A UTAUT Investigation of the Determinants of Generative AI Adoption in Irish Tertiary Education

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Abstract: Generative AI (GenAI) is rapidly transforming teaching, learning, and assessment, bringing benefits including personalised instruction and support for student learning. Although the benefits GenAI bring are potentially transformational, they must be balanced against academic integrity and related challenges, making it essential to understand students' perspectives on GenAI use and the factors influencing its adoption. However, many studies of GenAI adoption have favoured the educator's perspective, leaving the student voice largely unheard. This paper addresses this gap by examining the factors influencing tertiary education students' adoption of GenAI using the Unified Theory of Acceptance and Use of Technology (UTAUT). An online survey comprising open- and closed-ended questions, categorised according to UTAUT's four key constructs, was administered to 600 students enrolled in initial teacher education programmes in Ireland. The study achieved a 48% response rate, and quantitative and qualitative data were analysed using SPSS and NVivo, respectively. This paper makes two contributions. First, it provides a holistic understanding of the factors that encourage and discourage students' use of GenAI in their academic studies. Second, it assesses UTAUT's applicability in explaining the nuances of GenAI adoption in education and extends the framework with additional constructs identified through the study.

Keywords: Generative AI, AI Adoption, Adoption Determinants, Initial Teacher Education, UTAUT

1. Introduction

Generative AI (GenAI) developments are transforming student learning environments, but these transformations must be weighed against potential negative implications (see section 2) (Carcary and Buckland, 2026). Other studies have questioned whether existing theories of IT adoption can effectively explain the adoption of newer, more sophisticated technologies. This paper explores GenAI adoption from the perspective of student teachers in Ireland using the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al, 2003). Thus, it answers the following research questions:

1. What factors encourage and discourage students enrolled in initial teacher education programmes in Ireland to adopt GenAI in their academic studies?
2. To what extent is UTAUT an appropriate framework to explain the nuances of GenAI adoption?

This paper builds on research presented at the 2nd International Conference on Education Research (Carcary and Buckland, 2025) and the International Conference on Education and New Developments (Carcary and Buckland, 2026).

2. Literature Review – GenAI Adoption From the Student Perspective

Studies have highlighted both the opportunities and threats associated with GenAI use in education (Mao et al, 2023). GenAI's ability to transform education stems largely from its provision of personalised, interactive instruction adapted to individual learning styles. Students have access to a supportive learning environment outside the traditional classroom, enhancing learning autonomy and understanding of new or complex material (Bennett and Abusalem, 2024; Cotton et al, 2023; Mogavi et al, 2024; Wang et al., 2023). Students can access a personal tutor or learning companion that provides tailored explanations and analogies, supplemental study material and practice questions, and real-time feedback (Mogavi et al., 2024). These opportunities enable enhanced and more authentic learning experiences (Gamage et al, 2023), particularly for students with learning difficulties or different learning requirements and modalities (Kooli, 2023), affording them a more equitable learning experience (Meça and Shkëlzeni, 2024). Benefits to student creativity, interactivity, problem solving, collaboration, teamwork, peer learning, and classroom engagement have also been noted (Mao et al, 2023).

However, academic misconduct is one of the most widely discussed ethical challenges for educators and academic institutions (Gamage et al., 2023; Mao et al., 2023; Wang et al., 2024). AI-generated content is almost indistinguishable from human-created work, posing threats to academic integrity and raising concerns about the efficacy of traditional assessment due to plagiarism and contract cheating (Cong-Lem et al, 2024; Cotton et al, 2023; Mao et al, 2023; Moorhouse et al, 2023). The challenge is compounded because AI detection tools cannot

reliably prove whether student assignments are created with AI assistance (Perkins et al, 2024). Students' over-reliance on GenAI to '*quickly do the work for them*' has consequences for motivation, critical thinking and writing skills, and depth of understanding of the subject matter (Chan, 2023; Cong-Lem et al, 2024). Accepting GenAI output that may reflect misinformation or societal or representative bias can also negatively impact students' perspectives (Kooli, 2023; Mao et al, 2023). At the institutional level, these threats have implications for the long-term value and credibility of academic awards and institutional reputation (Bennett and Abusalem, 2024; Moorhouse et al, 2023).

3. UTAUT as the Theoretical Lens

The selected theoretical lens for this study is UTAUT (Venkatesh et al., 2003). UTAUT integrates eight widely used technology adoption theories, synthesising alternative views on IT adoption and providing a common structure to harmonise their constructs. More recently, it has been commonly applied in studies of GenAI adoption (e.g., Budhathoki et al., 2024; Grassini et al., 2024; Hsu and Silalahi, 2024; Menon and Shilpa, 2023; Tang et al., 2024). UTAUT reflects four key constructs as determinants of IT adoption: Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions (Venkatesh et al., 2003) (Table 1). In this study, these constructs guide the development of the research instrument and analysis of findings.

Table 1: UTAUT constructs

Construct	Definition	Underlying Assumption
Performance Expectancy	*"Degree to which an individual believes that using a technology will help them to improve a job performance".*	Behaviours are influenced by the value outcomes anticipated from using a technology.
Effort Expectancy	*"Degree of ease associated with the use of the system".*	Behaviours are influenced by the degree of effort required to process a complex new stimuli.
Social Influence	*"The degree to which an individual perceives that other 'important people' believe they should use the system".*	Behaviours are influenced by how people believe others will view them as a result of using a technology.
Facilitating Conditions	*"The degree to which an individual believes that the organisational and technological infrastructure exists to support use of the system".*	Aspects of the technological and organisational environment can lower the barriers for using a technology.

4. Research Methodology

This study administered a survey using Microsoft Forms, informed by a systematic review of literature on GenAI adoption in higher education. Closed- and open-ended questions enabled quantitative understanding of adoption determinants categorised according to UTAUT, along with a richer understanding through participants' qualitative comments. Purposive stratified sampling was employed with undergraduate students enrolled in discipline-specific initial teacher education programmes in Ireland. From a sample of 600 students, 290 usable responses were recorded, representing a 48% response rate. SPSS and NVivo were used to analyse the quantitative and qualitative data. This paper primarily reports the explanatory insights uncovered through coding and thematic analysis of the qualitative data.

5. Findings and Discussion

5.1 Performance Expectancy

Many factors influencing adoption can be categorised as performance expectancy issues, summarised in terms of GenAI's impacts on student productivity, efficiency and the overall learning experience.

Productivity-related factors were reported by 50% of respondents, centred on idea generation and academic writing. GenAI supported creativity and brainstorming: 'it can help increase productivity by giving ideas where to start' and helped get 'the flow of thinking going' for challenging assignments. Academic writing supports through improved readability, grammar and referencing also boosted productivity: 'It helps with essay writing by improving vocabulary and overall use of English'.

Efficiency-related factors were reported by 57% of respondent, primarily focused on the speed of completing tasks using GenAI. Respondents stated that GenAI 'makes it easier and more time efficient when searching for an answer to questions' and 'allows you to gather a range of resources much quicker'. GenAI also gave students 'extra time to focus on tasks they find hard instead of putting time into research', enabling on-time submission of assignments: 'it speeds up getting assignments finished'.

Factors related to the overall learning experience present both drivers and barriers to adoption. 50% of respondents reported that GenAI improved their understanding of academic matters, stating that it 'gives a starting point to confusing topics' and 'makes material more accessible'. Enhanced clarity on assignments was another rationale for GenAI use, while its functioning as an 'immediate tutor' providing 'layman explanations' was credited with improving student understanding. However, respondents were concerned about the negative consequences of GenAI for critical thinking, creativity and problem-solving: 'students are not able to think for themselves; they don't get to show reflection or personal opinion or input'. Concerns also related to content knowledge and academic writing skills: 'students won't have subject knowledge to answer questions themselves'. An overriding concern was overreliance on GenAI: 'it can make students lazy and unmotivated'. The resultant disengagement was perceived as negatively impacting the overall learning experience, with students becoming 'detached from the learning process'.

Supporting these findings, prior research has found performance expectancy to be a significant determinant of behavioural intention to use GenAI. Performance expectancy was a key determinant among students in Poland and Egypt (Strzelecki and El Arabawy, 2024), Norway (Grassini et al., 2024), Nepal and the UK (Budhathoki et al., 2024), Malaysia and Pakistan (Dahri et al., 2024), and Greece (Lavidas et al., 2024). However, concerns remain about impairment of critical thinking, problem-solving, writing skills, and intellectual development (Chan, 2023; Oc et al., 2024). Duong et al. (2024) found a strong relationship between effort expectancy and performance expectancy, suggesting that easier-to-use GenAI tools are perceived as more useful. Oc et al. (2024) found that tech-savviness moderated the relationship between performance expectancy and behavioural intention, with more tech-savvy students less influenced by performance expectations.

5.2 Effort Expectancy

Further factors influencing adoption pertained to effort expectancy. 67% of respondents found GenAI easy to use while 55% found that learning to use GenAI took little effort. Most respondents who provided qualitative comments described GenAI as uncomplicated: 'almost foolproof' and 'like using a search engine'. Despite this, some found it difficult to use GenAI effectively when developing prompts: 'it takes time to know how to ask AI the right questions' and 'it is difficult if you are not using the right prompts'. Foundational technology skills also appeared important: 'to those who are digitally savvy AI is quite an easy thing to learn'. Some respondents appeared reluctant to experiment with new technology independently without guided support: 'it is only easy if you are shown'.

Supporting these findings, many prior studies found effort expectancy to be a significant positive predictor of behavioural intention to use (Arthur et al., 2025; Sobaih et al., 2024) and actual use of GenAI (Saihi et al., 2024). Conversely, other studies found effort expectancy was not a significant predictor of behavioural intention (Biyiri et al, 2025; Grassini et al, 2024; Hu et al, 2025; Lavidas et al, 2024; Oc et al, 2024; Tang et al, 2024) or actual GenAI use (Bouteraa et al, 2024; Oc et al, 2024). This may reflect younger students' digital literacy and GenAI's intuitive nature (Biyiri et al, 2025; Grassini et al, 2024). Similarly, ease of use had limited impact on behavioural intentions among Asian university students (Tang et al, 2024). In contrast, Amin et al (2024) suggested that in developing countries facing infrastructural and digital literacy challenges, ease of use is a lower priority than performance-related benefits.

The relationship between effort expectancy and actual use was moderated by tech-savviness (Oc et al, 2024) and technology proficiency (Saihi et al, 2024), suggesting that lower tech-savviness discourages GenAI use when it is perceived as difficult (Oc et al 2024). Simple interfaces and low effort requirements are vital for lower-proficiency users (Saihi et al, 2024). Study level negatively moderated the relationship between effort expectancy and behavioural intention among Polish students, indicating that the impact of effort expectancy varies across different levels of university studies (Strzelecki and ElArabawy, 2024).

5.3 Social Influence

GenAI adoption was also influenced by social influence, specifically peers and lecturers. Responses ranged from 'greatly ' to 'not very much' to 'little to no influence'. In terms of peer influence, 36% of respondents believed

their peers were helpful in supporting them to use GenAI and for some highly influential in their adoption decision: 'if peers are relying on it, you believe it's ok; if not, you think more about using it'. Time pressure or task complexity also influenced peer impact: 'to find an answer fast, peers seem to use it which would influence me to also try it out' and 'peers influence me when I'm stuck on an assignment… it essentially puts you on the right track'. In some cases, peers appeared more influential than lecturers: 'peers would influence my use of AI chatbots more so than lecturers as most lecturers don't promote the use of AI'.

In terms of lecturer influence, only 16% of respondents believed academic staff were helpful in supporting GenAI use. One respondent stated: 'lecturers would influence my decision a lot … I would trust my lecturers' opinions on AI'. However, students largely reported that lecturers discouraged GenAI use within their academic programme, impacting adoption decisions. Respondents stated: 'lecturers deem AI totally wrong in an academic setting - most frown upon the use of AI' and 'lecturers are a huge influence in my determination of grades - a fail grade is given if caught using it, so they are a big influence'. One student commented: 'we have been warned many times about the negative impacts using AI may have on our degrees and future careers'.

In the literature, some studies found that social influence does not significantly predict behavioural intention to use GenAI (Acosta-Enriquez et al., 2024; Grassini et al., 2024; Lavidas et al., 2024; Oc et al., 2024). Grassini et al. (2024) suggested this may reflect limited social pressure due to the tool's newness or students' educational level. However, most studies found a significant effect of social influence on behavioural intention (Arthur et al., 2025; Biyiri et al., 2025; Bouteraa et al., 2024; Saihi et al., 2024; Sobaih et al., 2024; Wang et al., 2024), including students in Poland and Egypt (Strzelecki and ElArabawy, 2024), Nepal and the UK (Budhathoki et al., 2024), and Bangladesh (Amin et al., 2024). Zhu et al. (2024) also found that students perceived a lack of enthusiasm from educators, raising concerns as successful GenAI integration is shaped by educators' openness to the technology (Mogavi et al., 2024).

5.4 Facilitating Conditions

Other factors influencing adoption can be categorised under the facilitating conditions construct of UTAUT. 72% and 58% of respondents felt they had the necessary resources and knowledge to use GenAI. However, this appeared more related to the technology's ease of use than university supports. Only 9% felt that their university provided necessary GenAI-related learning opportunities. Many respondents were keen to see additional supports being made available to them by their academic institution. Such supports included instructional material on the proper and effective use of AI, including dedicated modules, technology lectures, courses or training programmes, talks, video guides, and academic websites. Most centred on 'how it use AI properly' in an ethical and responsible manner and identifying the best AI tools for specific tasks: 'how to use it in a safe manner that avoids the risk of misconduct to my studies'. Respondents also sought guidance on when AI could and could not be used, with some requesting consistency across their modules: 'to know what can be used and what isn't allowed, I'm not sure where the line is when using AI'.

The literature echoes the importance of these supports. GenAI literacy training and responsible use guidance are regarded as critical in reducing the likelihood of accidental plagiarism. Several studies confirm facilitating conditions as a significant predictor of actual GenAI use behaviour. These findings were uncovered in studies of ChatGPT use among university students in Poland, Egypt (Strzelecki and ElArabawy, 2024), Sri Lanka (Biyiri et al., 2025), and Greece (Lavidas et al., 2024). The strength of the relationship is moderated by age and gender (Arthur et al, 2025) - the positive effect of facilitating conditions weakens with older students and is stronger for females – and by technology proficiency (Saihi et al, 2024) – facilitating conditions were more important for users with lower technology proficiency signifying the importance of necessary training supports and ease of use particularly for those less tech-saavy. Technical barriers can be minimised through open access across platforms, global accessibility, and ease of interaction in relevant languages (Strzelecki and ElArabawy, 2024). Conversely, facilitating conditions did not significantly affect actual use among students in Norway (Grassini et al., 2024), Nepal and the UK (Budhathoki et al., 2024), Saudi Arabia (Sobaih et al., 2024), and China (Wang et al., 2024). Grassini et al. (2024) attributed these differences to demographic characteristics or technological familiarity, while Wang et al. (2024) suggested that GenAI's ease of use, user-friendly features, and online resources may reduce the impact of facilitating conditions.

5.5 Beyond UTAUT – Consideration of Additional Constructs

While the original UTAUT constructs provide a viable framework for explaining many of the GenAI adoption determinants uncovered in this research, they do not explain all findings. These include findings pertaining to

perceived risk and technological anxiety. We argue that to account for the nuances of GenAI adoption, UTAUT should be extended to include these constructs.

5.5.1 Perceived Risk

In the context of technology, perceived risk is "the degree to which individuals sense potential threats, uncertainties, unfavourable outcomes, or negative events when adopting new technologies" (Carcary and Buckland, 2025). In this study, several factors influencing adoption can be categorised as risk-related issues, with 83% of respondents reporting that using GenAI for academic purposes was risky. The primary risk factors include academic misconduct, misinformation and bias, and data privacy and security.

85% of respondents suggested that GenAI increased the potential for academic misconduct, including 'plagiarism' and 'not using your own work'. Respondents also noted the consequences of misconduct, including 'getting poor grades', 'failing a module or assignment' and 'getting kicked out of college'. One student commented that 'the chances of getting in trouble outweigh the reward of using it'. Regarding misinformation and bias, 79% believed GenAI output was not always correct, citing 'false/fake information', 'misleading information' and 'unreliable/inaccurate information'. Concerns also included the 'AI hallucination effect', lack of transparency surrounding how AI content is generated, and 'relying on information that hasn't been verified'. Regarding data privacy and security, only 11% believed their data privacy was ensured and 16% believed GenAI interactions were confidential. Respondents mentioned 'data privacy breaches', 'online safety' and uncertainty about what data was accessed and how information was stored.

While perceived risk is not included in the original UTAUT model, several studies have extended UTAUT with risk-related constructs to analyse GenAI adoption (Acosta-Enriquez et al, 2024; Sharma and Singh, 2024; Oc et al, 2024). Perceived risk has been found to significantly inhibit attitudes towards adopting GenAI (Chatterjee and Bhattacharjee, 2020), behavioural intention to use (Acosta-Enriquez et al., 2024; Hu et al., 2025), and actual use (Oc et al., 2024; Sharma and Singh, 2024). In line with this study's findings, perceived risks centred on data privacy and security, misinformation, academic misconduct and content authenticity, technical instability, and student dependency (Acosta-Enriquez et al, 2024; Hu et al, 2025). Data privacy concerns inhibit students' engagement with GenAI (Acosta-Enriquez et al, 2024), while the 'AI hallucination effect' is linked to poorer educational outcomes (Mao et al, 2023) and compromised academic integrity (Hsu and Silalahi, 2024). Plagiarism concerns also reduced students' intention to adopt GenAI (Wang et al, 2024). Risk perceptions varied by tool type, with text generators raising greater concerns about plagiarism, misinformation and academic misconduct than image generators (Oc et al, 2024). Contrary to these studies, Gulati et al (2024) found that perceived risk did not deter behavioural intention to use GenAI. Given these findings, we suggest adding 'perceived risk' as a UTAUT construct to provide a more nuanced view of GenAI adoption and to reflect risk-mitigation approaches.

5.5.2 Technological Anxiety

In the context of technology, anxiety is a "predictive behavioural factor which focuses on the psychological state of individuals in terms of competence and inclination to utilise technological tools" (Bouteraa et al, 2024). 54% of respondents felt apprehensive about adopting GenAI. The primary anxiety related to academic integrity: 'I feel apprehensive to use it due to the stigma surrounding AI chatbots. A further anxiety concerned GenAI's impact on critical thinking and learning: 'I feel it is dumbing people down' and 'it takes away from actually learning and gathering information on my own'. For some, anxiety reflected lecturers' perceptions of GenAI use: 'I am opposed to using it as a result of the warning given by lecturers and academic integrity policies'. Anxiety also related to respondents' depth of GenAI knowledge: 'I don't know where to start. I need guidance'.

While anxiety is not included in the original UTAUT model, several studies have extended UTAUT with anxiety-related constructs to analyse GenAI adoption (e.g., Acosta-Enriquez et al., 2024; Budhathoki et al., 2024; Wang et al., 2024). Stress and inadequate human contact when using AI were found to affect students' mental health (Acosta-Enriquez et al., 2024), while lower digital literacy or 'tech savviness' was associated with higher GenAI anxiety (Oc et al., 2024). Higher AI anxiety is associated with lower GenAI adoption (Wu and Li, 2025). In education, anxiety was a significant factor in pre-service teachers' intention to use GenAI (Falebita, 2024) and students' learning motivation (Wang et al, 2024). Wang et al (2024) also found that concerns about GenAI use may evoke anxiety, leading pre-service teachers to perceive it as less beneficial to their teaching practices. The impact of anxiety on behavioural intention differed across the UK, Saudi Arabia, and Taiwan, where it was significant, and Nepal, where it was insignificant, highlighting contextual and cultural influences (Almaiah et al., 2022; Budhathoki et al., 2024). Thus, the user's psychological state may be as important to adoption as the

technology itself. Given these findings, we suggest adding 'technological anxiety' as a UTAUT construct, recognising the psychological dimension of GenAI adoption (Budhathoki et al, 2024).

6. Conclusion

This paper explored the determinants of GenAI adoption among student teachers in Ireland. Most findings are supported by existing literature and can be explained in terms of UTAUT. However, the findings indicate that the framework should be extended with additional constructs to accommodate the complexities of GenAI adoption. Perceived risk and technological anxiety add value by enabling UTAUT to account for psychological challenges associated with adoption. This paper has primarily reported qualitative insights from this research. Future research may replicate the study using the extended UTAUT framework among student teachers in other countries and cultures, incorporating both qualitative insights and quantitative statistical analysis.

Ethics Declaration

Ethical clearance for this research was obtained from MIC's Joint Faculty Research Ethics Committee.

AI Declaration

GenAI was used for minor text editing, after which the authors reviewed the content as needed.

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