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Abstract— Recently, AI has gone from being a new, special kind of technology to something widely used in many areas, like online shopping websites. Observed in Indonesia, AI powered chatbots examples by ChatGPT, Google's Gemini, and Copilot have been integrated into several platforms' examples being Tokopedia and Shopee with the goal to improve the customer experience. Users especially those aged 18 - 30 are helped by these AI powered chatbots, particularly helping in product inquiries, transactions, and after sales support. This research looks at what makes online shoppers in Indonesia willing to use AI chatbots. It uses a framework called the Technology Acceptance Model, which considers how easy the technology is to use and how helpful people think it is. The study also checks other things that might affect acceptance, like how good the information provided is, how well the chatbot can be personalized, how much users trust it, whether they see it as innovative, and if they find it enjoyable to use. This paper utilizes a quantitative survey method as it provides insights towards how the core factors shape user's behaviorable intention. While also offering guidance for the development of more reliable and engaging AI chatbots in e-commerce platforms and industry.

Keywords— Artificial Intelligence, AI chatbots, user acceptance, TAM, trust towards AI, e-commerce

I. INTRODUCTION

Throughout the last five years rapid development of AI chatbots evolved into vital technologies revolutionizing industries, in the context for the paper towards the e-commerce world [1][2]. The utilization and integration of AI have significantly altered how platforms interact with their customers, allowing the construction of more efficient communication and closer relationships [1][2]. The Technology Acceptance Model (TAM) is able to explain this development, where it implies the adoption of these technological systems are driven by how useful or how easy to use these systems are for the average customer [3][4].

The progress achieved in the areas of natural language processing (NLP) and machine learning (ML), has improved

the reliability and responsiveness of these AI chatbot systems [1][4]. User willingness and user's trust to utilize and interact with these AI systems especially in customer service has been increased due to these recent developments. However, the traditional Technology Acceptance Model (TAM), which emphasizes ease of use and perceived usefulness, does not fully account for important psychological and social factors. These factors being trust and information quality, as a result this study will extend the TAM theoretical framework, adding in compatibility, trust, and perceived enjoyment. With the goal to better explain the user's acceptance of AI chatbots [3][4]. Understanding these effects are crucial, especially for the e-commerce sector, where AI is transforming human roles and interactions.

The inclusion of the TAM framework will hopefully provide a wider view of user behavior by integrating both cognitive factors and emotional social influences [3][5]. Additional evidence is presented further proving that there exist more significant constructs, not only usefulness and ease of use being important to look for. Constructs included such as customization, information quality, and innovation. Where each factor performs a significant role in shaping behavioral intentions [1][2]. TAM also provides improved insights towards the complex dynamics underlining the constant engagement and further interaction with these systems [3][4].

Despite multiple research attempting to leverage TAM, gaps will always exist in trying to understand contexts and the factors influencing real world attempts to adopt these AI chatbot systems [1][5]. This paper has the intention to address gaps via extending the TAM determinants [3][4]. Through the examination of built-in qualities for AI chatbots, these platforms and the perspectives of individuals around us influence the development of our willingness to utilize these systems. This study aims to offer practical guidelines as consideration when designing and deploying more effective and user centered systems [2][5].

TAM's main goal is to bring forward on the forms supporting the acknowledgment of innovation, in order to foresee the conduct of and give a hypothetical clarification for the fruitful execution of innovation. Its objective was to educate specialists around measures that they might take earlier to the execution of frameworks [6].

The inclination for AI chatbots usage would increase by it simply being helpful and simple to use. When users believe

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AI chatbots can improve their experience, they usually feel more positive about using them. This positive view makes them more willing to try and keep using the chatbots. Based on the TAM method, it's important in designing chatbots that are both functional and responsive so users can easily engage with them in daily service interactions.

B. Hypothesis Development

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1. Perceived Ease of Use (PEOU)

PEOU is looked at as a key factor influencing how people interact with information systems [7]. It reflects how much effort someone needs to use a particular technology. In this study, it refers to how easily users can operate AI chatbots and how satisfied they feel with their usability. Easy to use things are more likely to be adopted because people care about how well they work and how simple they are to operate. Previous research also shows that PEOU influences consumers' acceptance of AI chatbots [8]. The following hypothesis, we could propose that:

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H1: Behaviour intention of AI chatbots by individuals could be positively affected by perceived ease of use

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2. Perceived Usefulness (PU)

Perceived usefulness could be cited as being the range or ability of which by using a specific technology, it can improve or will improve individuals' performance and is one of the most crucial factors in TAM when it comes to technological adoption [6]. In this context, it refers to how useful the usage of AI chatbots is for their specific activities. Previous studies of such topics have brought up the importance and how AI chatbots could be positively influenced by perceived functionality (usefulness) positively [9]. Although in some other studies, it does not have the same importance due to differing factors, it is still important to consider the value of having perceived usefulness as a deterrent [10]. By using such information, the hypothesis states that:

H2: Behaviour intention of AI chatbots by individuals could be positively affected by perceived usefulness

3. Perceived Enjoyment (PE)

Perceived enjoyment could be cited as the natural tendencies of an individual that relates to how the user views something amusing and entertaining even in regard to possible repercussions [6]. In this context, perceived enjoyment can be referred to the enjoyment and satisfaction of AI chatbots usage and how it is of importance with its connection to the behavioral intention of users of such technology. As suggested per multiple studies, there was found to be a positive effect regarding the enjoyment and behaviour intention when users do interactions with these AI chatbots, even with contexts where utilitarian benefits are as important [3]. By using such information, the hypothesis states that:

H3: Behaviour intention of AI chatbots by individuals could be positively affected by perceived enjoyment

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4. Innovativeness (IN)

Innovativeness may relate to an individual's or others' ability to embrace new ideas earlier than other areas of society and with AI chatbot adoption, this could mean as a crucial element [11]. The theory is that users would be more likely or inclined to the acceptance of AI chatbots if they believe the technology is cutting-edge, revolutionary, and/or provides innovative answers [8]. Tian (2024) found that an inventive mentality can increase early adoption and good views toward new technology. Using such data, the hypothesis states that:

H4: Behaviour intention of AI chatbots by individuals could be positively affected by innovativeness

5. Perceived Information Quality (PIQ)

Perceived information quality can be referred to by the quality of information that a system can produce [12]. Individuals' behavior can highly be influenced by their perception of such information quality, whether it'll be in a positive or negative effect [1]. In this context, it can be the information quality of the answers or information that the AI chatbots can give out to users. Utilizing such information, the hypothesis state that:

H5: Behaviour intention of AI chatbots by individuals could be positively affected by perceived information quality

6. Perceived Customization (PC)

Perceived Customization is to be considered as one of the important aspects towards the improvement of customer service [13]. May be important especially when attempting a better understanding of users' behavior and perception, with inclusions of its usage towards AI chatbots [14]. Supported by Lee & Chan (2023), offered customization provides more personalized experiences, leading to a far more positive acceptance towards AI chatbot systems. Our investigation hopes to further improve understanding on how users perceive the offered customization and its relation towards users' acceptance for AI chatbots [8]. The utilization of such information, this hypothesis state:

H6: Behaviour intention of AI chatbots by individuals could be positively affected by perceived customization

7. Perceived Trust (PT)

Trust is considered a significant factor towards AI chatbot systems. Due to it being necessary for it to produce humanlike reliable and trustworthy answers [15]. Stated by Ding & Najaf (2024), trust is to be a critical mediator between users' acceptance of such technology and AI chatbot adoption. Similar research has suggested that behavioral intention is positively impacted by trust [8]. By utilizing such information, this hypothesis will state:

H7: Behaviour intention of AI chatbots by individuals can be positively affected by perceived trust

III. RESEARCH METHODOLOGY

A. Measurement Instrument

The method used for this research was a survey-based research method that was conducted using Google Forms, which allowed for an efficient data collection from a diverse sample of individuals and willing-takers. All measurement instruments were designed to capture various dimensions of AI chatbots, factors, and behavioral intentions in the acceptance of AI chatbots. Drawing from existing literature, the instrument encompassed multiple constructs such as common AI chatbots information, such as names of famous AI chatbots, the importance of each variable towards behavior intention, and how users perceive AI chatbots.

The instrument consisted of Likert-scale items to provide a comprehensive understanding of participants' cybersecurity awareness levels. Additionally, demographic questions were included to gather information on participants' academic disciplines, year of study, and prior exposure to AI chatbots.

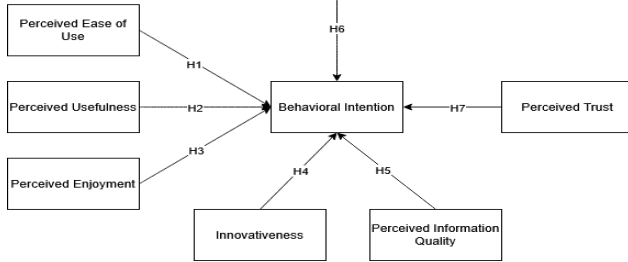


Fig. 1. The Research Model

B. Sample, Data Collection, and Procedure

Data was collected from 400 or more individuals from all ranges of ages, and it was done through an online survey platform, Google Forms. Data was collected between June 2025 and July 2025. A non-probability sampling method had been utilized, specifically using convenience sampling where participants were gained according to their availability and willingness. Such survey was distributed with the help of social media platforms to ensure maximum collection, and through other form collection platforms. Participants had been assured of their total confidentiality of their responses and informed consent was obtained before they proceeded.

C. Questionnaire Statements

TABLE I. QUESTIONNAIRE STATEMENTS

Research Variable	Questionnaire Statements
Perceived ease of use	I found it easy to learn about the usage of AI chatbots that are available in e-commerce platforms
	I found it easy to use AI chatbots in e-commerce platforms
	I felt that my interactions with the AI chatbot were clear and purposeful.
	With the AI chatbots that I use in e-commerce, it is easy to do interaction and has been responsive.
	I don't find it difficult or need to think hard when using the e-commerce AI chatbot
	I feel that I quickly get used to and become proficient in using AI chatbots on e-commerce platforms.
Perceived Usefulness	Using an AI-based chatbot makes it easier for me to understand product information on e-commerce platforms.
	AI-based chatbots help me interpret information faster when shopping online.
	AI-based chatbots increase my productivity when searching for information on e-commerce.
	AI-based chatbots improve my performance when browsing products or services on e-commerce.
	The chatbot provides useful information and services during my online shopping.
	They help me find the products or information I need a lot faster.
	I believe chatbots improved my life efficiency in online shopping activities.
	Conclusion, I found these chatbots to be very helpful in my e-commerce shopping experience.
Perceived Enjoyment	I feel happy when using a chatbot when shopping online.
	Using a chatbot when shopping online provides a pleasant experience.

Research Variable	Questionnaire Statements
Innovativeness	I feel uncomfortable or unpleasant when using a chatbot.
	If I learn about a chatbot feature in an online store, I will try it.
	I am the first person to try new features in a chatbot, among my friends
	I am a person who likes to try new features such as chatbots in e-commerce.
Perceived Information Quality	I will try a chatbot even though not many of my friends are using it yet.
	Chatbot provided information is accurate.
	Complete information was collected by the chatbot as needed.
	The information provided is concise and easy to understand.
	The chatbot provides really useful information when I want to buy a product.
	The information provided by the chatbot is easy to understand compared to other information on the platform.
Perceived Customization	Information provided by Chatbots is easy to understand
	I find these chatbots UI looks interesting in a positive way
	Navigating the chatbot when shopping online feels easy for me.
	The chatbot design provides a pleasant user experience.
	I would use the chatbot again because of its attractive design.
	The chatbot provides information tailored to my shopping needs.
	I feel like a unique customer because of the information provided by the chatbot.
	I trust that the chatbot can customize information to my preferences.
Perceived Trust	I trust the product recommendations provided by the chatbot.
	I believe the chatbot's decisions (such as product suggestions or promos) can help me choose well.
	E-commerce chatbots protect my data privacy, making me want to use them and feel satisfied.
	I trust e-commerce chatbots because I can remain anonymous during interactions.
	My trust in chatbots increases because I can remain anonymous during interactions.
Perceived Costs	The initial setup cost for adopting cloud technology is quite high.
	The subscription or maintenance cost for this cloud technology is high.
	The cost of training employees to use this cloud technology is high.
Behavioral Intention	I expect to continue using a chatbot for information or services when shopping online.
	I will most likely use the chatbot if it is available on these platforms of e-commerce

I will continue to use the chatbot because of the benefits I have felt so far.

D. Technique of Data Analysis

The technique of PLS-SEM was considered to be the most appropriate approach for this research due to specific attributes of the data and the complexity of the model under investigation. This technique also facilitates the examination of mediator effects, allowing researchers to assess indirect relationships between variables within the model which is crucial for understanding the underlying mechanisms driving the relationships observed and uncover nuanced patterns which possibly were not clear enough with the usage of past analysis methods.

IV. RESULTS & DISCUSSION

A. Respondent Demography

The survey was completed by 400 individuals. Among these, 343 (86%) of the 400 respondents have used an AI chatbot on an e-commerce site before. Valid data was collected from 343 respondents, with the remaining respondents not included in the measurable data due to their lack of experience using the application. The dominant age group among respondents was 17-28 years, accounting for 100% of the total. Additionally, 99,5% of respondents reside in Java (Banten, DKI Jakarta, West Java).

TABLE I. RESPONDENT DEMOGRAPHICS

Description	Total Answers	%
Total Respondent (<i>N</i> Total)	400	100%
Have you ever used an AI chatbot on an e-commerce site before?		
Yes	343	86%
No	57	14%
Total Valid Responses (343 Respondent)		
Gender of Respondents		
Male	215	54%
Female	185	46%
Domicile of Respondents		
Banten	195	49%
DKI Jakarta	144	36%
West Java	59	15%

Convergent validity's a type of criterion validity that indicates the extent to which two measures that should be related are relevant to each other. It is typically used to ensure that variables and indicators measuring a concept have a high correlation with each other, thereby strengthening the validity of that concept. Additionally, it can ensure that the measurement tool accurately reflects the stated concept, thereby increasing confidence in the research results [16].

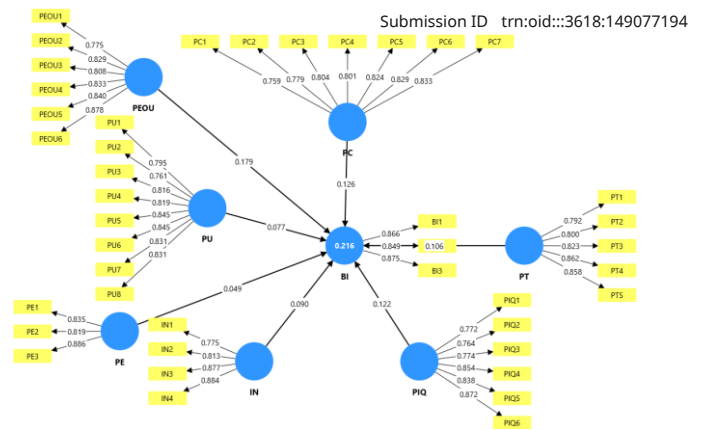


Fig. 2. PLS-SEM Algorithm Graphical Output

Average Variance Extracted (AVE) is a way to check if the questions or indicators used to measure a concept are actually capturing that concept well. It looks at how much of the variation in those questions is due to the main idea you're trying to measure, compared to all the variations in the questions. If it's high, it means the questions are good at representing the main concept. It is assumed that the average variance between indicators should be positive. The AVE value should exceed 0.5, indicating that the latent variable can explain at least 50% of the variance of its indicators [17]. From the results of our study, all AVE values exceed 0.5, which indicate, the variables can explain a lot more than half of the used variance with their indicators or connectors. Then, CA values for all variables have exceeded 0.7. In addition, the CR for all variables has also passed 0.8 [17]. In Table II, it could be stated that some outer loadings exceed 0.7, indicating that most indicators measure the variables effectively.

TABLE II. CONVERGENT VALIDITY

Items	Outer Loading	Cronbach's Alpha (CA)	Composite Reliability (CR)	AVE
BI1	0.866	0.829	0.898	0.745
BI2	0.849			
BI3	0.875			
IN1	0.775	0.859	0.904	0.703
IN2	0.813			
IN3	0.877			
IN4	0.884			
PC1	0.759	0.909	0.928	0.648
PC2	0.779			
PC3	0.804			
PC4	0.801			
PC5	0.824			
PC6	0.829			
PC7	0.833			
PE1	0.835	0.804	0.884	0.718
PE2	0.819			
PE3	0.886			
PEOU1	0.775	0.908	0.929	0.685
PEOU2	0.829			
PEOU3	0.808			
PEOU4	0.833			
PEOU5	0.840			
PEOU6	0.878			
PIQ1	0.772	0.897	0.921	0.662
PIQ2	0.764			
PIQ3	0.774			
PIQ4	0.854			
PIQ5	0.838			
PIQ6	0.872			
PT1	0.792	0.885	0.916	0.685
PT2	0.800			
PT3	0.823			

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PT5	0.858			
PU1	0.795			
PU2	0.761			
PU3	0.816			
PU4	0.819			
PU5	0.845	0.929	0.942	0.669
PU6	0.845			
PU7	0.831			
PU8	0.831			

Hypothesis 6 (H6) refers to "Behaviour intention of AI chatbots by individuals could be positively affected by perceived customization." The research results have supported that user's intentions increases when using AI chatbots that provide a more personalized experience. This finding was supported by research conducted which concluded similar results [18].

Hypothesis 7 (H7) refers to "Behaviour intention of AI chatbots by individuals can be positively affected by perceived trust." It is stated that behavioral intention can be impacted heavily in a positive manner by perceived trust. The more trust it is, the higher willingness to adopt is high, in accordance with existing research [18].

Next, we conducted an analysis of DV (Discriminant Validity), which was confirmed when the correlation between the two measurements was very low after taking measurement errors into account, indicating that the two truly represent different things. Discriminant validity was proven when the HTMT (Heterotrait-Monotrait) value was below 0.90 [18]. In Table III, the comparison of ratio for the HTMT rate is under 0.90.

TABLE III. DISCRIMINANT VALIDITY

	BI	IN	PC	PE	PEOU	PIQ	PT	PU
BI								
IN	0.343							
PC	0.327	0.330						
PE	0.270	0.322	0.243					
PEOU	0.359	0.328	0.270	0.256				
PIQ	0.341	0.335	0.298	0.377	0.276			
PT	0.319	0.397	0.292	0.267	0.240	0.325		
PU	0.294	0.381	0.311	0.294	0.258	0.305	0.272	

Hypothesis 1 (H1) refers to "Behaviour intention of AI chatbots by individuals could be positively affected by perceived ease of use". Basically, if AI chatbots are easier to use, people are more likely to want to use them. This idea matches what other studies have found [18].

Hypothesis 2 (H2) refers to "Behaviour intention of AI chatbots by individuals could be positively affected by perceived usefulness." However, the research results show that there is insufficient statistical evidence to support this relationship, meaning that perceived usefulness toward AI Chatbots does not significantly influence their intention, as also proven in a previous case study [18].

Hypothesis 3 (H3) refers to "Behaviour intention of AI chatbots by individuals could be positively affected by perceived enjoyment". However, research results supported insufficient statistical proof to support the relationship, which means perceived enjoyment towards AI chatbots do not significantly influence the intention. Proven and supported as well in a previous study [1].

Hypothesis 4 (H4) refers to "Behaviour intention of AI chatbots by individuals could be positively affected by innovativeness." From the results a conclusion can be drawn which states the user's innovative mindset is able to drive the early AI chatbot system adoption, which is in line with previous results from another similar research [18].

Hypothesis 5 (H5) refers to "Behaviour intention of AI chatbots by individuals could be positively affected by perceived information quality." The results acquired support the relationship that user's intentions towards the usage of AI chatbots increases with high quality information. This finding is supported by previous research who concluded similar results [18].

Hypotheses	Path	t-value	p-value	Decision
H1	PEOU → BI	3.842	0.000	Accepted
H2	PU → BI	1.514	0.065	Rejected
H3	PE → BI	0.955	0.170	Rejected
H4	IN → BI	1.721	0.043	Accepted
H5	PIQ → BI	2.436	0.007	Accepted
H6	PC → BI	2.660	0.004	Accepted
H7	PT → BI	2.134	0.016	Accepted

V. CONCLUSION

Based on our research on this study, we may offer further comprehension of factors which may or may not influence the acceptance of AI chatbots towards user acceptance in the e-commerce industry. This study identified multiple factors that positively affected users' acceptance towards AI chatbots, these included factors such as the easy of use which could indicate the importance of ease to use AI chatbots for better experience, innovativeness which could indicate how there needs to be more innovations towards this specific technology for it to be more accepted, perceived information quality in which the AI chatbots could churn out depending on users' needs, perceived customization which could correlate with a more personalized experience, and perceived trust which could indicate the importance of the users' trust towards using these AI chatbots without having the fear of having their information stolen. We also concluded however that perceived usefulness and perceived enjoyment were not too important towards users' acceptance of such technology, which could mean that users weren't necessarily inclined towards its usefulness because they weren't finding answers from these chatbots to be useful enough and weren't necessarily enjoying their experience when having to navigate through these chatbots for further information. These findings have further implications for these e-commerce platforms or the industry as a whole to prioritize further development in AI chatbots for better experience, particularly in the aspect of its usefulness and increasing user trust for this technology before it becomes the norm. This study helps us understand what makes people more likely to accept or use AI chatbots when shopping online. It also provides ideas for future studies to improve this technology.

VI. LIMITATIONS

The study did uncover multiple weaknesses that could be improved in later research. Firstly, our sample was

young adults aged from 18-39, and most of our demographic came from a single island in Indonesia (Java), this limits our generalization across different generations and regions. Expanding the demographic age and region could strengthen external validity. Second, it did not focus on including variables which are negative bias towards AI, such as concerns for damages environmentally or just lack of trust for such automation. Incorporating them could help to understand the limit of resistance for adoption. Lastly, we didn't specify the platforms because we generalized them. For future studies, they could try to profile different platforms' chatbots quality and how they have implemented them to influence further user acceptance.

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