Pan-African Journal of Education and Social Sciences (PAJES)
Vol 6, No. 1, 14-29, 2025

https://doi.org/10.56893/pajes2025v06i01.02

Exploring Students' Personality Traits and Attitudes toward Artificial Intelligence and its Adoption in Higher Education Learning Experience

*Marie-Anne Razafiarivony and Janet Nyaboke Odhiambo

Adventist University of Africa, Kenya

Abstract

Artificial Intelligence is advancing rapidly, promising efficient and effective learning methodologies in the educational sector, including the higher education sector. In particular, AI has facilitated the customization and enhancement of students' learning experiences. Apart from technological factors, personality traits play a role in the extent to which students adopt AI. This study investigated how students' personality traits from a postgraduate institution influence their attitude toward AI and their willingness to adopt new technology. This study employed a thematic qualitative methodology. In-depth interviews and focus group discussions were conducted to collect data. The findings suggest that the relationship between personality traits and attitudes toward adopting new AI technology is complex. On one hand, personality traits seem to influence the adoption of AI technology. On the other hand, the perceived usefulness of AI technology also appears to trigger personality traits and encourage them to adopt new technology. Furthermore, self-efficacy and positive experiences indirectly influence the adoption of the technology, whereas negative experiences enhance caution in using the technology without necessarily discouraging its use.

Keywords: Artificial Intelligence, higher education, personality traits, qualitative study

Introduction

Artificial intelligence (AI) has been broadly defined as the intelligence about machines that can reason, decide, and act like humans (Samoili et al., 2020). The development of such technologies has brought about several revolutionary changes in the private, public, and nonprofit sectors. The use of AI-based technology has become a new norm in the provision of education in contemporary societies. Several studies have debated the role and scope of AI in educational settings, especially higher education (Alqahtani et al., 2023; Felix, 2020; Singh & Hiran, 2022; Wang et al., 2021). Educational institutions are increasingly considering using AI technologies to obtain a competitive advantage in the marketplace (Hannan & Liu, 2023). Studies have shown that higher education institutions are increasingly using AI to deliver their services (Crompton & Burke, 2023; Wang et al., 2021). The adoption of AI technology helps revolutionize education, as it can potentially improve the service delivery of education (Mannuru et al., 2023). It assists institutions in accessing larger markets and helps students personalize their learning experience (Hutson et al., 2022). This trend can be observed even in developing countries trying to catch up with the development of AI technologies (Pedro et al., 2019).

For a long time, developing countries have used traditional methods and approaches to conduct business operations. Artificial intelligence (AI) technology has significant advantages. Artificial Intelligence has allowed businesses to improve performance standards by enhancing traditional operational approaches (Kshetri, 2020). Some developing nations have been able to adopt these technologies at a greater speed than other countries. Brazil, Chile, Nigeria, India, and Kenya are among the most prominent innovators in AI technology adoption (Aderibigbe et al., 2023).

*Contact author: razafiarivonym@aua.ac.ke

Notwithstanding the promising advances from introducing and developing AI technology in the education sector, there are concerns. Some of these concerns relate to the challenges and difficulties encountered by students who are the end recipients of educational services. As in other areas where new technology is introduced, the adoption of such technologies can foster negative emotions such as anxiety and trigger emotional problems (Almaiah et al., 2022; Kim et al., 2023). This is especially relevant in the case of the higher education sector, where students are usually mature learners who have already acquired some knowledge via more traditional methods. The shift to new ways of doing things may be an overwhelming experience for some (Malerbi et al., 2023; Duarte et al., 2018). Unfortunately, few studies have focused on understanding the personal experiences of these students, especially those living in developing countries in Africa. Such an understanding could lead to the design of a better curriculum and help service providers in their endeavors to deliver quality education.

Hence, this study explores how students' personality traits influence their attitude toward adopting AI and their willingness to embrace new AI technologies as a tool for their learning process. We addressed the following research questions: (1) How do students' personality traits influence their attitudes toward adopting AI technologies in their higher education learning experience? (2) What role do students' past experiences with technology play in shaping their perceptions and acceptance of AI tools in their academic environment? (3) How does self-efficacy hinder or encourage students' willingness to engage with AI-driven educational resources? (4) How do students perceive AI as beneficial or detrimental to their personal learning outcomes and overall academic performance?

Review of Literature

Definition of Artificial Intelligence

The term AI encompasses several technology categories developed to identify some form of intelligence and intelligent behavior, from machine learning to conscious robotics. AI organizations can implement human know-how in programming logic. Samoili et al. (2020) pointed out the commonalities in the many definitions of AI. First, in all the definitions, is the element of *perception of the environment* and the consideration of the complexities existing in the real world. Second, AI implies the *ability to process and interpret information* obtained from data. Third, there is the intelligence of *decision-making*. This means the subject is able to reason independently and decide to act based on the thinking process. Lastly, AI also implies *the ability to reach specific goals.* These components point out the complexity involved in AI technology. The High-Level Expert Group on Artificial Intelligence (HLEG, 2019), as cited in Sheikh et al. (2023), defined AI as follows: "Systems that display intelligent behavior by analyzing their environment and taking actions – with some degree of autonomy – to achieve specific goals" (p. 16).

Benefits of Using Artificial Intelligence in the Education Sector

Artificial Intelligence (AI) has revolutionized education by transforming how institutions teach, learn, and operate. Further, AI-powered tools enhance the educational experience by assisting students in their learning process (for example, personalizing learning paths and providing real-time feedback), developing curriculum and automating administrative tasks (Chen et al., 2024; George, 2023). Adaptive learning platforms analyze student performance and adjust content to suit their pace and needs, thus promoting better understanding and retention.

Davenport and Ronanki (2018) identified three core categories of AI technology in the context of higher education: process automation, cognitive insight, and cognitive engagement. Process automation concerns routine automated administrative tasks such as record updates. Robotic process automation is used in several functions of the organization, such as human resources, accounting, finance, and information

technology (Lievano-Martínez et al., 2022). Cognitive insight involves intelligence that performs tasks and duties that mimic human reasoning in recognizing trends and patterns for predictive analytics (Al Mesmari, 2023). This type of AI technology requires specific software systems. Cognitive engagement uses natural language processing and machine learning capabilities, as seen in pedagogical chatbots, to assist students in their learning experiences (Chen et al., 2023). These technologies require educational providers to reassess and revise curricula (Pedro et al., 2019). There is more emphasis on critical thinking, independent learning, and creative learning than memorization. Furthermore, problem-solving and other active learning strategies (AI-centric labs) that focus on hands-on, real-world applications are important to effectively bridge theoretical knowledge with practical skills (George, 2023).

Administratively, AI optimizes operations by streamlining admissions, tracking academic progress, and predicting student outcomes. It helps universities identify at-risk students and offers timely interventions to improve retention rates. Additionally, AI can assist in curriculum design by analyzing industry trends and aligning courses with workforce demands (Crompton & Burke, 2023). However, integrating AI in education poses challenges such as ensuring data privacy, addressing algorithm biases, and bridging the digital divide. Despite these concerns, AI has immense potential for democratizing education, making it more inclusive, efficient, and innovative. As technology evolves, it will continue to shape the future of higher education.

Students' Attitudes in Education Delivery

The students' attitude vis-à-vis the new technologies is important in delivering education because of the nature of the latter; that is, the "product" belongs to the service category. Services are unique in that they are not pre-produced like tangible products but rather are produced through a set of processes in which the consumer interacts with the production resources of the organization offering the service (Grönroos, 1998). As the education sector embraces AI technologies, and students are exposed to and become involved in new ways of doing things, their attitude toward the latter is affected by their personality traits. Indeed, studies have shown an association between personality traits and attitudes toward AI (Park & Woo, 2022; Schepman & Rodway, 2020).

Students' Personality Traits and AI

Personality traits determine individuals' emotions, thinking processes, and behaviors (Devaraj et al., 2008). The five most common personality traits are openness, agreeableness, extroversion, conscientiousness, and neuroticism (McCrae, 2009). This study considered three of these: openness, conscientiousness, and neuroticism. Openness implies open-mindedness, attraction to innovation, and intellectual curiosity (Matzler et al., 2006). Conscientiousness implies focused attention and effort exerted in an orderly and planned manner to reach a goal or assume responsibility (Soto & John, 2014; Roberts et al., 2014; Hassan et al., 2016), whereas neuroticism is related to negative emotions such as depression, insecurity, and anxiety. Several studies have shown either a positive or negative association between personality traits and the adoption of AI technology. Barnett et al. (2015) and Tassone (2023) tested and found a positive association between conscientiousness and the use of AI. However, they also found that neuroticism was negatively associated with using and adopting AI technologies. Studies have shown that AI has brought about a different kind of anxiety than traditional sources of anxiety. The abstract nature of AI and the technological changes with its implications for the future can bring a sense of vulnerability and loss of control and can be overwhelming (Kim et al., 2023). Li and Huang (2020), as well as Wang and Wang (2022), identified different types of AI anxiety, including job replacement anxiety, sociotechnical blindness, and AI learning anxiety. The level of anxiety seems to be related to students' confidence in learning new technologies, that is, their self-efficacy (Barrows et al., 2013). Studies also show that students' level of self-efficacy in

general, and self-efficacy in AI in particular, plays a role in their adoption of AI technologies (Chen et al., 2024). The more confidence they have in their ability to operate and use the technology to acquire knowledge, the more willing they are to try new technological developments.

Theoretical Framework

This study is anchored on the Technology Acceptance Model (TAM) as the theoretical framework. Davis's (1989) model posits that users' actual adoption of a new technology is determined by their attitude toward that technology. The reasoning behind the model is that users' intention to adopt technology is shaped by specific beliefs about the use of that technology (Marikyan & Papagiannidis, 2023). This theory has two objectives: first, to explain the processes involved in accepting a particular technology in an endeavor to predict users' behavior. Second, there is a practical objective, which is to assist practitioners with the measures to take before implementing systems (Marikyan & Papagiannidis, 2023).

According to Davis (1989), would-be users tend to form an attitude toward technology, and their attitude depends on how useful they perceive the technology (perceived usefulness) to be and how easy it is to use such technology (perceived ease of use). Perceived usefulness is defined as the perception that potential users have about the extent to which the use of technology can improve their performance. Perceived ease of use is defined as the level of difficulty associated with the use of technology. Potential users would weigh the level of usefulness of the technology against the level of difficulty involved in using it. According to Davis (1989), the effect of perceived usefulness on the actual adoption of technology (behavior) can be direct. However, perceived ease of use does not directly affect behavior but is related to perceived usefulness. The implication is that if technology is perceived to be easy to use, it is more likely to be perceived as useful.

This theory has been applied in various settings and proven robust. Over time, it was further improved to enhance its predictive power, as there was a need to further identify the conditions that underpin users' perception of usage of the technology. Three factors have been proposed: the control factor (self-efficacy), intrinsic motivation (objective usability), and emotions (perceived enjoyment, computer anxiety, and computer playfulness) (Venkatesh, 2000; Venkatesh & Bala, 2008). Further improvements have been made and the theoretical framework as it currently stands posits that "actual behaviour is predicted by the behavioural intention, and behavioural intention is underpinned by perceived usefulness and perceived ease of use, each of which has a set of antecedents" (Marikyan & Papagiannidis, 2023, p. 6).

The model has been criticized for its simplicity and lack of applicability in complex organizations, including institutions of higher learning (Ajibade, 2018). In particular, the model seems to imply that individuals accept new AI technology because of the influence of friends or media. Many organizations have rules and other organizational factors that influence the use of new technologies to the extent that considerations such as interpersonal influence do not count (King & He, 2006). Another limitation of the TAM model is that it seems to imply that extensive use of technology results in higher performance. Such a claim may not be true in practice (Goodhue, 2007). Nevertheless, the theory still fits the purpose of this study because it helps understand how users' (in this study, students in higher education) attitudes influence their adoption of new AI technologies, specifically by emphasizing the factors of usefulness and perceived ease of use.

Methodology

Research Design

A qualitative case study design was employed to understand the interplay between personality traits and students' attitudes toward AI in higher education. The case study design is deemed appropriate for this study because it allows for a thorough exploration of the phenomenon (Thomas, 2011).

Participants

Participants were selected from a diverse range of graduate students at a Christian university. The university was selected because it has deployed AI technologies in its service process and delivery over the past four years. The participants were selected using a purposive sampling procedure with a heterogeneous sampling approach to ensure a fair representation based on gender, age, program of study, and geographical location. This study involved ten students actively pursuing their studies. Five students participated in the in-depth interviews, while the other five participated in focus group discussions.

Instrument for Data Collection

Data was collected through semi-structured interviews and a focus group discussion in August 2024. While interviews facilitated the exploration of ideas with participants on an individual basis, focus group discussion was selected to allow participants to offer insights and share both commonalities and differences with their peers. This process aimed to facilitate the emergence of new topics through group dynamics. Both types of instruments are considered valuable for gaining an understanding of the topic under consideration and for providing a comprehensive description of students' experiences.

Data Collection Procedure

Students were invited by email to participate in the study. Once they confirmed their willingness to participate in the study, they were sent questions ahead of time to prepare a smooth process for the interview. They were also provided consent to sign. The date and time of the interviews were scheduled based on student availability. All interviews were conducted online using Zoom. The same questions were asked for the focus group discussion and interviews. The interview was about 45 minutes per student, whereas the focus group discussion lasted an hour and 30 minutes.

Trustworthiness

Trustworthiness in qualitative research is important. For this current study, the following criteria were followed to achieve trustworthiness: credibility, transferability and confirmability.

When it comes to credibility, we ensured that the research findings accurately represented the data and the reality being studied. This involves rigorous data collection and analysis processes that reflect participants' true experiences and perspectives. Member checking was conducted by repeating what the participants said to them to verify the accuracy of the statements expressed.

Trustworthy research provides detailed descriptions of the research context and participants, allowing others to judge the applicability of findings to different settings or populations. This element of transferability enhances the generalizability and relevance of the research. This study endeavored to provide the necessary information to the reader, thus setting an adequate foundation for future research.

Finally, confirmability addresses the objectivity of the research. In this study, we thoroughly examined the data provided by the participants and used them to establish our findings. Hence, it was ensured that the findings reflected the participants' perceptions and ideas rather than the researcher's preconceptions.

Data Analysis

The data were recorded and transcribed. We then read the transcribed version several times to highlight keywords that reflected the major responses to the research questions. A thematic analysis was performed manually. The analysis

involved three major steps. First, the draft versions from the interviews and focus group discussions were categorized and coded using theoretical thematic analysis. This initial type of analysis was driven by the research questions (Braun & Clarke, 2006). Second, the coding was refined and the relationships among the initial categories were merged to unearth new themes. This process was conducted to understand the participants' attitudes. Third, once the themes were developed, they were interpreted in the context of the existing literature on AI and the underlying theory used in the study. The discussion at this level aims not only to confirm what has been found in the existing literature but also to unearth new insights that can be used as recommendations for further studies.

Ethical Considerations

Participants were informed about the study's purpose, procedures, and their right to withdraw at any time. All participants consented to participate in this study. All data were anonymized to protect participants' identities. Ethical approval for this study was obtained the Ethical approval for this study was obtained from the Adventist University of Africa Institutional Scientific Ethics Review Committee, AUA/ISERC/6/08/2024.

Results and Discussions

The influence of personality traits on students' attitudes toward adopting AI technologies

The first research question concerned the influence of personality traits on students' attitudes toward adopting AI technologies. Three traits related to the adoption of AI were analyzed in this study (two positive and one negative): openness, conscientiousness, and anxiety. According to the students, they are open to new experiences, which enables them to try new experiences when they discover their usefulness. They also expressed that they were conscientious. They set goals and tend to work diligently toward achievement. This trait has helped them adopt AI as it seems to help them effectively and efficiently reach their set objectives. However, the students also expressed anxiety about AI, which sometimes influenced their adoption of technology. Three themes emerged to answer research question one. Openness and conscientiousness result in a positive attitude, while anxiety results in a negative attitude toward AI technology. These three themes are explained in the following sections.

Theme 1: Openness resulting in a positive attitude toward AI

Most participants expressed openness and willingness to learn new technologies, deeming them essential for their educational pursuits. One participant stated, *"I have always been curious about new things,"* while another mentioned, *"When someone informs me about a new technology, I will search to learn more about it."* For some, it was an opportunity for discovery: *"I always want to discover and try new things. The sky's the limit. My slogan is that I will not be the last to learn new technology."* Openness tends to influence attitudes toward adopting AI. One participant remarked, *"Society mandates the adoption of AI; otherwise, you become irrelevant."* One participant noted, *"this is the new way to succeed academically nowadays."* Some participants attributed their openness to learning to their natural curiosity and desire to enhance their knowledge. Most participants had a positive attitude toward adopting new AI technologies, recognizing their usefulness and importance in education. These findings confirm other studies suggesting that openness and willingness to learn encourage a positive attitude toward new technology (Park & Woo, 2022). Furthermore, other studies have found a relationship between personality traits and individual attitudes (Schepman & Rodway, 2020). Thus, individuals open to new technology are more likely to embrace their use.

Theme 2: Conscientiousness resulting in a positive attitude toward AI.

Most participants reported that they are responsible, diligent, and careful because they

want to succeed in their academic pursuits. One participant said, *"I want to succeed in my studies, that is my goal, so I do everything it takes to achieve that goal*." Another one added:

"If that technology can help me reach my goal, I want it." They felt obligated to perform well as students in an institution of higher learning. A participant said, *"I have set goals which I need to achieve, and AI technology aids me to achieve the goals I have set in good time."* Some participants are conscientious because they want to be of use to others. One participant said, " *I am a very conscientious person when it comes to AI because AI helps and motivates me to learn more. As I learn, I become a source of help, and I am able to assist other people…I have the desire to provide help to others so as to push them to learn more about new technology and how they can use it to their advantage in the learning process*." Hence, the need to transfer their knowledge to assist others motivates them to embrace and master new technology. The findings of the current study are similar to those of Barnett et al. (2015) and Tassone (2023), who found a significant association between conscientiousness and AI use. The implication is that whenever learners need to succeed and thrive in their learning process, they embrace AI technologies.

Theme 3: Anxiety resulting in a reluctance about the adoption of AI technology

As far as the negative emotions are concerned, some of the participants expressed that they felt anxious about the new technology. Their anxiety was mostly related to AI learning. AI Learning anxiety is felt when an individual is apprehensive about the complexity involved in understanding AI algorithms (Wang & Wang, 2022). One participant said, "*Before I start any new technologies, I feel a surge of anxiety…"* Others are apprehensive and tread carefully because they do not want to embrace AI before fully understanding it. One participant said, *"When there is a new thing, I do not embrace it immediately. Rather I want to know as much as possible about it before I take the plunge."* This finding is similar to that of other studies that revealed that some students experience learning anxiety as they use AI in their learning, especially in their first encounter. Moreover, the level of anxiety tends to increase if they have bad experiences with technology (Kim et al., 2023; Li & Huang, 2020; Wang & Wang, 2022).

How students' lived experiences shape their acceptance of AI tools

The second research question emphasized the role of experience in participants' adoption of AI. It seems from the interviews and focused group discussions that the students did not have much experience with AI, good or bad. This is probably because they have not been exposed to the wide range of AI technologies available. Nevertheless, from their few experiences, they expressed that good experiences gave them more motivation to adopt new technologies. On the other hand, bad experiences did not deter them from trying it again. Rather, the bad experiences made them more cautious about new things coming up. Thus, it cannot be said that good and bad experiences are at opposite ends of each other at all times.

Theme 4: Role of Experiences

The participants revealed that good experiences motivated them to learn more. One participant said, "*I had a good experience before, and I was so excited. I became more informed and always wanted to learn more to find my way through."* Still, another mentioned that the bad experiences made them look for other alternatives, searching for other types of technologies to see if they could solve their problem better. *"Because I had a setback with one technology, it did not hamper me. Instead, I looked for other tools where I can get the information that I need. It did not really affect my willingness to try more."* For some participants, the bad experiences they encountered made them cautious about the use of AI. One of them said *"I am cautious because I have had a bad experience before.* Still, another student added *"I had a bad experience in the past with trying new technologies. In the future, I will be more*

suspicious or rather cautious about using new technologies." Some participants had a poor perception of AI because they did not have a pleasant experience with technology.

The negative experience stems from a lack of understanding of AI that triggered anger, resentment, and frustration while trying to use AI. One participant said, *"Last time I used ChatGPT, I was very frustrated. There was production of information but there were no references. I had to start looking for references, and it wasted a lot of my time."* The findings agree with studies that seem to show that experience can hinder or encourage the adoption of AI technology (Barnett et al., 2015).

Role of students' self-efficacy and their adoption of AI-driven educational resources

The third research question was related to students' level of self-efficacy. Some students said they were confident in mastering technology because of their previous work experience. They have developed sufficient skills for managing new things. Others are less confident about AI technologies and realize they may be unable to navigate the complexities involved. Still, they do not want to give up. Their interest and need to reach where they want to be is superseded by their lack of confidence. From the analysis, one theme emerged, namely, the self-efficacy level.

Theme 5: Self-Efficacy

Most participants acknowledged their limitations vis-à-vis new technologies, but they also expressed that academic requirements need to be met. The responsibility of meeting these requirements seems to be heavier than the acknowledgment of a lack of skills and knowledge. As a result, they push themselves. One participant said, "*If I need to, I push myself to be confident about it. I reason with myself and do not think of the limitations. So, after a while, I gain confidence."* The level of self-efficacy comes because the need to reach their objectives is paramount in their minds. Another added *"Do I have a choice? I must master the technology."* Another stated, "*Even if I realize that I am not able to master the technology, the interest I have drives me to learn and master so I can get to where I want."*

Students use different methods to enhance their self-efficacy levels. Some use their previous experience to enhance their self-efficacy toward AI. One of the participants said, *"I have always worked with Information technology so I feel I can master the new AI technology as well."* Others rationalize that AI, when used correctly, has the potential to allow them to achieve their goals. One participant said, *"I am very confident using AI. It saves me time, produces better organized information, I avoid going to the library, and it makes my work very easy. I am passionate about its use."* One participant shared a success story. *"Technology helps a lot in giving insights to developing class materials. it aids work like editing hence improves personal learning experience."* These findings suggest that the conscientiousness of these participants helps them try new things, even if they are not very confident.

However, a few participants felt that the situation was complex and that they were not ready to handle new technologies. As much as they were excited about and in awe about the possibilities of new technology, they acknowledged that they were not up to par in using it effectively. One participant revealed *"I do not know so much about technology, so I am afraid that I do not get the desired outcome."* Another one said, *"Sometimes I am not confident that I can handle new technology."*

Scholars have reached similar conclusions that a high self-efficacy level leads to positive learning outcomes. For example, Hong et al. (2021) and Zorlu and Ünver (2022) affirmed that learners with strong self-efficacy engaged more in school activities and persisted longer in learning until they achieved their goals. Other studies have found that individuals with high self-efficacy are more resilient when they encounter challenges and are less likely to be anxious (Usher & Pajares, 2008). Students who are more confident in their ability to operate and use AI

technology tend to acquire more knowledge and are more willing to try new technologies.

Perceived benefits and detrimental effects on personal learning outcomes.

The fourth research question focused on AI in relation to students' learning outcomes and academic performance. The major downsides are possible mental dullness, dependency on technology, and demotivation. On the other hand, the major benefits raised by students are efficiency and the ability to access more ideas, thus increasing knowledge in less time. Two themes emerged: Perceived disadvantages and perceived benefits.

Theme 6: Perceived disadvantages

The disadvantages mentioned by the participants seem to be internally oriented. Students fear becoming less mentally sharp because they allow technology to take over their mental efforts and accomplish the tasks that were done previously. They are also concerned about a decline in their ability to think critically (mental dullness), leaning too much on technology (dependency), and not receiving accurate information.

Subtheme A. Mental Dullness. One participant said, *"AI can make me lazy mentally."* Another one said, *"AI prevents me from developing critical thinking."* Another also voiced similar sentiments, *"AI dulls my brain."* The participants seemed acutely aware of the effect of technology on their reasoning and thinking. This concern is relevant because, in higher education, students are required to have a higher order of thinking, especially when writing their thesis or dissertation. However, this statement may be biased. Consider the researcher's role in qualitative inquiry (If AI is useful for efficiency, how is it a negative thing to use?) Is the fault with AI or the user? As one participant voiced, *"I am very sensitive to anything that undermines my learning capability… Also, I think over relying on AI may reduce my thinking ability."*

Subtheme B. Overdependence. There is a view that AI is addictive in the sense that users may depend too much on the technology and become powerless in the absence of these tools. Two participants reported that they felt AI was addictive if one was not careful. They affirmed that AI can be addictive in some sense because sometimes it makes one dependent, and one has to use it at all times, even without thinking. *"Being dependent on AI means you are not a scholar nor a thinker. Without AI you cannot do anything and this is dangerous."*

Subtheme C: Inaccurate or Incomplete information. Some participants felt that AI can complicate matters, as one needs to choose and discern which material is relevant. One participant said, "*Whenever I use it, I have to read and interpret the information again."* In addition, some participants realized that the information produced by AI may not be fully accurate because the outcomes depend heavily on the input. A participant said, *"there is so much information available and sometimes they are not fully accurate and may even be contradictory."* Moreover, if not well managed and used, AI can waste a lot of someone's time. *"AI, especially ChatGPT, is a waste of time for me. Whenever I use it, I have to read and interpret the information again."* There is also a concern about plagiarism and copyright issues, where one's work can be "stolen" and this could potentially demotivate. A participant said *"Sometimes, AI may seem to make the work easier, but it can complicate things, someone may steal my work…and these thoughts can be demotivating…"* The findings of this current study agree with others that AI does have a dark side, such as plagiarism issues, overdependence on AI, and incorrectness of facts. These and other factors can foster negative emotions, such as anxiety, demotivation, and insecurity, especially if one is not knowledgeable about technology (Boguslawski et al., 2024; Ivanov, 2023; Jie & Kamrozzaman, 2024).

Theme 7: Perceived Benefits.

Participants appreciated the efficiency and effectiveness of AI and its efficacy in achieving their goals. These two subthemes are explained below.

Subtheme A: Effectiveness. Effectiveness is related to meeting expectations in the school or workplace. Participants appreciate that they get ideas on how to do certain things, for example, an outline for a term paper. One participant said, *"It makes studies easier."* Another confirmed, *"It allows me to get ideas on how to produce some academic work."* Another comment was added, *"It helps me to submit assignments that are well done."* Another revealed, *"It enhances my capacity of learning."* AI is also perceived as being able to increase knowledge. A participant affirmed, *"AI increases knowledge. One can access high-level knowledge. This knowledge can be used in academic settings and the workplace."* This finding contradicts participants' opinions about AI, making them mentally lazy and dull. However, it can be understood to the participants realize that while AI is potentially useful, it all depends on how it is used. One participant expressed it as follows: "*I intentionally decide what type of AI technology I use, and I have to use discernment in how I use the information. I don't just use anything that comes, No!!"*

Sub-theme B: Efficiency. Efficiency is valued because the students' intermediate goal is to finish school and graduate. As one participant shared, *"AI aids my work. This helps me finish the work quickly…. I might be able to graduate faster."* Another participant said, *"AI helps me save time. I think it is very efficient."* Another explained how AI has helped her work faster and on time. *"AI helps me do my work on time, then I can help others who are having challenges to accomplish their work."* When used well, AI saves a lot of time on tasks assigned, as multitasking is possible. Another participant explained, *"AI helps me multitask. I can handle many things. I am confident that it can do the work for me, and I am able to do other things."*

When asked if the benefits outweighed the drawbacks, all participants emphatically stated that the benefits were more than the drawbacks. In the words of one participant, "*AI allows me to gain time. This I appreciate .... the benefits outweigh the downside."* They are aware of the disadvantages but value the benefits and are willing to overlook them.

Discussion

The findings suggest that the relationship between personality traits and attitudes toward adopting new AI technology is complex. On one hand, personality traits such as openness and conscientiousness influence the adoption of technology. On the other hand, to adopt and eventually use AI technology because it helps achieve a certain goal (i.e., its perceived usefulness) tends to encourage the same personality traits. This finding agrees with other studies that show that despite the relatively stable nature of personality traits, they change due to certain events in an individual's life (in this case, higher education) (Bleidorn et al., 2018; Lucas & Donnellan, 2011; Nieß & Zacher, 2015).

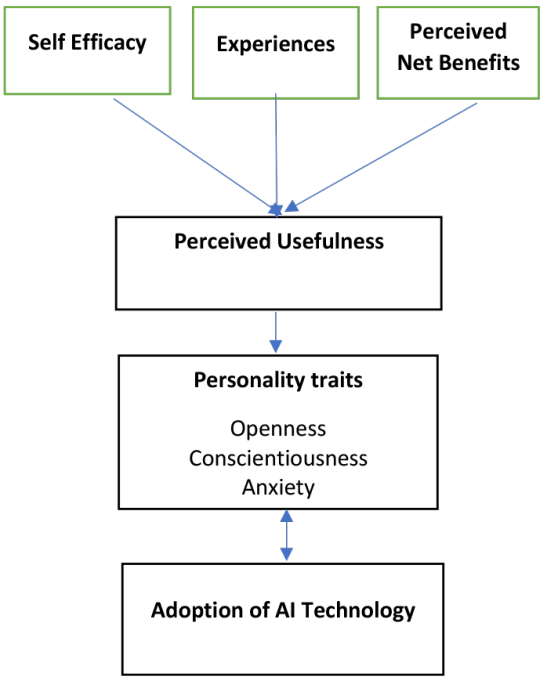
Furthermore, there seems to be an indirect link between the level of self-efficacy and the adoption of AI technology via personality traits such as openness. Students who are more confident about their ability to use technology are more open to trying and, consequently, are more prone to adopt new technological developments. However, the findings also show that those who acknowledge their lack of self-efficacy are not deterred from attempting to at least try the new technology. It seems that their level of conscientiousness motivates them to overlook their limitations and thus helps mitigate the influence of a lack of self-efficacy when adopting AI technology.

Students' experiences also seem to play an indirect role in adopting AI technology. Positive experiences regarding AI produce excitement and satisfaction, leading to more openness, which contributes to the easier adoption of the technology. On the other hand, negative

experiences do not necessarily produce the opposite effect; rather, they help students exert more caution while adopting the technology. Such caution may not necessarily be bad when it comes to AI technology, as it guards against the indiscriminate usage of AI. Hence, this study suggests that both good and bad experiences favor the adoption of the technology because of its underlying perceived usefulness.

Overall, the findings from this study seem to confirm the propositions of the theory of the Technology Acceptance Model, which posits that perceived usefulness, personality traits, and perceived ease of use play an important role in the attitude and adoption of AI technology (Davis, 1989; Marangunic & Granic, 2015; Al-Kfairy, 2024). Experiences, self-efficacy, and perceived benefits gained from the technology also seem to influence the propensity to adopt new AI technology indirectly. The diagram below shows the interrelationships between the different factors.

Figure 1: *Relationships of the factors involved in the adoption of AI technology*



Conclusion and Recommendations

This study explores the role of personality traits in the adoption of AI Technology. In particular, it shows how AI technologies occupy an important place in students' minds, even if they are not fully knowledgeable of all the possibilities. This implies that educational institutions need to ensure that students become more exposed to AI technology in order for them to take advantage of its benefits. The more opportunities they get to interact with AI technology, the more adept they would be to use it. Given that the students revealed some level of anxiety about AI because of the complexity involved, it is important that continuous training be offered to help them learn to master technology. The student's concern about the decline in mental alertness can be addressed by holding workshops to teach them how to critically and objectively assess the usability and accuracy of the information they obtain from the AI tools. There is also a need to assist the students in considering AI tools as tools to be used and not to depend on them to do their thinking.

Limitations and Areas for Future Research

Future studies can help address the following limitations of this study. The study was limited to the personality traits of the students and their influence on attitudes toward AI. However, there are indications that other factors may also have a role to play. Students live in regions where access to AI technology is limited. They mentioned the cost concerns and the demands of their profession as sometimes interfering with their adoption of AI. Further studies are recommended to explore the role of factors such as the level of accessibility to AI technologies, cost considerations, and even job demands, together with personality traits, in the adoption of AI technology. Another limitation of this study was the use of only one institution of higher learning. This may narrow the perspective on AI adoption in this context. Future studies should consider gathering data from a broader range of diverse institutions to gain further insights. Nevertheless, it is believed that this study offers some valuable insights and

allows a better understanding of the relationship between personality traits and students' adoption of AI in higher education.

Funding Statement: The author did not receive financial support for this research.

Conflicts of interest: None.

References

Aderibigbe, A. O., Ohenhen, P. E., Nwaobia, N. K., Gidiagba, J. O., & Ani, E. C. (2023). Artificial intelligence in developing countries: bridging the gap between potential and implementation. *Computer Science & IT Research Journal*, *4*(3), 185-199. https://doi.org/ 10.51594/csitrj.v4i3.629

Ajibade, P. (2018). "Technology Acceptance Model Limitations and Criticisms: Exploring the Practical Applications and Use in Technology-related Studies, Mixed-method, and Qualitative Researches". *Library Philosophy and Practice (e-journal).* 1941. http://digitalcommons.unl.edu/libphilprac/1941

Al-Kfairy, M. (2024). Factors impacting the adoption and acceptance of ChatGPT in educational settings: A narrative review of empirical studies. *Applied System Innovation*, *7*(6), 110. https://doi.org/10.3390/asi7060110

Almaiah, M. A., Alfaisal, R., Salloum, S. A., Hajjej, F., Thabit, S., El-Qirem, F. A., Lufti, A., Alrawad, M., Mulhem, A. A., Alkhdour, T., Awad, A. B. & Al-Maroof, R. S. (2022). Examining the impact of artificial intelligence and social and computer anxiety in e-learning settings: students' perceptions at the university level. *Electronics*, *11*(22), 3662, 1-122. https://doi.org/10.3390/electronics11223662

Al Mesmari, S. (2023). Transforming data into actionable insights with cognitive computing and AI. *Journal of Software Engineering and Applications*, *16*(6), 211-222. https://doi.org/10.4236/jsea.2023.166012

Alqahtani, T., Badreldin, H. A., Alrashed, M., Alshaya, A. I., Alghamdi, S. S., bin Saleh, K., Alowais, S. A., Alshaya, O. A., Rahman, I., Al Yami, M. S. & Albekairy, A. M. (2023). The emergent role of artificial intelligence, natural learning processing, and large language models in higher education and research. *Research in Social and Administrative Pharmacy*, *19*(8), 1236-1242. https://doi.org/10.1016/j.sapharm.2023.05.016

Barnett, T., Pearson, A. W., Pearson, R., & Kellermanns, F. W. (2015). Five-factor model personality traits as predictors of perceived and actual usage of technology. *European Journal of Information Systems*, *24*(4), 374-390. https://doi.org/10.1057/ejis.2014.10

Barrows, J., Dunn, S., & Lloyd, C. A. (2013). Anxiety, self-efficacy, and college exam grades. *Universal Journal of Educational Research*, *1*(3), 204-208. https://doi.org/10.13189/ujer.2013.010310

Bleidorn, W., Hopwood, C. J., & Lucas, R. E. (2018). Life events and personality trait change. *Journal of personality*, *86*(1), 83-96. https://doi.org/10.1111/jopy.12286

Boguslawski, S., Deer, R., & Dawson, M. G. (2024). Programming education and learner motivation in the age of generative AI: student and educator perspectives. *Information and Learning Sciences*. https://dx.doi.org/10.1108/ILS-10-2023-0163

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative

ResearchinPsychology,3,77–101.https://doi.org/10.1191/1478088706qp063oa

Chen, Y., Jensen, S., Albert, L. J., Gupta, S., & Lee, T. (2023). Artificial intelligence (AI) student assistants in the classroom: Designing chatbots to support student success. *Information Systems Frontiers*, *25*(1), 161-182. https://doi.org/ 10.1007/s10796-022-10291-4

Chen, D., Liu, W., & Liu, X. (2024). What drives college students to use AI for L2 learning? Modeling the roles of self-efficacy, anxiety, and attitude based on an extended technology acceptance model. *Acta Psychologica*, *249*, 104442. 1- 9. https://doi.org/10.1016/j.actpsy.2024.104442

Crompton, H., & Burke, D. (2023). Artificial intelligence in higher education: the state of the field. *International Journal of Educational Technology in Higher Education*, *20*(1), 22. https://doi.org/10.1186/s41239-023-00392-8

Davenport, T. H., & Ronanki, R. (2018), "Artificial intelligence for the real world", Harvard Business Review, January-February, pp. 108-116. https://www.hbsp.harvard.edu/product/R1801H-PDF-ENG

Devaraj, S., Easley, R. F., & Crant, J. M. (2008). Research note how does personality matter? Relating the five-factor model to technology acceptance and use. *Information Systems Research, 19*(1), 93–105. https://doi.org/10.1287/isre.1070.0153

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319-340. https://doi.org/10.2307/249008

Duarte, R., Nobre, Â. L., & De Oliveira Pires, A. L. (2018). *Mature Learners' Participation in Higher Education and Flexible Learning Pathways: Lessons Learned from an Exploratory Experimental Research* (pp. 33–53). Springer Singapore. https://doi.org/10.1007/978-981-10-8917-6_2

Felix, C. V. (2020). The role of the teacher and AI in education. In *International perspectives on the role of technology in humanizing higher education* (pp. 33-48). http://dx.doi.org/10.1108/S2055-364120200000033003

George, A. S. (2023). Preparing students for an AI-driven world: Rethinking curriculum and pedagogy in the age of artificial intelligence. *Partners Universal Innovative Research Publication*, *1*(2), 112-136. https://doi.org/10.5281/zenodo.10245675

Goodhue, D. (2007). Comment on Benbasat and Barki's "Quo Vadis TAM" article. Journal of the Association for Information Systems, 8 (4), 219-222.

Grönroos, C. (1998). Marketing services: the case of a missing product. *Journal of business & industrial marketing*, *13*(4/5), 322-338. https://doi.org/10.1108/08858629810226645

Hannan, E., & Liu, S. (2023). AI: new source of competitiveness in higher education. *Competitiveness Review: An International Business Journal*, *33*(2), 265-279. https://doi.org/10.1108/CR-03-2021-0045sh

Hassan, S., Akhtar, N., & Yılmaz, A. K. (2016). Impact of the conscientiousness as personality trait on both job and organizational performance. *Journal of Managerial Sciences*, *10*(1). https://qurtuba.edu.pk/jms/default_files/JMS/10_1/JMS_January_June2016_1-14.pdf

Hong, J. C., Zhang, H. L., Ye, J. H., & Ye, J. N. (2021). The effects of academic self-efficacy on vocational students behavioral engagement at school and at firm internships: A model of engagement-value of achievement motivation. *Education Sciences*, *11*(8), 387. https://doi.org/10.3390/educsci11080387

Hutson, J., Jeevanjee T., Vander Graaf, V., Lively, J., Weber, J., Weir, G., Arnone, K., Carnes, G., Vosevich, K., Plate, D., Leary, M., & Edele, S. (2022) "Artificial intelligence and the disruption of higher education: strategies for integrations across disciplines." *Creative Education* 13(12), 3953-3980 https://dx.doi.org/10.4236/ce.2022.1312253

Ivanov, S. (2023). The dark side of artificial intelligence in higher education, *The Service Industries Journal, 43*:15-16, 1055-1082, https://doi.org/10.1080/02642069.2023.2258799

Jie, A. L. X., & Kamrozzaman, N. A. (2024). The Challenges of Higher Education Students Face in Using Artificial Intelligence (AI) against Their Learning Experiences. Open Journal of Social Sciences, 12, 362-387. https://doi.org/10.4236/jss.2024.1210025

Kim, J., Kadkol, S., Solomon, I., Yeh, H., Soh, J. Y., Nguyen, T. M., Choi, J. Y., Lee, S., Srivatsa, A. V., Nahass, G. R., & Ajilore, O. A. (2023). AI anxiety: a comprehensive analysis of psychological factors and interventions. *SSRN Electronic Journal 4573394*. https://doi.org/10.2139/ssrn.4573394

King, W. R., & He, J. (2006). A meta-analysis of the technology acceptance model. *Information & management 43*(6): 740-755. https://doi.org/10.1016/j.im.2006.05.003

Kshetri, N. (2020)."Artificial intelligence in developing countries" *IEEE IT Professional, 22*(4) 63 - 68. https://doi.org/10.1109/MITP.2019.2951851

Li, J., & Huang, J. S. (2020). Dimensions of artificial intelligence anxiety based on the integrated fear acquisition theory. *Technology in Society*, *63*, 101410. https://doi.org/10.1016/j.techsoc.2020.101410

Lievano-Martínez, F. A., Fernández-Ledesma, J. D., Burgos, D., Branch-Bedoya, J. W., & Jimenez-Builes, J. A. (2022). Intelligent Process Automation: An Application in Manufacturing Industry. *Sustainability*, 14, 8804. https://doi.org/10.3390/su14148804

Lucas, R. E., & Donnellan, M. B. (2011). Personality development across the life span: Longitudinal analyses with a national sample from Germany. *Journal of Personality and Social Psychology, 101*, 847–861. https://psycnet.apa.org/doi/10.1037/a0024298

Malerbi, F. K., Nakayama, L. F., Dychiao, R. G., Ribeiro, L. Z., Villanueva, C., Celi, L. A., & Regatieri, C. V. (2023). Digital Education for the Deployment of Artificial Intelligence in Health Care. *Journal of Medical Internet Research*, 25, e43333. https://pmc.ncbi.nlm.nih.gov/articles/PMC10337407/

Marangunic, N., & Granic, A. (2015). Technology acceptance model: A literature review from 1986 to 2013. *Universal Access in the Information Society, 14*(1), 81-95. https://doi.org/10.1007/s10209-014-0348-1

Marikyan, D. & Papagiannidis, S. (2023). *Technology Acceptance Model: A review*. In S. Papagiannidis (Ed), TheoryHub Book. Available at https://open.ncl.ac.uk / ISBN: 9781739604400

McCrae, R. R. (2009). The five-factor model of personality traits: Consensus and controversy. *The Cambridge handbook of personality psychology*, 148-161. https://psycnet.apa.org/doi/10.1017/CBO9780511596544.012

Mannuru N. R., Shahriar S., Teel, Z. A., Wang T., Lund B. D., Tijani S., Pohboon, C. O., Agbaji, D., Alhassan J., Galley J., Kousari R., Ogbadu-Oladapo L., Saurav S. K., Srivastava A., Tummuru S. P., Uppala S., Vaidya P. (2023). Artificial intelligence in developing countries: The impact of generative artificial intelligence (AI) technologies for development. *Information Development* 1–19. https://dx.doi.org/10.1177/02666669231200628

Matzler, K., Bidmon, S., & Grabner-Kräuter, S. (2006). Individual determinants of brand affect: the role of the personality traits of extraversion and openness to experience. *Journal of product & brand management*, *15*(7), 427-434. https://doi.org/10.1108/10610420610712801

Nieß, C., & Zacher, H. (2015). Openness to experience as a predictor and outcome of upward job changes into managerial and professional positions. PlOS ONE, 10. https://doi.org/10.1371/ journal.pone.0131115

Park, J., & Woo, S. E. (2022). Who likes artificial intelligence? Personality predictors of attitudes toward artificial intelligence. The Journal of Psychology, 156(1), 68–94. https://doi.org/10.1080/00223980.2021.2012109

Pedro, F., Subosa, M., Rivas, A., & Valverde, P. (2019). Artificial intelligence in education: Challenges and opportunities for sustainable development. *Working Papers on Education Policy,7*. UNESCO https://www.gcedclearinghouse.org/sites/default/files/resources/190175eng.pdf

Roberts, B. W., Lejuez, C., Krueger, R. F., Richards, J. M., & Hill, P. L. (2014). What is conscientiousness and how can it be assessed? *Developmental psychology*, *50*(5), 1315. https://doi.org/10.1037/a0031109

Samoili, S., López Cobo, M., Gómez, E., De Prato, G., Martínez-Plumed, F., & Delipetrev, B. (2020). *AI Watch. Defining Artificial Intelligence. Toward an operational definition and taxonomy of artificial intelligence*, EUR 30117 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-17045-7, https://doi.org/10.2760/382730, JRC118163.

Schepman, A., & Rodway, P. (2020). Initial validation of the general attitudes toward Artificial Intelligence Scale. *Computers in Human Behavior Reports*, 1, 100014. https://doi.org/10.1016/j.chbr.2020.100014

Sheikh, H., Prins, C., & Schrijvers, E. (2023). *Artificial Intelligence: Definition and Background.* In: Mission AI. Research for Policy. Springer, Cham. https://doi.org/10.1007/978-3-031-21448-6_2

Singh, S. V., & Hiran, K. K. (2022). The impact of AI on teaching and learning in higher education technology. *Journal of Higher Education Theory and Practice*, *22*(13). https://doi.org/10.33423/jhetp.v22i13.5514

Soto, C. J., & John, O. P. (2014). Traits in transition: the structure of parent-reported personality traits from early childhood to early adulthood. *Journal of Personality*, *82*(3), 182-199. https://doi.org/10.1111/jopy.12044

Tassone, D. (2023). *Personality matters: predicting the acceptance of generative artificial intelligence through personality traits and job insecurity* (Unpublished

Master's Dissertation, Universidade Católica Portugues, Portugal. https://repositorio.ucp.pt/bitstream/10400.14/42713/1/203327144.pdf

Thomas, G. (2011). A typology for the case study in social science following a review of definition, discourse, and structure. *Qualitative inquiry*, *17*(6), 511-521. https://doi.org/10.1177/1077800411409884

Usher, E. L., & Pajares, F. (2008). Sources of self-efficacy in school: Critical review of the literature and future directions. *Review of educational research*, *78*(4), 751-796. https://www.jstor.org/stable/40071145

Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research, 11*(4), 342-365. https://doi.org/10.1287/isre.11.4.342.11872

Venkatesh, V., & Bala, H. (2008). Technology Acceptance Model 3 and a Research Agenda on Interventions. *Decision Sciences, 39* (2), 273-315. https://doi.org/10.1111/j.1540-5915.2008.00192.x

Wang, Y., Liu, C., & Tu, Y. F. (2021). Factors affecting the adoption of AI-based applications in higher education. *Educational Technology & Society*, *24*(3), 116-129. https://www.jstor.org/stable/10.2307/27032860

Wang, Y. Y., & Wang, Y. S. (2022). Development and validation of an artificial intelligence anxiety scale: An initial application in predicting motivated learning behavior. Interactive Learning Environments, 30(4), 619–634. https://doi.org/10.1080/10494820.2019.1674887

Zorlu, S., & Ünver, G. (2022). Predictive roles of self-regulatory learning strategies and self-efficacy beliefs on English language learning achievement. *Turkish Journal of Education*, *11*(2), 74-92. https://doi.org/10.19128/turje.841709