



**A STUDY OF THE IMPACT OF CHATGPT APPLICATION ON
KNOWLEDGE ACQUISITION CAPABILITY AMONG
INTERNATIONAL BUSINESS MANAGEMENT STUDENTS: A
CASE STUDY OF SIAM UNIVERSITY**

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**AN INDEPENDENT STUDY SUBMITTED IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF BUSINESS ADMINISTRATION
GRADUATE SCHOOL OF BUSINESS
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This Independent Study Has Been Approved as a Partial Fulfillment of the
Requirements for the Degree of Master of Business Administration

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ABSTRACT

With the rapid development of generative artificial intelligence, ChatGPT has been increasingly used as a learning support tool in higher education. For International Business Management students, the ability to acquire, understand, organize, and apply knowledge is essential because the discipline involves international markets, cross-cultural communication, business strategy, and global business problem-solving. In this context, ChatGPT may help students obtain information, summarize learning materials, explain business concepts, and analyze international business issues. Therefore, this study aimed to examine the influence of information accuracy, information timeliness, and AI analytical capability on knowledge acquisition capability among International Business Management students at Siam University.

This study adopted a quantitative research method. The research population consisted of International Business Management students at Siam University who had experience using ChatGPT or similar generative AI tools for learning. A questionnaire survey was conducted to collect data, and a five-point Likert scale was applied to measure the research variables. A total of 300 questionnaires were distributed, 286 questionnaires were returned, and 260 valid questionnaires were obtained after data screening. The data were analyzed using SPSS. The main statistical methods included reliability analysis, validity analysis, correlation analysis, and multiple regression analysis.

The research results show that information accuracy, information timeliness, and AI analytical capability all have significant positive influences on knowledge acquisition capability. Among these factors, AI analytical capability has the strongest influence, followed by information accuracy and information timeliness. The findings indicate that ChatGPT can support students' knowledge acquisition when it provides accurate, timely, and analytical information. Therefore, students should use ChatGPT

critically and responsibly, while teachers and universities should provide guidance on AI literacy, information verification, and ethical AI use in learning.

Keywords: ChatGPT, knowledge acquisition capability, information accuracy, information timeliness, AI analytical capability



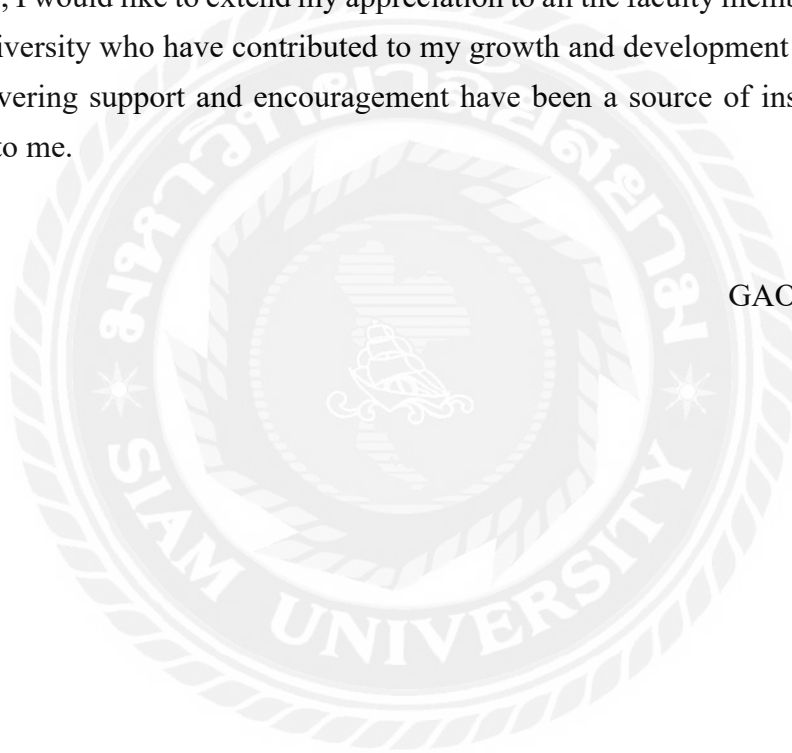
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GAO SHENGHE



DECLARATION

I, GAO SHENGHE, hereby declare that this Independent Study entitled “A Study of the Impact of ChatGPT Application on Knowledge Acquisition Capability among International Business Management Students: A Case Study of Siam University” is an original work and has never been submitted to any academic institution for a degree.

GAO SHENGHE

Aug 10, 2026



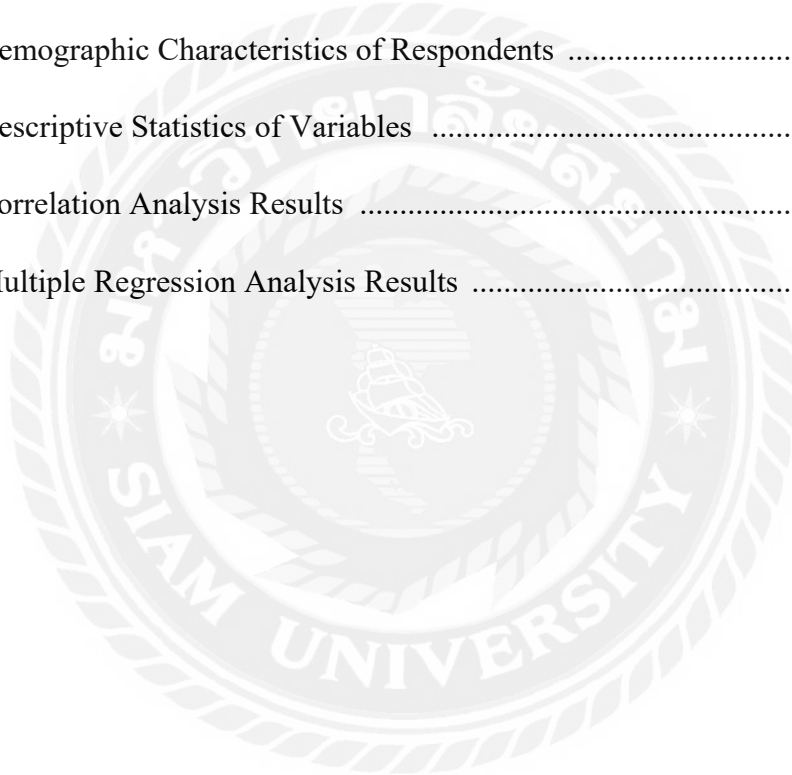
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Chapter 1 Introduction

1.1 Background of the Study

With the rapid development of artificial intelligence, generative artificial intelligence has become an increasingly important technological innovation in education. Among various generative AI applications, ChatGPT has received widespread attention because it can generate natural-language responses, answer questions, summarize texts, explain concepts, translate information, organize ideas, and assist users in solving problems. Since its public release, ChatGPT has rapidly entered educational settings and has become one of the most discussed AI technologies in higher education (Crompton & Burke, 2024; Kasneci et al., 2023). The original study also identifies ChatGPT as an increasingly important learning-support tool that can assist students in information searching, summarization, explanation, and problem solving.

The emergence of ChatGPT reflects a broader transformation in the ways students obtain and interact with information. Traditionally, university students have relied mainly on textbooks, teachers, academic databases, libraries, and search engines to obtain learning materials. Generative AI introduces a more interactive approach because users can communicate with the system through natural-language prompts and receive immediate, conversational responses. This interaction allows students to ask follow-up questions, request simpler explanations, generate examples, summarize complex materials, and reorganize information according to their learning needs. Albadarin et al. (2024), in a systematic review of empirical studies on ChatGPT in education, found that students had used ChatGPT as a virtual learning assistant for obtaining explanations, finding information, summarizing materials, translating texts, generating ideas, and supporting different academic tasks.

The growing educational application of ChatGPT has attracted considerable academic attention. Kasneci et al. (2023) argued that large language models have considerable potential to support education through personalized learning, content generation, explanations, information access, and increased interaction between learners and digital systems. Similarly, Mohebi (2024), based on a systematic review of research on ChatGPT in academic settings, found that personalized learning and learning support represent important potential benefits of ChatGPT, although effective integration requires appropriate educational strategies. These developments indicate that ChatGPT is gradually becoming part of the broader digital transformation occurring within higher education.

The rapid expansion of research on ChatGPT also demonstrates its increasing relevance to teaching and learning. Bhullar et al. (2024) reviewed the literature on ChatGPT in higher education and identified student learning, student engagement, academic integrity, and scholarly research as major themes in the emerging body of research. Crompton and Burke (2024) similarly examined the educational affordances and challenges of ChatGPT and noted that both educators and students can potentially use the technology to support learning, although its limitations must also be carefully considered. Therefore, the discussion surrounding ChatGPT has moved beyond whether the technology can be used in education toward questions concerning how it should be used and what implications it may have for learning.

One reason for the growing popularity of ChatGPT is its accessibility and efficiency. Students can obtain responses within seconds and can interact repeatedly with the system without many of the temporal restrictions associated with traditional sources of academic support. ChatGPT can assist with concept clarification, brainstorming, text summarization, language support, idea generation, and the exploration of unfamiliar subjects. Albadarin et al. (2024) reported that learners used ChatGPT to obtain on-demand answers and explanations of complex topics, while some studies included in their review suggested improvements in learning efficiency and task completion. These characteristics make generative AI particularly relevant in an educational environment where students increasingly expect flexible and immediate access to information.

At the same time, the educational use of ChatGPT has generated significant concerns. Large language models generate responses based on patterns in training data rather than through human-like understanding or independent verification of factual truth. Consequently, ChatGPT may produce inaccurate information, biased content, unsupported statements, or seemingly plausible but incorrect responses. Kasneci et al. (2023) identified misinformation, bias, overreliance, and the need for continuous human oversight as important challenges associated with large language models in education. These limitations are particularly important in academic settings because students may perceive fluent AI-generated responses as authoritative even when the underlying information is inaccurate.

Academic integrity and student dependence on AI have also become important areas of concern. Bhullar et al. (2024) found that academic integrity is one of the most prominent themes in higher-education research on ChatGPT, reflecting concerns about plagiarism, inappropriate assistance, and the production of academic work without sufficient student involvement. Broader reviews of early discussions surrounding

generative AI in higher education have similarly highlighted concerns that excessive dependence on AI-generated content may influence assessment practices and potentially reduce meaningful student engagement with academic tasks. These concerns have encouraged educators to reconsider not only assessment methods but also the skills students need to use generative AI appropriately.

The development of critical AI literacy has therefore become increasingly important. Students need to understand both the capabilities and limitations of generative AI and should be able to evaluate AI-generated information rather than accepting it automatically. Kasneci et al. (2023) emphasized that learners and educators require new competencies for understanding large language models and recommended strong attention to critical thinking and fact-checking when such technologies are incorporated into educational settings. This perspective suggests that generative AI should function as a supplementary learning resource rather than as an unquestioned replacement for textbooks, academic literature, teachers, or independent reasoning.

The increasing use of ChatGPT is also significant because university learning involves much more than simply locating information. Effective learning requires students to understand information, connect it with existing knowledge, organize ideas, interpret meaning, and apply knowledge to new situations. ChatGPT may facilitate some of these processes by providing explanations, summaries, examples, comparisons, and interactive responses. At the same time, the quality of the learning process still depends on how students evaluate, interpret, and use the information they receive. Reviews of ChatGPT research therefore increasingly emphasize the need to examine both its educational opportunities and its limitations rather than treating generative AI as either inherently beneficial or inherently harmful (Crompton & Burke, 2024; Mohebi, 2024).

1.2 Questions of the Study

Based on the research topic, this study sought to answer the following research questions:

1. Is information accuracy significantly associated with knowledge acquisition capability among International Business Management students at Siam University?
2. Is information timeliness significantly associated with knowledge acquisition capability among International Business Management students at Siam University?
3. Is AI analytical capability significantly associated with knowledge acquisition capability among International Business Management students at Siam University?

1.3 Objectives of the Study

The objectives of this study are as follows:

1. To examine the relationship between information accuracy and knowledge acquisition capability among International Business Management students at Siam University.
2. To examine the relationship between information timeliness and knowledge acquisition capability among International Business Management students at Siam University.
3. To examine the relationship between AI analytical capability and knowledge acquisition capability among International Business Management students at Siam University.

1.4 Scope of the Study

This study focused on the use of ChatGPT among International Business Management students at Siam University. The target population consisted of students who had experience using ChatGPT or similar generative artificial intelligence tools for learning purposes.

The study examined students' perceptions of ChatGPT application and their knowledge acquisition capability. The research focused on the relationships between the selected characteristics of ChatGPT application and students' ability to acquire, understand, organize, and apply knowledge.

A quantitative research approach was adopted in this study. Data were collected through a structured questionnaire using a five-point Likert scale. A total of 300 questionnaires were distributed, 286 questionnaires were returned, and 260 valid questionnaires were retained after data screening.

The collected data were analyzed using SPSS. The statistical procedures included descriptive analysis, reliability analysis, validity analysis, correlation analysis, and multiple regression analysis. The study was cross-sectional in nature and therefore focused on statistical relationships among the research variables at a specific point in time.

1.5 Significance of the Study

1.5.1 Theoretical Significance

First, this study contributes to the growing body of research on ChatGPT and generative artificial intelligence in higher education. Existing studies have mainly discussed the opportunities, challenges, acceptance, and ethical implications of

generative AI. This study extends this research by focusing specifically on students' knowledge acquisition capability, thereby providing a learning-oriented perspective for understanding the educational application of ChatGPT.

Second, this study contributes to research on AI-assisted knowledge acquisition. Knowledge acquisition is an important component of the learning process because students need not only to access information but also to understand, organize, and apply it. By examining ChatGPT in relation to knowledge acquisition capability, the study provides empirical evidence for understanding how generative AI may function as a supplementary knowledge-support tool in higher education.

Third, the study provides an integrated perspective for examining the relationship between generative AI and student learning. By drawing on technology acceptance, knowledge management, and information processing perspectives, the study provides a theoretical basis for explaining how students interact with AI-generated information and how such interaction is associated with their knowledge acquisition. This contributes to a more comprehensive understanding of generative AI-supported learning.

1.5.2 Practical Significance

First, this study provides useful guidance for students in using ChatGPT more effectively for academic learning. The findings can help students recognize that effective use of generative AI requires critical evaluation rather than passive acceptance of AI-generated responses. Students may therefore use ChatGPT as a supplementary learning resource while continuing to verify important information through textbooks, academic publications, official sources, and other reliable materials.

Second, the study provides practical implications for teachers. As students increasingly use generative AI in their learning activities, teachers need to understand how ChatGPT is being incorporated into students' knowledge-acquisition processes. The findings can assist teachers in designing learning activities that encourage students to use ChatGPT for explanation, comparison, summarization, brainstorming, and preliminary analysis while maintaining independent thinking and academic responsibility.

Third, the study provides useful reference for universities in developing policies and educational support related to generative AI. Higher education institutions can strengthen AI literacy education, provide guidance on appropriate AI use, establish clear academic-integrity standards, and help students understand both the advantages and limitations of generative AI. Such measures may support the responsible

integration of ChatGPT into teaching and learning while reducing potential risks associated with inaccurate information, overreliance, and inappropriate academic use.

1.6 Definition of Key Terms

Information Accuracy refers to the degree to which students perceive the information generated by ChatGPT as correct, reliable, consistent, and appropriate for academic learning. It reflects students' judgment of whether AI-generated information can be trusted and used as a useful learning resource.

Information Timeliness refers to the degree to which students perceive the information provided by ChatGPT as current, relevant, and available when needed. It reflects whether the information generated by ChatGPT can meet students' immediate learning needs and provide sufficiently updated content.

AI Analytical Capability refers to students' perception of ChatGPT's ability to analyze, compare, summarize, explain, synthesize, and organize information. It reflects the extent to which ChatGPT can assist students in understanding complex information and processing learning materials.

Knowledge Acquisition Capability refers to students' ability to obtain, understand, organize, internalize, and apply knowledge from different learning sources. In this study, it represents students' perceived capability to acquire and use knowledge with the support of ChatGPT.

Chapter 2 Literature Review

This chapter reviews the literature and theoretical foundations related to the variables and concepts examined in this study. To ensure a clear and logical structure, the chapter is organized into several sections and subsections. It begins with a review of ChatGPT and its application in higher education, followed by discussions of knowledge acquisition capability, information accuracy, information timeliness, and AI analytical capability. The chapter then presents the major theoretical foundations of the study, including Technology Acceptance Model, Knowledge Management Theory, and Information Processing Theory. Finally, the conceptual framework is developed by integrating the reviewed concepts and theories to explain the relationships among the research variables.

2.1 ChatGPT

ChatGPT is a generative artificial intelligence application based on large language models that can generate natural-language responses according to users' prompts. Compared with traditional information retrieval systems, ChatGPT provides a conversational form of interaction in which users can ask questions, refine prompts, request explanations, and receive context-sensitive responses. Its functions include answering questions, summarizing texts, translating information, generating ideas, explaining concepts, organizing content, and assisting with problem-solving. Since its public emergence, ChatGPT has rapidly become one of the most widely discussed applications of generative artificial intelligence in education (Albadarin et al., 2024; Baig & Yadegaridehkordi, 2024; Bhullar et al., 2024).

The development of ChatGPT represents an important stage in the broader application of artificial intelligence to education. Unlike conventional digital learning resources that primarily provide fixed information, generative AI can produce new responses according to the specific instructions and questions entered by users. This conversational and adaptive characteristic makes it possible for students to interact repeatedly with the system and request additional clarification, examples, summaries, or alternative explanations. Kasneci et al. (2023) argued that large language models have considerable educational potential because they can support personalized learning, content generation, information access, explanation, and learner assistance. Subsequent reviews have similarly concluded that ChatGPT has rapidly diversified across educational contexts and is increasingly used by students, teachers, researchers, and other higher-education stakeholders (Baig & Yadegaridehkordi, 2024; Mohebi, 2024).

In higher education, ChatGPT has increasingly been used as a supplementary learning tool. Students can use the system to clarify difficult concepts, summarize reading materials, generate examples, brainstorm ideas, support academic writing, translate content, and obtain preliminary explanations of unfamiliar topics. Albadarin et al. (2024), through a systematic review of empirical studies, found that ChatGPT had been applied in multiple educational activities and showed potential to enhance student learning and teacher productivity. Similarly, Baig and Yadegaridehkordi (2024) reviewed 57 studies published between 2023 and 2024 and found that the applications of ChatGPT in higher education had continued to expand across different academic and administrative purposes.

The interactive nature of ChatGPT is particularly relevant to learning because it allows students to engage in iterative dialogue rather than simply receive a single piece of information. A learner can ask an initial question, request additional detail, ask for a simpler explanation, compare alternative perspectives, or request examples until the information becomes easier to understand. Mohebi (2024) identified personalized learning as one of the major opportunities associated with ChatGPT and noted its potential to accommodate diverse student needs and provide flexible learning support. Albadarin et al. (2024) also found that learners used ChatGPT as a form of virtual assistance for explanations, information access, translation, content generation, and other academic activities.

The rapid adoption of ChatGPT has also expanded the role of AI in the higher-education learning environment. Bhullar et al. (2024) identified four major thematic areas in research on ChatGPT in higher education: academic integrity, learning environment, student engagement, and scholarly research. Their findings indicate that the academic discussion surrounding ChatGPT is no longer limited to its technical capabilities but increasingly concerns its broader implications for teaching, learning, assessment, and research. Baig and Yadegaridehkordi (2024) similarly concluded that ChatGPT research in higher education has developed rapidly, with growing attention to adoption, application, acceptance, and post-adoption use.

Student engagement is another important aspect of ChatGPT-supported learning. Because ChatGPT provides immediate and interactive responses, it may encourage students to explore questions, seek additional explanations, and interact more actively with learning content. However, the effects are not uniformly positive. Lo et al. (2024), in a systematic review of 72 studies, found evidence of both engagement and disengagement in ChatGPT-supported learning. Their findings suggest that the educational effects of ChatGPT depend on how it is incorporated into learning activities

and how students interact with the technology rather than merely on access to the tool itself.

Research has also begun to provide empirical evidence concerning the learning outcomes associated with ChatGPT. Deng et al. (2025), through a systematic review and meta-analysis of experimental studies, found that ChatGPT-supported interventions were generally associated with improvements in academic performance, affective-motivational outcomes, and higher-order thinking tendencies, while also reducing learners' mental effort. At the same time, the authors emphasized methodological limitations in the existing evidence and cautioned against making overly broad causal claims. Their findings indicate that ChatGPT may offer educational benefits when it is appropriately incorporated into teaching and learning activities, but the quality and context of implementation remain important.

ChatGPT has also demonstrated potential to support self-directed learning. Its availability enables students to obtain assistance outside normal classroom hours and to explore topics according to their individual learning needs. Reviews of its use in specific educational domains have found that ChatGPT can support self-directed learning, content generation, individualized feedback, and teacher workflows. For example, research on language education has shown that ChatGPT can expand learning opportunities and provide personalized support, although concerns about incorrect information, privacy, and academic dishonesty remain significant (Lo et al., 2024).

Despite these educational opportunities, ChatGPT has important limitations. Large language models generate responses from learned statistical patterns and do not necessarily verify the factual accuracy of every statement they produce. Consequently, ChatGPT may generate inaccurate information, unsupported claims, biased outputs, or apparently convincing responses that contain factual errors. Systematic reviews consistently identify reliability of information as an important concern in educational use (Albadarin et al., 2024; Baig & Yadegaridehkordi, 2024; Kasneci et al., 2023). For this reason, students need to evaluate AI-generated responses critically and verify important academic information through credible sources.

Another major concern is excessive reliance on generative AI. While ChatGPT can reduce the time required to obtain explanations and generate initial ideas, inappropriate dependence may reduce students' motivation to conduct independent research or engage deeply with learning materials. Recent systematic reviews have warned that misuse of ChatGPT may inhibit independent learning even though appropriate use can improve access to knowledge and provide cognitive support. This suggests that the educational role of ChatGPT should be understood as complementary

rather than substitutive: the technology can support students' learning processes, but it should not replace independent reasoning, critical evaluation, or meaningful engagement with academic materials.

Academic integrity has therefore become one of the most frequently discussed issues surrounding ChatGPT in higher education. Because the system can generate essays, summaries, reports, and responses to academic questions, it may be used in ways that blur the distinction between legitimate learning support and inappropriate completion of academic work. Bhullar et al. (2024) identified academic integrity as a dominant theme within the higher-education literature and noted concerns that excessive dependence on generated content may weaken students' ability to produce independent and original work. Research on the early adoption of generative AI in higher education has similarly emphasized the need for institutions to reconsider assessment practices and expectations regarding student authorship.

These developments have increased the importance of AI literacy and responsible use. Students need to understand not only how to operate generative AI systems but also how to evaluate their outputs, identify possible errors, protect personal information, and determine when the use of AI is academically appropriate. Miao and Holmes (2023) recommended a human-centered approach to generative AI in education that emphasizes ethical, safe, equitable, and meaningful use, together with appropriate institutional policies and human capacity development. The guidance also stresses that educational applications of generative AI should be subject to pedagogical and ethical evaluation rather than adopted solely because of technological capability.

Overall, the existing literature indicates that ChatGPT has developed from a novel conversational AI application into an increasingly important educational technology. Its ability to provide rapid responses, personalized explanations, content generation, summarization, and interactive assistance creates substantial possibilities for supporting student learning. At the same time, concerns related to inaccurate information, overreliance, academic integrity, privacy, and responsible use demonstrate that its educational application requires critical judgment and appropriate institutional guidance (Albadarin et al., 2024; Baig & Yadegaridehkordi, 2024; Bhullar et al., 2024; Mohebi, 2024).

2.2 Knowledge Acquisition Capability

Knowledge acquisition capability refers to an individual's ability to identify, obtain, understand, organize, assimilate, and use relevant knowledge from different sources. In educational contexts, knowledge acquisition is a fundamental component of

learning because students continuously encounter new information that must be interpreted and connected with existing knowledge. Effective knowledge acquisition therefore involves more than simple information collection; it requires learners to recognize useful information, understand its meaning, integrate it into existing cognitive structures, and apply it in appropriate situations.

Knowledge acquisition has long been discussed within knowledge management research. Davenport and Prusak (1998) distinguished knowledge from raw data and information by emphasizing the role of experience, context, interpretation, and judgment. From this perspective, obtaining information represents only an initial stage of the knowledge process. Information becomes meaningful knowledge when individuals are able to interpret, contextualize, and integrate it with what they already know. Alavi and Leidner (2001) similarly described knowledge management as involving processes such as knowledge creation, storage, transfer, and application, highlighting the importance of acquiring knowledge before it can be shared or used effectively.

Nonaka (1994) provided an influential explanation of how knowledge develops through interaction between tacit and explicit forms of knowledge. Tacit knowledge is personal and often rooted in experience, while explicit knowledge can be expressed and communicated through language, documents, or other formal representations. The process of knowledge development involves converting and combining these forms of knowledge through socialization, externalization, combination, and internalization. From a learning perspective, students acquire knowledge not simply by receiving explicit information but also by interpreting, combining, and internalizing new information so that it becomes part of their own understanding.

The distinction between information acquisition and knowledge acquisition is particularly important in higher education. Students may have access to large quantities of information through textbooks, databases, online platforms, search engines, and digital tools, but access alone does not guarantee meaningful learning. Effective knowledge acquisition requires learners to evaluate relevant information, establish connections among concepts, distinguish reliable from unreliable sources, and transform information into a form that can be remembered and applied. Paavola and Hakkarainen (2005) argued that learning should not be understood only as the passive acquisition of information but also as an active process in which learners participate in the development, transformation, and creation of knowledge.

Knowledge acquisition is also closely connected with absorptive capacity. Cohen and Levinthal (1990) introduced absorptive capacity as the ability to recognize the value

of external information, assimilate it, and apply it. Although the concept was originally developed in an organizational context, its underlying logic is relevant to individual learning. Learners must first identify useful external knowledge, understand and assimilate it, and subsequently apply it to new tasks or problems. Later research has continued to treat knowledge acquisition as an important initial stage of absorptive capacity and as a foundation for subsequent knowledge assimilation, transformation, and application.

In higher education, knowledge acquisition capability can therefore be viewed as a multidimensional learning capability. It includes the ability to locate relevant information, comprehend its meaning, compare new information with existing knowledge, organize concepts systematically, and use acquired knowledge in academic tasks or problem-solving activities. Students with stronger knowledge acquisition capability are more likely to process complex learning resources effectively, connect new ideas with prior understanding, and apply knowledge across different learning situations.

The development of digital learning environments has expanded the sources from which students can acquire knowledge. In addition to teachers and textbooks, students increasingly obtain information from electronic databases, online courses, educational videos, social media, search engines, and AI-based systems. Zhao et al. (2020) emphasized that learners acquire knowledge through multiple types of learning resources and that different resources may contribute differently to knowledge growth. This suggests that knowledge acquisition in contemporary education is increasingly distributed across multiple digital and traditional information sources.

At the same time, the growth of digital resources has increased the cognitive demands placed on students. The availability of large amounts of information requires students to select, evaluate, and synthesize relevant content rather than simply retrieve it. Recent research on higher education information processing has shown that prior knowledge, motivation, task complexity, cognitive load management, and external support structures can all influence how effectively students process academic information. These findings reinforce the idea that knowledge acquisition is an active cognitive capability rather than a simple consequence of information availability.

Knowledge acquisition is also closely related to students' ability to transform externally obtained information into internal understanding. In the SECI model, internalization refers to the conversion of explicit knowledge into tacit knowledge through experience and learning (Nonaka & Takeuchi, 1995). This process is particularly relevant in education because students must move beyond memorizing

externally presented information and develop their own understanding of concepts. A learning resource may provide explicit information, but successful acquisition occurs only when students are able to interpret and integrate that information into their existing knowledge structures.

Recent research has extended these ideas into higher education settings. Han and Zhao (2026) examined university students through the lens of the SECI model and absorptive capacity and found that knowledge-creation processes were positively associated with students' acquisition, assimilation, and transformation capabilities. Their findings indicate that knowledge acquisition functions as an important stage through which students obtain external knowledge before it can be further transformed and applied.

Technology can facilitate knowledge acquisition by improving access to learning resources and supporting information processing. Digital systems may help students locate information, reorganize materials, receive explanations, and compare different sources. However, technology does not automatically generate knowledge. Students still need to make cognitive judgments about the relevance, reliability, and meaning of the information provided. The effectiveness of technology-supported knowledge acquisition therefore depends both on the characteristics of the technology and on learners' ability to process the information it provides.

2.3 Information Accuracy

Information accuracy refers to the extent to which information is correct, reliable, precise, and free from factual or logical errors. In information systems research, accuracy has long been regarded as an important dimension of information quality because users depend on the information generated or delivered by a system when making judgments, completing tasks, or solving problems. DeLone and McLean (2003) identified information quality as one of the major dimensions of information-system success and emphasized characteristics such as accuracy, completeness, relevance, and timeliness. From this perspective, information accuracy is not only a technical characteristic of information but also an important factor affecting whether users perceive information as useful and trustworthy.

The importance of information accuracy is particularly evident in educational environments. Students frequently rely on external information when developing their understanding of concepts, completing assignments, solving problems, and making academic judgments. If the information they receive is inaccurate or misleading, it may negatively affect subsequent understanding and knowledge development. Therefore,

the quality of educational information depends not simply on accessibility but also on whether the information can be considered sufficiently reliable for learning purposes. In digital learning environments, where students obtain information from multiple online sources, the ability to distinguish accurate information from misleading or incomplete content becomes increasingly important.

The emergence of generative artificial intelligence has made information accuracy an even more significant issue. Unlike traditional databases or search engines that mainly retrieve existing documents, large language models generate new textual responses based on statistical relationships learned from large amounts of data. As a result, generated content may be linguistically fluent and convincing without necessarily being factually correct. Kasneci et al. (2023) identified misinformation and unreliable outputs as major challenges associated with large language models in education and emphasized that users should critically evaluate AI-generated information rather than automatically accept it as correct.

One phenomenon that has received particular attention is AI “hallucination,” which refers to situations in which a generative AI system produces information that appears plausible but is unsupported, incorrect, or fabricated. Albadarin et al. (2024), in their systematic review of empirical research on ChatGPT in education, identified the accuracy and quality of information as a fundamental concern in the educational use of ChatGPT. Their review found that inaccurate or misleading responses remain an important risk, particularly because students may use ChatGPT-generated content to support learning activities. This makes information accuracy an essential consideration when evaluating the educational usefulness of ChatGPT.

The problem is particularly important because the conversational style of ChatGPT can increase the perceived credibility of its responses. Students may interpret well-structured and confidently expressed answers as evidence that the information is correct. However, linguistic fluency does not necessarily indicate factual accuracy. Alibrahim (2024), in a systematic review examining the reliability of ChatGPT in educational contexts, found that ChatGPT still demonstrates limitations in areas such as deep understanding, complex problem solving, and certain forms of calculation. These findings suggest that students should distinguish between the apparent quality of a response and its actual factual reliability.

Information accuracy also has implications for the learning process because incorrect information can become incorporated into students’ existing understanding. When learners encounter new information, they compare it with prior knowledge and use it to construct or revise cognitive structures. If inaccurate information is accepted

without verification, it may produce misconceptions that affect later learning. For this reason, the reliability of information sources has always been an important consideration in education. Generative AI adds complexity to this issue because the source of individual statements may not always be immediately visible to the user.

Recent research on ChatGPT in higher education consistently identifies reliability and accuracy as major challenges. Baig and Yadegaridehkordi (2024), in a systematic review of ChatGPT applications in higher education, concluded that the use of ChatGPT has expanded rapidly across student, teaching, research, and administrative contexts, but its effective use still requires greater attention to limitations and research challenges. Bhullar et al. (2024) similarly identified the quality and responsible use of ChatGPT-generated information as part of the broader set of challenges associated with integrating ChatGPT into higher education.

Information accuracy should therefore be understood not only as an objective technical property but also as a user perception. Students generally cannot independently assess the internal operation of a large language model. Instead, they evaluate accuracy through the apparent consistency of responses, comparison with known facts, agreement with other sources, and their own experience. Perceived information accuracy consequently reflects whether users believe that the information provided by ChatGPT is sufficiently correct and dependable for their learning purposes.

The educational implications of information accuracy are closely related to source verification and critical thinking. Students should compare important AI-generated claims with textbooks, peer-reviewed research, official reports, or other credible information sources. This becomes particularly important when ChatGPT is used to obtain factual information, explain unfamiliar concepts, cite literature, or support academic decisions. Albadarin et al. (2024) emphasized that inaccurate information generated by ChatGPT may create risks for learners, suggesting that educational institutions and instructors need to provide guidance on appropriate verification practices.

At the same time, concerns regarding information accuracy do not mean that ChatGPT has no educational value. Rather, they indicate that its usefulness depends partly on how carefully its outputs are evaluated. ChatGPT can provide rapid explanations, summaries, and preliminary information, but such responses should be considered part of an information-search and learning process rather than an unquestionable final source. Appropriate use therefore requires students to combine the efficiency of generative AI with independent judgment and external verification.

Overall, information accuracy represents an important aspect of ChatGPT use in education because the usefulness of AI-generated information depends substantially on whether students perceive that information as correct and reliable. Existing literature indicates that generative AI offers considerable opportunities for supporting access to information and learning, while inaccurate or fabricated content remains one of its most consistently identified limitations (Albadarin et al., 2024; Baig & Yadegaridehkordi, 2024; Kasneci et al., 2023).

2.4 Information Timeliness

Information timeliness refers to the extent to which information is current, up to date, relevant to the present situation, and available when users need it. In information quality research, timeliness is commonly regarded as an important characteristic of useful information because even accurate information may lose value when it is outdated or delivered too late for the user's current task. For learners, timely information is particularly important when the subject matter involves rapidly changing knowledge, recent events, policies, market conditions, technological developments, or emerging research.

The concept of timeliness is closely related to information quality in digital systems. High-quality information should not only be accurate and relevant but should also be sufficiently current for the purpose for which it is used. In higher education, students increasingly rely on digital platforms to access learning materials and supporting information. Kim et al. (2012), in their study of course management systems in higher education, found that information quality was an important determinant of users' satisfaction and perceived benefits from e-learning systems. Their findings indicate that the quality of information delivered through digital learning technologies has direct implications for the educational value that students obtain from such systems.

Timeliness becomes especially important in learning environments where information changes rapidly. Many academic and professional subjects are influenced by continuous changes in technology, regulations, economic conditions, scientific knowledge, and social developments. Information that was previously accurate may become less useful when new evidence or developments emerge. Students therefore need access to information that reflects the current state of knowledge, particularly when they are studying recent events or completing tasks requiring contemporary examples and data.

Generative artificial intelligence provides important advantages in terms of response speed. Students can ask a question and receive a generated response within

seconds, which may reduce the time required to search through multiple sources manually. This immediacy can make ChatGPT attractive as an academic support tool. However, response speed and information timeliness are not the same concept. A system may respond immediately while still providing information that is outdated. This distinction is particularly important when evaluating the usefulness of ChatGPT for learning.

Empirical evidence has demonstrated this limitation. Taesotikul et al. (2024), in a comparative study involving ChatGPT and pharmacy students, reported that ChatGPT demonstrated considerable efficiency in retrieving and presenting information but also identified limitations caused by delays in updating its underlying information. The study specifically noted that outdated information could reduce ChatGPT's reliability in situations where recent knowledge is required. This finding illustrates why timeliness should be considered separately from the speed with which an AI system generates a response.

The relevance of information timeliness has also been demonstrated directly in research examining ChatGPT information quality. Fu et al. (2024) developed and empirically tested a model of information quality and user information satisfaction in the higher-education context using data from 508 university participants. The study found that timeliness was among the influential information-quality dimensions associated with users' satisfaction with ChatGPT, alongside factors such as completeness, precision, convenience, and information format. This provides empirical support for treating timeliness as an important component of students' evaluations of AI-generated information.

The significance of timeliness can also be understood from the perspective of learning efficiency. When students receive relevant information at the moment they encounter a learning problem, they may be able to continue a learning task without lengthy interruptions. For example, immediate access to an explanation or clarification may help a student resolve confusion before moving to the next stage of a task. In this respect, conversational AI provides a form of on-demand information support that differs from traditional sources requiring users to search, evaluate, and integrate information independently.

However, the educational value of this immediacy depends on whether the information remains relevant to the current context. An answer based on obsolete regulations, outdated statistics, previous versions of technology, or superseded academic findings may mislead students even if the response is delivered instantly.

Consequently, students must consider both the speed of information delivery and the currency of the information itself.

This distinction is increasingly important as ChatGPT is incorporated into higher education. Crompton and Burke (2024) identified rapid feedback, accessibility, personalized support, and immediate assistance among the educational affordances associated with ChatGPT. At the same time, they emphasized that limitations of the technology require users to evaluate its outputs carefully rather than assuming that convenience guarantees quality. Thus, the immediate availability of generated information can support learning, but its educational usefulness depends on whether the information remains applicable to the learner's current needs.

Timeliness also interacts with students' expectations of digital technology. Contemporary learners are accustomed to obtaining information rapidly through online platforms, mobile devices, search engines, and digital learning systems. Generative AI extends this expectation by allowing users to obtain direct responses through conversational interaction. As a result, students may increasingly evaluate learning technologies according to whether they can provide information efficiently and at the moment it is needed. This may influence how useful students perceive such technologies to be in supporting academic tasks.

Nevertheless, timely information should not be interpreted as meaning that ChatGPT automatically provides real-time or fully updated knowledge. The currentness of generated information may vary according to the model, the information available to it, whether external retrieval is enabled, and the nature of the user's request. For subjects that depend strongly on current information, students may therefore need to verify AI-generated responses using recent academic publications, official websites, databases, or other authoritative sources.

This issue is particularly relevant because the rapid generation of responses may create an impression of immediacy that users associate with currency. A student may reasonably assume that an answer received instantly represents the latest available information, even though these are separate characteristics. Effective use of generative AI therefore requires learners to recognize the difference between rapid response time and up-to-date information.

From an educational perspective, timely access to relevant information can support learning by reducing delays in information acquisition, assisting learners when difficulties arise, and allowing them to respond more efficiently to changing knowledge requirements. At the same time, outdated information can limit the usefulness of an

otherwise efficient learning tool. Information timeliness should therefore be regarded as an important quality characteristic when evaluating AI-supported learning systems.

2.5 AI Analytical Capability

AI analytical capability refers to the perceived ability of an artificial intelligence system to analyze, compare, interpret, summarize, synthesize, organize, and explain information in ways that support users' understanding and problem solving. In the context of generative artificial intelligence, analytical capability goes beyond simple information retrieval. Systems such as ChatGPT can respond to complex prompts, identify relationships among ideas, compare different viewpoints, reorganize information, generate structured explanations, and assist users in breaking complex problems into more manageable components. In Gao Shenghe's original study, AI analytical capability is similarly defined in terms of ChatGPT's perceived ability to analyze, compare, summarize, explain, and organize information.

One important characteristic of generative AI is its capacity to support information synthesis. Traditional search tools mainly help users locate existing information, whereas generative AI can reorganize and integrate information in response to specific user instructions. This capability enables learners to request summaries, comparisons, classifications, explanations, and alternative interpretations of complex materials. Such functions may reduce some of the initial effort involved in structuring unfamiliar information and provide learners with a starting point for deeper analysis and evaluation.

AI analytical capability is particularly relevant to higher-order learning because university students are frequently required to move beyond the recall of factual information and engage in analysis, evaluation, synthesis, interpretation, and problem solving. Experimental research has begun to provide evidence that ChatGPT may support some of these cognitive processes. Urban et al. (2024), for example, conducted an experimental study of university students engaged in creative problem-solving tasks and found that students using ChatGPT produced solutions with significantly higher quality, elaboration, and originality. Participants also perceived the task as easier and requiring less mental effort when ChatGPT was available.

Creative problem solving illustrates one way in which AI analytical capability may support learning. Complex problems typically require learners to interpret a situation, identify relevant information, generate possible solutions, compare alternatives, and evaluate the quality of different responses. ChatGPT can assist at several stages of this process by suggesting possible approaches, identifying alternative perspectives, organizing ideas, and generating preliminary explanations. However, Urban et al. (2024)

also found that the relationship between ChatGPT use and students' ability to accurately evaluate the quality of their own answers was less clear. This suggests that improved AI-assisted task performance does not necessarily imply equally strong metacognitive judgment.

AI analytical capability is also related to critical, creative, and reflective thinking. Essel et al. (2024) investigated ChatGPT use among 125 undergraduate students through a mixed-methods pretest-posttest experimental design. Students in the experimental group used ChatGPT during learning activities, whereas the control group relied on conventional databases and search engines. The findings showed discernible effects on students' critical, creative, and reflective thinking skills, indicating that generative AI can influence cognitive processes beyond basic information retrieval when incorporated into academic activities.

Critical thinking is particularly relevant to the analytical use of generative AI. Critical thinking involves interpreting information, evaluating evidence, comparing alternative arguments, identifying assumptions, and reaching justified conclusions. De la Puente et al. (2024) examined 95 undergraduate students participating in international-relations debate activities. Students who used ChatGPT-supported debate sessions demonstrated stronger outcomes in understanding complex concepts, critical thinking, and argumentation skills than students who participated in traditional debate activities. The study therefore provides empirical evidence that ChatGPT may contribute to analytical learning when the technology is incorporated into structured activities requiring students to evaluate and debate different perspectives.

Importantly, the way ChatGPT is used appears to influence the cognitive value obtained from its analytical capabilities. In the study by de la Puente et al. (2024), students did not simply accept AI-generated responses as final answers. They used ChatGPT to generate different perspectives and were subsequently required to fact-check key points, identify potential biases, and evaluate the logical consistency of the AI-generated arguments. Such activities encouraged students to interact critically with AI-generated information rather than passively consume it. This indicates that AI analytical capability may provide greater educational value when learners remain actively involved in interpreting and evaluating generated responses.

Another important analytical function of generative AI is the organization of complex information. Students often encounter large amounts of academic material and may need to identify central concepts, establish relationships among ideas, and distinguish important information from secondary details. ChatGPT can assist by generating summaries, outlines, comparisons, and structured explanations. These

functions may serve as cognitive scaffolds that help learners organize information before conducting their own interpretation and evaluation. However, the analytical assistance provided by AI should be viewed as complementary to students' own reasoning rather than as a substitute for it.

This distinction is important because AI-generated analyses can appear coherent even when they contain weaknesses or unsupported assumptions. Students must therefore evaluate whether the information and reasoning contained in an AI-generated response are logically consistent, relevant to the problem, and supported by credible evidence. The experimental findings of Urban et al. (2024) illustrate this issue: although ChatGPT improved several dimensions of creative problem-solving performance, its effects on accurate self-evaluation were uncertain. Thus, the ability of an AI system to produce sophisticated analytical output does not eliminate the need for human judgment.

The educational value of AI analytical capability also depends on the degree of cognitive engagement maintained by learners. When students use ChatGPT to generate possible explanations and then compare, revise, critique, or verify those explanations, AI can function as a cognitive partner that expands the range of information available for analysis. In contrast, if students simply delegate an analytical task to ChatGPT and reproduce the generated response without evaluation, opportunities to practice independent reasoning may be reduced. The findings of Essel et al. (2024) and de la Puente et al. (2024) suggest that structured integration of ChatGPT into learning activities can support cognitive skills when students remain actively involved in the learning process.

AI analytical capability can also support learning efficiency. Complex academic tasks may require students to process substantial amounts of unfamiliar information before they can begin interpreting a problem. AI-generated summaries, comparisons, classifications, and explanations can help students establish an initial structure for the information they encounter. Urban et al. (2024) found that students using ChatGPT perceived creative problem-solving tasks as requiring less mental effort, suggesting that generative AI may reduce some of the cognitive burden involved in initial information processing. Nevertheless, reduced mental effort should not be equated with reduced intellectual participation; effective learning still requires students to evaluate and apply the resulting information independently.

The relationship between AI analytical capability and learning therefore involves both technological capability and human participation. ChatGPT may be able to analyze and reorganize information rapidly, but the usefulness of these functions depends on whether students can formulate appropriate questions, interpret the generated responses,

identify weaknesses, and connect the information with existing knowledge. De la Puente et al. (2024) demonstrated that structured use involving brainstorming, fact-checking, bias identification, and logical evaluation can transform ChatGPT from a simple answer-generating tool into a resource for analytical engagement.

The role of instructional design is consequently important. When ChatGPT is integrated into activities that require comparison, critique, revision, justification, and reflection, students are more likely to engage actively with AI-generated information. The experimental studies of Essel et al. (2024) and de la Puente et al. (2024) both incorporated ChatGPT within structured learning activities rather than allowing completely unregulated use, and both reported positive outcomes related to higher-level cognitive skills. This suggests that the educational effectiveness of AI analytical capability depends partly on how learning tasks are designed and how students are instructed to interact with the technology.

Overall, existing empirical evidence indicates that ChatGPT can provide analytical support through information organization, comparison, explanation, idea generation, and problem analysis. Studies have reported benefits related to creative problem solving, critical thinking, reflective thinking, argumentation, and the understanding of complex concepts when ChatGPT is appropriately incorporated into learning activities (de la Puente et al., 2024; Essel et al., 2024; Urban et al., 2024). At the same time, these benefits do not remove the need for independent human evaluation. Students must continue to verify information, assess reasoning, and make final judgments about the relevance and validity of AI-generated analyses.

2.6 Technology Acceptance Model

The Technology Acceptance Model (TAM) is one of the most influential theoretical models for explaining individuals' acceptance and use of information technology. Davis (1989) developed TAM to explain why users accept or reject a technological system. The model proposes that two core beliefs—perceived usefulness and perceived ease of use—play central roles in shaping users' attitudes and behavioral intentions toward technology. Perceived usefulness refers to the degree to which an individual believes that using a particular system will improve task performance, whereas perceived ease of use refers to the degree to which an individual believes that using the system will require relatively little effort (Davis, 1989).

TAM was developed from the Theory of Reasoned Action and adapted specifically to the context of information-system adoption. In the original model, external factors influence users' beliefs about the usefulness and ease of use of a technology, which

subsequently affect attitude, behavioral intention, and actual system use (Davis, 1989). The model therefore provides a structured explanation of how users' perceptions of technological characteristics can shape their willingness to adopt and continue using a system.

Perceived usefulness occupies a particularly important position within TAM. Users are more likely to accept a technology when they believe that it contributes meaningfully to their performance or helps them complete tasks more effectively. Davis (1989) found that perceived usefulness was strongly associated with users' intentions to use information systems. Subsequent research has continued to confirm the importance of perceived usefulness across different technological contexts. King and He (2006), based on a meta-analysis of 88 TAM studies, concluded that TAM is a robust and widely applicable model for explaining technology acceptance.

Perceived ease of use is also central to TAM because users may avoid technologies that they consider difficult, complicated, or cognitively demanding. According to Davis (1989), when users perceive a system as relatively easy to operate, they are more likely to develop favorable evaluations of that system. Perceived ease of use may also strengthen perceived usefulness because a technology that requires less effort allows users to devote more attention to completing their primary tasks rather than learning how to operate the system.

The model was subsequently extended to explain a wider range of factors associated with technology acceptance. Venkatesh and Davis (2000) proposed TAM2, which incorporated social influence and cognitive instrumental processes into the original framework. Their longitudinal research found that factors such as subjective norm, job relevance, output quality, result demonstrability, and perceived ease of use contributed to users' perceptions of usefulness and intention to use technology. This extension demonstrated that technology acceptance is influenced not only by the basic characteristics of a system but also by how users evaluate its relevance, performance, and social context.

The validity of TAM has been supported across a wide range of research contexts. King and He (2006) statistically synthesized 88 published studies and found that TAM was a valid and robust model with broad applicability across different technologies and user groups. Their meta-analysis strengthened the theoretical status of TAM by showing that the relationships among its principal constructs were not limited to a single technological setting.

TAM has also been extensively applied in educational technology research. Scherer et al. (2019) conducted a meta-analytic structural equation modeling study

based on 114 empirical studies and 34,357 teachers. Their findings showed that TAM provided a good explanation of technology acceptance in educational settings and that perceived usefulness was directly related to behavioral intention. Similarly, Scherer and Teo (2019) found that TAM effectively explained teachers' intentions to integrate technology, although the strength of individual relationships varied according to sample and study characteristics.

These findings indicate that TAM is particularly relevant to education because students and teachers regularly evaluate whether a digital technology is useful for their learning or teaching activities and whether it can be operated efficiently. When a technology is perceived as helpful for completing academic tasks, accessing information, or improving learning efficiency, users are more likely to develop favorable attitudes toward its adoption. At the same time, technologies that are difficult to use may create additional cognitive or operational burdens and reduce users' willingness to integrate them into regular learning activities.

The emergence of generative AI provides a new context for applying TAM. ChatGPT differs from many traditional educational technologies because it allows users to interact through natural-language prompts rather than complex interfaces. Its conversational design may reduce perceived effort, while functions such as explanation, summarization, idea generation, and problem support may contribute to perceived usefulness. Consequently, TAM provides a useful theoretical lens for understanding why students may adopt ChatGPT as part of their learning activities.

However, the present study does not directly measure perceived usefulness or perceived ease of use as independent variables. Instead, TAM is used as a broader theoretical foundation for understanding how students' evaluations of the functional qualities of a technological system may relate to their learning experience. Venkatesh and Davis (2000) demonstrated that users' usefulness perceptions can be influenced by cognitive evaluations such as output quality and the relevance of technological support to a task. This principle is relevant to ChatGPT because students may evaluate the technology according to the quality and usefulness of the information and analytical support it provides.

In this study, information accuracy, information timeliness, and AI analytical capability can be interpreted as specific evaluations of the quality and functional performance of ChatGPT. Although these constructs are not identical to the original TAM variables, they reflect users' judgments about whether the technology provides useful and effective support for learning. From the TAM perspective, positive

evaluations of a technological system can strengthen users' perception that the system contributes value to task performance (Davis, 1989; Venkatesh & Davis, 2000).

2.7 Knowledge Management Theory

Knowledge Management Theory focuses on how knowledge is created, acquired, organized, stored, shared, and applied. Knowledge is not simply information; it develops when information is interpreted, integrated with existing understanding, and used meaningfully. Alavi and Leidner (2001) explained that knowledge management involves processes such as knowledge creation, storage and retrieval, transfer, and application.

A major theoretical foundation is Nonaka's distinction between tacit and explicit knowledge. Tacit knowledge is personal and experience-based, whereas explicit knowledge can be documented and communicated. Nonaka (1994) argued that knowledge develops through interaction between these two forms. Nonaka and Takeuchi (1995) later proposed the SECI model, including socialization, externalization, combination, and internalization, to explain how knowledge is continuously transformed and developed.

This perspective is relevant to higher education because students increasingly obtain information through digital platforms and AI-based systems. However, access to information alone does not guarantee knowledge acquisition. Students must still select, evaluate, organize, integrate, and internalize the information they receive. In this sense, digital technologies function as enablers of knowledge processes rather than substitutes for individual learning.

Recent studies have extended Knowledge Management Theory to generative AI environments. Lee et al. (2023) found that generative AI can support student discourse and knowledge creation when it is incorporated into appropriately designed learning activities. Darban (2024) also showed that conversational AI can support knowledge acquisition in technology-mediated learning environments. These findings indicate that generative AI may contribute to knowledge development by facilitating access to information and supporting interaction and knowledge exchange.

Knowledge acquisition and application have also been identified as important factors in generative AI use. Al-Qaysi et al. (2025) found that knowledge acquisition and knowledge application significantly influenced the use of generative AI. Similarly, Al-Emran et al. (2025) reported that knowledge-management factors, particularly knowledge acquisition and application, played important roles in students' effective use

of generative AI in education. These studies provide recent empirical support for applying Knowledge Management Theory to AI-assisted learning.

Generative AI may also facilitate the organization and construction of knowledge. An et al. (2025) found that a generative-AI-supported collaborative learning environment improved task performance and strengthened collaborative knowledge-construction processes. This suggests that AI can contribute not only to information access but also to the organization and integration of knowledge when students remain actively involved in the learning process.

2.8 Information Processing Theory

Information Processing Theory explains learning as a process in which individuals receive, attend to, organize, store, retrieve, and apply information. Early information-processing research emphasized the limited capacity of human cognition and the importance of attention and memory in determining how information is processed. Miller (1956) highlighted limitations in short-term information processing, while Atkinson and Shiffrin (1968) proposed a memory model involving sensory memory, short-term memory, and long-term memory. These perspectives suggest that effective learning requires individuals to select relevant information, process it meaningfully, and integrate it into existing cognitive structures.

The theory is particularly relevant to digital learning because students frequently encounter large amounts of information and must determine which information deserves attention. When information is complex or excessive, learners may experience greater cognitive load, which can interfere with understanding and learning. Sweller et al. (2019) explained that instructional environments should manage unnecessary cognitive demands so that limited working-memory resources can be directed toward meaningful learning. Thus, technologies that organize or simplify information may support information processing, provided that they do not replace the learner's own cognitive engagement.

Generative AI has introduced a new form of external support for information processing. ChatGPT can summarize lengthy materials, explain unfamiliar concepts, organize information, and provide immediate responses to questions. Woo et al. (2024) examined students learning to write with ChatGPT and found that the technology influenced students' perceived cognitive load as well as their learning experience. Their findings suggest that AI-supported learning environments can alter the amount of cognitive effort students perceive while processing academic tasks.

Recent experimental evidence also indicates that generative AI may reduce cognitive load during complex learning activities. In a comparison between human-machine and human-human collaborative learning, ChatGPT-supported student teachers demonstrated greater task-completion efficiency and lower cognitive load, together with stronger systematicity in critical thinking (Li et al., 2024). These results suggest that AI can provide cognitive scaffolding by assisting learners with information organization and preliminary processing.

However, reduced cognitive load does not necessarily result in deeper learning. Stadler et al. (2024) randomly assigned 91 university students to use either ChatGPT or a traditional search engine while investigating a scientific issue. Students using the large language model reported significantly lower cognitive load, but their final reasoning and argumentation were weaker than those of students using the search engine. This finding indicates that AI may make information processing easier while simultaneously reducing the depth of cognitive engagement if learners rely excessively on generated responses.

Metacognitive regulation is therefore important in AI-supported information processing. Xu et al. (2025) conducted a quasi-experiment with 68 college students and found that explicit metacognitive support in a generative AI learning environment enhanced students' self-regulated learning and learning experiences. This suggests that learners benefit more from generative AI when they are encouraged to monitor, evaluate, and regulate how they process AI-generated information rather than passively accepting it.

Recent longitudinal evidence further supports the importance of active information processing. Yan et al. (2025) followed university students over a 16-week period and found that sustained interaction with generative AI contributed to the development of metacognitive awareness, critical evaluation of AI outputs, and more personalized learning workflows. These findings show that meaningful AI-supported learning requires students to continuously evaluate and reorganize information instead of simply outsourcing cognitive tasks to the technology.

2.9 Conceptual Framework

The conceptual framework of this study integrates Technology Acceptance Model, Knowledge Management Theory, and Information Processing Theory to explain the relationship between students' perceptions of ChatGPT and their knowledge acquisition capability. The three theories provide complementary perspectives rather than independent explanations. TAM explains how students evaluate ChatGPT as a useful

technological tool, Knowledge Management Theory explains how externally obtained information can be transformed into usable knowledge, and Information Processing Theory explains how learners cognitively select, organize, interpret, and retain information.

Based on the integration of these three theoretical perspectives, the framework proposes that information accuracy, information timeliness, and AI analytical capability are positively associated with knowledge acquisition capability. The three independent variables represent different aspects of the information and analytical support provided by ChatGPT, while knowledge acquisition capability represents students' ability to obtain, understand, organize, and apply knowledge. The combined theoretical framework therefore explains the relationship from three interconnected dimensions: technological evaluation, knowledge transformation, and cognitive information processing. Accordingly, the conceptual framework of this study is presented as follows:

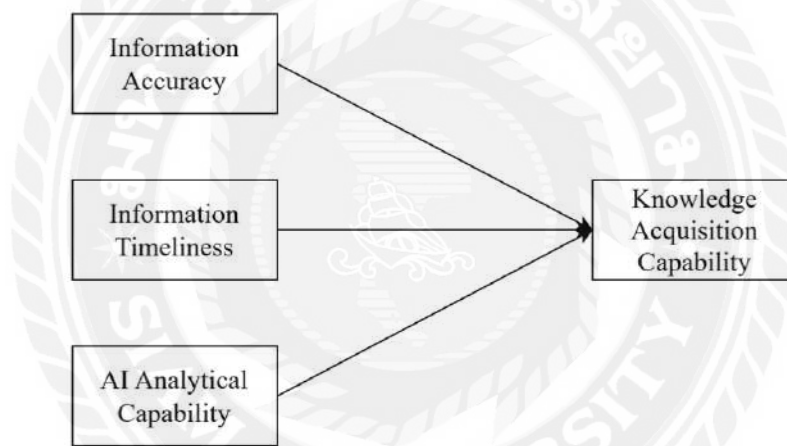


Figure 2.1 Conceptual Framework

Chapter 3 Research Methodology

3.1 Research Design

This study adopted a quantitative research approach to examine the relationships among the research variables. Quantitative research is appropriate because it allows numerical data to be collected from respondents and analyzed statistically in order to identify patterns, relationships, and differences among variables.

The main research method used in this study is a questionnaire survey with closed-ended questions and rating-scale items. A structured questionnaire was designed based on the research framework and relevant literature. Respondents were asked to evaluate each statement using a five-point Likert scale, ranging from 1 = Strongly Disagree to 5 = Strongly Agree.

3.2 Questionnaire Design

The questionnaire consists of two parts. The first part collects respondents' demographic information. The second part measures the four research variables: information accuracy, information timeliness, AI analytical capability, and knowledge acquisition capability.

All measurement items are assessed using a five-point Likert scale, ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The measurement items were adapted from established studies and modified to fit the context of ChatGPT-supported learning.

3.2.1 Information Accuracy Scale

Information accuracy refers to the extent to which students perceive the information generated by ChatGPT as correct, reliable, and suitable for learning. The scale is mainly adapted from the information-quality measures of Fu et al. (2024), who specifically examined ChatGPT information quality in higher education. Fu (2024) measured accuracy using items concerning whether ChatGPT information is correct, reliable, and accurate. The items are modified to fit the learning context.

Table 3.1 Information Accuracy Scale

Code	Measurement Item	Source
IA1	The information provided by ChatGPT is generally accurate.	Fu et al. (2024); Wixom & Todd (2005)
IA2	The information provided by ChatGPT is generally correct.	

IA3	The information provided by ChatGPT is reliable for learning purposes.	
IA4	The information provided by ChatGPT is consistent with other credible learning sources.	

3.2.2 Information Timeliness Scale

Information timeliness refers to the extent to which ChatGPT provides information that is current, relevant, and available when students need it. The measurement is primarily adapted from Fu (2024), whose ChatGPT information-quality scale includes items concerning whether information is up to date and received in a timely manner.

Table 3.2 Information Timeliness Scale

Code	Measurement Item	Source
IT1	ChatGPT provides information in a timely manner.	Fu et al. (2024)
IT2	The information provided by ChatGPT is sufficiently up to date for my learning needs.	
IT3	ChatGPT provides relevant information when I need it for learning.	
IT4	ChatGPT helps me obtain needed information quickly for my learning activities.	

3.2.3 AI Analytical Capability Scale

AI analytical capability refers to students' perception of ChatGPT's ability to analyze, compare, summarize, explain, and organize information. Because no single established scale exactly matches the construct as defined in this study, the items are adapted from recent research on ChatGPT capabilities and AI-supported analytical activities. Existing research has measured ChatGPT capabilities through its ability to provide systematic knowledge and support information processing, while recent AI competency research has emphasized analytical problem solving, structured reasoning, interpretation, and evaluation as important analytical dimensions of AI use.

Table 3.3 AI Analytical Capability Scale

Code	Measurement Item	Source
AIAC1	ChatGPT can effectively analyze complex learning information.	Ravšelj et al. (2025)
AIAC2	ChatGPT can help compare different ideas or viewpoints.	
AIAC3	ChatGPT can effectively summarize and organize complex learning materials.	

AIAC4	ChatGPT can provide clear and structured explanations of complex issues.	
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3.2.4 Knowledge Acquisition Capability Scale

Knowledge acquisition capability refers to students' perceived ability to obtain, understand, organize, and apply knowledge. The scale was adapted from previous research on knowledge acquisition in technology-supported learning. Existing e-learning research has measured knowledge acquisition through the extent to which technology facilitates the acquisition of knowledge, supports the generation of new knowledge from existing knowledge, provides access to different knowledge resources, and helps learners obtain knowledge that meets their needs.

Recent research has also adapted knowledge-acquisition capability measures specifically to university students, defining the construct as students' ability to identify and obtain relevant and useful external knowledge. Representative student-level items include the ability to acquire knowledge through formal teaching and other learning channels.

Table 3.4 Knowledge Acquisition Capability Scale

Code	Measurement Item	Source
KAC1	ChatGPT helps me acquire new knowledge for my learning.	Al-Emran & Teo (2020)
KAC2	ChatGPT helps me understand knowledge that I did not previously understand.	
KAC3	ChatGPT helps me organize and integrate newly acquired knowledge with what I already know.	
KAC4	ChatGPT helps me apply acquired knowledge to learning tasks and problem solving.	

3.3 Hypothesis

H1: Information accuracy has a significant positive impact on knowledge acquisition capability among international business management students.

H2: Information timeliness has a significant positive impact on knowledge acquisition capability among international business management students.

H3: AI analytical capability has a significant positive impact on knowledge acquisition capability among international business management students.

3.4 Population and Sample

The population of this study consisted of students at Siam University who had experience using ChatGPT or similar generative AI tools for learning purposes. These students were selected because they were familiar with the use of generative AI in academic learning and were therefore able to evaluate their experiences with ChatGPT.

A purposive sampling method was used to select respondents who met the research criteria. The main inclusion criterion was that participants had previously used ChatGPT or similar generative AI tools for learning activities. The questionnaires were distributed to eligible students through online channels, allowing respondents to complete the survey voluntarily and anonymously.

A total of 300 questionnaires were distributed. Among them, 286 questionnaires were returned, representing a response rate of 95.33%. After data screening, 26 questionnaires were excluded because of incomplete responses, repeated responses, or obvious patterned answers. Finally, 260 valid questionnaires were retained for statistical analysis, representing a valid response rate of 90.91% based on the returned questionnaires. These figures are consistent with the original study.

The valid questionnaires were coded and entered into SPSS for subsequent statistical analysis. Only completed and usable questionnaires were included in the final dataset to ensure the quality and consistency of the data.

3.5 Data Analysis

The data collected from the valid questionnaires were coded and analyzed using SPSS. The following statistical methods were applied in this study.

1. Descriptive Statistical Analysis

Descriptive statistics were used to summarize the characteristics of the respondents and the general distribution of the research variables. Frequency and percentage were used to describe respondents' demographic characteristics, while mean and standard deviation were used to summarize respondents' evaluations of information accuracy, information timeliness, AI analytical capability, and knowledge acquisition capability.

2. Reliability Analysis

Cronbach's alpha was used to evaluate the internal consistency of the measurement scales. A Cronbach's alpha value of 0.70 or above was considered acceptable, indicating that the items within each construct had satisfactory reliability.

3. Validity Analysis

The Kaiser–Meyer–Olkin (KMO) measure and Bartlett’s test of sphericity were used to examine whether the questionnaire data were suitable for factor analysis. A higher KMO value and a statistically significant Bartlett’s test indicate that the correlations among the measurement items are sufficient for validity assessment.

4. Correlation Analysis

Pearson correlation analysis was conducted to examine the direction and strength of the relationships among information accuracy, information timeliness, AI analytical capability, and knowledge acquisition capability.

5. Multiple Regression Analysis

Multiple regression analysis was conducted to examine the relationships between the three independent variables and knowledge acquisition capability. Information accuracy, information timeliness, and AI analytical capability were entered as independent variables, while knowledge acquisition capability was treated as the dependent variable. Standardized regression coefficients, significance levels, and model explanatory power were used to evaluate the proposed hypotheses.

3.6 Reliability and Validity Analysis of the Scale

Reliability Analysis

Reliability analysis was conducted using Cronbach’s alpha to examine the internal consistency of the measurement items. Generally, a Cronbach’s alpha value above 0.70 indicates acceptable reliability.

Table 1 Reliability Analysis Results

Variable	Number of Items	Cronbach’s Alpha	Result
Information Accuracy	4	0.872	Good
Information Timeliness	4	0.858	Good
AI Analytical Capability	4	0.901	Good
Knowledge Acquisition Capability	4	0.889	Good
Overall Scale	16	0.926	Excellent

The results show that the Cronbach’s alpha values of all variables ranged from 0.858 to 0.901, and the overall Cronbach’s alpha value was 0.926. All values were higher than 0.70, indicating that the questionnaire had good internal consistency and reliability.

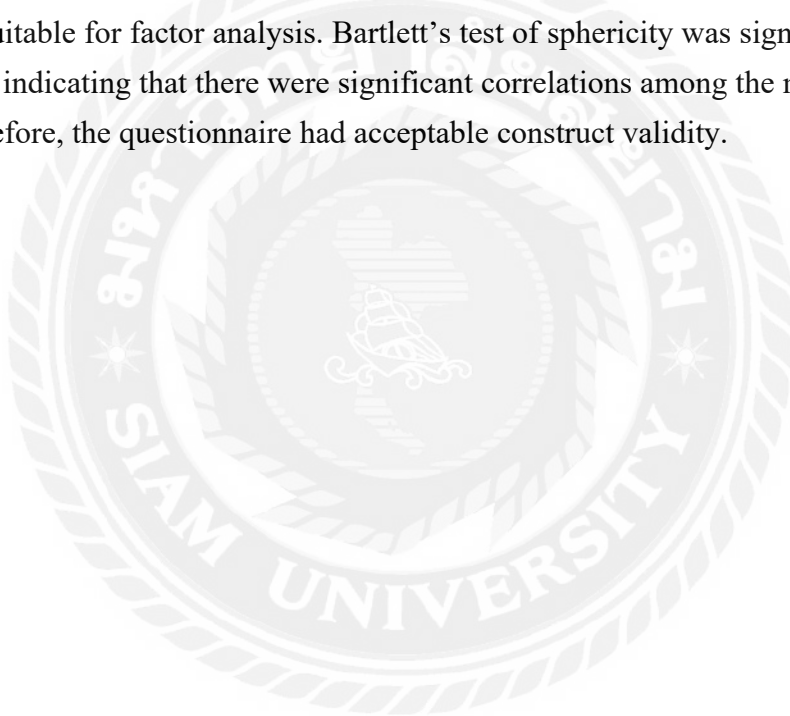
Validity Analysis

Validity analysis was conducted using KMO and Bartlett's test of sphericity to examine whether the data were suitable for factor analysis.

Table 2 KMO and Bartlett's Test Results

Test	Value
KMO Measure of Sampling Adequacy	0.883
Bartlett's Test of Sphericity Approx. Chi-Square	1894.327
df	120
Sig.	0.000

The KMO value was 0.883, which was higher than 0.70, indicating that the sample data were suitable for factor analysis. Bartlett's test of sphericity was significant at the 0.001 level, indicating that there were significant correlations among the measurement items. Therefore, the questionnaire had acceptable construct validity.



Chapter 4 Findings and Discussion

4.1 Demographic Characteristics of Respondents

Table 4.1 Demographic Characteristics of Respondents

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	118	45.38
	Female	142	54.62
Year of Study	First year	132	50.77
	Second year	98	37.69
	Third year or above	30	11.54
Frequency of ChatGPT/AI Use	Less than once a week	36	13.85
	1–2 times per week	74	28.46
	3–5 times per week	86	33.08
	More than 5 times per week	64	24.62

Among the 260 valid respondents, the gender distribution was relatively balanced. Female respondents accounted for 54.62% with 142 respondents, while male respondents accounted for 45.38% with 118 respondents. Female students therefore represented a slightly larger proportion of the sample.

In terms of year of study, first-year students formed the largest group, with 132 respondents representing 50.77% of the sample. Second-year students included 98 respondents representing 37.69%, while students in their third year or above included 30 respondents representing 11.54%. This shows that the respondents were mainly concentrated in the first and second years of study.

Regarding the frequency of ChatGPT or generative AI use, the largest group used these tools three to five times per week, with 86 respondents representing 33.08%. Another 74 respondents representing 28.46% used them one to two times per week, while 64 respondents representing 24.62% reported using them more than five times per week. The remaining 36 respondents representing 13.85% used ChatGPT or generative AI less than once a week.

Overall, 150 respondents representing 57.70% of the total sample used ChatGPT or other generative AI tools at least three times per week. This indicates that more than half of the respondents had relatively frequent experience using generative AI tools for learning activities.

4.2 Descriptive Statistics of Variables

Descriptive statistics were used to examine the overall evaluation of the four research variables. Mean and standard deviation were calculated to summarize the central tendency and dispersion of respondents' responses.

Table 4.2 Descriptive Statistics of Variables

Variable	Mean	Standard Deviation
Information Accuracy	3.89	0.614
Information Timeliness	3.82	0.637
AI Analytical Capability	4.01	0.586
Knowledge Acquisition Capability	3.94	0.603

Among the four variables, AI Analytical Capability received the highest mean score of 4.01 with a standard deviation of 0.586, indicating that respondents generally had a favorable evaluation of ChatGPT's ability to analyze, summarize, compare, and explain information.

Knowledge Acquisition Capability recorded a mean score of 3.94 and a standard deviation of 0.603, showing that respondents generally perceived ChatGPT as useful in supporting the acquisition, understanding, organization, and application of knowledge.

For Information Accuracy, the mean score was 3.89 with a standard deviation of 0.614, suggesting that respondents generally considered the information provided by ChatGPT to be relatively accurate and reliable for learning purposes.

Information Timeliness had the lowest mean score of 3.82 with a standard deviation of 0.637. Although it ranked lowest among the four variables, the mean remained above the midpoint of the five-point scale, indicating an overall positive perception of the timeliness and relevance of information provided by ChatGPT.

Overall, all four variables achieved mean scores above 3.80, indicating generally positive evaluations among the respondents. AI Analytical Capability received the strongest evaluation, while Information Timeliness received the comparatively lowest evaluation.

4.3 Correlation Analysis

Pearson correlation analysis was conducted to examine the relationships among Information Accuracy, Information Timeliness, AI Analytical Capability, and Knowledge Acquisition Capability.

Table 4.3 Correlation Analysis Results

Variable	Information Accuracy	Information Timeliness	AI Analytical Capability	Knowledge Acquisition Capability
Information Accuracy	1			
Information Timeliness	0.536**	1		
AI Analytical Capability	0.584**	0.557**	1	
Knowledge Acquisition Capability	0.621**	0.588**	0.667**	1
Note. ** $p < 0.01$.				

The results show that Information Accuracy was significantly and positively correlated with Knowledge Acquisition Capability, with $r = 0.621$ and $p < 0.01$. This indicates that higher perceived information accuracy was associated with stronger knowledge acquisition capability.

Information Timeliness was also significantly and positively correlated with Knowledge Acquisition Capability, with $r = 0.588$ and $p < 0.01$. This suggests that students who perceived the information provided by ChatGPT as more timely tended to report stronger knowledge acquisition capability.

Among the three independent variables, AI Analytical Capability showed the strongest correlation with Knowledge Acquisition Capability, with $r = 0.667$ and $p < 0.01$. This indicates a relatively strong positive relationship between students' perceptions of ChatGPT's analytical capability and their knowledge acquisition capability.

In addition, the correlations among the three independent variables ranged from 0.536 to 0.584, indicating moderate positive relationships among Information Accuracy, Information Timeliness, and AI Analytical Capability. Overall, the correlation results provide preliminary support for the proposed relationships among the research variables.

4.4 Regression Analysis

Multiple regression analysis was conducted to further examine the relationships between Information Accuracy, Information Timeliness, AI Analytical Capability, and Knowledge Acquisition Capability. Knowledge Acquisition Capability was treated as the dependent variable, while the three independent variables were entered into the regression model simultaneously.

Table 4.4 Multiple Regression Analysis Results

Independent Variable	Standardized β	t	Sig.
Information Accuracy	0.278	5.165	< 0.001
Information Timeliness	0.229	4.350	< 0.001
AI Analytical Capability	0.377	6.891	< 0.001
Model Statistics: $R^2 = 0.559$, Adjusted $R^2 = 0.554$, $F = 108.083$, $p < 0.001$.			

The regression model was statistically significant, with $F = 108.083$ and $p < 0.001$. The coefficient of determination was $R^2 = 0.559$, indicating that Information Accuracy, Information Timeliness, and AI Analytical Capability jointly explained approximately 55.9% of the variance in Knowledge Acquisition Capability. The adjusted R^2 value was 0.554, showing that the model maintained substantial explanatory power after adjustment for the number of predictors.

Information Accuracy showed a significant positive relationship with Knowledge Acquisition Capability, with a standardized coefficient of $\beta = 0.278$, $t = 5.165$, and $p < 0.001$. This indicates that higher perceived information accuracy was associated with stronger knowledge acquisition capability when the other independent variables were controlled.

Information Timeliness also showed a significant positive relationship with Knowledge Acquisition Capability, with $\beta = 0.229$, $t = 4.350$, and $p < 0.001$. Although its coefficient was the smallest among the three predictors, the relationship remained statistically significant.

AI Analytical Capability demonstrated the strongest relationship with Knowledge Acquisition Capability, with $\beta = 0.377$, $t = 6.891$, and $p < 0.001$. This result indicates that students' perceptions of ChatGPT's analytical capability were more strongly associated with Knowledge Acquisition Capability than Information Accuracy and Information Timeliness.

Overall, all three independent variables were significant positive predictors of Knowledge Acquisition Capability. Among them, AI Analytical Capability showed the largest standardized regression coefficient, followed by Information Accuracy and Information Timeliness.

4.5 Discussion

The results show that Information Accuracy, Information Timeliness, and AI Analytical Capability are all significantly and positively related to Knowledge Acquisition Capability. The regression model explained 55.9% of the variance in Knowledge Acquisition Capability.

Information Accuracy had a significant positive relationship with Knowledge Acquisition Capability. Accurate information can reduce misunderstanding and provide a more reliable basis for learning. This is consistent with previous studies showing that ChatGPT can support information search, concept clarification, and knowledge organization (Kasneci et al., 2023).

Information Timeliness also showed a significant positive relationship. Timely and relevant information can help students understand rapidly changing business topics more efficiently. This is consistent with findings that students value ChatGPT for its accessibility and time-saving advantages (Blahopoulou & Ortiz-Bonnin, 2025).

AI Analytical Capability showed the strongest relationship with Knowledge Acquisition Capability. This indicates that ChatGPT's ability to analyze, compare, summarize, and organize information is particularly important for students' learning. Similar findings have highlighted the role of ChatGPT in idea organization, analytical support, and management education (AlAfnan et al., 2023; Ratten & Jones, 2023).

Overall, the findings are consistent with the Technology Acceptance Model, Knowledge Management Theory, and Information Processing Theory. These theories collectively explain how students evaluate ChatGPT as a learning tool, acquire useful information, and process that information into knowledge.

Chapter 5 Conclusion and Recommendation

5.1 Conclusion

The results of this study support all three hypotheses and confirm that Information Accuracy, Information Timeliness, and AI Analytical Capability are significantly and positively related to Knowledge Acquisition Capability.

H1 was supported, indicating that Information Accuracy has a significant positive relationship with Knowledge Acquisition Capability. When students perceive the information provided by ChatGPT as accurate, reliable, and appropriate for learning, they are better able to understand and acquire relevant knowledge. Accurate information can provide a more dependable basis for learning and reduce possible misunderstandings during the knowledge acquisition process.

H2 was supported, showing that Information Timeliness has a significant positive relationship with Knowledge Acquisition Capability. Timely and relevant information enables students to access learning content more efficiently and respond to changing topics and information needs. For International Business Management students, timely information is particularly valuable because many business issues, market conditions, and international developments change rapidly.

H3 was supported, indicating that AI Analytical Capability has a significant positive relationship with Knowledge Acquisition Capability. ChatGPT's ability to analyze, compare, summarize, explain, and organize information can help students process complex learning materials and develop a clearer understanding of business-related knowledge. This suggests that the analytical functions of generative AI are an important component of its educational value.

Among the three independent variables, AI Analytical Capability showed the strongest relationship with Knowledge Acquisition Capability, followed by Information Accuracy and Information Timeliness. This result indicates that students may benefit more when ChatGPT is used not only to obtain information quickly, but also to support deeper analysis, comparison, explanation, and organization of knowledge.

Overall, the findings indicate that the effectiveness of ChatGPT in supporting knowledge acquisition is associated with both the quality of the information it provides and its analytical functions. Accurate and timely information provides the foundation for learning, while stronger analytical capability can further assist students in understanding, organizing, and applying knowledge more effectively.

5.2 Recommendation

Based on the research findings, several recommendations are proposed for students, teachers, and universities.

First, students should improve their ability to evaluate the accuracy of AI-generated information. ChatGPT can provide useful learning support, but its responses should not be accepted without verification. Students should compare important information with textbooks, academic articles, official reports, and other reliable sources. This can reduce misunderstanding and improve the quality of knowledge acquisition.

Second, students should make greater use of ChatGPT's analytical functions. Since AI Analytical Capability showed the strongest relationship with Knowledge Acquisition Capability, students should use ChatGPT not only to search for answers, but also to compare business cases, summarize complex materials, explain theories, analyze market information, and organize learning ideas. Such use may support deeper understanding and more effective learning.

Third, teachers should provide appropriate guidance on the use of ChatGPT in International Business Management courses. Assignments and classroom activities can incorporate ChatGPT for brainstorming, case analysis, market comparison, and concept explanation. At the same time, students should be required to evaluate and verify AI-generated content rather than directly relying on it.

Finally, universities should strengthen AI literacy education by providing guidance on information verification, responsible AI use, academic integrity, and effective prompting strategies. This can help students use generative AI more critically and effectively while reducing the potential risks associated with excessive dependence on AI-generated information.

5.3 Further Study

Future studies can expand the scope of this research in several directions. First, the sample can be extended beyond International Business Management students at Siam University to students from other majors, universities, or countries. This would provide a broader understanding of how generative AI relates to knowledge acquisition in different educational contexts.

Second, future research can examine additional factors associated with knowledge acquisition capability, such as AI literacy, perceived usefulness, critical thinking, trust in AI-generated information, and learning engagement. Including these variables may

provide a more comprehensive explanation of students' learning experiences with ChatGPT.

Third, future studies can compare different generative AI tools rather than focusing primarily on ChatGPT. Differences in information quality, analytical capability, usability, and learning support may produce different outcomes for students.

Finally, future research may use longitudinal or experimental research designs to examine changes in students' knowledge acquisition over time and provide stronger evidence regarding the effects of generative AI use on learning outcomes.



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Appendix

Dear Participant,

This questionnaire is designed for an academic study on the relationship between ChatGPT application and knowledge acquisition capability among International Business Management students at Siam University. The information collected will be used solely for academic research purposes. All responses will remain confidential and anonymous.

Please answer each question based on your actual experience of using ChatGPT or similar generative AI tools for learning.

For Part II, please indicate your level of agreement with each statement using the following scale:

1 = Strongly Disagree

2 = Disagree

3 = Neutral

4 = Agree

5 = Strongly Agree

Part I: General Information

1. Gender

- Male
- Female

2. Year of Study

- First year
- Second year
- Third year or above

3. Frequency of Using ChatGPT or Similar Generative AI Tools

- Less than once a week
- 1–2 times per week
- 3–5 times per week
- More than 5 times per week

Part II: Measurement Items

Information Accuracy

IA1: The information provided by ChatGPT is generally accurate.

IA2: The information provided by ChatGPT is generally correct.

IA3: The information provided by ChatGPT is reliable for learning purposes.

IA4: The information provided by ChatGPT is consistent with other credible learning sources.

Information Timeliness

IT1: ChatGPT provides information in a timely manner.

IT2: The information provided by ChatGPT is sufficiently up to date for my learning needs.

IT3: ChatGPT provides relevant information when I need it for learning.

IT4: ChatGPT helps me obtain needed information quickly for my learning activities.

AI Analytical Capability

AIAC1: ChatGPT can effectively analyze complex learning information.

AIAC2: ChatGPT can help me compare different ideas or viewpoints.

AIAC3: ChatGPT can effectively summarize and organize complex learning materials.

AIAC4: ChatGPT can provide clear and structured explanations of complex issues.

Knowledge Acquisition Capability

KAC1: ChatGPT helps me acquire new knowledge for my learning.

KAC2: ChatGPT helps me understand knowledge that I did not previously understand.

KAC3: ChatGPT helps me organize and integrate newly acquired knowledge with what I already know.

KAC4: ChatGPT helps me apply acquired knowledge to learning tasks and problem solving.

Thank you for your participation and valuable contribution to this study.