multiple source in order to complete and get precise information. By using this method, it allows the organization to answer set of questions, evaluate the result and predict the probability and pattern. The main data collection methods are questionnaires, observation, reporting and interviews. This research will be using existing questionnaire to study the personality of human. The purpose of this study is to identify the personality of human and to be applied in chatbot later on.

### 3.6.1 Recruit Participants

In this activity, a group of UiTM Jasin students aged from 20 to 26 from different programs of Faculty of Computer and Mathematical Sciences are recruited in order to perform the experiment of chatbot personality. Later, the

result of the experiment will be used to study whether chatbot with personality has significant impact on improving user experience.

### **3.6.2 Prepare Experiment Plan**

Test plan is a task that the participant needs to accomplish and a set of questions are used to analyze the feedback from the participant. The purpose of test plan is to give insight to the researchers in conducting their study. This method is based on the research objectives to identify the activity needed to be done and improvised. There are two areas of focuses in this task which are specific task and specific question. Specific task will allow the participant to use the features of the application specifically. Meanwhile specific question is mostly asked to the participant about the opinion and expectation of the specific application and their features.

In this research, it will discuss the evaluation of chatbot prototype with different personalities. Next, it also helps to determine the participant's expectation and opinion towards the chatbot prototype features.

### **3.6.3 Conduct the Experiment**

During this activity, the participants will be using the chatbots by using Telegram. The experiment will take place in the library of UiTM Jasin. After using both of the chatbots, it will be followed up with answering a set of questionnaire and one-to-one interview with the participants.

## **3.7 Data Analysis**

Data analysis is the last phase for this research. This phase will discuss the result obtained from the previous activities and to be used to provide evidence whether to support or rebut the study (Glasgow, 2005). Data analysis is a process of analysing the obtained data. Data is collected and

evaluated to draw a conclusion. There are two types of data analysis which are qualitative data analysis and quantitative data analysis. Qualitative data analysis requires the study using patterns that occur during the study. For example, interviews and focus groups. Meanwhile, quantitative data analysis involves analysis of numbers or figures.

### **3.7.1 Data Gathered from the Experiment**

During this phase in this research, the data obtained from the participant's evaluation of the chatbot prototype will be analysed. This point will also determine if the chatbot personality in context of organizational brand identity will give impact towards the organization and customer perception.

### **3.7.2 Develop a Conceptual Model Based on the Analyzed Data**

This activity is focusing on the development of a conceptual model of chatbot personality and integrate to Kapferer Brand Identity Prism will be conducted.

## **3.8 Summary**

The prototype of the chatbot personality will be developed by using web-based platform (Dialogflow.api) and integrated with Telegram. From the prototype evaluation, the enhancement of Kapferer Brand Identity Prism will be integrated with the chatbot personality conceptual model which is going to be developed in this research.

## **CHAPTER 4**

### **FINDINGS AND ANALYSIS**

This chapter discusses the analysis and findings for this research in order to achieve each objective. The analysis is divided into four sections which are knowledge acquisition (section 4.1), prototype development (section 4.2), data collection (section 4.3) and data analysis (section 4.4). The result of the findings will be summarized in this chapter.

#### **4.1 Knowledge Acquisition**

The beginning of this research process is the knowledge acquisition phase. Researches ought to have an overview and holistic understanding before implementing any research. By having the strong understanding, it would help to guide the researchers to find, read and review any related journals and articles in order to gain knowledge. This phase also requires the researchers to collect the information as much as possible in order to implement the next phase in their research. Knowledge acquisition should be carefully planned to match the objective for this research.

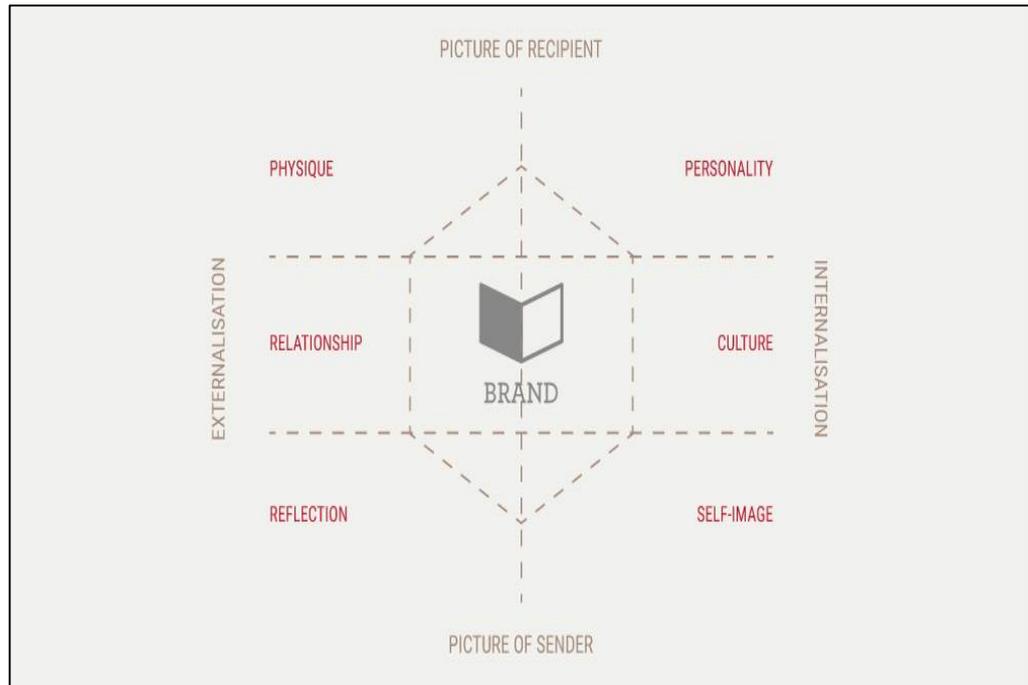
##### **4.1.1 Review and Analyze the Existing Brand Identity Conceptual Model**

The detailed analysis of the conceptual models is available in Chapter 2 (Literature Review). In summary, brand identity is one of the important values in creating a product or service. Having brand identity in an organization will make them unique and differ them from its competitor. Not only that, brand identity plays a solid role in customer's mind, enabling them to make an everlasting impression of a brand (Farhana, 2014).

Conceptual models are useful mechanism in analysing brand identity. For this research, three brand identity conceptual models are compared, which are Kapferer Brand Identity Prism, De Chernatony Brand Identity Model and Aaker's Brand Identity Model.

Based on the analysis of each of the conceptual model, Kapferer Brand Identity Prism (refer to Figure 4.1) is the suitable model to be used for this study. This model is made up of six core elements which are personality, physique, relationship, personality, culture and self-image. All of the six core elements in this model are suitable in identifying the strength and weakness of a brand (Farhana, 2014).

However, the study is conducted to focus on one core element of Kapferer Brand Identity Prism which is the personality element. As stated previously, this research is conducted to integrate chatbot with the 'personality' core element in Kapferer Brand Identity prism. Kapferer provide a simple yet understandable description about 'personality' element as compared to the other two brand identity models because it is straightforward and clearly explains that specific core element.



**Figure 4.1** Kapferer Brand Identity Prism

### 4.1.2 Study the Existing Chatbots

The detailed study of the existing chatbots is available in Chapter 2 (Literature Review). For this research, there are three existing chatbots are being compared in term of their personalities. For instance, Bus Uncle chatbot is fun and grumpy, RHB chatbot is formal and straight forward meanwhile Replika chatbot is compassionate and friendly.

Initially, chatbot does not have personality. Since chatbot is now widely used in assisting human in the organization, it is crucial for chatbot to have personality since the way chatbot is being represented would have impact towards customer's perception. Through personality, emotional connection and trust can be built, making the chatbot more convenient to communicate with (Qian et al., 2017).

To make the chatbot unique and interesting, this research instill the personality of the chatbot based on the Five Factor Model (Big Five Personality Traits). This research is solely focusing on the positive personality traits which means, all of the dimensions are in high range except for Neuroticism (negative personality). The personality traits are identified based on a published research paper which is “The Big Five Personality Factors and Personal Value” by Roccas, Sagiv, Schwartz & Knafo (2002). It is widely used in various field of research study such as entrepreneurship (Rauch & Frese, 2007; Doran, 2009; Chiu, Hsu, Lai & Chang, 2012; Gorgievski, Ascalon & Stephan, 2011; Lan, Gowing, Rieger, McMahon & King, 2010), politics (Caprara, Schwartz, Capanna & Vecchione, 2006; Caprara & Zimbardo, 2004; Freitag & Rapp, 2015, Kuşdil & Şimşek, 2008; Ackermann & Ackermann, 2015), technology (Grabner-Kräuter & Faullant, 2008; Rife, Cate, Kosinski & Stillwell, 2016; Codish & Ravid, 2014, Lönnqvist & Itkonen, 2016; Lee & Lyu, 2016), culture (Fontaine & Richardson, 2005; Tsai, Knutson & Fung, 2006; McCrae & Terracciano, 2005; Sousa, & Bradley, 2006; Saroglou, 2010) and psychology (Hirschi, 2008; Irwin, 2009; Martínez & García, 2007; Milfont & Sibley, 2012; Tartakovsky & Schwartz, 2001).

**Table 4.1** Five Factor Model and High Range Personality Traits

<b>Dimension</b>	<b>High Range Personality Traits</b>
Openness to experience	Intellectual, imaginative, sensitive and open-minded.
Conscientiousness	Careful, thorough, responsible, organized and scrupulous.
Neuroticism	Impatient, depressed, angry, insecure.
Agreeableness	Good-natured, compliant, modest, gentle and cooperative.
Extraversion	Sociable, talkative, assertive and active.

*Source:* Roccas et al., 2002

### **4.1.3 Information Regarding Brand Identity and Existing Chatbots**

In a nutshell, this phase is all about gathering the information on the brand identity conceptual models and the existing chatbots to study the difference of personalities. The Five Factor theory is used to identify the core element of chatbot personality. With the deliverable of this information regarding brand identity and existing chatbots, objective one (1) is achieved.

## **4.2 Prototype Development**

This phase requires the development of the chatbot prototype by using the chatbot template. A student academic affair chatbot is built with personality that is determined through the Five Factor Model. Next, the chatbot will be compared with another student academic affair chatbot without personality to study whether chatbot with personality has significant impact on improving user experience. Both of the chatbots perform the same function, to provide information to the students in UiTM Jasin. The chatbots were developed as an informational chatbot that provides info on the student academic affair matter.

### **4.2.1 Designing Chatbot Personality**

The first step to develop the chatbot with personality is to understand the elements that affect human perception towards the chatbot through personality. The way human perceive chatbot is a crucial factor that can help in designing the personality of the chatbot. It is also important to define the target user and contain relevant information to understand them. Therefore, chatbot personality is designed based on the purpose of chatbot and the target user.

Student academic affair is responsible in handling curriculum, monitoring academic management, manage student registration and course registration.

Students need to be able to trust and rely on them especially when it is related to their journey of study in the university.

As eloquently stated by Thies, Menon, Magapu & Subramony (2017), various chatbot with distinct personality traits are meant to connect with human as a “friend” rather than an “assistant”. It is important that the chatbot connect emotionally with user, one of them is through personality. In order to build the personality traits of the chatbot, it is crucial to understand the target user, their preferences and topic of interest. The target user for this research is the students of UiTM Jasin.

### **Target User**

Designing chatbot personality must be based on the target user that will be interacting with the chatbot. The identified target user for the research is the students of UiTM Jasin that is aged between 18 to 27.

### **Purpose of Chabot**

Student academic affair is responsible in handling curriculum, monitoring academic management, manage student registration and course registration. Students need to be able to trust and rely on them especially when it is related to their journey of study in the university. For this research, a student academic affair chatbot is developed as a type of informational chatbot which provides information to the user such class registration and timetable. The user asks the question and chatbot will response with the predefined answer. This also means that the chatbot handles FAQs of student academic affair.

## 4.2.2 Chatbot Character and Appearance Description

According to Cummings (2017), it is crucial to pick the suitable chatbot personality and meet the expectations of user. The personality of the chatbot is defined based on the purpose of the chatbots and its target user. Humanness is a term that refers to the extent the chatbot imitates human through appearance and capabilities (Smestad, 2018). Meyer (2016) indicates that a high level of humanness is a useful medium to establish trust from the user. In order to make the chatbot appear to be more “human”, its name, gender, avatar and humour are also defined in this study.

### Character Description



Chatbot Daniel's avatar

The chatbot is given by a human name which is Daniel. He is designed to act around the same age of one of the student academic affair staffs of UiTM Jasin. The avatar for this chatbot is portrayed as an illustrated icon instead of real human. This is because too much humanness can give negative impact on human perception (Fink, 2012).

### Gender

Gender of the chatbot plays a massive effect on how the chatbot is being perceived by human (Brahnam & De Angeli, 2012). They also added that female gender is prone to be ascribed with undesirable stereotypes and tend to receive cussing and sexual attention compared to male gender. Therefore, to avoid this problem, the chosen gender for this chatbot is male gender.

### **4.2.3 Personality of the Chatbot based on The Five Factor Model**

Student academic affair can be categorized as a form of customer service. One of the factors contributing to greater customer satisfaction is through personality of the front-line employee (Bowen & Schneider, 1985; Ekinici, Dawes & Massey, 2008). A study by De Haan (2018) indicates that the human personality traits is inherited by the representative such as chatbot have a significance impact on customer satisfaction.

The personality of the chatbot Daniel is focusing on the positive traits. The detailed discussion of Five Factor Model (FFM) is in chapter 2 (Literature Review). There are five dimensions in FFM which are openness to experience, consciousness, extraversion, agreeableness and neuroticism. In order to design positive traits based on the dimension, all of the dimension needs to be in high range personality traits except from neuroticism since it is associated with negative personality traits (refer to Table 4.1).

Each of the dimension represents personality in different ways in term of tone and style of writing. Table 4.2 shows the summarization of each dimension and its style of writing:

**Table 4.2** Five Factor Model dimension and description

<b>Dimension</b>	<b>Description</b>
Openness to Experience	Use longer words for writing,
Conscientiousness	Use formal, non-frequent words and more positive emotions words.
Neuroticism	Tend to pause a lot (E.g.: 'err', 'hmm') which portrays uncertainty.
Agreeableness	Have a tendency to use positive words in conversation and avoid pauses.
Extraversion	Inclined to use lengthier words and more enthusiastic.

*Source:* Mairesse & Walker, 2009

#### **4.2.4 Platform to Build Chatbot**

The chatbot template is built using Dialogflow.api. It is a web-based template that allows the developer to integrate the chatbot into the social media messaging platform. This research is using the existing platform which is Telegram. A study by Bapat (2017) stated that Telegram is a suitable messaging platform and easy to implement and to be integrated with multiple web-based chatbot template. The reason why the chatbot is integrated to the existing platform is because in this era, the rapid popularity of messaging platform is a great tool in developing and discovering chatbots. The chatbot developed for this research is using a text-based as a medium of communication to interact with user.

One of the greatest benefits of Dialogflow.api compared to the other chatbot platform is that it provides various of library to be included in the chatbot. Most of them are used to support small talk such as whether and jokes library. The library offers a good way in expressing the personality of chatbot.

After developing the chatbot on Dialogflow.api, the chatbot is integrated to Telegram. Telegram provide a hassle-free account that can be used to create new bots account, which is the BotFather (refer to Figure 4.2). Later, the chatbot account is created on Telegram and ready to be used.

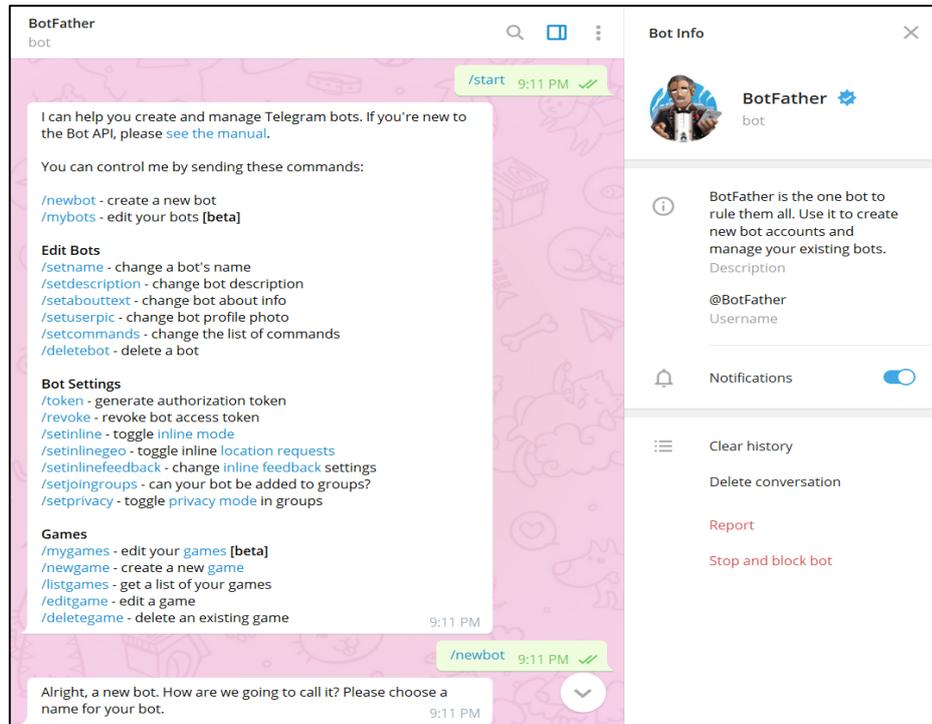


Figure 4.2 BotFather interface to create chatbot account on Telegram

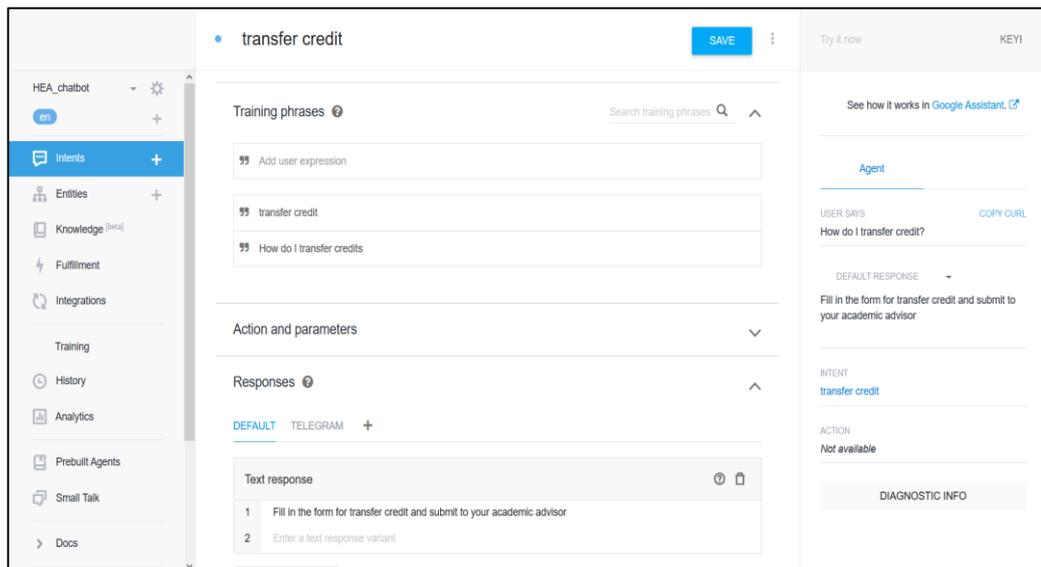


Figure 4.3 Creating intents in Dialogflow.api

## 4.2.5 Chatbot Prototype Conversational Flow

The chatbot prototype was made by using chatbot template as a prove of concept to study the impact of personality, whether chatbot with personality has significant impact on improving user experience or not. This research is focusing on the chatbot personality through the way it interacts with user.

The questions and answers for this chatbot prototype has been defined by the developer. The questions are retrieved based on the FAQs of student academic affair. Example of the predefined questions and answers is shown in table below:

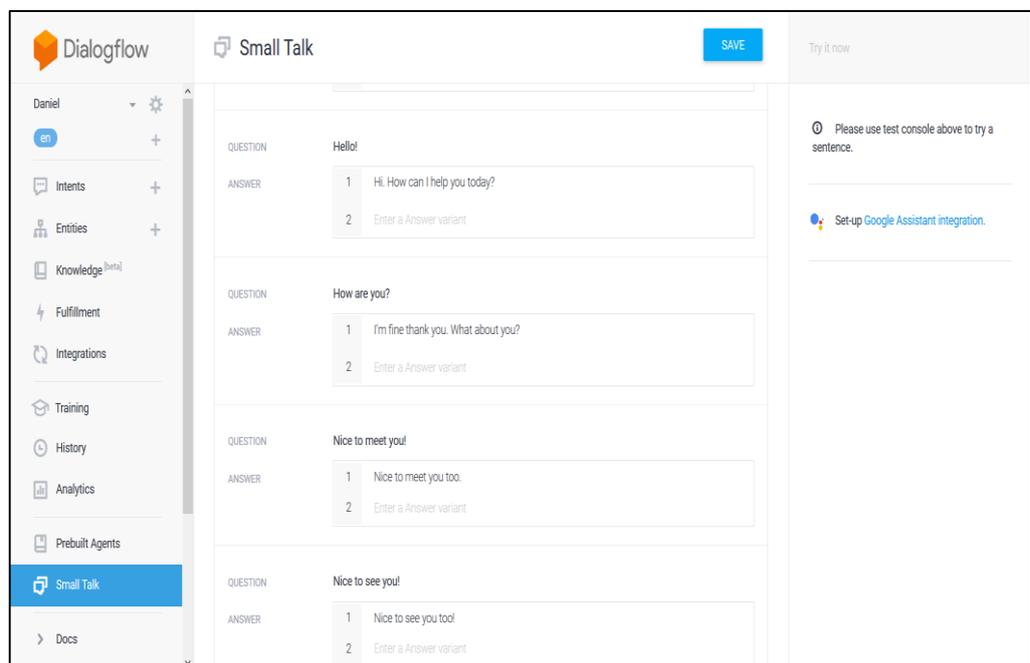
**Table 4.3** Example of FAQs for Student Academic Affair

Question	Answer
What are the maximum credit hours for every semester?	23 credit hours
What are the minimum credit hours for every semester?	15 credit hours
How to transfer credit?	Fill in the form for transfer credit and submit to your academic advisor

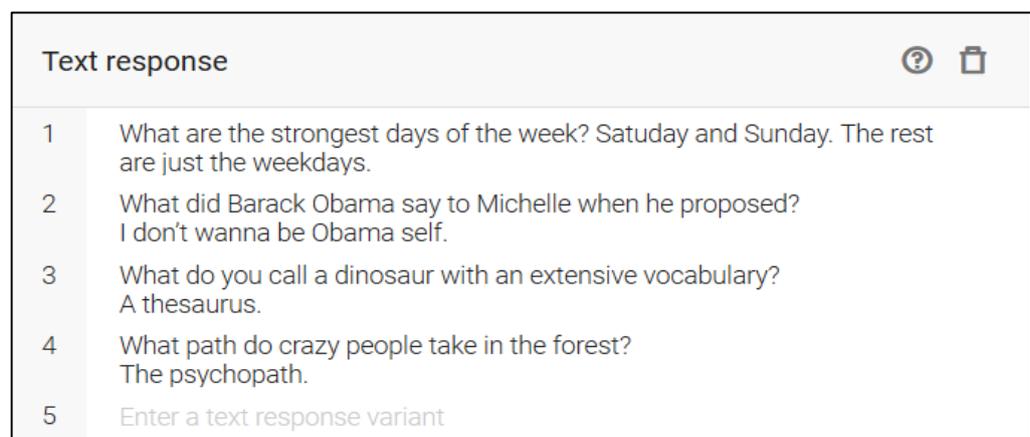
### Small Talk, Emoticon, Humour, Greeting

Small talk is a library provided in Dialogflow.api. Small talk is very important in engaging with people. According Bickmore & Cassell (1999), if chatbot can engage in small talk, it will make it more reliable. Therefore, small talk is added in Daniel chatbot to make it more human-like. The small talk conversation provided in Dialogflow.api contains of the most common popular requests by the user. Bapat (2017) stated that greeting is one of the attributes of personality that makes the chatbot to become more expressive (e.g.: 'Hello', 'Welcome').

Figure 4.4 shows the questions provided by Dialogflow.api and defining its answer based on the developer's preference. Other than that, the chatbot also practice the use of emoticon since it helps in enriching the conversation and portray the personality of the chatbot better (Asher, 2017). Thies et al., (2017) added that humour in chatbot can engage the interaction better with user. Therefore, Dialog.api provides a library for a humorous reply (refer to Figure 4.5), which is helpful in order to make Daniel chatbot to express its personality.



**Figure 4.4** Predefined small talks questions and answers



**Figure 4.5** Defining humour questions and answers

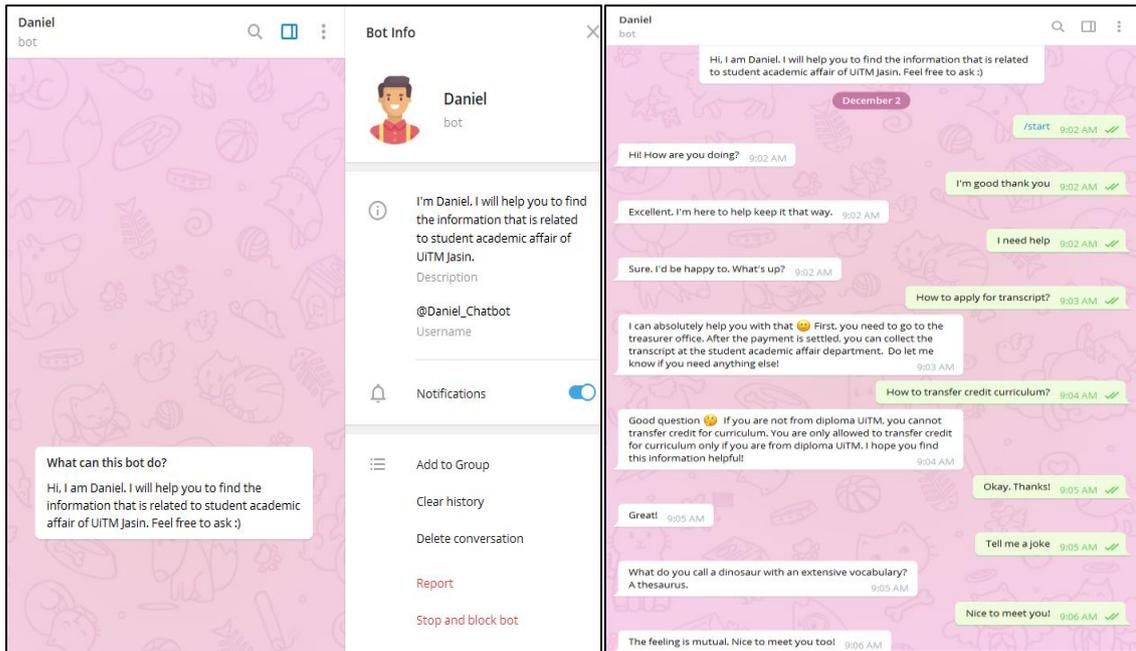


Figure 4.6 Interface of Daniel chatbot on Telegram

## 4.2.6 Chatbot with Personality versus Chatbot without Personality

Two chatbots with the same function are compared in this section in order to identify if chatbot with personality can help to improve user experience. The first chatbot is the Daniel chatbot, which has personality based the Five Factor Model. Meanwhile, the second chatbot is perceived with no personality which is the Student Academic Affair Chatbot System (SAACS). For this comparison, the same questions are asked by the user. The way the chatbots responds to user request is different in term of the personality through text. The SAACS chatbot appear as “robotic” whereas Daniel chatbot appear to be more human. Table 4.4 shows the difference in answering user request between Daniel chatbot and SAACS chatbot.

**Table 4.4** Difference of The Chatbots In Responding to User's Request

<b>User Request</b>	<b>Daniel Chatbot</b>	<b>SAACS Chatbot</b>
What is the maximum credit hours?	For every semester, student is allowed to register for 23 credit hours only. Oh, if you have more inquiry, you can contact your academic advisor.	23 credit hours.
How to book class?	Sure you can 😊 Just fill in the form for booking the class. You can get the form at Hal Ehwal Akademik (HEA) and submit it to the staff that is on duty. Hope this helps!	Fill in the form for booking class. You can get the form at <i>Hal Ehwal Akademik (HEA)</i> and submit it to the staff.
Where to get exam schedule?	You can get the examination timetable at the information board located in student academic affair department or at the lecturer hall in FSKM. I would recommend you to check out the schedule online at <a href="https://bit.ly/2BFCxhI">https://bit.ly/2BFCxhI</a> 😊	Board at <i>Hal Ehwal Akademik (HEA)</i> and <i>dewan kuliah</i> .

#### **4.2.7 Chatbot Prototype**

Based on the information provided in the previous section, a chatbot prototype was built based on the criteria stated in section 4.2. Chatbot personality is expressed through the tone via text. With the deliverables of this phase, objective two (2) is successfully achieved.

### 4.3 Data Collection

This phase discusses on how the experiment is conducted and the data is collected throughout the experiment for the research. The information gathered is crucial in order to determine whether the chatbot personality has significant impact on user experience and to identify the personality traits that is suitable for the student academic affair department.

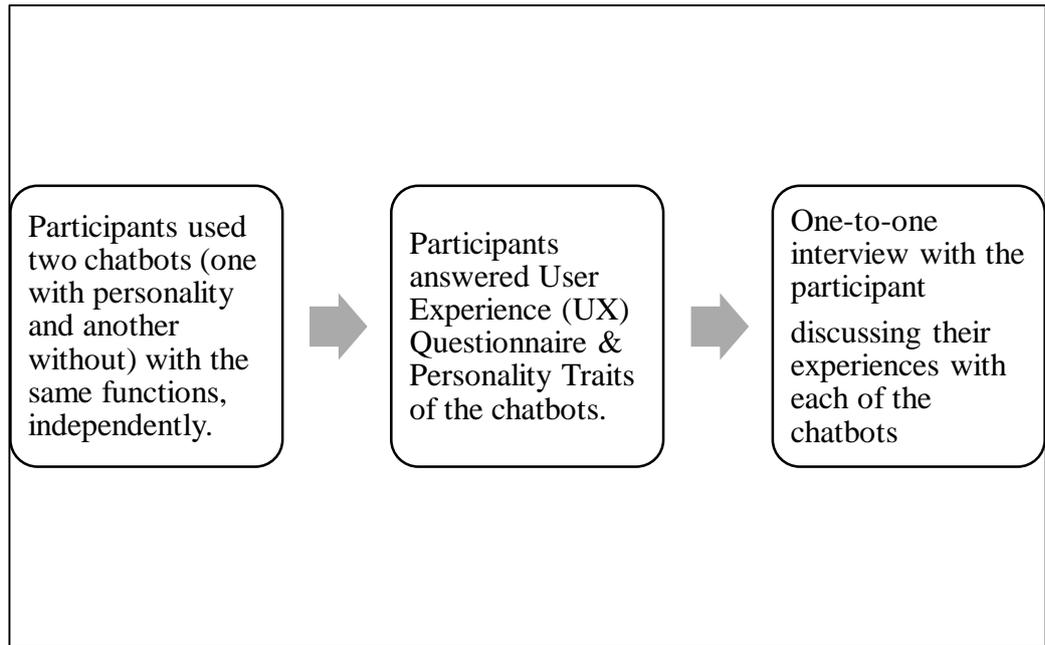
The hypothesis of this experiment is:

H<sub>0</sub>1: Chatbot personality has no effect of on user experience

H<sub>1</sub>1: Chatbot personality has effect of on user experience

(The independent variable is *Personality* and the dependent variable is *User Experience*).

With the purpose of completing this phase, the participants are gathered and briefed on how the experiment will be conducted. On the other hand, a set of user experience (UX) questionnaire and personality traits based on the Five Factor Model are distributed. Lastly, one-to-one interview with the participant is conducted to discuss their experience with each of the chatbots.



**Figure 4.7** Flow of the data collection process for the experiment

### 4.3.1 Recruit Participant

For this research, a message was sent asking for students to volunteer in participating this experiment. 20 participants among the students from Faculty of Computer and Mathematical Sciences of UiTM Jasin agreed to volunteer. This is mainly because the students spend more time at student academic affair department especially during the beginning of the semester by asking question such class registration and timetable class. The participant is aged between 18 to 26. 10 of them are male and the rest are female. Most of them are the final year students which are from part six.

### 4.3.2 Experiment Plan

The experiment is focusing on studying the participants' perception of the chatbots. In the interest of collecting the needed data of the experiment, within subject design is used where each participant is required to use two chatbots, one with personality and another without. Two chatbots perform the

same functions and topics that are related to the student academic affair of UiTM Jasin are used in this study. The difference between the chatbots is through the way they interact with user. Chatbot A (SAACS Chatbot) appear to have ‘no personality’ meanwhile Chatbot B (Daniel Chatbot) is included with personality. The sequence of using both of the chatbots is counter-balanced so that some participants used Chatbot A after Chatbot B and vice-versa.

However, due to the difference of platform in developing the chatbots, only a set of predefined questions are allowed to be asked by the participant for Chatbot A and Chatbot B (refer Table 4.5). Meanwhile, participants are also allowed to engage in small talk on Chatbot B such as “how are you”.

**Table 4.5** Set of Predefined Questions

<b>Question</b>
Can I add or drop the registered courses?
How to book class?
Can I change the program or campus that is offered?
How to transfer credit for curriculum?
Where to get exam schedule
Can I register without paying tuition fees?
Can I register ITS 570 and 670 simultaneously?
What are the maximum credit hours for every semester?
What are the minimum credit hours for every semester?
Can I register third language courses on second semester?
How to apply transcript?

### 4.3.3 User Experience (UX) Questionnaire

The questionnaire is used to assess participants' perception towards the chatbot personality. It was adapted from Design and Evaluation of a Short Version of the User Experience Questionnaire (UEQ-S). User Experience (UX) questionnaire was chosen because it is widely used to measure subjective impression of users towards user experience of a product, which is chatbot. Moreover, this short version questionnaire is suitable for this experiment because it is widely used as an instrument to measure user experience (Shrepp, Hinderks & Thomaschewski, 2017). The analysis of UX questionnaire measures 6 scales which are:

**Table 4.6** Scales of UEQ-S

Scale	Item
Attractiveness	General overview of the product used.
Perspiciuity	The familiarity of the product.
Efficiency	The ability of user to solve the task effortlessly.
Dependability	User feels in control when using the product.
Stimulation	The product is exciting and motivating to use.
Novelty	The product is innovative and creative.

*Source:* Shrepp, Hinderks & Thomaschewski, 2014

The questionnaire was adapted to suit the context of the intended experiment. The participants were asked to state their level of agreement on a Likert-scale by using the Five-Point Scales which is ranging from 1 = Strongly Disagree to 5 = Strongly Agree. Likert-scale is suitable to use when attempting to measure user perception or opinion (Bishop & Herron, 2015). Figure 4.8 shows the example of the adapted questionnaire that is suitable for the experiment context. The full version of questionnaire is included in Appendix A.

**User Experience Questionnaire**

Please rate each of the question from 1-5.  
 5: Strongly Agree  
 4: Agree  
 3: Undecided  
 2: Disagree  
 1: Strongly Disagree

**6. 1. Is the chatbot attractive, enjoyable and pleasing? \***  
*Mark only one oval.*

1      2      3      4      5

---

Strongly Disagree                  Strongly Agree

---

**7. 2. Is it easy to get familiar with the chatbot? \***  
*Mark only one oval.*

1      2      3      4      5

---

Strongly Disagree                  Strongly Agree

---

**8. 3. Does the chatbot react to user request quickly? \***  
*Mark only one oval.*

1      2      3      4      5

---

Strongly Disagree                  Strongly Agree

---

**Figure 4.8** User Experience questionnaire

### 4.3.4 Personality Traits Questionnaire

The personality core elements of chatbot has been defined in Table 2.6. This questionnaire is used to identify the specific personality traits that is suitable for the student academic affair chatbot and to be extended as the elements in the chatbot personality conceptual model.

FFM categorized all of the personality traits into five dimensions which are Openness to Experience, Conscientiousness, Extraversion, Agreeableness and Neuroticism. For each of the personality questionnaire, one specific

personality trait is chosen to represent each of the dimension. This is because, in one dimension, there personality traits have no significant difference. For example, in 'Conscientiousness' dimension contains two personality traits that carry the same meaning such as 'careful' and 'scrupulous'.

The personality traits that represent each of the dimension is chosen based on the suitable personality traits that is relevant with the front-liners employee personality such as open-minded (Openness to Experience), responsible (Conscientiousness), impatient (Neuroticism), cooperative (Agreeableness) and talkative (Extraversion). Figure 4.9 shows the example of the personality questionnaire that is adapted from the Five Factor Model. The participants were asked to state their level of agreement for on a Likert-scale by using the Five-Point Scales which is ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The set of questionnaires was distributed online so that is convenient for the students to answer the questionnaire everywhere and make it easier for researcher to evaluate the data as well as reduce the usage of paper. The full version of questionnaire is included in Appendix B.

**Personality Elements of Chatbot**  
Please rate each of the personality elements from 1-5.  
5: Strongly Agree  
4: Agree  
3: Undecided  
2: Disagree  
1: Strongly Disagree

**12. Open-minded \***  
*Mark only one oval.*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	Strongly Agree				

**13. Responsible \***  
*Mark only one oval.*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	Strongly Agree				

**14. Impatient \***  
*Mark only one oval.*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	Strongly Agree				

**Figure 4.9** Personality traits questionnaire

### 4.3.5 Interview

In addition to the questionnaire, the last activity for each session in one-to-one interview with the participants. The interview was semi-structured, which involves the interviewer and interviewee to discuss about the subject in detail. (Mathers, Fox & Hunn. 1998). They were asked to identify which chatbot they prefer the most (chatbot with personality or chatbot without personality), the things they like and those they dislike about the chatbot. The semi-structured interview format is shown in Appendix C.

### **4.3.6 Procedure**

The procedure for the participants was as follows:

- i. Participants were briefed regarding the purpose of the experiment.
- ii. Participants used two chatbots with the same function, one with personality element and one without personality element. There was no specific time limit for this experiment
- iii. Participants used Chatbot A and Chatbot B alternately to avoid from bias.
- iv. Participants answered user experience (UX) questionnaire and the personality element of chatbot (given in Appendix A).
  - State their experience and the personality traits of on using the chatbots, on a Likert-scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree.
- v. Participants were interviewed to discuss their experience, in general about the chatbots, was conducted at the end of each session.

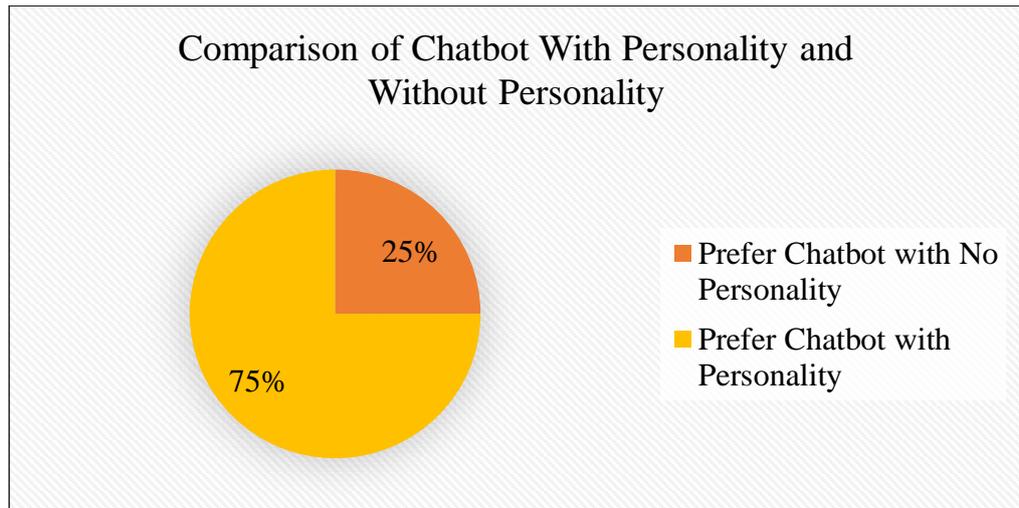
### **4.3.7 Conduct the Experiment**

As stated earlier, a within subject design was used where each participant was instructed to use both chatbots (Chatbot A and Chatbot B) in order to study the if chatbot personality have significant impact on user experience. The sequence of using Chatbot A and Chatbot B is counter-balanced to minimized the effect of bias on the experiment result.

Since both of the chatbots are integrated with Telegram, it is optional for them to use both of the chatbots on their mobile phone or using the laptop that were prepared in the library to assist the participant. The experiment is

using the ‘think aloud’ method<sup>3</sup>, followed by a set of questionnaire and one-to-one interview. Each session took about 20 to 25 minutes for each participant to complete all of the activities.

#### 4.3.8 Experiment Data



**Figure 4.10** Comparison between two chatbots based on qualitative study

According to the interview conducted with all of the participants, most of them responded that they prefer chatbot with personality (Chatbot B). This is due to the personality attributes such as using emoticon, greeting, humour and small talks such as “how are you” make Chatbot B to appear less robotic and friendly. Moreover, it provides clearer instruction as well as fun to interact with other than the answering to user request regarding academic matter.

---

<sup>3</sup> A method where the user is observed while performing the task and asked to describe what he is doing and why.

**Table 4.7** User Experience Data Collection

<b>User Experience (UX) Data Collection Form</b>					
	<b>1 = Strongly Disagree</b>	<b>2 = Disagree</b>	<b>3 = Undecided</b>	<b>4 = Agree</b>	<b>5 = Strongly Agree</b>
Attractiveness					
Perspicuity					
Efficiency					
Dependability					
Stimulation					
Novelty					

**Table 4.8** Personality Traits Data Collection

<b>Personality Traits Data Collection Form</b>					
	<b>1= Strongly Disagree</b>	<b>2 = Disagree</b>	<b>3 = Undecided</b>	<b>4 = Agree</b>	<b>5 = Strongly Agree</b>
Open Minded (Openness to Experience)					
Responsible (Conscientiousness)					
Impatient (Neuroticism)					
Cooperative (Agreeableness)					
Talkative (Extraversion)					

With the intention of collecting data, the participants were asked to evaluate the UX questionnaire and the predefined personality traits for each of the chatbots. Each of the Likert-scale is defined as 1= Strongly Disagree, 2= Disagree, 3 = Undecided, 4 = Agree, 5 = Strongly Disagree (Brown, 2010). Based on the deliverable, objective three (3) is successfully accomplished.

## 4.4 Data Analysis

This phase discusses on the findings based on the collected data. In order to find significant relationship between chatbot personality and user experience, a quantitative study was conducted by using **t-test**. Meanwhile, the interview answer is using the **thematic analysis** to find the theme of the interview data.

### 4.4.1 Results

Table 4.10 shows the participants' agreement with the statements related to user experience using Chatbot A (without personality) and Chatbot B (with personality). Based on the results in the UX questionnaire, the mean for all statements is inclined towards agreement, which shows that participant have positive perception towards both of the chatbot.

The interview session however, shows a different result where 75% of the participants prefer the chatbot with personality while 25% prefer the chatbot without personality. Data were grouped based on the preference on chatbot, the general liking and dislike about the chatbots.

In reference to the one-to-one interview that was conducted at the end of the session, most of the participants prefer Chatbot B (Daniel Chatbot). Table 4.9 shows the summary of the interview answer based on the qualitative study by using **thematic analysis** to find the common themes of the interview data.

**Table 4.9** Interview Data

	<b>Features</b>	
	<b>Chatbot A (without personality)</b>	<b>Chatbot B (with personality)</b>
<b>Like</b>		Small talks
		Friendliness
		Using emoticon/emoji
		Appear to be less robotic
		Clear instruction since it provided links to the related question.
<b>Dislike</b>	Slow response	The sentence should be in paragraph.
	No small talk	

However, there is one respond from the participant that is exclusive from the other answers. The preferred chatbot was Chatbot A (without personality) because it responds in shorter sentence which made it easier to understand the context of the information provided by chatbot.

**Table 4.10** Participants' Level of Agreement for User Experience Questionnaire

		<span style="color: blue;">■</span> Strongly Disagree <span style="color: orange;">■</span> Disagree <span style="color: gray;">■</span> Undecided <span style="color: yellow;">■</span> Agree <span style="color: blue;">■</span> Strongly Agree					
		1	2	3	4	5	
1. It is attractive, enjoyable and pleasing?	Chatbot A						<i>Mean = 3.7</i>
	Chatbot B						<i>Mean = 4.35</i>
2. Is it easy to get familiar with the chatbot?	Chatbot A						<i>Mean = 4.35</i>
	Chatbot B						<i>Mean = 4.35</i>
3. Does the chatbot react to user request quickly?	Chatbot A						<i>Mean = 4</i>
	Chatbot B						<i>Mean = 4.55</i>
4. Do you feel confident when working with this chatbot?	Chatbot A						<i>Mean = 3.9</i>
	Chatbot B						<i>Mean = 4.45</i>
5. Is it exciting and motivating to use this chatbot?	Chatbot A						<i>Mean = 3.9</i>
	Chatbot B						<i>Mean = 4.3</i>
6. Is the chatbot innovative and creative?	Chatbot A						<i>Mean = 3.9</i>
	Chatbot B						<i>Mean = 4.4</i>

The analysis of the questionnaire is divided into six scales: 'Attractiveness' (Statement 1), 'Perspicuity' (Statement 2), 'Efficiency' (Statement 3), 'Dependability' (Statement 4) and 'Stimulation' (Statement 5), 'Novelty' (Statement 6) as they appear in Schrepp, Hinderks & Thomaschewski (2014).

The results show that the user experience for Chatbot B was higher than Chatbot A. The participants' agreement of Chatbot A (without personality) for 'Perspicuity' and 'Efficiency' are incline towards agreement (Mean  $\geq 4$ ), whereas 'Attractiveness', 'Dependability', 'Stimulation' and 'Novelty' are neutral (Mean  $\geq 3$ ).

On the other hand, all of the statements for Chatbot B (with personality) are inclined towards agreement (Mean  $\geq 4$ ). Overall, most of the participants response that elements such as small talks, humour and greetings, friendliness and clear instructions made Chatbot B become outstanding compared to chatbot A.

**Table 4.11** Participants' Level of Agreement for The Personality Traits Questionnaire

		<span style="color: blue;">■</span> Strongly Disagree <span style="color: orange;">■</span> Disagree <span style="color: gray;">■</span> Undecided <span style="color: yellow;">■</span> Agree <span style="color: blue;">■</span> Strongly Agree						
		1	2	3	4	5		
1. Open-Minded	Chatbot A	1	5	3	7	4	<i>Mean = 3.4</i>	
	Chatbot B	11				9		<i>Mean = 4.45</i>
2. Responsible	Chatbot A	4		9		7		<i>Mean = 4.15</i>
	Chatbot B	1	9		10			<i>Mean = 4.5</i>
3. Impatient	Chatbot A	4	3	7		4	2	<i>Mean = 2.85</i>
	Chatbot B	6		4	4	5	1	<i>Mean = 2.55</i>
4. Cooperative	Chatbot A	1	2	4	5	8		<i>Mean = 3.85</i>
	Chatbot B	10				10		<i>Mean = 4.5</i>
5. Talkative	Chatbot A	3	3	8		4	2	<i>Mean = 2.95</i>
	Chatbot B	1	1	10			8	

The personality traits data analysis based on the questionnaire is categorized into five dimensions which are 'Openness to Experience' (Statement 1), 'Conscientiousness' (Statement 2), 'Neuroticism' (Statement 3), 'Agreeableness' (Statement 4) and 'Extraversion' (Statement 5).

The results demonstrate that the personality traits for Chatbot B was higher than Chatbot A except for 'Neuroticism' ( $Mean \geq 2$ ). Neuroticism indicate unstable emotion. The participants disagree that both chatbot are impatient, which means the chatbots do not have the tendency to show irritation or anger when responding to user requests repetitively. Moreover, 'Openness to Experience' (Statement 1) for Chatbot B is inclined towards agreement ( $Mean = 4.45$ ), while for Chatbot A is neutral ( $Mean = 3.4$ ), showing that Chatbot B engage with users in creative ways in term of word choice and using emoticons. On the other hand, the results also demonstrate the participants' agreement towards 'Conscientiousness' (Statement 2) for both chatbots ( $Mean \geq 4$ ), signifying that the chatbots are a reliable source of information.

For 'Agreeableness' (Statement 4), the result for Chatbot B are inclined towards agreement ( $Mean = 4.5$ ) whereas for Chatbot A is neutral ( $Mean = 3.85$ ), implying that Chatbot B is willing to do what students ask.

In addition, significant difference was found in 'Extraversion' (Statement 5). Participants agree that Chatbot B is more talkative ( $Mean = 4.25$ ) meanwhile disagree that Chatbot B is talkative ( $Mean = 2.95$ ), suggesting that Chatbot B is able to engage in small talks other than answering to question related to academic matter.

#### 4.4.2 Statistical Analysis of the Data Gathered from the Experiment

Based on user experience data analysis (refer to Table 4.10), a t-test was run to assess the hypothesis of the experiment, as stated earlier:

H<sub>0</sub>1: Chatbot personality has no effect of on user experience

H<sub>1</sub>1: Chatbot personality has effect of on user experience

(The independent variable is *Personality* and the dependent variable is *User Experience*).

**Table 4.12** *P*-Value for Each Statement

Statement	Chatbot A (with personality)	Chatbot B (with personality)	<i>p</i> -value
	( <i>Mean</i> )	( <i>Mean</i> )	
1	3.7	4.35	1
2	4.35	4.35	1
3	4	4.55	1
4	3.9	4.45	1
5	3.9	4.3	0.62131
6	3.9	4.4	1

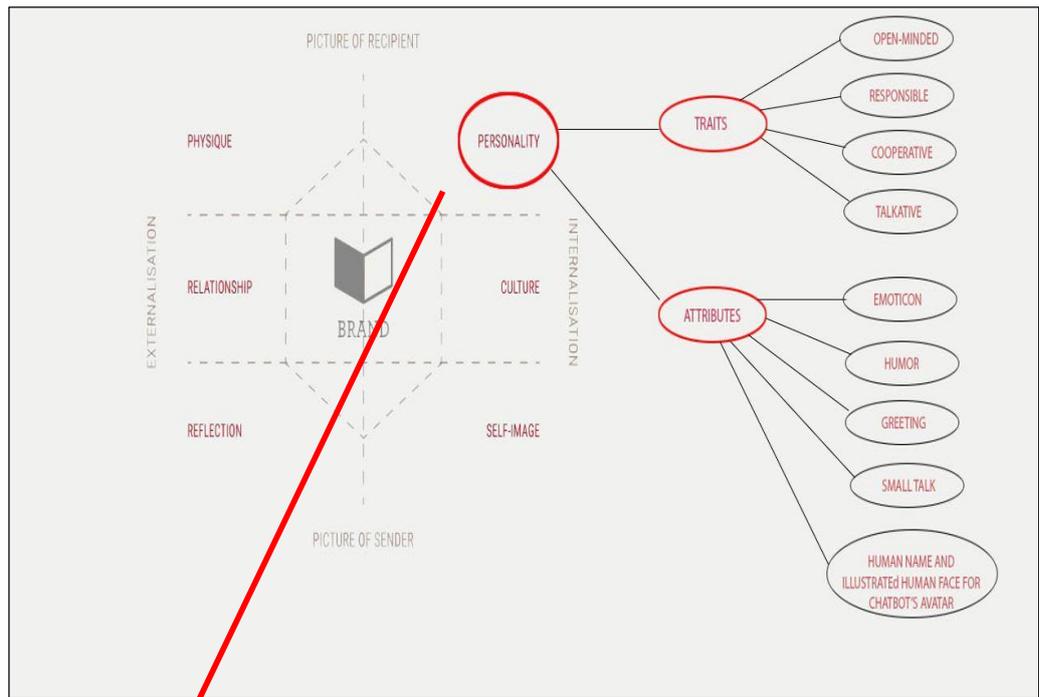
A t-test for a null hypothesis of differences, the *p*-value which is less than the alpha value indicates a significant difference between the two means. If the *p*-value is more than the alpha value, it indicates no significant difference between the two means. In this experiment, the alpha value ( $\alpha$  value) is set to the standard value of .05. Table 4.12 shows the result of the t-test which indicates that the *p*-value is not less than the  $\alpha$  value, ( $p < .05$ ). Therefore, we fail to reject the null hypothesis, suggesting that there is no significant effect of the chatbot personality towards the user experience. Although the null hypothesis is failed to be rejected, the findings discussed in the earlier part of Section 4.4.1 demonstrate that the preferences of the participants were inclined towards the chatbot with personality.

#### **4.4.3 Develop a Conceptual Model Based on the Analyzed Data**

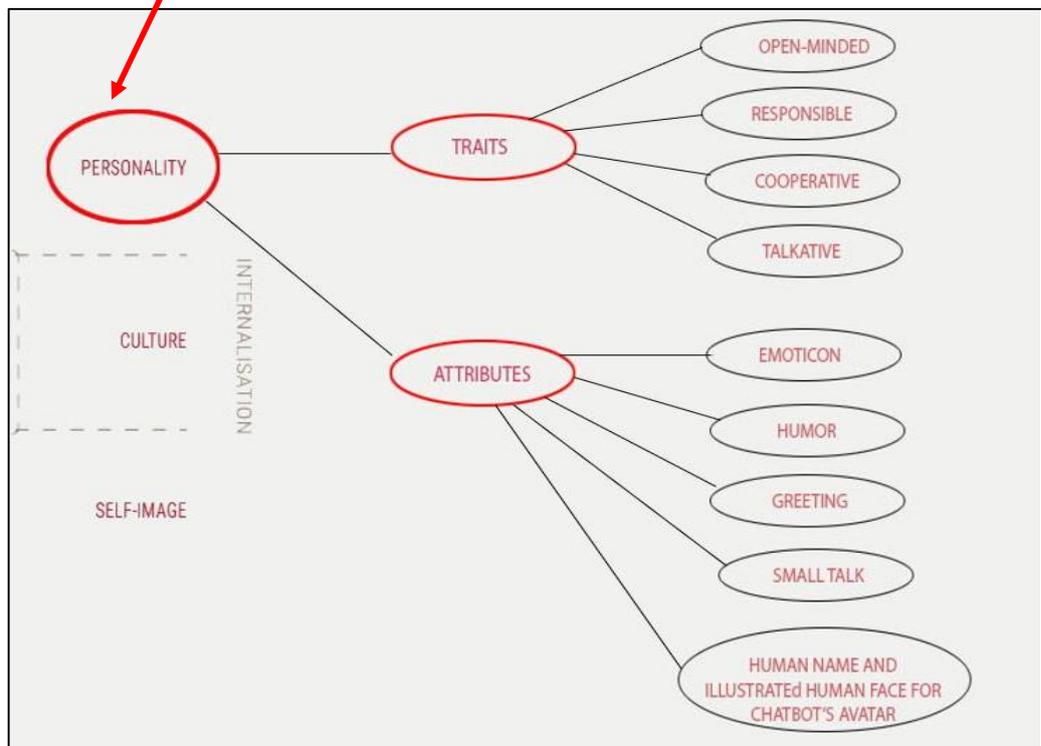
The conceptual model of chatbot personality is enhanced from the Kapferer Brand Identity Prism, focusing on the ‘personality’ core element in order to determine the chatbot personality with unique characteristics. This conceptual model is intended as a guideline to assist the developer or researcher to define the chatbot personality.

In accordance with the analyzed data, the ‘personality’ core element is divided to traits and attributes. Traits are focused on specific personality traits that represents the dimensions of the FFM. For example, open minded represents openness to experience, responsible signifies conscientiousness, impatient denotes neuroticism, cooperative represents agreeableness and talkative signifies extraversion. The personality traits selected for each dimension is based on the high range personality traits that fits in the context of the chatbot for the student academic affair department. Each of the dimension in FFM has different ways in term of the writing style (refer to Table 4.2). Referring to the analyzed data, the neuroticism dimension is excluded from the conceptual model since the data collected in the experiment is declining towards disagreement.

Apart from personality traits, the attributes of personality are determined in order to make the chatbot to appear more human, thus, gaining trust and make the user feel more comfortable when interacting with it. The traits are the usage of emoticons, humour, greeting, small talk and using human name and illustrated human face for the chatbot’s avatar. Referring to the qualitative study conducted on this research, most of the people prefer the chatbot with personality. This includes the attributes stated previously because they felt like talking to real human instead of robot. Therefore, traits and attributes are relevant to be included in the conceptual model of chatbot personality.



**Figure 4.11** The conceptual model of chatbot personality



#### **4.4.4 Conceptual Model of Chatbot Personality**

On the basis of the data analyzed on the previous section, a conceptual model of chatbot personality was developed based on the Kapferer Brand Identity Prism. The ‘personality’ core elements are divided to traits and attributes which contribute in giving the chatbot unique characteristics. With the deliverables of this phase, objective four (4) is successfully achieved.

## **CHAPTER 5**

### **CONCLUSION AND RECOMENDATIONS**

This chapter discuss the conclusion acquired from the execution of this study. It also provides the elaboration on its limitation and future work. The conclusion explains the overview of the research and its finding as well as the discussion from the finding (section 5.1). The limitations of this study are also identified (section 5.2), the recommendations for future work (section 5.3) and the summary (section 5.4) are also provided in this chapter.

#### **5.1 Research Conclusion**

This thesis is aimed to enhance the Kapferer Brand Identity Prism conceptual model with the inclusion of chatbot personality in context of organizational brand identity. Chatbot application has grown immensely popular over the time in supporting people to navigate their daily task and perceived as an easy and fast platform for communication. However, in order to make the chatbot become more memorable and unique, it needs to have personality elements.

Brand identity is represented in chatbot through personality. It gives the chatbot unique characteristic which differs them from one chatbot with another. In addition, chatbot personality makes it exclusive. In order to define the brand identity, Kapferer Brand Identity Prism is used since it is widely implemented in many companies to identify their own brand identity. This study is focusing on the 'personality' elements from the brand identity conceptual model. In order to determine the specific personality traits for the chatbot, the Five Factor Model Personality Theory is used. Although it is made focusing on human, chatbot is inheriting its personality traits from human since it is perceived as a digitized human.

The research was carried out to determine whether the chatbot personality has significant impact on user experience. In order to answer that, a survey and interview was conducted. From the previous study, it was hypothesized that chatbot personality has effect on experience. Nevertheless, based on the statistical analysis, the result did not replicate the previous study regarding chatbot personality effect on user experience. However, based on qualitative study in this research, chatbot with personality is the most preferred compared to chatbot without personality. This can support the studies by Smestad (2018) and De Haan (2018), which chatbot personality improves user experience.

Another aspect in making the chatbot very popular and unique is to account for user experience. Apart from personality traits, personality attributes such as the usage of emoji or emoticons, humour, greetings, small talks and using human name and illustrated human face for the chatbot's avatar need to be considered in order to make the chatbot become more reliable to use and make the conversation less boring. As a conclusion, chatbot personality is an important aspect that needs to be considered when developing the chatbot to make it become more memorable and reliable.

## **5.2 Research Limitations**

There are some limitations that are found which hindered the process of the project. The limitations are as followed:

- Small sample size of study to conduct the experiment which made it tough in finding significant relationship between chatbot personality and user experience. This limitation exists when the scope for the study is limited to one faculty in the university.

- Limited questions allowed to be asked for the chatbots. This is to avoid compatibility issue since Chatbot A and Chatbot B are developed by using different platform.
- Inexperienced participants volunteered for the experiment. Some of the participants were not familiar with chatbot (although they were briefed about the experiment at the beginning of the session), thus they are spending more time on learning how to use chatbot for the first time. This leads to bias when answering the questionnaire after using each of the chatbots (one with personality and one without).

### **5.3 Recommendations for Future Work**

The chatbot personality conceptual model is currently based on the student academic affair department still need to be improved in term validity and reliability of the conceptual model for future enhancement or research. There are several recommendations that can be further investigated and improve this research output:

- This study requires the validity of the developed conceptual model. The development of the conceptual model is based on the experiment. Therefore, this conceptual model should be measured in validating the relationship between chatbot personality and user experience.
- The conceptual model should be enhanced. It is suggested to be explored on identifying more personality elements or attributes as part of the final model. This will help in producing a complete and final chatbot personality conceptual model and contribute to the developer or researcher on emphasizing personality elements in chatbot development.

- This conceptual model should be adapted in different scope. For future study, the conceptual model could be use as guide to develop chatbot personality for different department such as the library, counselling and so forth.

## **5.4 Summary**

This chapter have discussed on the conclusion of the research, limitations and recommendations for future work of the chatbot personality conceptual model. The problems for the research studies can be solved by establishing a conceptual model which can also assist the developer or researcher to develop chatbot that is less boring. The limitations of this research are identified so that it can be improved for future works. Last but not least, the recommendations of the future works are available as an opportunity to anyone who wants to enhance this research project.

## REFERENCES

- Aaker, D 1996, *Building Strong Brands*, 2010 edition, London, Pocket Books.
- Abdul-Kader, S. A. (2015). Survey on *Chatbot Design Techniques in Speech Conversation Systems*, 6(7), 72–80.
- Abu Shawar, B., & Atwell, E. (2007). Chatbots: are they really useful? *LDV-Forum: Zeitschrift Für Computer Linguistik Und Sprachtechnologie*, 22(1), 29–49.
- Allport, G. W., & Odbert, H. (1936). Trait-names: A Psycho-Lexical Study. *No. 211. Princeton, NJ: Psychological Review Monographs*.
- Alreck, P., L. & Settle, R., B. (1999). Strategies for Building Customer Preference. *Journal of Product and Brand Management*, Vol. 8, Issue 2, p. 130.
- Andersson, M., & Otterheim, J. (2003). The Strategic Development of Brand Identity (Bachelor Thesis, The Lulea University of Technology).
- Asher, N. (2017). A Warmer Welcome: Application of a Chatbot as a Facilitator for New Hires Onboarding. Retrieved from <http://urn.kb.se/resolve?urn=urn:nbn:se:lnu:diva-65887>
- Ask, J. A., Facemire, M., & Hogan, A. (2016). The State of Chatbots. *Forrester Research*. Retrieved from <https://www.forrester.com/report/The+State+Of+Chatbots/-/E-RES136207>
- Bacon-Shone, J. (2015). Introduction to Quantitative Research Methods. (*Graduate School, The University of Hong Kong*).

- Bapat, R. (2017). Helping to Better Understand User Requests Efficiently Using Human Computation.
- Bauer, T. N. (2010). Onboarding new employees: Maximizing success. *SHRM Foundation*, 1–54. Retrieved from <http://www.shrm.org/about/foundation/products/pages/onboardingepg.aspx>
- Bickmore, T., & Cassell, J. (1999), Small Talk and Conversational Storytelling in Embodied Conversational Interface Agents. *AAAI Fall Symposium on Narrative Intelligence*. 187-92.
- Bishop, P. A., & Herron, R. L. (2015). Use and misuse of the Likert item responses and other ordinal measures. *International Journal of Exercise Science*, 8(3), 297–302. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4833473/>
- Blackston, M., (1992), ‘Observations: Building Brand Equity by Managing the Brand’s Relationships. *Journal of Advertising Research*, 32 (May/June), 79-83
- Bowen, D. E., & Schneider, B. (1985). Boundary-Spanning-Role Employees and The Service Encounter: Some Guidelines for Management and Research. *The Service Encounter*, 127, 148.
- Brahnam, S. & De Angeli, A. (2012), Gender Affordances of Conversational Agents. *Interacting with Computers*, 24(3), 139–153.
- Brandtzaeg, P. B., & Følstad, A. (2017). Why People Use Chatbots [PDF Document]. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 10673 LNCS, 377–392. [https://doi.org/10.1007/978-3-319-70284-1\\_30](https://doi.org/10.1007/978-3-319-70284-1_30)

- Brassington, F. & Pettitt, S. (2000). Principles of Marketing. *Harlow Financial Times Management*.
- Brown, S. (2010). Likert Scales for Surveys. *The Corsini Encyclopedia of Psychology*. Retrieved from <https://www.extension.iastate.edu/Documents/ANR/LikertScaleExamplesforSurveys.pdf>
- Chantarotwong, B. (2006). The Learning Chatbot. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.92.480&rep=rep1&type=pdf>
- Christensen, L.T. & Askegaard, S. (2001). Corporate Identity and Corporate Image Revisited: A Semiotic Perspective. *European Journal of marketing*, Vol 35, 292-315.
- Ciechanowski, L., Przegalinska, A., Magnuski, M., & Gloor, P. (2018). In the shades of the Uncanny Valley: An Experimental Study of Human-Chatbot Interaction. *Future Generation Computer Systems*, 1–10.
- Cristina, P., & Rodrigues, L. (2011). The Importance of Brand Identity in Consumer Behavior Abstract. *Fundação Para a Ciência e Tecnologia, Portugal*, 1–10.
- Cummings, H. (2017). Finding Your Brand's Tone of Voice: How to Shape A Tone of Voice.
- Davis, S. (2002). Implementing your BAM2 Strategy: 11 Steps to Making Your Brand More Valuable Business Asset. *Journal of Consumer Marketing*. Vol. 19, Issue 6, p. 503.

- De Bod, A. (2013). The Effect of Poor Customer Service and What to Do About It. *Compare Business Products*, 6.
- De Chernatony, L. and M. McDonald (1998). Creating Powerful Brands: In Consumer, Service and Industrial Markets
- De Haan. (2018). Chatbot Personality and Customer Satisfaction. *Chatbot Personality and Customer Satisfaction*.
- Deyoung, C. G. (2015). Cybernetic Big Five Theory. *Journal of Research in Personality*, 56, 33–58.
- Ekinci, Y., Dawes, P. L., & Massey, G. R. (2008). An Extended Model of The Antecedents and Consequences of Consumer Satisfaction for Hospitality Services. *European Journal of Marketing*, 42(1/2), 35–68.
- Eswaran, S., Islam, M. A., & Yusuf, D. H. M. (2011). A Study of the Relationship between the Big Five Personality Dimensions and Job Involvement in a Foreign Based Financial Institution in Penang. *International Business Research*, 4(4), 29–35. <https://doi.org/10.5539/ibr.v4n4p164>
- Etlinger, S. (2017). The Conversational Business: How Chatbots Will Reshape Digital Experiences. *Altimeter Group - Research Reports*, 1–29. Retrieved from <http://www.redibw.de/db/ebsco.php/search.ebscohost.com/login.aspx%3Fdirect%3Dtrue%26db%3Dbuh%26AN%3D123922391%26site%3Dehost-live>
- Fadhil, A. (2018). Domain Specific Design Patterns: Designing for Conversational User Interfaces. <https://doi.org/10.1109/Powercon.2010.5666426>

- Farhana, M. (2014). Implication of Brand Identity Facets on Marketing Communication of Lifestyle Magazine: Case Study of a Swedish Brand, *4*(1), 23–41.
- Fink, J. (2012). Anthropomorphism and Human Likeness in the Design of Robots and Human-Robot Interaction, 199–208.
- Finney, D. J. (1978). Topic 1: *Introduction to Principles of Experimental*, 1–16.
- Frances, Ryan & Coughlan, Michael & Cronin, Patricia. (2009). Interviewing in Qualitative Research. *International Journal of Therapy and Rehabilitation*. 16. 309-314. 10.12968/ijtr.2009.16.6.42433.
- Franzen, G. & Moriarty, S., 2009. *The Science and Art of Branding*. New York: M.E. Sharpe.
- Ghodeswar, B. M. (2008). Building Brand Identity in Competitive Markets: A Conceptual Model. *Journal of Product & Brand Management*, *17*(1), 4.
- Glasgow, P. A. (2005). Fundamentals of Survey Research Methodology. *Centre for Evaluation and Research*, *55*(8), 311–327. <https://doi.org/10.2146/ajhp070364>
- Gosling, S. D., Rentfrow, P. J., & Jr, W. B. S. (2003). A Very Brief Measure Of The Big-Five Personality Domains, *q*, *37*, 504–528.
- Harris, F., & De Chernatony, L. (2001). Corporate Branding and Corporate Brand Performance, *35*(3), 441–456. <https://doi.org/10.1108/03090560110382101>
- Helin, S. (2014). Brand Image and Identity (Degree Thesis, International Business, 2014).

- Hellweger, S., & Wang, X. (2015). What is User Experience Really: towards a UX Conceptual Framework. <https://doi.org/10.1136/pgmj.2009.090696>
- Holtgraves, T. M., Ross, S. J., Weywadt, C. R., & Han, T. L. (2007). Perceiving Artificial Social Agents, *23*, 2163–2174.
- Huynh, T. K. N. (2016). Building Brand Identity Strategy. (Bachelor Thesis, Turku University of Applied Sciences, 2016)
- Isaac, S., & Michael, W. B. (1997). Handbook in Research and Evaluation: *A Collection of Principles, Methods, And Strategies Useful in The Planning, Design and Evaluation of Studies in Education and The Behavioral Sciences*. (3rd Ed.). San Diego: Educational and Industrial Testing Services
- Ivanov, A. V., Riccardi, G., Sporka, A. J., & Franc, J. (2011). Recognition of Personality Traits from Human Spoken Conversations. *Proceedings of the Annual Conference of the International Speech Communication Association, Interspeech*, (August), 1549–1552.
- John, O. P., & Srivastava, S. (1999). The Big Five Trait Taxonomy: History, Measurement, And Theoretical Perspectives. *Handbook of Personality: Theory and Research*, *2*(510), 102–138.
- Jurafsky, D. and Martin, J. (2000). Introduction. In *Speech and Language Processing: An Introduction to Natural Language Processing, Computational Linguistics, and Speech Recognition*, pages 1–18. Prentice Hall, New Jersey.
- Kapferer, J.N. (2004). Brand New World, Brand Equity, *The Economic Times*, June 30, Mumbai.

- Kapferer, J.-N., (2008). *The New Strategic Brand Management: Creating and Sustaining Brand Equity Long Term*. 4th ed. London: Kogan Page.
- Killian, S. (2015). *The Importance of for Environmental Conservation Brands the Importance of Brand Identity for Environmental Conservation Brands*.
- Knight, W. (2017). Andrew Ng Has a Chatbot That Can Help with Depression - MIT Technology Review, *121*(1). Retrieved from <https://www.technologyreview.com/s/609142/andrew-ng-has-a-chatbot-that-can-help-with-depression/>
- Konttinen, J., & Elbanna, K. (2013). Identifying Brand Image Case Revo Design, (November). Retrieved from [https://www.theseus.fi/bitstream/handle/10024/69498/Joel\\_Konttinen\\_Karim\\_Elbanna.pdf?sequence=1](https://www.theseus.fi/bitstream/handle/10024/69498/Joel_Konttinen_Karim_Elbanna.pdf?sequence=1)
- Krosnick, J. a. (1999). Survey research. *Annual Review of Psychology*, *50*, 537–567.
- Kuoksa, M. E. (2017). *Brand Research: Comparison Between the Brand Identity and Image of R/H Studio* (Bachelor Thesis, Tampere University of Applied Sciences, 2017)
- Kurilchik, E. (2017). *Chatbots as a Digital Marketing Communication Tool*. Retrieved from [https://www.theseus.fi/bitstream/handle/10024/131171/Thesis\\_Kurilchik.pdf?sequence=1](https://www.theseus.fi/bitstream/handle/10024/131171/Thesis_Kurilchik.pdf?sequence=1)
- Kuyda, E., & New, T. (2017). *The Friendly Chatbot That Mimics Your Voice*, (July).
- Lannon, J., and Cooper, P. (1983). Humanistic Advertising – A Holistic Cultural Perspective. *International Journal of Advertising*, Vol. 2, No. 3, pp.195-213.

- Lee, D., Oh, K. J., & Choi, H. J. (2017). The Chatbot Feels You - A Counselling Service Using Emotional Response Generation. *2017 IEEE International Conference on Big Data and Smart Computing, BigComp 2017*, 437–440.
- Leon, A. C., Davis, L. L., & Kraemer, H. C. (2010). The Role and Interpretation of Pilot Studies in Clinical Research. *Journal of psychiatric research*, *45*(5), 626-9.
- Lindeberg, A., Blomkvist, C., Johansson, M. (2012). Understanding the Relationship Between Brand identity and Brand image (Bachelor Thesis, Linnaeus University, 2012).
- Mahdi, Z., Mobarakabadi, H., & Hamidi, K. (2015). Brand Identity and Its Models, *2*(2007), 110–116.
- Mairesse, F., & Walker, M. A. (2009). Can Conversational Agents Express Big Five Personality Traits through Language? Evaluating a Psychologically-Informed Language Generator. *Cambridge & Sheffield, United Kingdom: Cambridge University Engineering Department & Department of Computer Science, University of Sheffield.*, 1–59.
- Mat Rahim, S. R., Mohamad, Z. Z., Abu Bakar, J., Mohsin, F. H., & Md Isa, N. (2018). Artificial Intelligence, Smart Contract and Islamic Finance. *Asian Social Science*, *14*(2), 145. <https://doi.org/10.5539/ass.v14n2p145>
- Mathers, N. J., Fox, N. J., & Hunn, A. (1998). Using Interviews in A Research Project. NHS Executive, Trent.
- Mccrae, R. R. & Costa, P., (1996). Toward A New Generation of Personality Theories: Theoretical Contexts for the Five-Factor Model.

- Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative Research: A Guide to Design and Implementation*. John Wiley & Sons.
- Meyer, J., Miller, C., Hancock, P., de Visser, E. J. & Dorneich, M. (2016), Politeness in Machine- Human and Human-Human Interaction, *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* 60(1), 279–283.
- Michiels, E. (2017). Modelling Chatbots with A Cognitive System Allows for A Differentiating User Experience. *CEUR Workshop Proceedings, 2027*, 70–78.
- Moorthi, Y., L., R. (2002). An Approach to Branding Services. *Journal of Services Marketing*, Vol. 16, Issue 3, p.259.
- Mostafa, M., Crick, T., Calderon, A. C., & Oatley, G. (2016). Incorporating Emotion and Personality-Based Analysis in User-Centred Modelling. [https://doi.org/10.1007/978-3-319-47175-4\\_29](https://doi.org/10.1007/978-3-319-47175-4_29)
- Norman, D. A. (2007). *Emotional Design: Why We Love (or Hate) Everyday Things*, Basic Books, New York.
- Oracle. (2016). Can Virtual Experiences Replace Reality? The Future Role for Humans in Delivering Customer Experience. *Oracle*, 1–19. Retrieved from [https://www.oracle.com/webfolder/s/delivery\\_production/docs/FY16h1/doc35/CX\\_ResearchVirtualExperiences.pdf](https://www.oracle.com/webfolder/s/delivery_production/docs/FY16h1/doc35/CX_ResearchVirtualExperiences.pdf)
- Orlova, M. (2016). User Experience Design (UX Design) In A Website Development, (December). Retrieved from [http://www.theseus.fi/bitstream/handle/10024/120948/Thesis\\_UXdesign\\_OrlovaMariia.pdf;jsessionid=3D5D2AB12DAE0DF815B488862BDE9AB0?sequence=1](http://www.theseus.fi/bitstream/handle/10024/120948/Thesis_UXdesign_OrlovaMariia.pdf;jsessionid=3D5D2AB12DAE0DF815B488862BDE9AB0?sequence=1)

- Paul, D. (2011). Pilot Testing Data Collection Instruments. *Center for Evaluation and Research* (May), 1–25.
- Personality Questionnaires (2018). Retrieved from <https://sapa-project.org/>
- Perumal, T. (2014). Research Methodology. *Course Material, Chapter 8* (Leedy1993), 87–104.
- Qian, Q., Huang, M., Zhao, H., Xu, J., & Zhu, X. (2017). Assigning Personality/Identity to A Chatting Machine for Coherent Conversation Generation, 4279–4285. Retrieved from <http://arxiv.org/abs/1706.02861>
- Quach, K. (2016, September 23). Do AI Chat Bots Need A Personality Bypass - or Will We Only Trust Gabber ‘Droid with Character. *The Register*. Retrieved from [https://www.theregister.co.uk/2016/09/23/chatbot\\_design](https://www.theregister.co.uk/2016/09/23/chatbot_design)
- Rajagopal, I., & Bojin, N. (2003). Quantitative Research Methods. *First Monday*, 8(1), 87–104. <https://doi.org/http://dx.doi.org/10.5210/fm.v8i1.1023>
- Rauschenberger, M., Schrepp, M., Perez-Cota, M., Olschner, S., & Thomaschewski, J. (2013). Efficient Measurement of the User Experience of Interactive Products. How to use the User Experience Questionnaire (UEQ). Example: Spanish Language Version. *International Journal of Interactive Multimedia and Artificial Intelligence*, 2(1), 39. <https://doi.org/10.9781/ijimai.2013.215>
- Roccas, S., Sagiv, L., Schwartz, S. H., & Knafo, A. (2002). The Big Five Personality Factors and Personal Values. *Personality and Social Psychology Bulletin*, 28(6), 789–801. <https://doi.org/10.1177/0146167202289008>

- Rolland, J., & Cedex, N. (2002). The Five-Factor Model of Personality Across Cultures, (March). <https://doi.org/10.1007/978-1-4615-0763-5>
- Sääksjärvi, M., & Samiee, S. (2011). Relationships among Brand Identity, Brand Image and Brand Preference: Differences between Cyber and Extension Retail Brands over Time. *Journal of Interactive Marketing*, 25(3), 169–177.
- Scherer, K. R. (1984). Emotion as A Multicomponent Process: A Model and Some Cross-Cultural Data. *Review of Personality & Social Psychology*, 5, 37-63.
- Schlicht, M. (2016). The Complete Beginner's Guide to Chatbots. *Chatbots Magazine (Medium.com)*. Retrieved from: <https://chatbotsmagazine.com/the-complete-beginner-s-guide-tochatbots-8280b7b906ca>
- Schrepp, M., Hinderks, A., & Thomaschewski, J. (2017). Design and Evaluation of a Short Version of the User Experience Questionnaire (UEQ-S), (January). <https://doi.org/10.9781/ijimai.2017.09.001>
- Seeger, A.-M., & Heinzl, A. (2018). Human Versus Machine: Contingency Factors of Anthropomorphism as a Trust-Inducing Design Strategy for Conversational Agents. In *Information Systems and Neuroscience* (pp. 129–139). Springer.
- Shah, H., Warwick, K., Vallverdú, J., & Wu, D. (2016). Can Machines Talk? Comparison of Eliza with modern dialogue systems. *Computers in Human Behavior*, 58, 278–295.
- Shawar, B. A., & Atwell, E. S. (2005). Using Corpora in Machine-Learning Chatbot Systems. *International Journal of Corpus Linguistics*, 10(4), 489–516.

- Smestad, T. L. (2018). Personality Matters! Improving the User Experience of Chatbot Interfaces, (June).
- Sonnier, G. & Ainslie, A. W. (2011). Estimating the value of Brand- Image Associations: The Role of General and Specific Brand Image. *Journal of Marketing Research*, Vol. 48, No 3, pp.518-531.
- Sujan, M. and J. Bettman (1989). The Effects of Brand Positioning Strategies on Consumers' Brand and Category Perceptions: Some Insights from Schema Research.
- Therasa, C., & Vijayabanu, C. (2015). The Impact of Big Five Personality Traits and Positive Psychological Strengths Towards Job Satisfaction: A review. *Periodica Polytechnica Social and Management Sciences*, 23(2), 142–150.  
<https://doi.org/10.3311/PPso.7620>
- Thies, I. M., Menon, N., Magapu, S., Subramony, M., & Neill, O. (2017). How do you want your chatbot? An exploratory Wizard-of-Oz Study with Young, Urban Indians.
- Wright, D. (2016). Digital Assistants/Chatbots – A Brand’ s Best Friend? *Association for Survey Computing*, Volume 7.7, 1–25.
- Yu, Z., Xu, Z., Black, A. W., & Rudnicky, A. (2016). Strategy and Policy Learning for Non-Task-Oriented Conversational Systems. *Proceedings of the 17th Annual Meeting of the Special Interest Group on Discourse and Dialogue*, 404–412.  
<https://doi.org/10.18653/v1/W16-3649>

Yunus, A. R., Najmuddin, S., & Syed, B. (2018). Traits and Factors Theory for Malaysian HLI Enrolment: A New Approach, (April).

Zelenski, J. M. (2007). The Role of Personality in Emotion, Judgment, And Decision Making. *Do Emotions Help or Hurt Decision Making? A Hedgefoxian Perspective*, 9781610445(January 2007), 117–132

ZenDesk (2013) The Good, The Bad and The Ugly: The Impact of Customer Service, Retrieved from May 12, 2019, from <https://www.zendesk.com/resources/the-impact-of-customer-service/>

## **APPENDICES**

### **APPENDIX A: USER EXPERIENCE QUESTIONNAIRE (UEQ-S)**

## User Experience Questionnaire

Please rate each of the question from 1-5.

5: Strongly Agree

4: Agree

3: Undecided

2: Disagree

1: Strongly Disagree

1. Is the chatbot attractive, enjoyable and pleasing? \*

Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	Strongly Agree				

2. Is it easy to get familiar with the chatbot? \*

Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	Strongly Agree				

3. Does the chatbot react to user request quickly? \*

Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	Strongly Agree				

4. Do you feel confident when working with this chatbot? \*

Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	Strongly Agree				

5. Is it exciting and motivating to use this chatbot? \*

Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	Strongly Agree				

6. Is the chatbot innovative and creative? \*

Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	Strongly Agree				

## **APPENDIX B: PERSONALITY TRAITS QUESTIONNAIRE**

## Personality Elements of Chatbot

Please rate each of the personality elements from 1-5.

5: Strongly Agree

4: Agree

3: Undecided

2: Disagree

1: Strongly Disagree

**Open-minded \***

*Mark only one oval.*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	Strongly Agree				

**Responsible \***

*Mark only one oval.*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	Strongly Agree				

**Impatient \***

*Mark only one oval.*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	Strongly Agree				

**Cooperative \***

*Mark only one oval.*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	Strongly Agree				

**Talkative \***

*Mark only one oval.*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	Strongly Agree				

## **APPENDIX C: INTERVIEW QUESTIONS STRUCTURE**

## One-to-One Interviews

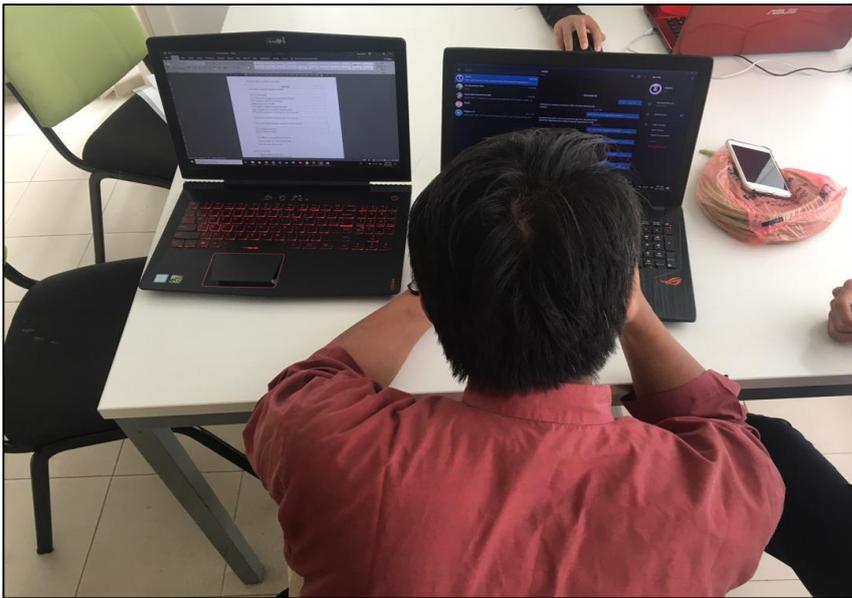
The outline of the questions is:

- Which chatbot do you prefer?
- What do you like/ did not like about the preferred chatbot?
- From the answer, where appropriate:

Could you explain more on ....?

Please tell me more about ....?

**APPENDIX D: PARTICIPANTS' EVALUATION EVIDENCE**



## **APPENDIX E: T-TEST FOR UEQ-S DATA ANALYSIS**

**t-Test Statement 1**

	<i>Without Personality</i>	<i>With Personality</i>
Mean	4	4
Variance	6	26.5
Observations	5	5
Pearson Correlation	0.753399006	
Hypothesized Mean Difference	0	
df	4	
t Stat	0	
P(T<=t) one-tail	0.5	
t Critical one-tail	2.131846786	
P(T<=t) two-tail	1	
t Critical two-tail	2.776445105	

**t-Test Statement 2**

	<i>Without Personality</i>	<i>With Personality</i>
Mean	4	4
Variance	15.5	21.5
Observations	5	5
Pearson Correlation	0.890160433	
Hypothesized Mean Difference	0	
df	4	
t Stat	0	
P(T<=t) one-tail	0.5	
t Critical one-tail	2.131846786	
P(T<=t) two-tail	1	
t Critical two-tail	2.776445105	

**t-Test Statement 3**

---

	<i>Without Personality</i>	<i>With Personality</i>
Mean	4	4
Variance	11	30.5
Observations	5	5
Pearson Correlation	0.818926636	
Hypothesized Mean Difference	0	
df	4	
t Stat	0	
P(T<=t) one-tail	0.5	
t Critical one-tail	2.131846786	
P(T<=t) two-tail	1	
t Critical two-tail	2.776445105	

---

**t-Test Statement 4**

---

	<i>Without Personality</i>	<i>With Personality</i>
Mean	4	4
Variance	14.5	24.5
Observations	5	5
Pearson Correlation	0.543822062	
Hypothesized Mean Difference	0	
df	4	
t Stat	0	
P(T<=t) one-tail	0.5	
t Critical one-tail	2.131846786	
P(T<=t) two-tail	1	
t Critical two-tail	2.776445105	

---

**t-Test Statement 5**

	<i>Without Personality</i>	<i>With Personality</i>
Mean	4.4	4
Variance	11.3	18.5
Observations	5	5
Pearson Correlation	0.933702846	
Hypothesized Mean Difference	0	
df	4	
t Stat	0.534522484	
P(T<=t) one-tail	0.310654148	
t Critical one-tail	2.131846786	
P(T<=t) two-tail	0.621308295	
t Critical two-tail	2.776445105	

**t-Test statement 6**

	<i>Without Personality</i>	<i>With Personality</i>
Mean	4	4
Variance	11	21.5
Observations	5	5
Pearson Correlation	0.845332915	
Hypothesized Mean Difference	0	
df	4	
t Stat	0	
P(T<=t) one-tail	0.5	
t Critical one-tail	2.131846786	
P(T<=t) two-tail	1	
t Critical two-tail	2.776445105	

