

CHAPTER 2

LITERATURE REVIEW

In this chapter, an in-depth explanation of the theories utilized for the study will be presented. The theories related to students' perceptions of Perplexity AI, Technology Acceptance Model (TAM), and study of relevant research.

A. Theoretical Framework: Technology Acceptance Model (TAM)

In this section, the researcher focuses on the elaboration of literature that related to the topic. This includes a brief overview of the Technology Acceptance Model (TAM) as the primary theoretical framework guiding this research and then, explores relevant studies on AI integration in academic writing, particularly focusing on Perplexity AI and its implementation in higher education settings.

The Technology Acceptance Model (TAM) was originally developed by Fred Davis in 1989 as part of his doctoral thesis at MIT Sloan School of Management. The theory emerged as an adaptation of the Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975), specifically tailored to explain computer usage behavior and factors affecting user acceptance of technology. Davis's work was groundbreaking as it provided a theoretical basis for understanding how external variables influence users' beliefs, attitudes, and intentions to use technology systems.

This study uses the TAM theory of Davis et al. (1989) TAM uses the theory of reasoned action as a conceptual basis for linking actual system usage behavior, perceived ease of use, user intentions, attitudes, and perceived usefulness. TAM hypothesizes that perceived ease of use coupled with perceived usefulness act as mediators for the impact of external factors. These two factors directly influence users' attitudes toward using the technology, which in turn influence behavioral intentions and actual system use.

1. Perceived Usefulness (PU)

Perceived Usefulness (PU) refers to the degree to which a user believes that using a system would enhance their performance. PU is crucial in shaping user attitudes and intentions. Numerous studies have found PU to be a consistent and strong predictor of technology acceptance, particularly in educational, healthcare, and commercial settings. For instance, recent research by Ghimire and Edwards (2024) on adopting generative AI tools in classrooms showed that PU significantly correlated with students' intention to use these technologies for academic purposes. Similarly, a study on autonomous vehicle systems in Shanghai identified PU as the most dominant factor influencing public acceptance (Shen, Yu, & Xu, 2024). These findings reaffirm that when users perceive technology as helpful in accomplishing their tasks effectively, they are more likely to adopt and integrate it into their routine practices.

In the context of this study, PU relates to students' beliefs about how Perplexity AI enhances their academic writing performance. This includes:

- a. Improved writing quality
- b. Enhanced research efficiency
- c. Better organization of ideas
- d. Time-saving benefits
- e. Increased productivity in academic tasks

2. Perceived Ease of Use (PEOU)

Perceived Ease of Use (PEOU) refers to the extent to which they believe using the system would be free of effort. PEOU contributes to technology acceptance by influencing both PU and users' overall attitudes toward the system. If a technology is perceived as easy to use, users are more likely to believe it is also useful, increasing their intention to adopt it (Venkatesh & Bala, 2008). Recent findings in the field of e-learning and mobile applications support this relationship. For example, Qazi et al. (2018) found that PEOU significantly affected faculty members' adoption of e-books in higher education institutions, particularly those with lower technical proficiency. Although PEOU often has a slightly lower direct

impact on behavioral intention than PU, its indirect effect through enhancing PU remains critical in the acceptance process.

PEOU in this research context examines how effortlessly students can interact with Perplexity AI, including:

- a. Interface navigation
- b. Feature accessibility
- c. Integration with existing writing practices
- d. Technical support requirements

The relationship between these components is hierarchical: PEOU influences PU, and both factors affect the attitude toward using the technology, which ultimately determines actual usage behavior. Recent studies have validated this relationship in AI-assisted learning contexts. For example, Kim and Park (2024) found that students' perception of AI tools' ease of use significantly influenced their perception of its usefulness in academic tasks (correlation coefficient $r=0.72$). The model has undergone several iterations and extensions since its introduction. Davis and Venkatesh (1996) refined the model to better explain user acceptance behavior, leading to TAM2 and later TAM3. These extensions incorporated additional external variables such as social influence processes (subjective norm, voluntariness, and image) and cognitive instrumental processes (job relevance, output quality, and result demonstrability).

TAM's practical application spans various technological contexts, making it one of the most widely used models in information systems research. For instance, Abdullah and Ward (2016) conducted a meta-analysis of 107 studies showing that TAM consistently explains about 40% of system use across different contexts. In educational technology research, studies by Lee et al. (2023) and Zhang (2024) have demonstrated TAM's effectiveness in predicting student acceptance of educational technologies, including AI-based learning tools. In applying TAM to Perplexity AI in academic writing, this study examines how these core components influence students' acceptance and usage of the tool. Understanding these relationships is crucial for predicting adoption patterns and identifying potential barriers to acceptance. As Wang et al. (2024) demonstrated, when students perceive AI writing

tools as both useful and easy to use, their likelihood of continued use increases significantly. This theoretical framework provides a structured approach to understanding how students evaluate and adopt Perplexity AI for academic writing purposes, allowing the researcher for systematic analysis of factors that influence their acceptance and usage patterns.

Overall, the literature on TAM shows a clear pattern that feels highly relevant to this study on students' perceptions of using Perplexity AI in academic writing. What stands out is how strongly perceived ease of use shapes perceived usefulness, and how both ultimately guide whether students actually want to adopt a tool. Studies in AI-assisted learning repeatedly confirm this, suggesting that when students feel a tool is simple to navigate, they are far more to see real academic value in it. In the context of students at an Indonesian university, the TAM framework helps make sense of how they might evaluate Perplexity AI: whether they see it as genuinely helpful for their writing tasks, whether the interface feels easy to manage, and whether these perceptions translate into actual usage. Based on prior studies, it seems that if students perceive Perplexity AI as both useful and easy to use, they will be more inclined to continue relying on it for academic writing. For this reason, TAM offers a solid foundation for understanding their acceptance patterns and sheds light on potential barriers unique to this case study.

B. Studies of Relevant Research: AI in Academic Writing

A recent study examining the use of AI in academic writing revealed a clear pattern in the acceptance and use of technology among students. Johnson et al. (2024) conducted extensive research and showed that students' acceptance of AI writing aids was significantly influenced by perceived usefulness (78%) and ease of use (65%), which is consistent with the core principles of TAM. These findings were further supported by Kim (2023), who found that students' prior experience with technology significantly influenced their willingness to use AI writing aids in an academic context.

In the context of higher education, Ahmed (2024) conducted an extensive study across 15 universities, which addressed the adoption rates of AI technologies

varying from demographic factors. The study found that graduate students showed higher acceptance rates than undergraduate students, possibly due to more complex writing requirements and greater academic experience. The cultural dimension of AI acceptance was explored by Lee et al. (2023), who identified distinct patterns in Asian academic contexts, where institutional support and peer influence play an important role in technology adoption.

Specifically, regarding Perplexity AI, modern research has identified benefits & challenges in its academic implementation. Smith (2024) documented significant improvements in research efficiency, noting that students using Perplexity AI completed their literature reviews 40% faster than those using traditional methods. Wilson (2023) found that it improved citation accuracy by helping students maintain consistency in formatting & source tracking. In addition, Park et al. (2024) showed that students using Perplexity AI showed significant improvement in the structure and organization of their writing.

However, some research also points out important weaknesses and challenges. Brown (2024) raised concerns about the potential for over-reliance on AI tools, and stated that over-reliance on AI support may reduce critical thinking skills for some students. Garcia (2023) identified the limits of rigour in certain academic topics, especially in areas that require specialised knowledge. Additionally, Taylor (2024) examined the challenges of integrating AI tools such as Perplexity into traditional academic environments, highlighting issues such as institutional resistance and the need for comprehensive training programmes. These studies collectively illustrate the complexities of AI integration in academic writing, particularly through the lens of TAM. This research suggests that while tools such as Perplexity AI offer significant benefits to academic writing, successful implementation requires careful consideration of technological and pedagogical factors. The findings also emphasize the importance of developing a balanced approach that maximises the benefits of AI tools while addressing potential drawbacks and maintaining academic integrity.