UNDERSTANDING THE INFLUENCE FACTORS ON THE ACCEPTANCE AND USE OF CHATGPT IN BANGKOK: A STUDY BASED ON THE TECHNOLOGY ACCEPTANCE MODEL

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ABSTRACT

ChatGPT is an advanced conversational agent powered by artificial intelligence (AI). It has garnered considerable scholarly and public attention due to its exceptional capabilities in natural language processing and the generation of human-like linguistic interactions. The primary objective of this research is to systematically examine the determinants affecting the adoption and utilization of ChatGPT within the context of Bangkok, Thailand. Employing a quantitative research methodology, this study engages with 400 respondents residing in Bangkok and utilizes the Technology Acceptance Model (TAM) as its theoretical underpinning. Data were collected through a rigorously designed structured survey and analyzed via descriptive and inferential statistical techniques. The findings indicate that variables such as perceived usefulness, perceived ease of use, attitudes toward usage, and behavioral intentions significantly and positively correlate with the actual usage of ChatGPT. Additionally, the study confirms the instrument's validity and reliability while demonstrating that the Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) yield satisfactory fit indices. In conclusion, the Technology Acceptance Model is a practical framework for explaining the determinants influencing the adoption and sustained usage of ChatGPT within the Bangkok populace. Recommendations are put forth for organizations and developers to prioritize enhancements in the technology's perceived usefulness and ease of use in operation and foster favorable attitudes toward its application.

KEY WORDS: ChatGPT/ TAM/ Technology Acceptance Model/ AI / Chatbot

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CHAPTER I
INTRODUCTION

1.1 Introduction

According to the world today, the function of AI or artificial intelligence is the take part as the essential of daily life. An example of change that can be seen is in form of advance language model such as OpenAI's ChatGPT. These AI model could have the ability to write or generate text like human which could change the way of communicating and share information. It would making thing more faster, easier and more accessible for everyone. However, the tangible realization of this capability is influenced by numerous elements, esspecially the culture where it's used and how people see and use the new technology is really tied to their background and traditions. The acceptance and adaptation of technology are inherently associated with the cultural structure of the consuming group, guiding its comprehension, integration, and subsequent triumph. Thus, this research is endeavors to comprehend the acceptance and use of ChatGPT within the context of Bangkok, an essential technological hub in Southeast Asia. This research aims to clarify how various factors that influence the adoption and acceptance of AI-Driven technologies like ChatGPT, which adopt the well-established framework like the Technology Acceptance model or TAM as a theoretical study as its foundation. Moreover, this research examines how cultural aspects or attitudes, which may include values, traditions or social norms, and language, could impact the perception of utility and user-friendliness, thereby affecting the overall acceptance and use of ChatGPT.

The acceptance and use of new technology isn't just about its basic features or benefit that the technology has offered. It is instead a complex process deeply rooted in the socio-cultural environment of the users. A comprehensive understanding of this intricate interplay between technology and culture is crucial, as it augments my insights into human-technology interactions and allows us to predict and potentially direct the trajectory of technology acceptance and diffusion with greater efficacy. This

understanding becomes vital when considering AI communication tools such as ChatGPT, which intersect technology, language, and interpersonal interaction - domains significantly influenced by cultural nuances. These AI models, designed to replicate human communication, are inherently susceptible to cultural influences. A nuanced understanding of these influences can direct the development, implementation, and promotion strategies of such tools, rendering them more culturally sensitive, effective, and widely accepted.

Bangkok, distinguished by its rich cultural heritage coupled with a rapid pace of modernization, presents an intriguing setting for this study. It represents a dynamic, non-western urban environment where tradition and modernity coexist, potentially generating unique patterns of technology acceptance. By investigating the influence of cultural factors on the acceptance and use of ChatGPT in Bangkok, this study aims to supplement the existing body of knowledge on AI acceptance in such contexts. A comprehensive trend analysis of ChatGPT's adoption and usage in Thailand from 2022 to 2023 Since the initial introduction of ChatGPT on November 30, 2022 (Cotton, D., Cotton, P., & Shipway, R., 2023), there has been an observable upward trend in utilizing ChatGPT to facilitate the completion of reports and complex tasks. The graph displayed in Figure 1 traces the evolution of interest in ChatGPT among the Thai population over a given time frame. As evidenced by the data extracted from Google Trends, the score attributed to ChatGPT peaked at nearly 100 points upon its initial rollout. This interest surge reflects the Thai public's inquisitiveness and keenness to comprehend this novel technology. However, subsequent trends reveal a marked decrease, with the interest level plunging below 25 points and oscillating between 12 and 65 points on average. This decreasing yet fluctuating trend implies that while the

overall interest rate has diminished, a subset of the Thai population continues to show interest in using ChatGPT.

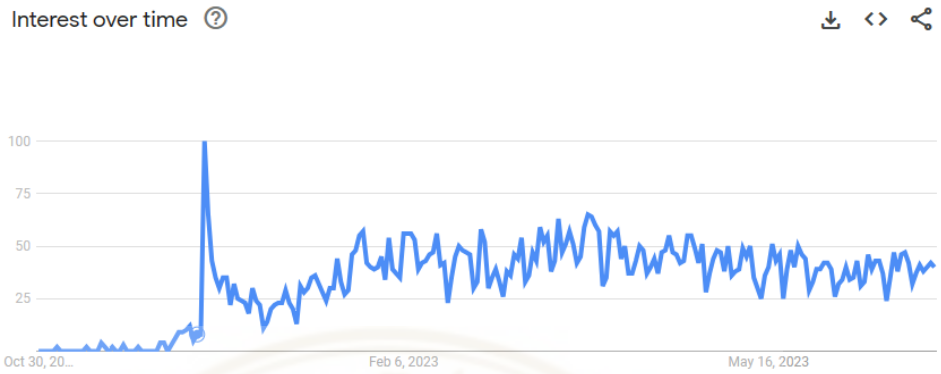

Figure 1: ChatGPT Interest overtime among Thai people

According to the data presented in Figure 2, it is evident that the principal user group showing interest in ChatGPT is concentrated within the Bangkok metropolitan area. This pattern indicates that the inhabitants of Bangkok exhibit a superior inclination towards, and proficiency with, ChatGPT relative to those residing in other sub-regions of Thailand.

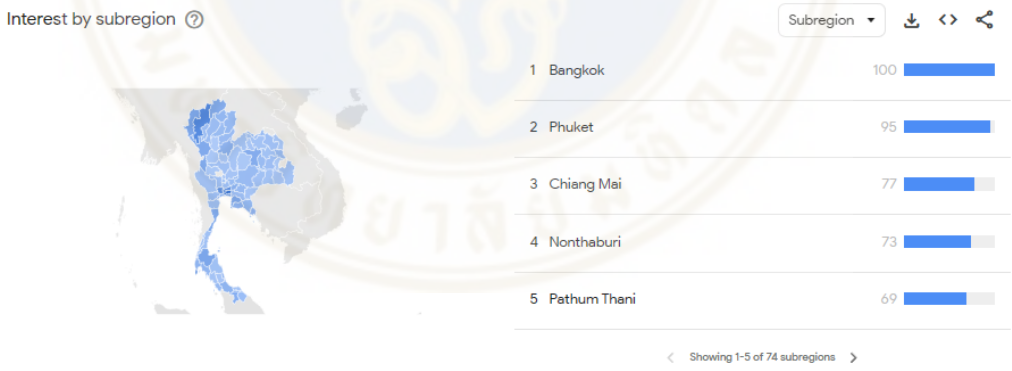

Figure 2 ChatGPT Interest by subregion

Moreover, the practical implications of these insights extend beyond the academic realm. The findings may offer valuable guidance to technology developers, providing insights to make their products more universally appealing and effective. Policymakers aiming to foster a more inclusive technological landscape can employ these insights for informed decision-making. Furthermore, educators can utilize this understanding to better equip future generations for a world increasingly dependent on AI. Ultimately, the ambition of this study extends beyond the confines of academic

discourse; it seeks to foster a deeper understanding to facilitate a more inclusive, effective, and culturally attuned technological future.

1.2 Problem Statement

In the contemporary global landscape, the rapid advancements in artificial intelligence (AI) stand out as a defining transformative force. These advancements and their potential to reshape industries and societies have elicited varied responses across diverse demographic and cultural spectra. While specific segments have quickly embraced the new technological offerings, others exhibit a more measured approach. This differential uptake often hinges on an array of considerations. Notably, Davis (1989) shed light on the significance of perceived usefulness and ease of use in adopting technology. Beyond these factors, local socio-cultural intricacies also weigh heavily, intertwining with technology acceptance trajectories. This phenomenon is particularly pronounced in non-western regions undergoing rapid urban transition.

A study relates to perspectives on implementing ChatGPT has exhibited that ChatGPT has the potential to be a valuable education tool in the digital era. These findings show that both educators and students have a positive perception of using chatbots in education and reduce the workload of educators to answer routine questions. The chatbot was helpful for providing immediate feedback, answering questions, and supporting students. However, concerns were raised about the accuracy of information provided by the chatbot, the potential loss of personal interaction with teachers, and the need for privacy and data security. The paper concludes that ChatGPT has the potential to be a valuable educational tool in the digital era. However, its implementation should be carefully considered, and efforts should be made to address the concerns raised. Moreover, the study on the perception towards ChatGPT (Jangjarat et al., P., & Sonsuphap, R., 2023) has mentioned that an artificial intelligence language model is widely accepted among Thai people as a robot assistant. The study reflects that standard factors like gender, education, and social media use influence the awareness and usage of ChatGPT. In contrast, factors like occupation and monthly income have little impact. In conclusion, these two studies have supported each other that the need to use or

implement AI-driven tools needs to be studied and understood in any aspect of use, including potential risks that may occur from the accuracy of results and data privacy.

A case in point is Bangkok, a city that has evolved into a pulsating hub of technological dynamism in the heart of Southeast Asia. Here, amidst the bustling streets and towering skyscrapers, there has been an unmistakable gravitation towards novel AI solutions, ChatGPT being an illustrative embodiment of this trend. The widespread adoption and complex use of new technologies in various places are still in the early stages of academic exploration. This gap in understanding can be problematic for both innovators and policymakers. They must fully understand these complexities to develop practical AI tools and policies that match real-world needs. It must align with users' expectations and comfort with technology to ensure the widespread acceptance of these tools. However, the academic quest to understand and contextualize this technological enthusiasm remains a work in progress. A profound understanding of Bangkok's AI dynamics is imperative for those steering the ship of innovation and policy formulation. They must navigate the intricate maze of local user preferences, expectations, and reservations. This research, titled "Understanding the Influence Factors on the Acceptance and Use of ChatGPT in Bangkok: A Study Based on the Technology Acceptance Model" focuses on why ChatGPT is seen, adopted, and used daily by the people of Bangkok. This study aims to be a comprehensive guide for further research in Bangkok's urban settings.

Research Question

1. Individuals' perceived usefulness influences attitude towards use of ChatGPT or not and how?

2. Individuals' perceived ease of use influences their attitude towards use ChatGPT or not and how?

3. Individuals' attitude influence intention to use ChatGPT or not and how?

4. Individuals' attitude plays a mediating role on the relationship between perceived usefulness and intention to use ChatGPT or not and how?

5. Individuals' attitude plays a mediating role on the relationship between perceived ease of use and intention to use ChatGPT or not and how?

1.3 Research Aim and Objectives

The primary aim of this research is to explore and understand the key factors that influence the acceptance and use of ChatGPT in Bangkok, utilizing the Technology Acceptance Model (TAM) as a guiding theoretical framework:

- To identify the key factors that influence the acceptance and use of ChatGPT among residents of Bangkok.
- To assess the applicability of the Technology Acceptance Model's constructs (perceived usefulness and perceived ease of use) to the acceptance and use of ChatGPT in Bangkok.
- To examine the role of socio-demographic factors (such as age, gender, education, and occupation) in shaping the acceptance and use of ChatGPT in Bangkok.
- To investigate the interaction between the Technology Acceptance Model constructs and socio-demographic factors in influencing the acceptance and use of ChatGPT.
- To extrapolate the findings to provide recommendations for developers, policymakers, and other stakeholders to promote the use of AI technologies like ChatGPT in Bangkok or similar urban environments.

CHAPTER II
LITERATURE REVIEW

The acceptance and integration of AI-powered communication tools, such as OpenAI's ChatGPT, into daily life represents a multifaceted process, influenced by numerous factors. These factors can range from perceived usefulness and ease of use to demographic variables, all crucial components of the Technology Acceptance Model (TAM). With the swift pace of modernization in non-western urban environments like Bangkok, understanding these influences becomes even more critical. This literature review aims to investigate the existing body of knowledge on the determinants influencing the acceptance and usage of AI technologies like ChatGPT. Particular emphasis will be given to the application and adaptation of the TAM in various cultural and technological contexts. By integrating these key areas, the review seeks to create a comprehensive picture that will aid in understanding the factors impacting the acceptance and use of ChatGPT among Bangkok residents.

2.1 ChatGPT

The revolution of AI technologies has seen the advent of sophisticated language models that can generate human-like text, among which ChatGPT, developed by OpenAI, stands out. A generative pre-training transformer, ChatGPT, has captured the attention of researchers and the general public due to its ability to generate coherent and contextually relevant dialogues (OpenAI, 2022). ChatGPT finds its utility across various fields, such as customer service, tutoring, mental health assistance, entertainment, and more, as an AI language model. However, its effectiveness in these domains is a subject of ongoing research. For instance, in customer service, studies have shown that while ChatGPT can handle common queries efficiently, it can struggle with more complex, domain-specific inquiries (OpenAI, 2022). Moreover, research on AI tutors found that while ChatGPT can provide informative responses, maintaining an

interactive and engaging conversation over a more extended period remains challenging. The therapeutic use of ChatGPT as a mental health assistant is also under scrutiny, with some studies indicating potential benefits while highlighting ethical and reliability concerns. (Lund, Brady & Nie, Bing & Wang, Ting & Mannuru, Nishith Reddy & Wang, Ziang & Shimray, Somipam, 2023)

Various factors influence the general public's acceptance of ChatGPT and similar AI language models. Some of these are closely tied to the Technology Acceptance Model (TAM), including perceived usefulness and perceived ease of use (Davis, 1989). Users who perceive ChatGPT can effectively assist them and is easy to interact with are more likely to accept and use it. However, the complexities of language and communication present unique challenges, and thus additional factors like the perceived naturalness of the interaction, the ability to understand context, and trust in the model's responses also come into play. Although ChatGPT represents a significant advancement in AI language models, its acceptance and usage in non-Western, culturally diverse contexts like Bangkok are still underexplored. Given the significant impact, cultural factors can have on technology acceptance, this presents a gap in the current body of literature, pointing to the need for more geographically and culturally inclusive research.

ChatGPT, often called GPT (Generative Pre-training Transformer), is a product of the artificial intelligence research lab, OpenAI. The "GPT" framework is based on a machine learning model known as a transformer, designed explicitly for understanding sequences in data, making it particularly well-suited for natural language processing tasks. The "GPT" in ChatGPT refers to the general framework used to train the model, but there have been multiple versions of GPT over time, with GPT-4 being the latest as of the last update in 2021. Each iteration of GPT has increased in size and complexity and, as a result, its ability to generate more sophisticated and nuanced text. ChatGPT was trained using a two-step process involving unsupervised learning and fine-tuning. In the first step, the model was trained on a large corpus of internet text to predict what word should come next in a sentence. However, it is essential to note that the model only knows specifics about which documents were in its training set or has access to any personal or confidential information if it has been explicitly provided in the conversation. In the second step, the base model was fine-tuned on a more specific

dataset, which was generated with the assistance of human reviewers following particular guidelines provided by OpenAI. The reviewers review and rate possible model outputs for various example inputs. Over time, the model generalizes from this reviewer's feedback to respond to a wide array of user input. (OpenAI, 2022)

ChatGPT has been used in various applications, from drafting emails to writing code, tutoring in different subjects, translating languages, and simulating characters for video games. As the technology improves, the scope of its possible uses continues to expand. However, ChatGPT needs to understand and 'know' information as an AI language model like humans do. It does not have beliefs, intentions, or desires. It generates outputs based solely on its programming and training.

In addition, OpenAI introduced a superior package termed "ChatGPT Plus" in 2023 (OpenAI, 2023). This novel package is based on a subscription model (20$ per month) and provides subscribers with a range of advantageous features:

- **Unrestricted Access During Peak Hours:** Subscribers to the ChatGPT Plus package gain the privilege of accessing the system even during periods of peak demand. This provision ensures uninterrupted and reliable access to ChatGPT regardless of the time or volume of simultaneous users.
- **Swift and Appropriate Responses:** The ChatGPT Plus subscription offers an enhanced response rate, ensuring swift feedback from the AI. Additionally, the responses given are not only timely but also cogent and contextually precise.
- **Prioritized Access to Future Innovations:** Subscribers benefit from the added perk of receiving early or preferential access to newly developed features and improvements. This strategic advantage allows them to explore and experience the latest advancements in ChatGPT ahead of non-subscribers.

In summation, the development of the ChatGPT Plus package constitutes a significant milestone in AI user engagement strategy, providing added benefits and enhanced experiences to those users who opt to subscribe (OpenAI, 2023).

2.1.1 ChatGPT in Education

Generative Pre-Trained Transformer (GPT), developed by OpenAI, represents a profound advancement in the field of artificial intelligence, particularly in

the sphere of language models. GPT facilitates the performance of a variety of language-related tasks, including but not limited to, translation, text generation, and question answering. A prominent utilization of this technology is the sophisticated chatbot, ChatGPT, which has recently attracted significant attention due to its remarkable proficiency in natural language processing and the production of human-like language (Lund, B., & Wang, T., 2021).

ChatGPT bears the potential to assist scholars in pinpointing relevant scholarly works. It does so by crafting abstracts of academic writings or producing lists of pertinent papers rooted in keywords or themes. Moreover, it can blend text in a pre-defined manner or tone, making it feasible for scholars to swiftly fashion preliminary versions of academic writings, funding requests, and other erudite documents. ChatGPT's proficiency in handling and evaluating enormous textual data set aids in unveiling insights and discerning trends within comprehensive resources like journalistic writings or social platforms. This tech is also suitable for machine-based translation, availing researchers the aptitude to delve into and understand scholarly content across diverse linguistic barriers. It's equipped to auto-abstract scientific writings, reports, or other literary compositions, simplifying the task for scholars to stay abreast of the freshest advancements in their discipline. Furthermore, ChatGPT exhibits adaptability to tackle specialized inquiries, rendering it a potent instrument for scholars desiring swift and adept data retrieval (Lund, B., & Wang, T., 2021).

Aside from the potential impact on academia, the introduction of ChatGPT holds notable implications for a wide spectrum of industries. Its proficiency in natural language processing presents it as an ideal tool for managing rudimentary customer service inquiries, such as website 'ask me' features. The ability of ChatGPT to analyze and interpret large quantities of text data could provide notable value within the legal profession, potentially assisting with research and document preparation tasks. Additionally, its potential to monitor the quality of written work could prove invaluable in the education sector, assisting in grading and providing feedback on student assignments. Nonetheless, the implementation of ChatGPT is not without ethical considerations. Privacy and bias represent significant concerns that necessitate meticulous examination. Furthermore, the potential of ChatGPT to generate human-like

language and undertake intricate tasks prompts consideration of the future of work and the evolving role of AI within society.

2.2 Acceptance of AI Technologies

Artificial Intelligence (AI) technologies have emerged as an influential component of daily lives, from predictive texting on smartphones to advanced business data analysis. A broad spectrum of research has been dedicated to understanding the acceptance of such technologies, revealing many influencing factors and effects. Central to these studies is the user's perception of AI. User acceptance is often linked to how users perceive the technology's usefulness and ease of use, notions deeply rooted in the Technology Acceptance Model (Davis, 1989). Many AI acceptance studies have applied these principles to their investigations. For example, research focusing on AI personal assistant technologies has revealed that user acceptance is significantly associated with perceived usefulness, where users who believe the technology can improve their efficiency are more likely to accept and use it (Kelly et al., 2023). Similarly, perceived ease of use also plays a crucial role, as technologies that are too complex or not user-friendly can deter potential users, regardless of the advantages they might offer AI's capabilities to learn and adapt make it unique among other technologies. Consequently, the concept of trust arises as a significant factor in AI acceptance. Trust in AI technologies is often associated with their transparency and explainability - users are more likely to trust, and therefore accept, an AI technology if they understand how it works and can somewhat predict its behavior. Despite the fast-paced development of AI technologies, there is a gap between their technological advancements and their acceptance among users. The 'AI paradox,' as termed by some researchers, highlights that despite AI's increasing capabilities and integration, user acceptance sometimes follows suit. This suggests that acceptance is influenced by more than just technological attributes, pointing towards external factors like societal, ethical, and cultural considerations.

To conclude, existing literature underscores that the embracement of AI technologies is a multi-dimensional matter. It's shaped not solely by perceived usefulness and perceived ease of use but also encompasses trust and exterior societal

influences. Yet, many inquiries in this realm hail from Western or tech-forward milieus. This results in a void in grasping AI's acceptance in varied cultural settings, for instance, in swiftly urbanizing non-western metropolises like Bangkok. Additionally, the primary attention is frequently on AI as a broad category or on distinct AI utilities, with scarce research aimed at AI linguistic models such as ChatGPT. This highlights an exigency for extended exploration in this trajectory.

2.3 Existing Framework

2.3.1 TAM Model

The "Technology Acceptance Model" (TAM), first unveiled by Davis in 1986, has emerged as a pivotal blueprint for gauging user adoption and behavioral patterns linked to technological platforms (Davis, Bagozzi, & Warshaw, 1989). Within this model exists a holistic framework, diligently striving to decode behavior exhibited towards IT by emphasizing perceived usefulness and perceived ease of use. As articulated by Davis and collaborators (1989), a principal aspiration of TAM resides in "offering elucidation of computer acceptance variables which are universal in essence, aptly portraying user behaviors spanning a myriad of computing tools and user demographics." Its inception is rooted in the "Theory of Reasoned Action" (TRA), a brainchild of Fishbein and Ajzen from 1975, recognized for its robustness in forecasting and deciphering human behavior across diverse scenarios (Fishbein & Ajzen, 1975). Davis' rendition of TAM narrowed its gaze on technological applications, especially those orbiting information systems, to churn out more context-bound predictions.

Perceived usefulness, as restricted by Davis and team (1989), mirrors "the extent to which an individual is convinced that a certain system would amplify their professional effectiveness." On the other hand, perceived ease of use signifies "how much an individual is of the view that deploying a specific system won't demand strenuous effort." These twin pillars are cardinal in sculpting an individual's predisposition toward system adoption. Their influence in foretelling technology system acceptance and usage behavior has been endorsed through many scholarly inquiries (Lee, Kozar, & Larsen, 2003), and the ensuing years witnessed TAM undergo several refinements. A notable variant is TAM2, birthed by Venkatesh and Davis in 2000, which

embraced elements like societal influence dynamics and cognitive instrumental processes. Venkatesh and others, 2003, introduced the Unified Theory of Acceptance and Use of Technology (UTAUT) (Chan, K. & Cheung, George & Brown, I. & Luk, G., 2015), a conglomerate of eight distinct models, with TAM being one among them. Such metamorphic stages of TAM underscore its paramount significance and adaptability in the perpetually transforming domain of technology endorsement.

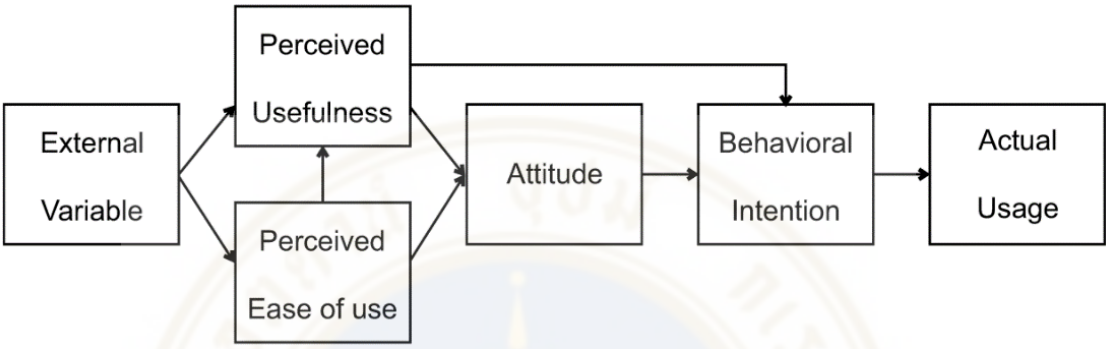

Figure 3 The original technology acceptance model TAM (Davis, 1989)

In conclusion, the Technology Acceptance Model emerges as a sturdy and versatile instrument, adept at deciphering and forecasting user comportments in the technological landscape.By integrating the perceived usefulness and ease of use into a comprehensive model, researchers and practitioners can gain valuable insights into the user's acceptance and usage patterns of new technologies, aiding in the development and implementation of more user-friendly systems.

Table 1: The Definition of each variable of the original technology acceptance models TAM (Davis, 1989)

Variables	Definition	Source
Perceived Usefulness (PU)	The extent to which a person believes that using the system will improve their performance.	Islami, Muhammad & Asdar, Muhammad & Baumassepe, Andi. (2021).
Perceived Ease of Use (PEOU)	The extent of belief that using a specific information system will be effortless.	Davis, 1989
Attitude Towards Use (ATU)	An individual's positive or negative feelings (evaluative affect) about performing the target behavior.	Golbabaei, Yigitcanlar, Paz, Bunker, 2020, Fishbein & Ajzen 1975, p.216
Behavioral Intention to Use (BIU)	The actual use of a given information system and therefore determines technology acceptance.	Alharbi and Drew (2014)
	The degree to which a person has formulated conscious plans to perform or not perform some specified future behavior	Davis, 1989
Actual Use (AU)	The actual use of technology	Fathema et al., 2015

The successful adoption of AI language models such as ChatGPT in diverse cultural contexts relies significantly on users' continued intention to use these systems. To better understand and predict user behaviors within the culturally diverse city of Bangkok, this study adopts an extended version of the Technology Acceptance Model (TAM). Initially developed by Davis in 1989, TAM provides a robust theoretical basis for explaining the critical determinants of technology acceptance across various digital platforms and demographics, making it an appropriate model for this research. TAM proposes that perceived usefulness and perceived ease of use are primary influences shaping user attitudes towards technology. Past research substantiates that perceived usefulness significantly impacts attitudes toward technology (Agarwal & Prasad, 1999; Davis, 1989; Venkatesh & Davis, 2000). However, the impact of perceived ease of use on user attitudes can be less consistent and potentially diminish with increased user experience (Ma & Liu, 2004; van der Heijden, et al., 2003). Given that this study focuses on Bangkok residents' continued intention to use AI language models like ChatGPT, it's assumed that participants already have experience with such technologies. This suggests

that factors other than perceived ease of use could significantly influence their acceptance and usage intentions. Furthermore, several studies have streamlined TAM by examining only the effects of perceived usefulness and ease of use on the intention to use, excluding attitudes (Gefen & Straub, 2000; Venkatesh et al., 2003). To extend TAM's predictive power for this study, incorporate additional factors, including those derived from the Information System Success Model (ISSM) proposed by Delone & Mclean in 2003, as well as cultural factors such as values and beliefs, social norms, language, traditions and customs, and education and knowledge. These additions aim to provide a more comprehensive understanding of the factors driving Bangkok residents' attitudes and behavioral intentions toward using AI language models like ChatGPT.

Numerous scholarly inquiries have adopted the Technology Acceptance Model (TAM) as a theoretical framework for their studies. Evidently, TAM's application is not confined to a single domain but extends across diverse industries, as demonstrated by the assortment of empirical investigations. The versatility and broad applicability of TAM underscores its robustness as a tool for understanding and predicting user acceptance of new technologies, thereby affirming its continued relevance in the realm of technology acceptance research. A synopsis of the industries where TAM has been utilized can be observed in the subsequent table, illustrating the model's widespread adoption in various sectors. (Table 2)

Table 2: Adoption of TAM (Siribunjongchoke, 2021)

Research Topic	Variables	Industry	Reference
Acceptance of Vein Authentication Technology in Automotive on Thai Consumers	Perceived ease of use Perceived usefulness Cost Privacy Attitude	Automotive	(Siribunjongchoke, 2021)
Factors motivating to use a credit card and its frequency of use in Thailand.	Credit card Usage Perceived usefulness Perceived ease of use Social Norms Consumer attitude Credit card reward programs	Payment	(Knokham, 2014)

Factors influencing the attitudes and behavioral intentions to use just walk out technology among Bangkok consumers	Perceived usefulness, Perceived Ease of use, Perceived Entertainment, Trust, Technology anxiety	Payment	(Chuawatcharin and Gerdsri, 2019) (Siribunjongchoke, 2021)
Exploring Students' Acceptance of E-learning through the Development of a Comprehensive Technology Acceptance Model	Perceived usefulness, Perceived Ease of use, System Characteristics, Individual Factors	Education	(Salloum et al, 2019) (Siribunjongchoke, 2021)

2.4 Research Framework and Hypothesis Development

2.4.1 Research Framework

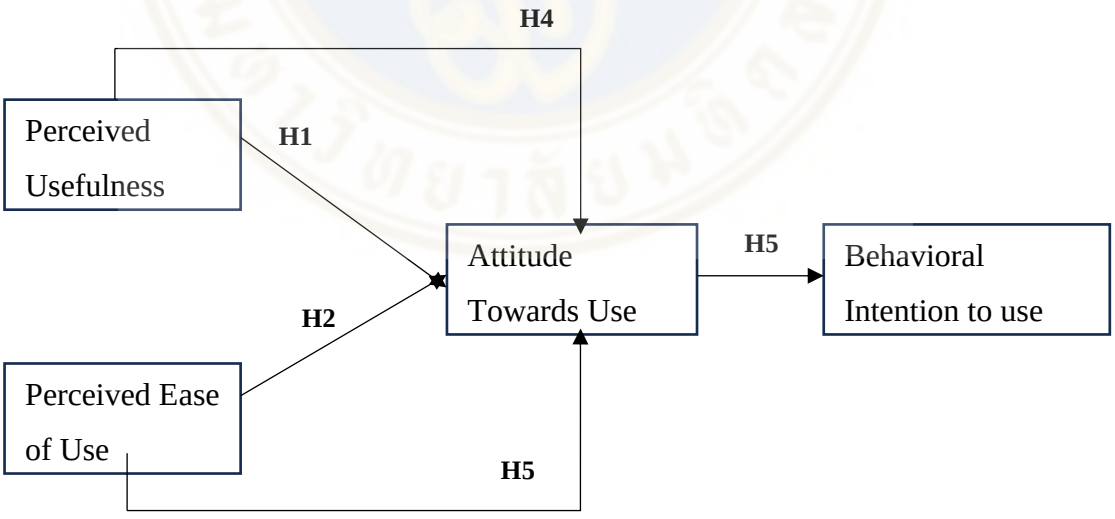

Figure 4: Research Framework

2.4.2 Hypothesis Development

In alignment with the adoption of the Technology Acceptance Model (TAM) framework, this research intends to examine five distinct hypotheses. Each one represents an integral component of the technology acceptance process, aimed at furthering understanding of user behavior and perceptions towards emergent technological systems. These collectively curated hypotheses serve to enhance the robustness of the study within the confines of the TAM framework, thereby broadening the comprehension of technology acceptance and usage in various industry contexts. All hypothesises are as follows.

2.4.2.1 H1: Individuals' perceived usefulness influences attitude.

The first hypothesis taps into the fundamental principle of the TAM model, which is that perceived usefulness (PU) directly affects the individual's attitude toward using the technology. Davis et al. (1989) explain PU as the degree to which a person believes that employing a particular system will enhance their job performance. Prior research indicates that individuals who perceive technology as applicable are more likely to develop a positive attitude toward it, increasing their likelihood of use (Venkatesh & Davis, 2000; Davis et al., 1989). More recently, studies exploring contemporary technological landscapes have reinforced the emphasis on PU's role. For instance, Tarhini et al. (2017) investigated the factors affecting the adoption of e-learning systems in Lebanon. They found that perceived usefulness was a prime predictor of intention to use, emphasizing its consistent significance across different technological contexts. Furthermore, in the realm of AI-driven platforms, a study by Venkatesh, Thong, and Xu (2012) introduced an extended TAM for mobile services. Their findings emphasized that, as technology (in this case, mobile services) grows increasingly sophisticated, its perceived usefulness remains a primary determinant of user attitude and acceptance. To bolster this further, Dwivedi et al. (2019) undertook a study analyzing the factors driving the adoption of AI in healthcare. They accentuated that irrespective of the technology's complexity if healthcare professionals did not discern a direct utility in their primary duties, their acceptance levels could have been better. Pooling insights from both foundational and modern research, it is evident that the core tenet of PU in TAM remains intact. However, its nuances evolve as technology

progresses. The enduring examination of this facet, especially against the backdrop of today's tech-forward landscape, is of paramount importance.

2.4.2.2 H2: Individuals' perceived ease of use influences their attitude

The second hypothesis suggests that the perceived ease of use (PEOU) influences an individual's attitude towards technology. According to Davis et al. (1989), PEOU refers to the extent to which a person believes that using a specific system would be free of effort. It has been empirically proven that if individuals perceive a technology to be easy to use, they are more likely to have a favorable attitude toward it and use it (Venkatesh, 2000). Another study found that perceived ease of use hasa positively

2.4.2.3 H3: Individuals' attitude influences intention to use

The third hypothesis is a well-established concept in the TAM model, stating that the individual's attitude towards the use of a technology significantly influences their intention to use it. Numerous empirical studies, such as those conducted by Davis et al. (1989) and Taylor and Todd (1995), substantiate this hypothesis by demonstrating a significant positive relationship between users' attitudes and their intention to use a system.

2.4.2.4 H4: Individuals' attitude plays a mediating role on the relationship between perceived usefulness and intention to use.

The fourth hypothesis expands on the mediating role of attitude in the relationship between PU and the intention to use a system. In line with Ajzen's Theory of Planned Behavior (1991), the attitude toward behavior (in this case, using technology) mediates the relationship between beliefs (perceived usefulness) and behavioral intentions (intention to use). In the realm of TAM, it is theorized. It has been validated that individuals with a more positive attitude toward technology, derived from its perceived usefulness, exhibit a stronger intention to use it (Davis et al., 1989; Taylor & Todd, 1995). Another study from Paris, Cody & Lee, Woojin & Seery, Paul. (2010) reflect that an individual's attitude plays a mediating role in the relationship between perceived usefulness and intention to use Facebook "events." Moreover, the research has suggested that individual perceived usefulness, ease of use, and another determinant

of using Facebook can lead to their favorable attitude toward using it, influencing their intention to attend the event.

2.4.2.5 H5: Individuals' attitude plays a mediating role on the relationship between perceived ease of use and intention to use

The fifth hypothesis is the mediating effect of attitude in the link between PEOU and intention to use. Davis et al. (1989) posited that perceived ease of use indirectly affects the intention to use through the mediation of attitude. Their research has been widely corroborated, showing that the less effort people perceive is needed to use technology, the more positive their attitude towards it, leading to a stronger intention to use it (King & He, 2006; Venkatesh, 2000). According to the study by Osman, Z., Alwi, N.H., & Khan, B.N. (2016), attitude partially mediates a relationship between perceived ease of use and intention in students' willingness to use online learning platforms in Malaysia. The study found that perceived ease of use has a positive and significant relationship with attitude and that perceived ease of use determines users' attitudes toward using online learning. The finding implied that a user's inclination to engage with an online learning system is significantly influenced by how easy they perceive the platform to be.

CHAPTER III
RESEARCH METHODOLOGY

3.1 Research Approach

This study will employ a quantitative research approach to achieve the stated objectives. The primary method of data collection will be a structured survey administered to a representative sample of residents in Bangkok. The survey will be designed based on the constructs of the Technology Acceptance Model (TAM), including variables such as perceived usefulness and perceived ease of use. Additional demographic and socio-economic factors deemed relevant to the research objectives will also be included in the survey. These may include factors such as age, gender, educational background, and occupation, among others.

The gathered data will subsequently be subjected to rigorous statistical examination using appropriate methodologies to identify patterns, correlations, and trends. Notably, Structural Equation Modeling (SEM) will be employed as the principal analytical technique. This approach is chosen due to its robustness in examining complex relationships between multiple variables, fitting well with the nature of the data and the specific research questions this study aims to answer. The quantitative approach is advantageous as it allows for a more systematic and objective investigation of the research problem. It provides the capacity to collect data from a large number of respondents, offering a broader generalizability of the results. Moreover, the use of statistical analysis can uncover relationships between variables that can help predict patterns of ChatGPT acceptance and use among Bangkok residents.

Table 3.1: Variables use for this research

Type	Variables
Independent Variable	Perceived usefulness Perceived ease of use
Mediator Variable	Attitude toward using
Dependent Variable	Behavioral intention to use

3.2 Sampling Procedure

The target population for this study includes Bangkok residents with prior experience using AI language models like ChatGPT. A stratified random sampling procedure will ensure a representative sample of different demographic groups (age, gender, education level, occupation, etc.) in Bangkok. This method increases the likelihood that the sample mirrors the diversity of the overall population, thereby improving the external validity of the findings.

The Yamane formula will determine the appropriate sample size for this study. The target population comprises Bangkok residents with prior experience using AI language models like ChatGPT.

The formula for determining the sample size (n) using the Yamane formula is: $\mathbf{n = N / (1 + N(e^2))}$

Where: n is the required sample size, N is the total population size, e is the desired margin of error (expressed as a decimal)

Using the Yamane formula, a representative sample will be selected from the population of Bangkok residents. The total population size will be estimated based on the available data on the number of residents in Bangkok, where N is 5,494,932 people (Bangkok. (2023, June 19). In Wikipedia. The desired margin of error will depend on the precision required for the study, which can be determined based on the specific research objectives of 0.05. After calculating the sample size using the Yamane formula, the stratified random sampling technique will be employed to ensure representation across different demographic groups. This will involve dividing the population into relevant strata (e.g., age groups, gender, education level) and randomly selecting participants from each stratum to form the final sample. By applying the Yamane formula and implementing a stratified random sampling approach, the study aims to obtain a sample representative of the larger population of Bangkok residents with experience using AI language models.

Based on the calculation, the total sampling size will be = **400.**

3.3 Data Collection

The data collection process for this research will involve the administration of a structured survey to a representative sample of residents in Bangkok. The purpose of the survey is to gather quantitative data related to the perceived usefulness and ease of use of ChatGPT, as well as various demographic and socio-economic factors that could potentially influence its acceptance and usage. The survey will consist of close-ended questions formulated based on the constructs of the Technology Acceptance Model (TAM). Participants will be asked to rate their agreement with various statements on a Likert scale, providing data that can be quantitatively analyzed. The selection of the sample will be done using an appropriate sampling technique, such as stratified sampling or random sampling, to ensure a representative sample. The exact size of the sample will depend on the population size, the margin of error, and the confidence level desired. Data will be collected via an online survey platform, ensuring the process is efficient, cost-effective, and capable of reaching a wide audience. Participants informed consent will be obtained before the survey, and all responses will be anonymous to maintain confidentiality and privacy. The collected data will then be systematically organized and prepared for statistical analysis to address the research questions and objectives. Thus, the questionaire will be done by online questionaire through google form. The questionaire is consist of 3 composites which are

3.3.1 Survey Purpose:

The purpose of this survey is to articulate the objectives and the rationale behind the questions posed. It will elucidate the type of data to be analyzed in this research, accompanied by a set of inructions to guide respondents in accurately answering the survey.

3.3.2 Demographic Information:

This segment of the survey incorporates multiple-choice questions designed to gather key demographic information. Respondents will be asked to disclose their gender, age, and education level, with a separate field provided to specify their occupation.

3.3.3 Determining Influential Factors:

This part of the survey aims to explore the determinants influencing the acceptance and usage of ChatGPT in Bangkok. It will investigate perceptions of usefulness, ease of use, attitudes towards usage, and behavioral intention to use the technology. Responses will be gauged utilizing a 5-point Likert scale, as depicted in Table 3.3

Table 3.3 Survey Question and references

Perceived usefulness	PU1	I agree that ChatGPT improves my productivity in tasks.	(Davis, 1989)
	PU2	I agree that using ChatGPT makes your tasks easier to complete.	
	PU3	I agree that the use of ChatGPT provides value in your daily life/work.	
Perceived ease of use	PEOU1	I agree that learning to operate ChatGPT is easy and does not require significant effort.	(Lund, 2001)
	PEOU2	I agree that using ChatGPT feels intuitive and straightforward.	
	PEOU3	I agree that it's easy to get ChatGPT to do what you want it to do.	
Attitude Towards Use	AIT1	I feel positive about utilizing ChatGPT in my everyday life/work.	(Fernando & Touriano, 2018)
	AIT2	I feel comfortable in my ability to use ChatGPT effectively.	
	AIT3	I feel that using ChatGPT is beneficial for completing my tasks.	
Behavioural Intention to Use	BIU1	I am likely to continue using ChatGPT in the future.	(Fernando & Touriano, 2018)
	BIU2	I am likely to recommend ChatGPT to others.	
	BIU3	I plan to use ChatGPT in my future tasks.	

3.4 Data Analysis

To rigorously test the proposed hypotheses, the analytical procedure will be segregated into two primary divisions: Descriptive Statistics and Inferential Statistics.

3.4.1 Descriptive Statistics

The utilization of Descriptive Statistics is integral to this research as it serves to encapsulate the primary attributes of the data compiled. In the pursuit of capturing a thorough snapshot of the dataset, several key statistical indicators have been chosen, including Frequency, Valid Percentage, Mean, and Standard Deviation.

- Frequency provides a simple count of the occurrences of a particular variable, enabling an understanding of its distribution within the dataset.
- Valid Percentage, an indicator adjusted for missing values, offers a proportionate representation of each category within a variable, thereby revealing its relative contribution.
- The Mean, or the arithmetic average, offers insight into the central tendency of a given set of values.
- Standard Deviation, a measure of dispersion, elucidates the amount of variation or dispersion of a set of values.

These specific parameters have been selected to present an accurate and comprehensive statistical overview of the dataset. The chosen criteria for the application of these descriptive statistics are detailed in Table (3.2), offering a roadmap for their practical implementation in the study.

Table 3.2: The descriptive of each interval.

Interval	Description
4.21-5.00	Strongly Agree
3.41-4.20	Agree
2.61-3.40	Neither agree or disagree
1.81-2.60	Disagree
1.00-1.80	Strongly Disagree

Source : *Pimentel, Jonald. (2010). A note on the usage of Likert Scaling for research data analysis. 18. 109-112.*

3.4.2 Inferential Statistics

Inferential Statistics will be employed in this research to extrapolate findings from the sampled data to the broader population. This statistical category is instrumental in facilitating hypothesis testing and formulating estimates and predictions about the population parameters. To accomplish these objectives, this study will harness the capabilities of Structural Equation Modeling (SEM). SEM, a multivariate statistical analysis technique, is aptly suited for the examination of complex relationships among observed and latent variables. It allows for the simultaneous testing of multiple hypotheses, thereby presenting a comprehensive view of the interplay among the variables under consideration. (Hayashi, Bentler, Yuan, 2011). Therefore, this research will employ SEM for two primary purposes:

- **Hypothesis Testing:** SEM will be used to validate the proposed hypotheses by examining the directional relationships between the variables. This examination aids in discerning the nature and extent of the influence the variables exert on one another.
- **Model Fit:** The consistency of the model will be assessed to determine how well the proposed model aligns with the empirical data. This involves the evaluation of various fit indices, each of which provides insights into different aspects of model fit.

The specific criteria utilized in this testing procedure are detailed in the accompanying Table (3.3). These criteria guide the application of SEM, ensuring a rigorous and methodical approach to inferential data analysis in the study.

Table 3.3 SEM Criteria for analysis

Index	Criteria	Reference Source
Chi-square	p-value > 0.05	(Kula, Sedat., 2011) Hair et al. (2010) and Kline (2005)
P-Value	> 0.05	
CMIN/df.	< 2.0	
CFI	> 0.90	

NFI	> 0.90	
TLI	> 0.90	
IFI	> 0.90	
RMSEA	< 0.05	
RMR	< 0.08	

CHAPTER IV
RESEARCH FINDING

4.1 Descriptive Statistics

4.1.1 Demographic characteristic

Upon collating the responses for this study, it was ascertained that the participant pool comprised a total of 400 respondents. This segment of the research primarily focuses on the demographic attributes of the participants, specifically their gender, age, and level of education. As outlined in Table 4.1, the gender distribution reveals that the majority of the respondents identify as female, constituting 72.5% of the sample. This is followed by male respondents at 22% and respondents identifying as LGBTQ+ at 5.25%. A marginal 0.25% of respondents opted not to disclose their gender. Analyzing the age distribution of the respondents, it was observed that the majority (62%) fall within the 36-45 age group. This is followed by the 26-35 age bracket at 33.75%, the 15-25 age group at 3.5%, and finally, the 46-60 age group, which makes up 0.75% of the total respondents. Lastly, an examination of the respondents' educational attainment revealed a high prevalence of bachelor's degree holders, accounting for 90.5% of the sample. The remaining 9.5% of the respondents reported holding a Master's degree.

Table 4.1: General Information

Gender	Frequency	Percentage
Female	290	72.5
LGBTQ+	21	5.25
Male	88	22
Prefer not to say	1	0.25
Summarize	**400**	**100**
Age	**Frequency**	**Percentage**
15-25	14	3.5
26-35	135	33.75
36-45	248	62

46-60	3	0.75
Summarize	**400**	**100**
Education	**Frequency**	**Percentage**
High School	0	0
Bachelor's Degree	362	90.5
Master's Degree	38	9.5
Ph.D.	0	0
Other	0	0
Summarize	**400**	**100**

4.1.2 Analysis result for each variable.

According to find the result of latent variables, table 4.2 has described using mean and standard deviation analyzing and reflected that the overall latent variables is in the "Agree" level.

Table 4.2 : Mean and Standard Deviation for each questions.

Question	Mean	S.D.	Result
Perceived Usefulness	3.94	0.67	Agree
Perceived ease of use	3.95	0.69	Agree
Attitude toward use	3.96	0.69	Agree
Behavioral Intention to use	3.98	0.7	Agree

4.2 Inferential Statistics

4.2.1 Reliability and Communality testing result

According to the questionnaire reliability test with Cronbach's alpha analysis, as shown in Table 4.3, the consistency of the test and scale is between 0 to 1 (Tavakol & Dennick, 2011), and the acceptable result is between 0.7 to 0.95 (Tavakol & Dennick, 2011). The result from the overall questionnaire analysis is 0.837, which means the questionnaire has reliability. Moreover, a test on communality analysis found that if item communalities moderate to low is a result between 0.40 to 0.70, and if less than 4.0, which means some variables are not related to others (Taderdoost &Sahibuddin, & Jalaliyoon, 2014). Hence, PEOU3 and BIU3 have communalities less than 0.4, while the other variables average between 0.4 to 0.6. PEOU 3 and BIU3 may not relate to other variables, but the rest are related as shown in Table 4.3.

Table 4.3: Cronbach alpha result

Variables	Variables Name	Question	Cronbach's Alpha	Communality
Perceived usefulness	PU1	I agree that ChatGPT improves my productivity in tasks.	0.628	0.435
	PU2	I agree that using ChatGPT makes your tasks easier to complete.		0.633
	PU3	I agree that using ChatGPT provides value in your daily life/work.		0.490
Perceived ease of use	PEOU1	I agree that learning to operate ChatGPT is easy and does not require significant effort.	0.549	0.406
	PEOU2	I agree that using ChatGPT feels intuitive and straightforward.		0.563
	PEOU3	I agree that it's easy to get ChatGPT to do what you want it to do.		0.333
Attitude Towards Use	AIT1	I feel positive about utilizing ChatGPT in my everyday life/work.	0.656	0.450
	AIT2	I feel comfortable in my ability to use ChatGPT effectively.		0.444
	AIT3	I feel that using ChatGPT is beneficial for completing my tasks.		0.438
Behavioural Intention to Use	BIU1	I am likely to continue using ChatGPT in the future.	0.681	0.453
	BIU2	I am likely to recommend ChatGPT to others.		0.442
	BIU3	I plan to use ChatGPT in my future tasks.		0.363
Overall result			**0.837**	

4.2.2 Instrument validity test

According to instrument validity test, this research has used the KMO and Bartlett's analysis as the methodology. The output of the Kaiser-Meyer-Olkin (KMO) and Bartlett's test assesses the suitability of the responses provided in the sample. (Reddy & Kulshrestha, 2019) This test helps determine whether the data collected are sufficient for conducting further analysis or not. Moreover, the acceptible KMO value is more than 0.5. Thus, as show in table 4.4, the KMO result is 0.886 which could explain that sample size for this research is suitable. Moreover, the Barletts's test of sphericity as shown in table 4.4 show that the approximately Chi-Square value is 1156.101 and significant value is 0.000 where less than 0.001. Thus, the correlation matrix is not an indentity matrix (Reddy & Kulshrestha, 2019). In conclusion, factor analysis of 12 variables for understanding the influence factors on the acceptance use of ChatGPT in Bangkok is suitable with this data set.

Table 4.4: KMO and Bartlett's test result.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.886
Bartlett's Test of Sphericity	Approx. Chi-Square	1156.101
	df	66
	Sig.	.000

4.2.3 Examination of descriptive statistic

According to the examination of descriptive statistic of 4 variables for understanding the influence factors on the acceptance use of ChatGPT in Bangkok, the result for all variables (table 4.5) show that range = 4, min = 1, max = 5, mean is between 3.84 to 4.04, S.D. is between 0.662 to 0.729 which reflect that the data is distributed less that 30% of mean where the variance is between each data is 0.439 to 0.531. Moreover, skewness is result between -0.694 to – 0.411 and kurtosis is between 0.502 to 1.850. According to the mearurement of skewness and kurtosis, the skewness value less than 2 and kurtnosis is less than 7 for more than 300 sample sizes (Kim, 2013). The result in table 4.5 reflect that all variables is considerd to be a normal distribution and could be use to analyse in SEM.

Table 4.5: Examination of descriptive statistic result

Variables	Range	Min.	Max.	Mean	S.D.	Variance	Skewness	Kurtosis	CV
Perceived usefulness									
PU1	4	1	5	4.02	0.677	0.458	-0.411	0.686	16.9%
PU2	4	1	5	4.00	0.703	0.494	-0.657	1.673	17.6%
PU3	4	1	5	3.85	0.681	0.464	-0.474	1.110	17.7%
Perceived ease of use									
PEOU1	4	1	5	3.93	0.729	0.531	-0.477	0.502	18.5%
PEOU2	4	1	5	4.01	0.694	0.481	-0.595	1.346	17.3%
PEOU3	4	1	5	3.91	0.673	0.453	-0.487	1.266	17.2%
Attitude toward use									
ATU1	4	1	5	4.04	0.724	0.525	-0.617	1.033	17.9%
ATU2	4	1	5	3.99	0.701	0.491	-0.463	0.649	17.6%
ATU3	4	1	5	3.84	0.662	0.439	-0.647	1.624	17.2%
Behavioral intention to use									
BIU1	4	1	5	3.99	0.727	0.529	-0.657	1.381	18.2%
BIU2	4	1	5	4.04	0.691	0.477	-0.515	1.098	17.1%
BIU3	4	1	5	3.90	0.690	0.476	-0.694	1.850	17.7%

4.2.4 Correlations coefficient testing

Correlation coefficient analysis is the methodology to test the relationship between two or more variables. The result is between -1,0,1 which means -1 is perfect negative correlation, 0 is no correlation and 1 is perfect positive correlation (Mukaka, 2012). According to the result in table 4.6, the result show that correlation value between each variable 0.175 to 0.500 which can summarize that all variables relationship is postive correlation.

Table 4.6: Correlation Coefficient result

Correlations (N=400)													
		PU 1	**PU 2**	**PU 3**	**PEO U1**	**PEO U2**	**PEO U3**	**AT U1**	**AT U2**	**AT U3**	**BI U1**	**BI U2**	**BI U3**
PU1	Pearson Correlation	1	.390**	.272**	.175**	.229**	.218**	.244**	.228**	.252**	.234**	.288**	.213**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PU2	Pearson	.390**	1	.415**	.206**	.206**	.191**	.310**	.219**	.329**	.275**	.336**	.274**

	Correlation												
	Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PU3	Pearson Correlation	.272**	.415**	1	.196**	.187**	.238**	.307**	.279**	.298**	.261**	.275**	.267**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PEOU1	Pearson Correlation	.175**	.206**	.196**	1	.407**	.191**	.295**	.273**	.294**	.344**	.300**	.210**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PEOU2	Pearson Correlation	.229**	.206**	.187**	.407**	1	.387**	.329**	.397**	.329**	.343**	.308**	.216**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000
PEOU3	Pearson Correlation	.218**	.191**	.238**	.191**	.387**	1	.275**	.321**	.317**	.234**	.289**	.267**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000
ATU1	Pearson Correlation	.244**	.310**	.307**	.295**	.329**	.275**	1	.406**	.358**	.500**	.342**	.324**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000
ATU2	Pearson Correlation	.228**	.219**	.279**	.273**	.397**	.321**	.406**	1	.405**	.305**	.307**	.292**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000
ATU3	Pearson Correlation	.252**	.329**	.298**	.294**	.329**	.317**	.358**	.405**	1	.315**	.387**	.399**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000
BIU1	Pearson Correlation	.234**	.275**	.261**	.344**	.343**	.234**	.500**	.305**	.315**	1	.455**	.393**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000
BIU2	Pearson Correlation	.288**	.336**	.275**	.300**	.308**	.289**	.342**	.307**	.387**	.455**	1	.398**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
BIU3	Pearson Correlation	.213**	.274**	.267**	.210**	.216**	.267**	.324**	.292**	.399**	.393**	.398**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

****. Correlation is significant at the 0.01 level (2-tailed).**

4.2.5 Confirmatory Factor Analysis

Prior to conducting the hypothesis testing, a confirmatory factor analysis utilizing the maximum likelihood method was executed on all 12 observed variables, employing AMOS 24.0 software. This analysis aimed to ascertain whether the variables conformed to the hypothesized five-factor model.

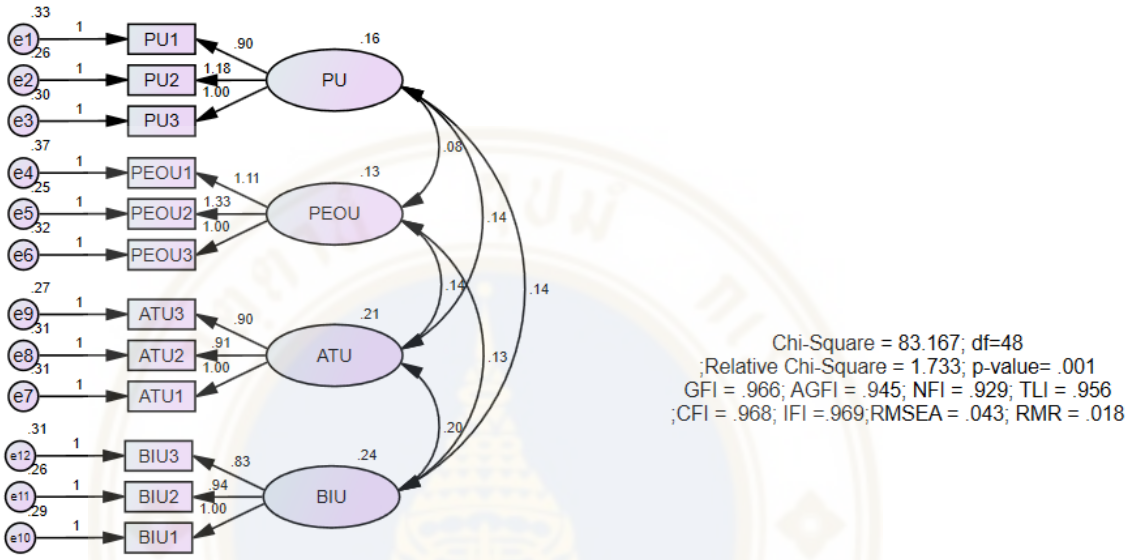

Figure 5 CFA models result.

According to the model fit resulted in Figure 5 showing fit indices for the initial model, the fit indices were $\chi^2 = 83.167$, $df = 48$, $\chi^2/df = 1.733$, GFI = 0.966, AGFI = 0.945, CFI = 0.968, TLI = 0.956, IFI = 0.969, RMSEA = 0.043, RMR=0.018. The model has exhibited a very good fit and showed commendable alignment. Moreover, all of indices which have goodness of fit are surpassed their corresponding threshold values. Thus, the summary in Table 4.7 shows that all results passed the criteria check except P-Value. According to P-Value, the index is used to confirm the null hypothesis (H0) in which the significant statistic is equal to 0.05. However, in this research, the H0 confirmation is not required.

Table 4.7: CFA analysis test result

Index	Criteria	Result	Summarize	Reference
Chi-square (χ^2) = 83.167 df. = 48				
P-Value	> 0.05	0.001	Pass	(Kula, Sedat., 2011) Hair et al. (2010) and Kline (2005)
CMIN/df.	< 2.0	0.966	Pass	
CFI	> 0.90	0.945	Pass	
NFI	> 0.90	0.968	Pass	
TLI	> 0.90	0.956	Pass	
IFI	> 0.90	0.969	Pass	
RMSEA	< 0.05	0.043	Pass	
RMR	< 0.08	0.018	Pass	

4.2.6 Structural equation model analysis

In this analysis part, a structural equation model is constructed deriving from the measurement on model of previous phase to inspect and find the relevance of path coefficients between the conjectured relation of constructs. According to the knowledge that have obtained, it could be either accepting of refusing the research hypothesis. However, the relationships amongst constructs were outlined for conducting the structural model and tracking back to the research hypothesis which has mentioned in Chapter 3. Thus, the path diagram, showcasing all the participating constructs and their interlinks has shown in Figure 6.

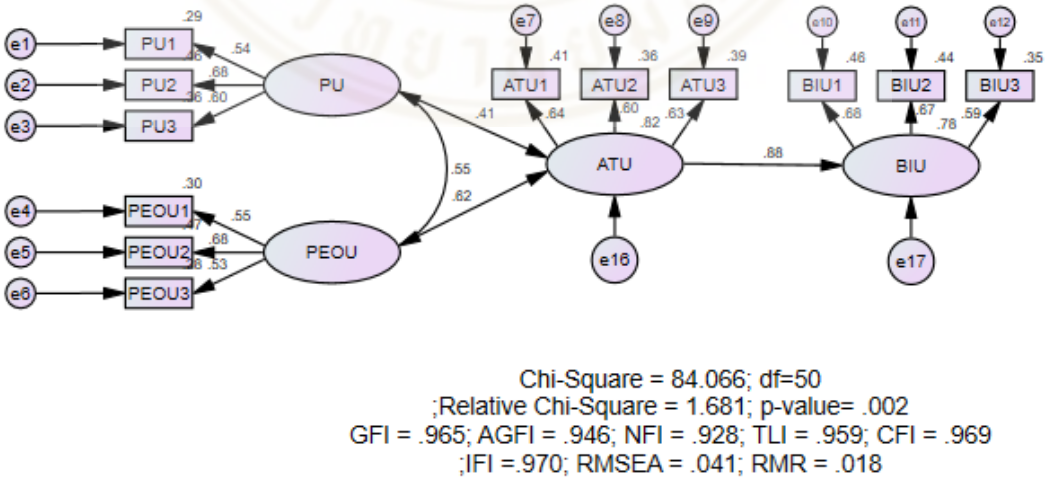

Figure 6 SEM Model result.

After the model was specified, the validity of the model was examined through the same set of goodness-of-fit indices used for the measurement model. The goodness-of-fit statistics for the structural model were $\chi 2 = 84.066$, df = 50, $\chi 2/df = 1.681$, GFI = 0.965, AGFI = 0.946, CFI = 0.969, TLI = 0.959, IFI = 0.970, RMR = 0.018, and RMSEA = 0.041

Table 4.8: SEM analysis test result

Index	Criteria	Result	Summarize	Reference
Chi-square (χ^2) = 84.066 df. = 50				
P-Value	> 0.05	0.002	Pass	(Kula, Sedat., 2011) Hair et al. (2010) and Kline (2005)
CMIN/df.	< 2.0	1.681	Pass	
CFI	> 0.90	0.969	Pass	
NFI	> 0.90	0.928	Pass	
TLI	> 0.90	0.959	Pass	
IFI	> 0.90	0.970	Pass	
RMSEA	< 0.05	0.041	Pass	
RMR	< 0.08	0.018	Pass	

From what is observed, the model demonstrated a commendable fit in every index. This denotes that the model aligned well with the data, necessitating no further adjustments. Despite the notable chi-square statistics, potentially due to their sensitivity to sample sizes as mentioned by Hair et al. (2006), other indices recorded values that exceeded their respective benchmarks. The $\chi 2/df$ ratio showcased a value of 1.681, which is distinctly beneath the accepted maximum of 3.0. An RMR value of 0.018, being under 0.05, signifies the model's strong alignment with the data. As for RMSEA, its value was 0.041. Considering values below 0.08 as fairly fitting and those below 0.05 as very fitting, it's clear the RMSEA shows an excellent fit for this model. Moreover, the readings for GFI (0.965), AGFI (0.946), CFI (0.969), IFI (0.970), and TLI (0.959) surpass the 0.90 benchmark, adding to the assertion of an effective fit

4.2.7 Testing of Hypothesis

After getting affirmation on the overall model alignment, the significant was shifted to the relevance of singular path coefficients, as this data is integral for

hypothesis evaluation. Outcomes of the hypothesis tests, influenced by standardized path coefficients, have been itemized in Table 4.8.

Table 4.9: Hypothesis Test Result (H1-H3)

Structural Path	Standardized Coefficient	*t*	Hypothesis Testing
Perceived Usefulness → Attitude Towards Use	0.406***	4.528	H1: Supported
Perceived Ease of Use → Attitude Towards Use	0.618***	5.809	H2: Supported
Attitude Towards Use → Behavioral Intention to Use	0.884***	9.741	H3: Supported

Within the model, significant pathways were observed amongst all the assumed relations. As a result, H1, H2, and H3 found support. The numerical values for standard coefficients for each respective path were as follows: 0.406 ($t = 4.528$, $p < 0.001$) for the route from Perceived Usefulness to Attitude Towards Use, 0.618 ($t = 5.809$, $p < 0.001$) when connecting Perceived Ease of Use with Attitude Towards Use, and 0.884 ($t = 9.741$, $p < 0.001$) linking Attitude towards Use with Behavioral Intention to Use

Table 4.10: Hypothesis Test Result (H4-H5)

Hypothesis	Indirect Effect on Behavioral Intention to Use	Hypothesis Testing
Indirect Effect of Perceived Usefulness on Behavioral Intention to Use	0.436**	H4: Supported
Indirect Effect of Perceived Ease of Use on Behavioral Intention to Use	0.754**	H5: Supported

Regarding the mediating effect of Perceived Usefulness on Behavioral Intention to Use, as seen in Table 4.9, the result was significant as the indirect effect was 0.436 ($p<.01$). Therefore, H4 was supported. For the mediating effect of Perceived Ease of Use on Behavioral Intention to Use, the result was also significant as the indirect effect was 0.754 ($p<.01$). Therefore, H5 was supported.

4.2.8 Discussion

The technology acceptance model or TAM consists of perceived usefulness and perceived ease of use (David, 1989) influences attitude toward using, which acts as the mediating to the behavioral intention to use ChatGPT in Bangkok city. The sampling was collected from 400 Bangkok residents aged around 15-60 years old through the online questionnaire (Google Form). Moreover, the IBM SPSS and AMOS 24.0 was used to analyze reliability, communality, validity, examination of descriptive statistic, correlations coefficient, confirmation factor analysis, and structural equation model analysis to examine the relation between each variable, the goodness-of-fit to each model, which has passed the cut-off criteria and exhibited that the model was fit and the support information below;

4.2.8.1 Individuals' perceived usefulness influences attitude towards use ChatGPT or not and how?

As tested in the first hypothesis, the result shows that an individual's perceived usefulness influences the attitude toward use of ChatGPT, which support the prior study of Venkatesh & Davis, 2000; Davis, Bagozzi, & Warshaw, 1989 that individual who perceived technology as applicable are more likely to develop a positive attitude toward as it and will be increasing their likelihood of use. The result shows that the standardized coefficient or beta results in 0.406 which suggests a positive moderate relationship between perceived usefulness and attitude towards use. Addtionally, t-value has result in 4.528 which is significantly and indicate that this relationship is statiscally significant. It could imply that if the perceived usefulness of ChatGPT has increased, the positive attitude towards its use tends to increase. A pertinent rationale buttressing this hypothesis can be drawn from the contemporary applications of advanced technologies like ChatGPT. A pertinent rationale buttressing this hypothesis can be drawn from the contemporary applications of advanced technologies like ChatGPT. Many concur that tools like ChatGPT markedly enhance productivity in various tasks such as writing or proofreading, simplifying their completion. Furthermore, they recognize its inherent value in both daily life and professional environments, suggesting its capability to address and improve multifaceted challenges faced by users.

4.2.8.2 Individuals' perceived ease of use influences their attitude towards use ChatGPT or not and how?

As tested in the second hypothesis, the result shows that an individual's perceived ease of use influences the attitude toward the use of ChatGPT, which support prior research by Venkatesh (2000) that if individuals perceive technology to be easy to use, they are more likely to have a favorable attitude toward it and use it. The result shows that the standardized coefficient or beta results in 0.618, indicating a strong relationship among perceived ease of use and attitude toward use. The t-value result in 5.809 which could confirm that this relationship is statiscally significant. It implies that the perceived ease of use of ChatGPT increases, and the positive attitude towards its use also increases significantly. Moreover, ChatGPT requires effortless study and user-friendliness such as user can type whatever they want to ask AI to do with an accurate response, which could increase the attitude of using ChatGPT quite clearly. In simpler terms, if individuals find the product easy to use, they will be more likely to have a favorable attitude towards adopting or using it.

4.2.8.3 Individuals' attitude influence intention to use ChatGPT or not and how?

As tested in the third hypothesis, the result shows that attitude toward use influences the behavioral intention to use ChatGPT. According to the result, the standardized coefficient or beta results in 0.618 which suggests a solid relationship between an individual's attitude toward use and their behavioral intention to use ChatGPT. In other words, a more positive attitude toward a product will increase the intention to use it. Moreover, the t-value result of 9.741 demonstrates that this relationship is statically significant. According to the prior research by Davis et al. (1989) and Taylor and Todd (1995), they demonstrate a significant positive relationship between users' attitudes and their intention to use a system. Based on the presented data, an individual's attitude significantly and positively impacts their intention to use a product or service. The more favorable the attitude an individual has towards a product or service, the higher the likelihood they intend to use or adopt it.

4.2.8.4 Individuals' attitude plays a mediating role on the relationship between perceived usefulness and intention to use ChatGPT or not and how?

As tested in the fourth hypothesis, the result shows that an individual attitude plays a mediating role in the relationship between perceived usefulness and intention to use ChatGPT. According to the result, an indirect effect on behavioral intention to use has the result of 0.436, which could indicate that when the perceived usefulness of ChatGPT influences each individual's attitude, the result turns out that it substantially impacts their intention to use ChatGPT. The significance level ($p<.01$) which could indicate that this mediating relation is statistically significance. Moreover, the indirect effect suggests that the perceived usefulness does not directly predict the intention to use but rather does so through influencing an individual's attitude, which supports the former research by Davis et al. (1989) and Taylor and Todd (1995), that individuals with a more positive attitude towards technology, derived from its perceived usefulness, exhibit a stronger intention to use it and support another research of Paris, Cody & Lee, Woojin & Seery, Paul. (2010) which suggest that perceived usefulness and ease of use can lead to the favorable attitude and influences their intentiont to use. In other words, if an individual perceives something as applicable, it positively influences their attitude, and this improved attitude then increases their intention to use the said product or service. According to the data presented in Table 4.9, an individual's attitude does mediate between perceived usefulness and intention to use. In essence, the perception of usefulness positively influences one's attitude, and this positive attitude then increases the intention to use or adopt a product or service.

4.2.8.5 Individuals' attitude plays a mediating role on the relationship between perceived ease of use and intention to use ChatGPT or not and how?

As tested in the fifth hypothesis, the result shows that an individual's perceived ease of use influences the attitude toward the use of ChatGPT. According to the result, an indirect effect on behavioral intention to use ChatGPT resulted from 0.754. It could indicate that when perceived ease of use affects each individual's attitude significantly impacts their intention to use ChatGPT. Moreover, the sizable indirect effect means that perceived ease of use did not directly lead to an intention to use but instead performed by influencing the individual's attitude which support the former study of Osman et al. (2016) which posited that the attitude is partially mediates relationship between perceive ease of use and the intention to use. In

other words, if individuals found ChatGPT easy to use, it would positively impact their attitude. Then, it will enormously enhance their intention to use ChatGPT. Moreover, the significance level ($p<.01$) confirms this mediating relationship is statistically significant. Based on the analysis result, which supports the prior research by King & He, 2006; Venkatesh, 2000 that the fewer effort people perceive is needed to use a technology, the more positive their attitude towards it, leading to a stronger intention to use it. According to the data presented in Table 4.9, the significant mediating role played by an individual's attitude in the relationship between perceived ease of use and intention to use. When a product or service is perceived as easy to use, it leads to a more favorable attitude, substantially boosting the intention to use or adopt the said product or service.

CHAPTER V
CONCLUSION AND RECOMMENDATION

5.1 Conclusion

The research topic "Understanding the Influence Factors on the Acceptance and Use of ChatGPT in Bangkok: A Study Based on the Technology Acceptance Model" aims to understand the influence factors for using ChatGPT in Bangkok. This research seeks to elucidate the factors propelling the utilization of ChatGPT among Bangkok's residents. The primary research instrument was a questionnaire disseminated through the digital platform Google Forms. This method yielded responses from a significant sample of 400 individuals, as detailed in Chapter 3 of this paper. The impetus for this study is threefold. Firstly, the investigation aims to inform businesses contemplating integrating artificial intelligence (AI), chatbots, or the ChatGPT system. By elucidating the influencing factors on ChatGPT's acceptance and use, this research provides crucial insights that could facilitate the seamless implementation of such technologies. Secondly, this study responds to the rapid pace of today's technological advancement. The dynamic and complex landscape of AI, underpinned by the surge in sophisticated tools like chatbots, necessitates empirical studies to guide its application. Lastly, in shedding light on the acceptance and usage of ChatGPT, this research contributes to the broader academic discourse on AI, enriching the collective understanding of how people interact with these emergent technologies.

The exploration of the acceptance of ChatGPT within Bangkok's demographic aged 15-60 has yielded insightful findings. Supported by advanced analytical tools such as IBM SPSS and AMOS 24.0, the results corroborate established theories like the technology acceptance model (TAM) articulated by Davis in 1989. Firstly, the study affirmed that perceived usefulness plays a pivotal role in shaping attitudes toward ChatGPT. The significant positive correlation between perceived usefulness and a favorable disposition to ChatGPT aligns with prior research (Venkatesh & Davis, 2000; Davis et al., 1989). Similarly, ease of use remains a crucial determinant

of attitude, resonating with the findings of Venkatesh (2000). The strong relationship accentuates that if ChatGPT is viewed as user-friendly, its positive reception is more likely. It augments the probability of ChatGPT's acceptance and consistent utilization. The crux of the study lies in understanding the relationship between individuals' attitude and their behavioral intention to use ChatGPT. A compelling relationship suggests that favorable attitudes directly correspond to an augmented intention to use the product. The mediating role of attitudes was explored, providing nuanced insights into the nexus between perceived usefulness, perceived ease of use, and behavioral intention to adopt ChatGPT. Both variables, perceived usefulness and ease of use, do not directly contribute to the intention to use. Instead, they exert their influence through an intermediary variable, the individual's attitude. In essence, the study accentuates attitudes' integral role in technology acceptance, bridging perceptions and intentions. The acceptance and usage of products like ChatGPT in Bangkok or any urban center hinge on their perceived utility and user-friendliness, pivotally shaping user attitudes and subsequent adoption intentions.

5.2 Recommendation

This study's findings have significant implications, theoretically and practically, shedding light on the critical influence factors for the acceptance and use of ChatGPT in Bangkok within the context of the Technology Acceptance Model (TAM).

From a theoretical standpoint, the research not only underscores the mediating role of attitude in the relationship between perceived usefulness, ease of use, and behavioral intention but also enriches understanding of the TAM. Future research can leverage these insights to expand the TAM by considering additional variables, thus enhancing the model's predictive power. Moreover, this study contributes valuable insights to the growing knowledge concerning AI acceptance, particularly language models like ChatGPT. It provides a robust basis for further investigations into AI-driven technologies, paving the way for developing more nuanced theoretical frameworks regarding AI acceptance and usage.

From a practical perspective, understanding these influence factors can significantly benefit businesses considering incorporating AI tools like ChatGPT.

Businesses could boost customer engagement by designing implementation strategies that emphasize the system's usefulness and ease of use and aim to positively shape attitudes towards its use. Furthermore, these insights can inform policymakers and educators in promoting responsible and beneficial use of AI technologies. Recognizing the factors influencing AI acceptance allows for crafting tailored educational programs and public policies, fostering AI literacy, and forming regulations that cultivate an AI-friendly environment while mitigating potential risks.

5.3 Limitation and Future Research.

This research presents a valuable investigation into the factors influencing the acceptance and use of ChatGPT among Bangkok's residents based on the Technology Acceptance Model (TAM). However, there are some limitations to note that could shape the interpretation and application of the study's findings.

First and foremost, the study's geographic focus on the population of Bangkok might have resulted in limited diversity among the participants. The respondents are predominantly those who have already developed an understanding of ChatGPT usage and possibly those who have access to requisite resources, including technology and internet connectivity. This specific participant group might not be a representative sample of all ChatGPT users, restricting the generalizability of the findings. Secondly, the research employs a cross-sectional design, offering insights into the factors influencing ChatGPT acceptance at a specific point in time. While this approach provides valuable snapshots of participants' attitudes and perceptions, it might need to capture how they evolve accurately. Given the rapid changes of technology advancement in user behaviors, a longitudinal study design could offer more comprehensive insights into the dynamics of ChatGPT acceptance. Thirdly, it is crucial to acknowledge the subjectivity inherent in the self-reported data used in this research. Participants' responses might be influenced by personal biases, potentially leading to inaccuracies. The recall bias could have impacted participants' responses, especially regarding their usage behavior and attitudes towards ChatGPT, possibly skewing the results.

Lastly, while this study applies the TAM, focusing on perceived usefulness, perceived ease of use, attitude towards use, behavioral intention to use, and actual use, it leaves out potential influential factors. This research did not investigate elements such as social influence or trust in AI, which could significantly affect ChatGPT acceptance. Including these factors in future studies could lead to a more holistic understanding of ChatGPT acceptance among users. These limitations, however, provide valuable directions for future research. Further studies could diversify participant demographics, adopt longitudinal designs, consider alternative data collection methods to minimize personal bias, and incorporate additional influential factors beyond those included in the TAM.

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APPENDICES

Survey Questions

Part1: Demographic Information

1 Gender: [ ] Male [ ] Female [ ] Prefer not to say [ ] Lgbtq+

2 Age: _____

3 Education Level: [ ] High School [ ] Bachelor's Degree [ ] Master's Degree [ ] Ph.D. [ ] Other (please specify) _____

Part 2: Perceived Usefulness:

Please rate your agreement with the following statements on a Likert scale from 1 to 5, where 1 represents "Strongly Disagree," and 5 represents "Strongly Agree."

Statement	Rating				
	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
1. I agree that ChatGPT improves my productivity in tasks.					
2. I agree that using ChatGPT makes your tasks easier to complete.					
3. I agree that the use of ChatGPT provides value in your daily life/work.					

Part 3: Perceived Ease of Use:

Please rate your agreement with the following statements on a Likert scale from 1 to 5, where 1 represents "Strongly Disagree," and 5 represents "Strongly Agree."

Statement	Rating				
	Strongly Disagree (1)	Disagree (2)	Neither agree or disagree (3)	Agree (4)	Strongly Agree (5)
1. I agree that learning to operate ChatGPT is easy and does not require significant effort.					
2. I agree that using ChatGPT feels intuitive and straightforward.					
3. I agree that it's easy to get ChatGPT to do what you want it to do.					

Part 4: Attitude Towards Use

Please rate your agreement with the following statements on a Likert scale from 1 to 5, where 1 represents "Strongly Disagree," and 5 represents "Strongly Agree."

Statement	Rating				
	Strongly Disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly Agree (5)
1. I feel positive about utilizing ChatGPT in my everyday life/work.					
2. I feel comfortable in my ability to use ChatGPT effectively.					
3. I feel that using ChatGPT is beneficial for completing my tasks.					

Part 5: Behavioural Intention to Use

Please rate your agreement with the following statements on a Likert scale from 1 to 5, where 1 represents "Strongly Disagree," and 5 represents "Strongly Agree."

Statement	Rating				
	Strongly Disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly Agree (5)
1. I am likely to continue using ChatGPT in the future.					
2. I am likely to recommend ChatGPT to others.					
3. I plan to use ChatGPT in my future tasks.					