

## FACTORS AFFECTING BABY BOOMERS' ATTITUDES TOWARDS THE ACCEPTANCE OF MOBILE NETWORK PROVIDERS' AI CHATBOT

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### Abstract

The research aims to study the factors which affect baby boomers' attitudes towards the acceptance of mobile network providers' Artificial Intelligence (AI) Chatbots in Thailand and their influences. The research sample consists of 400 people who were born from 1946 to 1964 and had experience in using AI chatbots. The proposed concept of model of this research is based on the Technology Acceptance Model (TAM), Modified Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), and Innovation Diffusion Theory (IDT). The questionnaire is the tool for data collection. The statistics for data analysis were mean, percentage, frequency distribution, and standard deviation. The statistical hypothesis testing included confirmatory factor analysis and structural equation model. The results can prove the importance of perceived usefulness, perceived ease of use, compatibility, privacy concern, attitude toward advertisement, and social influence on the acceptance of AI chatbot technology. Consequently, the results help business sectors to form better strategies to promote the broader use of AI chatbots.

**Keywords :** chatbots, Baby Boomer, Mobile Network Providers

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Diterima Redaksi: 28-10-2022 | Selesai Revisi: 09-12-2022 | Diterbitkan Online: 27-12-2022

DOI: <https://doi.org/10.23887/janapati.v11i3.53523>

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### INTRODUCTION

Current technologies such as AI technology, virtual technology, big data, and other technologies, have been used in daily life, especially, in communication. Messaging Application becomes widely used and has strong impact on marketing. Accordingly, customers often have conversation with an advanced computer program called, "Artificial Intelligence (AI) Chatbot", which are embedded in server or chat application when they need information from a company. This digital technology assists many business entities to be able to promptly respond to their customers' questions. AI chatbots improve and replace companies' traditional communication and promote higher marketing efficiency.[1] nowadays, we find that many companies use AI chatbots in their marketing more often than ever before. For example, banks and mobile operators are replacing many workers with AI chatbots.[2] Chatbots are important tools for digital businesses because they can respond to messages 24 hours a day, lower operators' workload, reduce operation expenses, and

quickly inform new promotion to their customers. [3]

In Thailand, mobile network businesses have begun to use AI chatbots and create chatbot characters for their marketing strategy. These created characters are important because they build a chatbot with unique identity. The chatbot, then, could represent a mobile operator and attract users to receive services.[4] For Thailand True Corporation and Advanced Info Services, two out of five mobile network providers, have begun to use AI chatbots, namely Mali AI and Aunjai AI, accordingly. The widely use of smartphones, applications, and tablets in Thailand supports the uses of AI chatbot for asking question or helping to solve problem. With AI chatbot, customers do not have to visit or call people in customer service department and ask for help but their problems could be immediately solved. [5]

However, UneeQ Digital Humans (UNeeQ) discovers that, compared to other groups of generation, AI chatbots are less accepted by the group of baby boomers. Only 38 percent of them are satisfied with the use of AI

chatbots and only 29 percent feels that chatbots were friendly and approachable.[6]

Kaspersky's research reports that this generation has a negative attitude towards technology due to misinformation on social media.[7] The reason might be because baby boomers do not have much experience on highly advanced technology. Hence, they are not familiar with highly advanced technology. Baby boomer were born between 1946 and 1964, after the World War II ended and they are currently old.[8] Nevertheless, they have access to several communication platforms. [9] In contrast to the low adoption of chatbot and other advanced technology, baby boomers have to face a new digital world. Their behaviors are changing. [6] The report of Future-Proofing Your Brand shows that baby boomer group has become the main customer base for smartphone and tablet business. They are the group of consumers with the highest application downloads per month during the first three months of lockdown period during Covid-19 pandemic which more than 1.2 billion new applications had been downloaded worldwide. [10] Additionally, Kasikorn Research Center estimates that most countries are moving towards an aging society and Thailand would fully enter aging society in 2022. Old people are of interest to many marketers as they become an important customer base. Many researchers point that though baby boomers have problems in catching up the new technologies, they are more being able to adopt and learn how to use the new technologies in the digital world.[11] Chatbot or AI chatbot is one of the modern technologies which are widely used by many business sectors in marketing and communicating, especially, in telecommunication or mobile network businesses. However, there are not many studies on the adoption of AI chatbot technology. In Thailand, only 2 out of 5 companies in mobile network business have developed chatbots from a Rule-Based Bot to AI chatbot to provide services to their customers. Eventually, the

remained organizations are expected to develop their own AI chatbots in the same way. [6]

Hence, this research focuses on finding the factors affecting baby boomers' attitudes towards the acceptance of mobile network providers' AI Chatbot. The study's results should be useful for marketers, business owners, and program developers and help them in improving marketing planning and launching business

activities that best meet the needs of these potential customers.

### **Theory and research model development**

The conceptual framework was developed and a research proposal was presented in Figure 1. The study examines the factors that influence baby boomers' attitudes toward adopting chatbot technology based on previous studies about the adoption of technology. The key examined factors are from the concepts of the Technology Acceptance Model, compatibility, privacy concern, attitude toward advertisement, and social influence which are explained as follows:

#### **1 Technology Acceptance Model: TAM**

A widely applied model for explaining the acceptance of the new technology (system) is the Technology Adoption Model (TAM) which is created by Davis (1985).[12] The model concludes that both Perceived Usefulness and Perceived Ease of Use positively influence Attitude towards Using. Besides, Perceived Ease of Use directly affects Perceived Usefulness. When users feel that technology is easy to use, then they will be able to recognize the benefits of technology. After that, when the users perceives that the technology is useful, they will have a positive attitude towards it. At the same time, studies have proved the direct impact of perceived usefulness Perceived Usefulness, Perceived Ease of Use, and Attitude towards Using are common prerequisites for adopting the innovation of chatbot. [13] Therefore, this research would examine Perceived usefulness, Perceived ease of use, Attitude toward using, and Behavior intention factors as follows:

H1. Perceived ease of use has a positive effect on the Perceived Usefulness.

H2. Perceived ease of use has a positive effect on Attitude toward AI Chatbots.

H3. Perceived usefulness has a positive effect on Attitude toward AI Chatbots.

#### **2 Compatibility**

For the concept concerning compatibility, Diffusion of Innovation Theory was invented and developed by Roger in 1995.[14] The theory explains that social change is caused by the spread of something new, from one society to another societies. The new thing is called innovation, the more the user's experience is compatible with that technology, the faster the innovation will be accepted. Hence, compatibility is an indicator of the responsiveness of technology or user values and is seen as a factor

influencing attitudes towards chatbot usage.[13] Therefore, this study forms the following hypothesis:

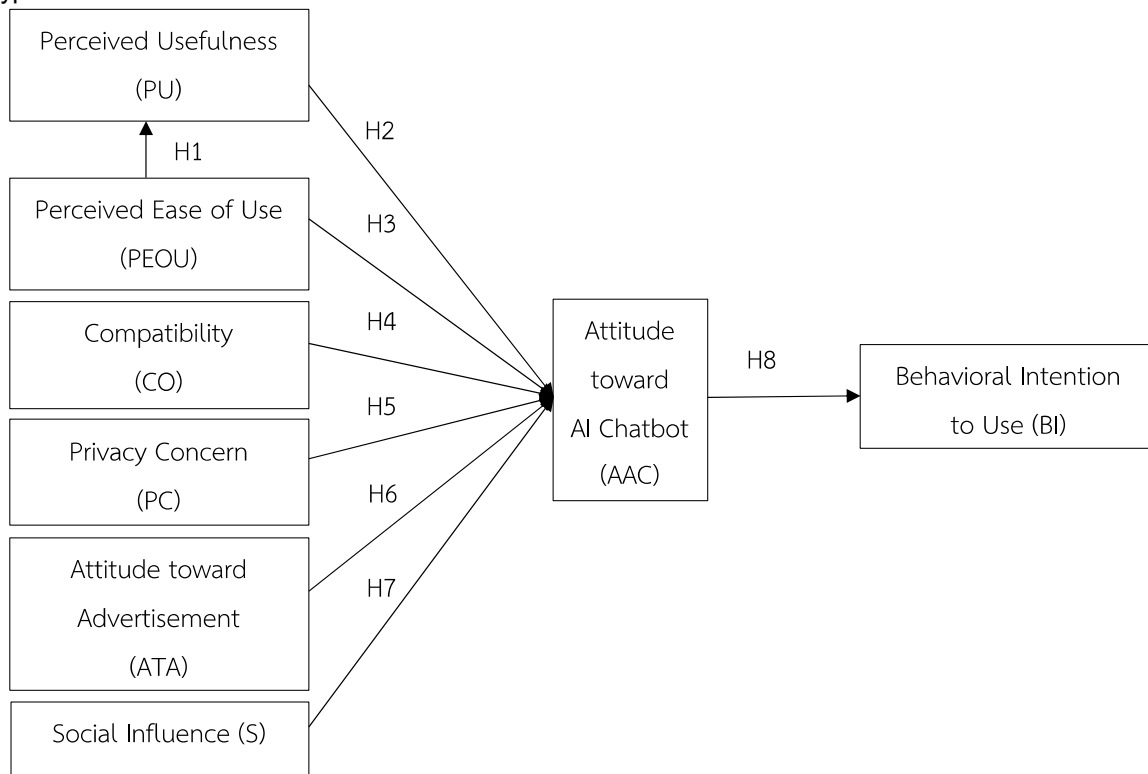


Figure 1. Conceptual Model

### 3 Privacy concern

A lot of researches on technology adoption has taken the privacy concern factor into their studies. AI chatbots are artificial intelligence-powered systems used to communicate and provide information to humans. [15] Though this benefit is vast for the participants, the use of social media or internet access and chatbots makes it easy to access personally identifiable information. [16] Consequently, the use of chatbots raises concerns about data access and misuse.[13]

The potential users who concern about their privacy might decide not to use AI chatbots to protect the leaking of their data to the third party. As a result, this study forms the following hypothesis:

H5. Privacy Concern has a negative effect on Attitude toward AI Chatbot.

### 4 Attitude toward Advertising

Attitude toward Advertising is an inclination caused by a response in a way that

H4. Compatibility has a positive effect on Attitude toward AI Chatbots.

influences or does not influence the stimulus of advertising and influences attitudes towards it. [17] This study examines the factors influencing baby boomers' attitudes toward adopting chatbot technology. Attitude is important in determining behavior and chatbots are often used in sales, promotion, and customer service. [11] Thus, people with positive attitude toward advertising should not feel against the use of AI chatbot. Therefore, the following hypothesis is formed:

H6. Attitude toward Advertising has a positive effect on Attitude toward AI Chatbots.

### 5 Social Influence

Modified Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) is a theory developed from the Modified Unified Theory of Acceptance and Use of Technology (UTAUT) which was built by Venkatesh, Morris, and Davis in 2003.[18] The research of Venkatesh, Thong, and Xu in 2012 adopts UTAUT to UTAUT2 to make it more suitable for the study of users' acceptance and the usability. Among 7 factors found from the study Social Influence Factor is

considered an important one. The social Influence is from the perception of social factors that influence decision-making. The social influence often come family and friends. This research examines the factors affecting Baby Boomer's attitudes toward AI chatbot technology. The Baby Boomers are usually unfamiliar with new technologies.[15] If these people are embracing technologies or know new technologies, they may be influenced by social factors that influence their experiences and attitudes.[19] Hence, social influence factor should be examined and included as a factor which impacts the acceptance of baby boomers' chatbot technology in this study.

H7. Social Influence has a positive effect on Attitudes toward AI Chatbots.

### 6 Attitude toward chatbots

According to TAM, the attitude is a mediator before behavioral intention to use. The attitude can be negative or positive. The attitude towards technology is an important factor which affects technology adoption in the model. Generally, it is expected to positively affect behavioral intention to use of the technology. Thus, the last hypothesis of this study is set as follows:

H8. Attitude toward AI Chatbots has a positive effect on the Behavioral Intention to Use.

### RESEARCH METHODOLOGY

This study focuses on Thai baby boomers born between 1946 and 1964 who have ever used AI chatbots of the two Thai companies in mobile network businesses. This is because there are very rare companies that truly use AI chatbots in Thailand. The selected two companies, True Corporation (TRUE) and Advance Info Services (AIS) truly use AI chatbots and there are many Thai baby boomers who have used their AI chatbots. The sample size was calculated by using Taro Yamane's formula, which was 400 samples.

The research is conducted through survey questionnaires which would be distribute online to 5 groups of Facebook which are widely used by baby boomers. The questionnaire consists of three parts. The first part is designed to screen people who were Thai baby boomer and have ever used True's and or AIS's AI chatbots. The second part is the group of demographic and general information questions including gender, level of education, social media usage, and social media activities. The last part of the questionnaire contains the questions of

Perceived usefulness, Perceived ease of use, Compatibility, Privacy Concern, Attitude towards advertisement, Social Influence, Attitude toward AI chatbot, and Behavioral intention

There are two sections of statistical analysis. The first section is the descriptive statistics section which analyzes and describes the demographic data of the research samples. The statistical methods include frequency, standard deviation, mean, and percentage. The second section is the inferential statistics section. The analysis includes Confirmatory Factor Analysis (CFA) and Structural Equation Model (SEM) Analysis. The CFA analysis purpose is to examine the appropriateness of the measured variables with the nature of the construct. Data analysis by CFA was assessed using the fit indices:  $CMIN/DF \leq 2$ , Comparative of Fit Index (CFI)  $> 0.9$ , Goodness of Fit Index (GFI)  $> 0.9$ , Root Mean Squared Error of Approximation (RMSEA)  $< 0.05$  and Incremental fit index (IFI)  $> 0.90$ . The SEM was used to verify the proposed hypothesis of the research. Data analysis by SEM was assessed using the fit indices:  $CMIN/DF \leq 2$ , Comparative of Fit Index (CFI)  $> 0.90$ , Goodness of Fit Index (GFI)  $> 0.90$ , Root Mean Squared Error of Approximation (RMSEA)  $< 0.05$  and Incremental fit index (IFI)  $> 0.90$ .

### DATA ANALYSIS AND RESULTS

In total, 400 respondents from 5 Facebook groups did the online survey. The respondents who filled the answers were 199 females (50.25%) and 201 males (49.75%). Most respondents graduated from High Vocational Certificate (39%). For more details, 39 percent of the respondents, spent time between 2 – 4 hours on average per day on social media and 23.50% of them use social media for entertainment. The highest frequent activity from the use of Mobile Network Providers' AI Chatbot was asking for helping or advice (55%). 93.75% or 375 respondents received information through chatbots without having to go to the AIS and True shops for further advice.

### Results of CFA

The results of the CFA analysis of the harmonious index measurement of the measurement model revealed that some of the index values did not meet the specified criteria. Therefore, the researcher adjusted the model to make the indices pass the specified criteria. For model fit, the index values pass all criteria as shown in Table 1.

Table 1. Results of Confirmatory Factor Analysis (CFA)

Measurement criteria		Before		After	
		Index value	Assessment results	Index value	Assessment results
CMIN/DF	≤ 2.00	2.495	Not pass	1.046	Pass
CFI	> 0.90	0.917	Pass	0.998	Pass
GFI	> 0.90	0.798	Not pass	0.935	Pass
RMSEA	< 0.05	0.061	Not pass	0.011	Pass
IFI	> 0.90	0.917	Pass	0.998	Pass

Table 1 shows the results of the index analysis before and after the model adjustment. The index values after model adjustment were CMIN/DF = 1.046, CFI = 0.998, GFI = 0.935, RMSEA = 0.011 and IFI = 0.998, indicating that all index values pass the specified criteria.

### Results of SEM

Table 2 summarizes the results of the Structural Equation Model (SEM) analysis. Perceived Ease of Use (PEOU) statistically significantly affects Perceived Usefulness (PU) and Attitude toward AI Chatbot (AAC) ( $B = 0.701$  and  $0.810$ ,  $P$ -value = 0.000 and 0.000). Perceived Usefulness (PU) statistically significantly affects Attitude toward AI Chatbot (AAC) ( $B = 0.220$ ,  $P$ -value

= 0.000). Compatibility (CO) statistically significantly affects Attitude toward AI Chatbot (AAC) ( $B = 0.494$ ,  $P$ -value = 0.000). Privacy Concern (PC) does not statistically significantly affect Attitude toward AI Chatbot (AAC) ( $B = 0.029$ ,  $P$ -value = 0.750). Attitude towards Advertisement (ATA) statistically significantly affects Attitude toward AI Chatbot (AAC) ( $B = 0.609$ ,  $P$ -value = 0.000). Social Influence (S) statistically significantly affects Attitude toward AI Chatbot (AAC) ( $B = 0.460$ ,  $P$ -value = 0.000). Attitude toward AI Chatbot (AAC) statistically significantly affects Behavioral Intention (BI) ( $B = 0.920$ ,  $P$ -value = 0.000). In summary, all hypotheses (H1 – H8), except H5, are accepted.

Table 2. Hypothesis testing results

Hypothesis			Decision
1.	PEOU	→ PU	Accept***
2.	PU	→ AAC	Accept***
3.	PEOU	→ AAC	Accept***
4.	CO	→ AAC	Accept***
5.	PC	→ AAC	Reject
6.	ATA	→ AAC	Accept***
7.	S	→ AAC	Accept***
8.	AAC	→ BI	Accept***

Note path sign: \*  $P$ -value < 0.10, \*\*  $P$ -value < 0.05, and \*\*\*  $P$ -value < 0.01

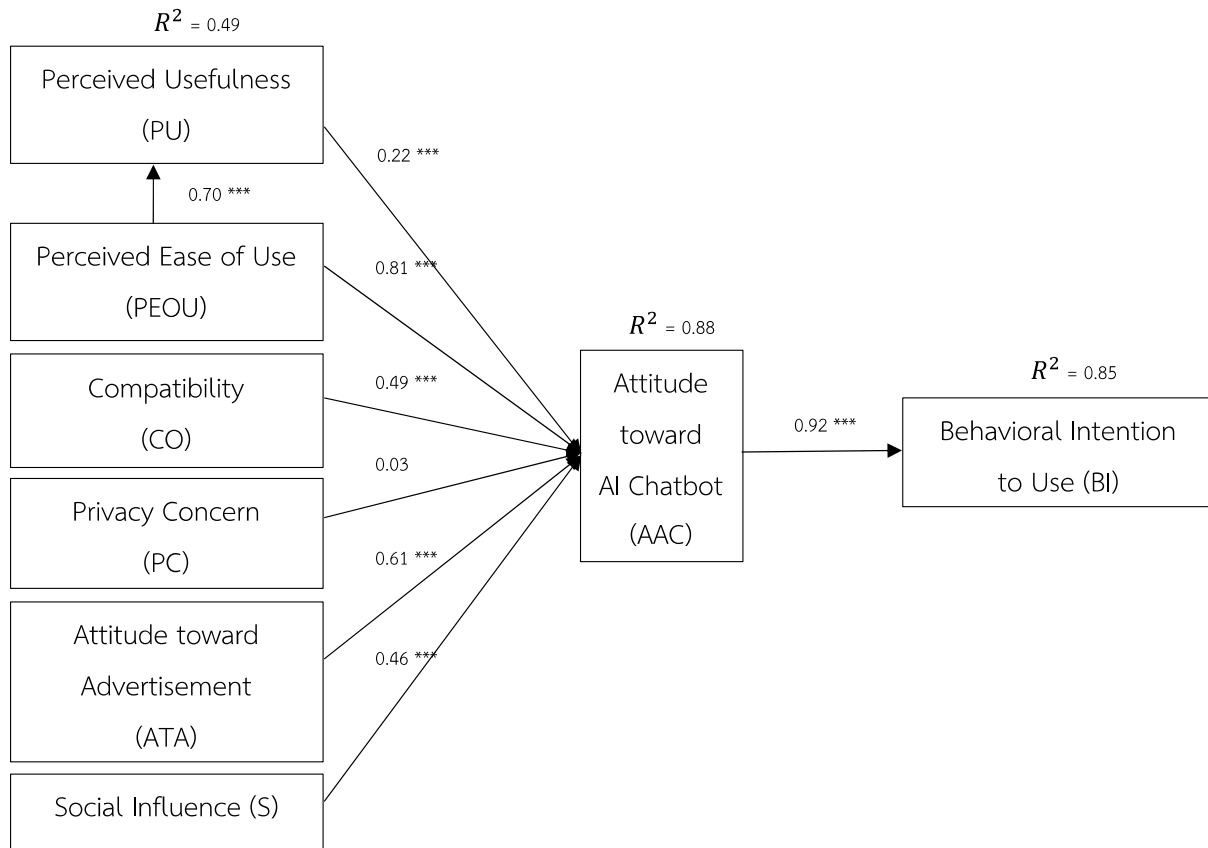
Figure 2 shows the statistic results of Structural Equation Model (SEM). Perceived Ease of Use (PEOU) can predict the Perceived Usefulness (PU) by 49.1% ( $R$ -

Squared = 0.491), Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Compatibility (CO), Privacy Concern (PC), Attitude towards Advertisement (ATA), and



Social Influence (S) can predict Attitude toward AI Chatbot (AAC) by 87.8% (R-Squared = 0.878), and Attitude toward AI

Chatbot (AAC) was able to predict Behavioral Intention (BI) by 84.6% (R-Squared = 0.846)



CMIN/DF = 1.017, GFI = 0.938, AGFI = 0.904, RMSEA = 0.006

Note path sign: \* P-value < 0.10, \*\* P-value < 0.05, and \*\*\* P-value < 0.01

Figure 2. Multiple regression results model

## CONCLUSION

The study found that Perceived ease of use, Perceived usefulness, Compatibility, Attitude towards Advertisement, and Social Influence contributed to Baby boomers' Attitude toward AI chatbots. Descriptively, the majority of baby boomer respondents spend 2-4 hours on social media and the most common activity when using social media is about entertainment. The mobile network's AI Chatbot is a helpful device which support the entertainment activity. More than 90 percent of baby boomer respondents were able to receive complete and useful information from Chatbots without having to go to the branch for inquiries in person. For all supported hypotheses, Perceived Ease of Use is the most important predictor of Attitude towards Baby Boomer's Mobile Network Providers' AI

Chatbot, as suggested by TAM. Perceived Ease of Use is a prerequisite for the adoption of innovation as recommended by Davis (1985).[12] Users will form a positive attitude towards that technology if they do not have to put much effort into it. The result is consistent with Damir's (2021) research.[13] The second important factor to Attitude towards Baby Boomer's Mobile Network Providers' AI Chatbot is Attitude toward Advertisement. Chatbots are often used for sales, promotions, and customer service. Therefore, the previous attitudes or experiences with advertising influenced the acceptance of chatbots. This result is consistent with Damir's (2021) research.[13] The third significant factor is Compatibility. The more the users' past experiences are compatible with Chatbots, the faster the innovation would be accepted.[13]

Surprisingly, Privacy Concern does not influence Attitudes towards AI Chatbot. The reasons may be related to the overcome of the negative impact since AI chatbot users enjoy the convenience and benefits from the technology. Also, they are familiar with the exchanges of their information for other internet services. Lastly, this research has limitations as well. Since it is inconvenient for researchers to directly collect data for the analysis, the data are collected through the dissemination of questionnaires to five Facebook groups which are popular for baby boomers. The data may not truly represent the entire research population.

## REFERENCES

- [1] DIGITAL GOVERNMENT TECHNOLOGY AND INNOVATION CENTER, "Chatbot The Ultimate Smart Assistant" Thailand, 2021, [Online] Available: <https://dgti.dga.or.th/chatbot-2/>
- [2] Prachachat Online, "Financial institutions and the adoption of AI for business" Thailand, 2021, [Online] Available: <https://www.prachachat.net/public-relations/news-819746>
- [3] LINE Developers, "Chatbots, the most widely used AI applications" Thailand, 2019 [Online]
- [4] Krungsri Plearn Plearn, "Elevate your business easier with "Chatbot", the ultimate intelligent assistant of the 4.0 era." Thailand, 2019 [Online] Available: <https://www.krungsri.com/th/plearn-plearn/chatbot->
- [5] MGR, "Mali comes to help" True's AI technology chatbot "online assistant" reduces risks during the COVID-19 situation and takes care of basic services for customers" Thailand, 2021 [Online] Available: <https://mgronline.com/cyberbiz/detail/9640000007617>
- [6] UNeeQ Digital Humans, "We need to chat about chatbots" US, 2019 [Online] Available: <https://digitalhumans.com/blog/we-need-to-chat-about-chatbots/>
- [7] TechTalkThai, "Kaspersky Research Reveals Millennials and Baby Boomers Are Ready for the Tech of the Future Even though I'm still afraid of the good effect" Thailand, 2020 [Online] Available: <https://www.techtalkthai.com/guest-post-kaspersky-millennials-boomers-more-guarded-about-future-tech/>
- [8] Krungsri Guru, "What is the difference between Baby Boomers and Millennials managing money?" Thailand, 2021, [Online] Available: <https://www.krungsri.com/th/plearn-plearn/chatbot->
- [9] Fillgoods, "Penetrate the behavior of consumers of 4 generations, allowing entrepreneurs to plan marketing plans to create sales beyond the target" Thailand, 2021, [Online] Available: <https://www.fillgoods.co/online-biz/shop-orders-focus-on-behavior-4-generations-marketing-plan/>
- [10] Marketingoops, "Survey of Baby Boomers in the digital age with new behaviors facing more online world" Thailand, 2020 [Online] Available: <https://www.marketingoops.com/data/baby-boomer-have-entered-digital-migration-era/>
- [11] The Bangkok Insight Editorial Team, "Countdown that Thailand will enter an aging society in 2022" Thailand, 2019, [Online] Available: <https://www.thebangkokinsight.com/news/business/economics/239862/>
- [12] Davis, F. D., "Perceived usefulness, perceived ease of use, and user acceptance of information technology". MIS quarterly 1989; 319-340
- [13] Dobrinić D, Gregurec I, Dobrinić D. Attitudes of Croatian Consumers About Mobile Messenger Chatbots. Journal of Information and Organizational Sciences. 2021; 45(2): 579-599.
- [14] Rogers, E. Diffusion of Innovations. New York. 1995; Free Press
- [15] Thamonwon, "Information Privacy" Thailand, 2020, [Online] Available: <https://sites.google.com/site/apple581031018/1-khwam-pen-swn-taw-information-privacy>
- [16] SAS, "Natural language processing" Thailand, 2021, [Online] Available: [https://www.sas.com/th\\_th/insights/analytics/what-is-natural-language-processing-nlp.html](https://www.sas.com/th_th/insights/analytics/what-is-natural-language-processing-nlp.html)
- [17] Mitchell A, Olson J. Are product attribute beliefs the only mediator of advertising effects on brand attitude?. Journal of marketing research. 1981; 18(3): 318-332.
- [18] Venkatesh V, Morris MG, Davis GB, et al. User acceptance of information technology: Toward a unified view. MIS Quarterly. 2003; 27(3): 425-478.
- [19] Magnetolabs, "How to convince executives who are not open to technology?" Thailand, 2020, [Online] Available: <https://magnetolabs.com/blog/how-to-convince-non-techie-executives/>