

Research Article

The Use of Artificial Intelligence Chatbots on Student Learning, Information, and Communication in Higher Education

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Abstract.

The research in this article aims to investigate how students use ChatBot Chat GPT 3.5, Gemini AI, and Microsoft Bing as information platforms for providing verified, trustworthy information for academic use. It focuses on the validity and dependability of the data offered by these three AI platforms, as well as the type and frequency of chatbot use, which is important for students' academic success. It uses a literature review method and a questionnaire survey to collect data from students about their use of ChatBots. The findings provide insights into the use of AI technologies through ChatBot features among students, emphasizing their integration into academic activities and the effectiveness of these tools. Additionally, the research addresses key issues such as the accuracy and reliability of the information provided by these platforms, raising concerns about the level of trust and reliance students place on this information for academic purposes. Furthermore, the frequency and nature of use of each chatbot are analyzed to determine the level of dependency and its impact on student learning processes. Although the specific conclusion is not detailed in the excerpts, the research suggests that AI ChatBots significantly enhance communication and information access for students in higher education.

Keywords: artificial intelligence, ChatBot, higher education, information, student

1. Introduction

The rapid development and widespread use of AI technology-based tools has raised new legal and ethical challenges, especially in the areas of information dissemination and information sharing [1]. Humans began to frequently use AI technology in many fields, this presented a more renewable technology that gave rise to the latest generation of AI called Generative AI. Generative AI (Gen-AI) focuses on creating new and unique content with pre-processed data. This content can be in the form of literature, images, music, videos, and others. And it enables its limitless use. ChatBot is one example of the implementation of Generative AI. [2] ChatBot is a program consisting of a combination of AI and Human Computer Interaction (HCI). [3] The system uses Natural Language Processing or (NLP) models and also sentiment analysis to communicate

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in human language through text or spoken speech with humans or other ChatBots. [4]. Digital Assistants, Smart Bots, and AI Conversation are also included as ChatBot technologies. [5]. ChatBots are more efficient for users and more engaging than static content-based search engines. ChatBot offers easier and more efficient assistance to users when communicating and can generate context-appropriate answers directly and also respond to user problems. [6].

We have to admit that digital technologies like AI have become an internal part of our daily lives. They are changing the way we search for information, how we communicate with each other, and even how we behave. As a result, the educational landscape has also started to change. In fact, more and more educational programs are incorporating digital culture into the curriculum.[7]. Technology will continue to evolve, and so will AI integration. As AI technology continues to evolve, so does its integration into the education sector. [8]. The integration of Generative AI (GenAI) in Education presents great potential to reshape the learning experience and empower students and educators alike [9]

ChatBots are increasingly being used to enhance student interaction in today's technological world where communication and many other activities rely heavily on online platforms. Most students in higher education have smartphones and this makes them use internet services frequently. The ChatBot system can be distributed as a mobile web application to assist learning. [10] And most of the AI-based ChatBot features in the latest version take the form of a website platform that adapts to the behavior of its users to improve the experience in education. [7]. More specifically, AI ChatBot technology can provide information in the context of personalized tutoring, assignment help, concept learning, test preparation, discussion and collaboration, and mental health support. [11].

AI chatbots, which are easy to use and provide excellent resources related to the academic sphere, are of great assistance in academic activities, especially at the tertiary level. The presence of ChatBot technology also provides many advantages to a student in the field of scientific writing, including facilitating hypothesis formulation, conducting literature reviews, assistance in problem solving, as well as proficiency in paraphrasing, summarizing, and guiding the editing process. In addition, it is effective in navigating complex processes to obtain the most appropriate information needed. [12]. Artificial Intelligence products based on ChatBot features that are already quite well known include; Chat GPT 3.5, Gemini AI, and Microsoft Bing (Bing AI). Chat GPT 3.5, Gemini AI, and Microsoft Bing have specifications that are almost similar to each other both

in terms of functionality and features provided, this is because the three brands were created by the same type of AI Model, namely the Large Language Model (LLM). [13]. These three brands are commonly used, especially among students as tools that help find information related to academic assignments.

The use of ChatBot-based Artificial Intelligence in the three major brands is commonly used to perform development tasks among students in critical thinking and problem solving, this topic raises statements related to the AI ChatBot Brand that has a high frequency of use or is most favored by users, especially among students and AI ChatBot Brands with the most trusted level of trust and validation of information according to students among the three brands (Chat GPT 3.5, Gemini AI, and Microsoft Bing).

This research refers to updating data about ChatBot-based Artificial Intelligence technology to the three brands that are most often used in academia, namely Chat GPT 3.5, Gemini AI, and Microsoft Bing among students. This study has a problem formulation regarding the credibility and reliability of the information provided by the three AI platforms and examines the frequency and nature of chatbot use, which is very important for students for academic purposes, as well as whether excessive use can affect critical thinking skills and independent research. The use of an AI ChatBot that functions to help students as an information platform must have information credibility and trust scores by users so that each brand studied in the future will further update the sophistication of the features in their products.

The research in this article aims to determine the frequency of use of Artificial Intelligence technology based on ChatBot features from three specific brands, namely; Chat GPT 3.5, Gemini AI, and Microsoft Bing among students where this study assesses the level of popularity among the three brands, knowing the level of student needs in accessing ChatBot brands, the purpose of students using them and knowing the level of trust and validity in information provided by the three ChatBot brands according to students as a platform that helps aspects of life and meets their needs in carrying out activities related to the realm of higher education.

2. Methods

The research method used in making this scientific article consists of the Literature Review Method and Questionnaire Survey.

1. According to [14] The literature review methodology is to read, analyze, and sort through the literature to identify important attributes, this methodology does not directly deal with the object under study, but indirectly accesses information from various literatures, which is generally referred to as the “*non-contact method*”.
2. According to [15]. A questionnaire survey is a set of structured questions asked to respondents during an interview, accompanied by clearly detailed, sequential and selection criteria-compliant instructions.

In this study, a population of 120 respondents was obtained with a sample of respondents obtained randomly from students as many as 60 respondents. The research focuses on the use of ChatBot Chat GPT 3.5, Gemini AI, and Microsoft Bing on UIN Raden Intan Lampung students. To obtain representative data and reduce bias, random sampling method was used in sample selection.

3. Results and Discussion

The research findings in this article provide new insights into the use of Artificial Intelligence Technology Based on ChatBot Features found on Brand Chat GPT 3.5, Gemini AI, and Microsoft Bing among Students in Digitalization of Communication as platforms for reaching information. The research only explores various Generative AI tools, but does not cover all the possibilities of the brand's latest products, especially paid versions such as Chat GPT 4.0, Microsoft Copilot Pro, Gemini Pro. This research tested the free versions of Chat GPT 3.5, Gemini AI, and Microsoft Bing on Students for reasons related to the limitations of some consumers or users.

Data collection was conducted using the Google Forms media platform, making it easy for respondents to access the online survey. The questions featured were designed to generate information on the frequency and purpose of respondents using each AI ChatBot from the three brands, as well as ratings on effectiveness and student experience. The data collected consists of Respondent Demographic Info, User Experience, Frequency of Use, Purpose of Use and Frequency of Trust Level according to Students to the three AI ChatBot brands and with this research can be an opportunity in developing AI Technology Based on ChatBot in accordance with the latest data findings in this scientific article.

3.1. Respondent Demographic Info

Demographic info is used to collect data on respondents who report their answers about the use of AI technology based on ChatBot features of Chat brand GPT 3.5, Gemini AI, and Microsoft Bing in filling out the research questionnaire for this article. This data is important to find out different perspectives or responses among students either due to age or gender differences in the use of these brands.

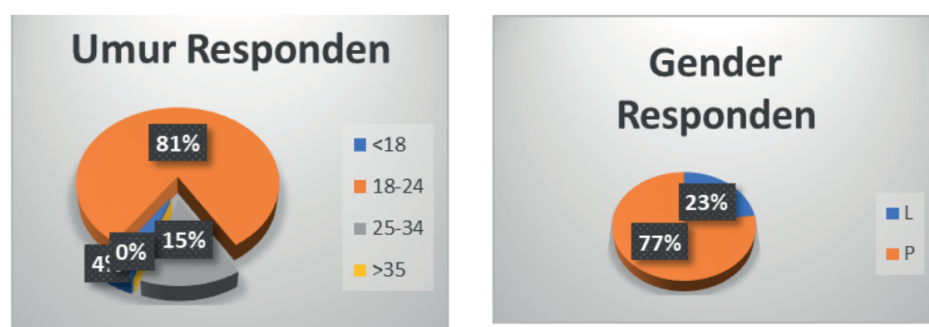


Figure 1: Respondent Demographic Info (Age and Gender).

1. **Description:** In the survey conducted, it was found that the age range of students was quite young. There are 3 respondents who have an age range of <18 years old and below, as many as 56 others are 18 to 24 years old according to the average student at the undergraduate level (S1) in general, there are also 1 respondent with an age of 25-34 years, and an age range of >35 as many as 0 respondents.
2. In the respondent's gender data, 46 women filled out the questionnaire and 14 were men.

3.2. Use of ChatBot by Students: Experience in using Chat GPT 3.5, Gemini AI, and Microsoft Bing

From the research data obtained during the survey, the use of Artificial Intelligence based on the ChatBot feature among students, be it Brand Chat GPT 3.5, Gemini AI, and Microsoft Bing, has been widely used. In accordance with the statement [16] The use of ChatBots in education can enhance the student learning experience and help academic members by bringing automation into the classroom environment.

ChatBot can also be used in educational systems such as technical institutes to facilitate communication. It can be used to enhance student interaction and collaboration, and has the potential to be an agent of change in an increasingly technologically advanced world. Personalized learning environments, intelligent feedback, virtual assistants, efficient teaching, and direct assistance to students can all be provided by AI technology-based ChatBot features. [17].

This survey asked about students’ experiences with AI-based ChatBot features from Chat brands GPT 3.5, Gemini AI, and Microsoft Bing. Respondents were asked to choose whether they had used any of these ChatBots, used them occasionally or whether they had never used them at all. The results of this question provide an initial picture of how much AI technology based on ChatBot features has been accepted and integrated into students’ daily academic activities.

With the data that reveals the popularity of ChatBot-based AI technology among the three Chat brands GPT 3.5, Gemini AI, and Microsoft Bing among UIN Raden Intan Lampung students. Provides data on the latest report variations obtained from student answers. The diversity of answers occurs because among the three brands have different potential according to the students themselves.

TABLE 1: User Experience in using AI ChatBot from Chat GPT 3.5, Gemini AI, and Microsoft Bing.

Brand AI based ChatBot Feature	Results
Chat GPT 3.5	Chat GPT 3.5 is the most popular AI ChatBot brand with the frequency of students who have used it the most in this study. With a total population of 70 respondents and a sample of 60 respondents obtained, 52 student respondents claimed to have used the Chat GPT 3.5 platform, 8 other people only used it occasionally and 1 other has never used Chat GPT 3.5.
Gemini AI	Gemini AI represents an AI ChatBot gaining popularity among students who are in second place after Chat GPT 3.5. With the data collected in the achievement population of 70 respondents and the sample respondents obtained as many as 60 students, 24 student respondents claimed to have used the Gemini AI platform, 18 other respondents only used it occasionally and the remaining 18 stated that they had never used Gemini AI.
Microsoft Bing	On the other hand, the Microsoft Bing or Bing AI brand, has not been widely used by students as a platform that has been used by them. Recorded in the survey research data obtained with a population of 70 respondents and a sample of respondents obtained as many as 60 students, there were at least 35 student respondents who admitted that they had never tried using the Microsoft Bing platform, 11 others only used it occasionally and the remaining 14 others stated that they had used Microsoft Bing.

Chat GPT 3.5 as the brand with the highest popularity shown in the data has its own reasons for its achievement, apart from the computational features that can enrich

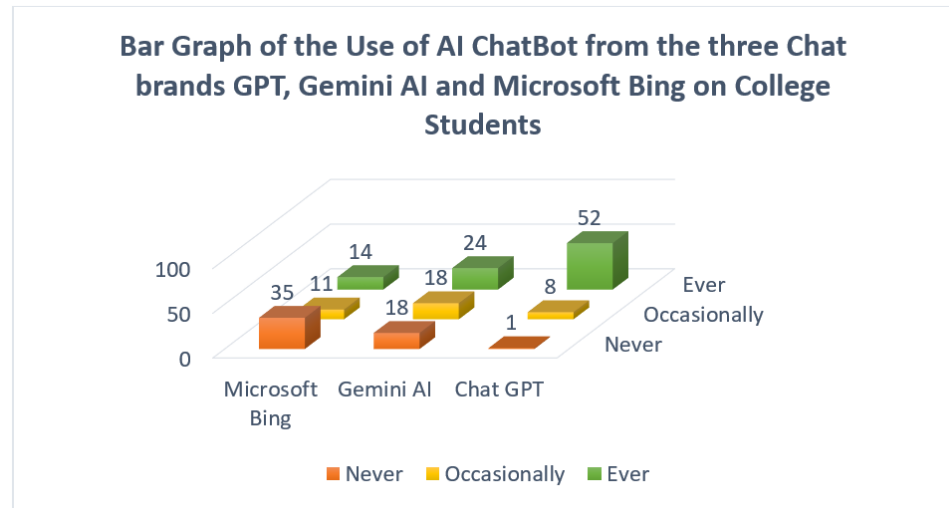


Figure 2: Graph of User Experience in using AI ChatBot from Chat GPT 3.5, Gemini AI, and Microsoft Bing.

vocabulary so that many students have used this brand as a tool to help them with their assignments. Chat GPT 3.5 is also so popular because of its efficient use and easy access for students. However, this can also be caused by its first appearance compared to other AI ChatBot brands. Reported in the journal [18] Artificial intelligence (AI) technology, especially the Large Language Model (LLM), the AI ChatBot that emerged to the public in November 2022 has attracted the attention of a global community that has never had the best experience of an up-and-coming product with powerful capabilities known as Chat GPT 3.5. These factors are able to drive the popularity authority that Chat GPT 3.5 has.

Another factor that can push Chat GPT 3.5 to become the most popular brand comes from the rapid dissemination of information with social media platforms. Social media platforms, such as Tiktok, Instagram, Facebook, WhatsApp and so on are widely accessed by young people such as students. The content on social media created by influencers or content creators specializing in education displays a lot of content about the latest technology brands that can make it easier for students to do their jobs quickly. The emergence of Chat GPT 3.5 as the latest breakthrough AI-based ChatBot feature 2 years ago was quite interesting and was able to give consumers their best experience using Chat GPT 3.5.

Other ChatBots such as Gemini AI and Microsoft Bing have significant popularity compared to GPT 3.5 Chat, according to the data examined in this article. Between Gemini AI and Microsoft Bing have the same popularity that is with the minimum achievement, many students do not know and involve both AI ChatBot platforms in

their academic fields. The minimum value obtained by the two brands can be triggered by the popularity of Chat GPT 3.5 which has already appeared and has penetrated into many sectors that affect human life such as education, thus making these brands less used by students. Although both are AI technology brands based on ChatBot like Chat GPT 3.5, these two brands are still rarely used as a platform to reach information related to the academic field in higher education.

3.3. Use of ChatBot by Students: Frequency of Chat Usage of GPT 3.5, Gemini AI, and Microsoft Bing

In examining the existing patterns of AI ChatBot usage among students of UIN Raden Intan Lampung, another important aspect to consider is the frequency of usage. The survey solicited responses from students on how often they engage with ChatBots offered by AI ChatBot brands such as Chat GPT 3.5, Gemini AI, and Microsoft Bing. The corresponding answers covered a range of frequency levels, from “very often” to “rarely”. This frequency analysis yields important insights into the extent to which AI ChatBots have been integrated into students’ academic activities and how much they rely on this technology for educational and research purposes. In addition, variations in frequency of use across brands can provide an indication of students’ inclinations and assessments of quality and utility on each platform.

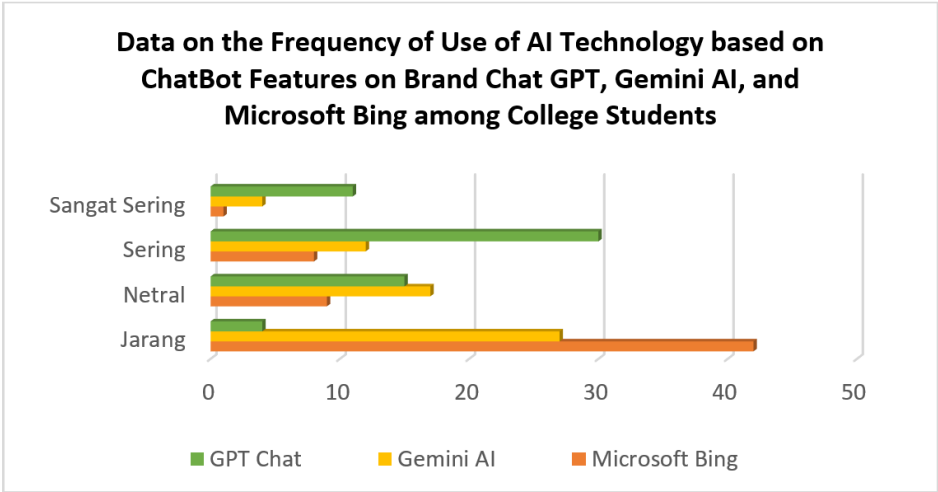


Figure 3: Graph of User Consumption in using AI ChatBot from Chat GPT 3.5, Gemini AI, and Microsoft Bing.

From the bar graph (Figure 3) that presents the frequency of UIN Raden Intan Lampung students in consuming the use of AI ChatBot platforms from the Chat GPT

3.5, Gemini AI and Microsoft Bing brands provides interesting information. In the results of the previous section of research on User Experience in using one of the three AI ChatBot products from Chat GPT 3.5, Gemini AI, and Microsoft Bing does not differ much from the frequency of consumption of its use. From the analysis there are color symbols that mark each brand, Chat GPT 3.5 with a green bar, Gemini AI with a yellow bar and Microsoft Bing with an orange bar, along with the data in the form of an explanation table (Table 2):

TABLE 2: Explanation of the Number of Respondents at Each Bar.

Brand AI based Chat-Bot Feature	Respondent Results
Chat GPT 3.5	<ul style="list-style-type: none">• Very often: 11 respondents• Frequent: 30 respondents• Neutral: 15 respondents• Rarely: 4 respondents
Gemini AI	<ul style="list-style-type: none">• Very often: 4 respondents• Frequent: 12 respondents• Neutral: 17 respondents• Rare: 27 respondents
Microsoft Bing	<ul style="list-style-type: none">• Very often: 1 respondent• Often: 8 respondents• Neutral: 9 respondents• Rare: 42 respondents
	Total of 60 respondents with their respective answers on each brand.

It can be seen that the most frequently used ChatBot consumption among students is the AI ChatBot with Chat GPT 3.5 Brand. At the beginning of its launch, Chat GPT 3.5 had reached one million registered users in just five days and 100 million active users in less than three months.(Jürgen Rudolph & Tan, 2023). Chat GPT 3.5 is the best option for students to get the information they want in a very easy way. From previous research conducted by [17] regarding the benefits of using the GPT 3.5 Chat platform in the realm of higher education. The study mentioned 5 advantages obtained by students in using Chat GPT 3.5, namely functioning as adaptive learning, individualized feedback (self-learning), research support, writing, and data analytics, automated administrative support, and innovative assessment activities. This is one of the factors that drives the high frequency of consumption of AI ChatBot platfroms on the GPT 3.5 Chat brand among university students.

Although both are derived from AI technology based on Large Language Models (LLM), it cannot be denied that there are significant differences between the three brands. The 1:2 comparison between the three brands has its own reasons, especially among students. The use or enthusiasts of ChatBot AI with the Gemini AI and Micosoft

Bing brands are still unfamiliar with using these two brands. The effectiveness of the Chat GPT brand makes the other two platforms less attractive to students. Chat GPT is able to compile natural vocabulary capable of a paragraph, which is of great interest to students because most of their assignments are related to making essays or concept maps. However, this statement can be refuted according to research conducted by [19] discussing the exploration of the performance and accuracy of three ChatBots (Chat GPT, Gemini AI, and Copilot) in defining five basic chemical concepts compared to the definitions in the IUPAC Summary of Chemical Terminology found different results from previous findings that had been done by [13] who suggested that *“the performance of Chat GPT (both free and commercial versions) is much better than Google Bard (Gemini)”*. In his findings [19] revealed that among the three Chat Bot brands namely Chat GPT, Gemini AI, and Microsoft Bing gave equally satisfactory results to define a concept related to their research. This proves that the three ChatBots have the same ability to carry out a user request, especially college students.

3.4. Use of ChatBot by Students: The goal of using Chat GPT 3.5, Gemini AI, and Microsoft Bing

The use of AI ChatBots in higher education academics can serve various purposes for students, such as showcasing the adaptability and effectiveness of this technology in meeting their productivity. ChatBots are commonly used to quickly access accurate information, whether for academic assignments, understanding complex concepts, or finding additional references. In addition, some students use ChatBot for entertainment purposes such as playing games or receiving content recommendations from various social media platforms. There are also those who use ChatBots to receive technical support or customer support from certain services, for example on E-Commerce application platforms.

With the research data regarding the analysis of the purpose of using ChatBot by UIN Raden Intan Lampung students using the three Chat brands GPT 3.5, Gemini AI, and Microsoft Bing can help us understand how AI ChatBot has evolved into a multifunctional tool that supports and influences various aspects of student life, both inside and outside the academic environment.

In Figure 4, it is clear that the use of AI ChatBot Technology, be it Chat GPT 3.5, Gemini AI, and Microsoft Bing among students as much as 63% is used for learning purposes. The 63% figure is obtained from 46 respondents who chose to use ChatBot

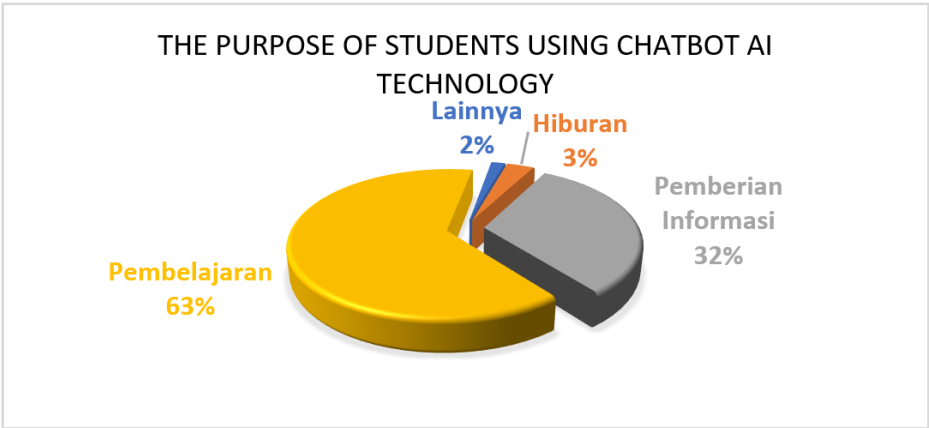


Figure 4: Graph of the Purpose of Using AI ChatBot from Chat GPT 3.5, Gemini AI, and Microsoft Bing among Students.

AI as a learning objective regarding their academic assignments. Another 32% or as many as 18 respondents chose AI ChatBot to be used as an information provision platform. There are 2 respondents with a percentage of 3% having the aim of accessing an entertainment content from ChatBot AI platforms, as well as another 2% which is only filled by 1 respondent choosing other.

In higher education, students are required to have critical thinking and problem-solving skills. Unfortunately, times are changing and they are turning to ChatBot technologies such as Chat GPT, Gemini AI, and Microsoft Bing to enhance their learning experience. Chat GPT, with its advanced natural language processing capabilities, assists college students in tasks such as drafting essays, completing assignments, and understanding complex concepts. Meanwhile, Gemini AI is preferred by students who need more comprehensive data analysis and assistance in scientific research. Microsoft Bing, on the other hand, is mostly used for information search and reference. These ChatBot technologies play an important role in enriching students’ academic journey, providing better support, and increasing productivity in higher education. The provision of learning fields obtained in this AI-based ChatBot technology can maximize a student’s ability to explore related to their scientific tasks. This is also supported by some previous research on ChatBot in higher education.

3.5. Frequency Level of Trust in AI ChatBot Technology on Chat brands GPT 3.5, Gemini AI, and Microsoft Bing According to Students

The data in the last discussion relates to ethics in technology. Consumer or user trust in a product is an important part of improving a better experience for consumers in the future. The existence of a good relationship between the user and the product of a company indicates good performance in designing, making, and optimizing the product. This also applies to technology products, especially in maintaining users’ personal data. Providing content according to the user’s wishes is also something that is considered. A technology brand needs to provide information with the real truth. Providing content without a clear basis for the origin of the information can cause the spread of fake news and is very risky both for product platforms and users. Various kinds of risks need to be borne in maintaining data and the level of consumer confidence that is always vulnerable to change. User vigilance also needs to be increased in carrying out an activity related to advanced technology such as AI. Consumers must be able to balance the use of technology with reality.

The data obtained in this questionnaire survey is about the level of trust of UIN Raden Intan Lampung students in the three brands, namely Chat GPT 3.5, Gemini AI, and Microsoft Bing as platforms to obtain actual and credible information in finding content or information for their use in the academic realm. In addition, this questionnaire also collects students’ reports on Artificial Intelligence technology based on ChatBot features among the three brands Chat GPT 3.5, Gemini AI and Microsoft Bing which they think provide the most up-to-date and well-validated information.

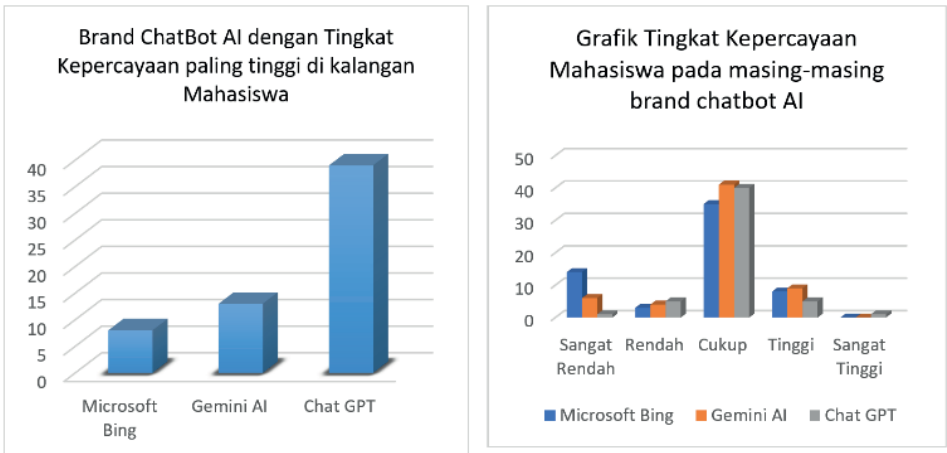


Figure 5: Graph of Student Trust Level in AI ChatBot; Chat GPT 3.5, Gemini AI, and Microsoft Bing among Students.

Figure 5 above displays two graphs that have the same context in this study, namely the level of student trust in AI ChatBot on the Chat brand GPT 3.5, Gemini AI, and Microsoft Bing. Although they look the same, the graphs display different data. The graph of ChatBot AI with the highest level of trust among students among the three brands has the highest value obtained by Brand Chat GPT 3.5 with the results of respondents who chose it as many as 39 respondents, 13 others chose Gemini AI as the most trusted ChatBot AI brand platforms and 8 others chose Microsoft Bing.

To graph the level of student trust in each ChatBot brand including, the data obtained for the Chat GPT 3.5 brand (1) respondents chose very low, (5) respondents chose low, (40) chose sufficient, (5) chose high, and (1) chose very high. For the Gemini AI brand, the data collected consists of (6) respondents choosing very low, (4) respondents choosing low, (41) choosing moderate, (9) choosing high, and (0) choosing very high. Furthermore, for the Microsoft Bing brand, data was obtained with (14) respondents choosing very low, (3) respondents choosing low, (35) choosing moderate, (8) choosing high, and (0) choosing very high.

In this study, college students' level of trust in three ChatBot brands, namely Chat GPT, Gemini AI, and Microsoft Bing, was analyzed to understand how each platform is perceived in terms of accuracy and reliability of information. The data collected showed that Chat GPT came out on top with the highest level of trust among college students. The main reason for Chat GPT's superiority was its ability to provide quick, relevant and detailed answers. Students feel that Chat GPT is able to understand and respond to questions with a high degree of factuality, which is very helpful in an academic context. Its popularity is also supported by a wide user base and a wealth of positive documentation and testimonials that reinforce its reputation as a reliable source of information.

Gemini AI came in second place with a fairly good level of trust. Although not as popular as Chat GPT, Gemini AI is still valued by students who require in-depth analysis and a more specific approach to complex topics. Gemini AI's reliability and ability to handle certain tasks makes it a trustworthy choice for some students, especially those with more specific academic needs. Microsoft Bing came in last in terms of trust. One of the main reasons for the low level of trust in Bing is the perception that the platform is more limited in its capabilities as an AI ChatBot compared to GPT Chat and Gemini AI. Although Bing is known as a powerful search tool, students felt that the accuracy and relevance of its answers in an academic context were not as good as the other two platforms, thus reducing their trust in Bing as a reliable source of information.

4. Conclusion

Based on the results of research on the use of AI ChatBots among college students, it can be concluded that AI ChatBot technology has brought significant impact in higher education, especially in supporting the student learning process. The use of AI ChatBots such as ChatGPT, Gemini AI, and Microsoft Bing by university students has shown how these technologies can enrich the learning experience and improve academic efficiency. ChatGPT is the most popular and most frequently used platform. Students tend to rely more on ChatGPT compared to Gemini AI and Microsoft Bing, both for academic purposes such as composing essays, understanding complex concepts, and for non-academic activities. The high frequency of ChatGPT usage reflects students' trust in the platform's ability to provide accurate and relevant answers. Meanwhile, Gemini AI and Microsoft Bing have a smaller share of usage. Gemini AI is used moderately by students, mainly in the context of data analysis and scientific research, while Microsoft Bing tends to be used less frequently as an AI ChatBot, although it is still relevant in information and reference searches. ChatGPT occupies the leading position as the preferred AI ChatBot among college students, showing dominance in the adoption of ChatBot technology in the college environment. The presence of AI ChatBot technology has changed the way students learn and interact with educational materials, making the learning process more dynamic and accessible. It has enabled students to get academic support anytime and anywhere, providing a more personalized and effective learning experience.

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