Impact of Perceived Educational Value and Usability of AI Tools on Undergraduate Students' Learning Autonomy

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The rapid adoption of the Artificial Intelligence (AI) technology in the sphere of higher education promises to stimulate better learning progress, as well as promote the development of autonoetic learning. However, the extent of student perception towards AI tools impacting their self-directed learning trends is not researched to an adequate extent. To investigate these relationships, it is a quantitative research design that used a correlational approach. A total of 370 undergraduate students of a number of universities were used as a sample, and stratified random sampling was applied. The data collection was conducted on the basis of a modified questionnaire resolving the vision of AI tools regarding their educational and usability worth, and learning autonomy of students. The instrument was tested and showed a sufficient degree of reliability. Regression analyses also revealed that the perceived educational value and usability of the AI tools were positively related to the student learning autonomy and thus implied that the students perceiving AI tools as relevant and easy to use are more likely to engage in self-directed learning. Based on the results of the conducted research, it is suggested that teachers and curriculum developers should integrate AI technologies that are pedagogically applicable and easily available, and learning institutions should provide resources and information on how learners can use such technologies. The next study should study new variables such as AI literacy, subject-specific situations, and longitudinal implications in order to gain a better insight into the influence of AI in autonomous learning encouragement.

1. Introduction

The fast adoption of artificial intelligence (AI) in the learning environment has greatly transformed the modern learning and teaching processes. Intelligent tutoring systems, adaptive learning platforms, automated assessment tools and generative AI applications are all examples of AI-based learning systems that are progressively being used to promote instructional efficacy and learner assistance. Such tools have the benefits of personalized learning experiences, instant feedback, and adaptable access to learning materials, and are thus disrupting the usual learning environment into a more interactive and learner-centered environment (Holmes et al., 2022). With the rising trend in the uptake of AI technologies, it has become critical to understand how students perceive the technologies in order to make their application in education meaningful and sustainable. The perceptions of the students concerning the educational usefulness and value are some of the determinant factors that affect the successful implementation of educational technologies. Perceived educational value refers to the faith that learners hold regarding the levels in which AI tools can be important in enhancing their educational outcomes, perception, and academic growth. The usability, conversely, is an indicator of how easy these tools are seen to be, user-friendly, as well as something that can be easily accessed with little effort. Studies based on technology acceptance models believe that learners are better equipped to implement and successfully use tech to gain greater convenience with tech devices as they perceive them to be useful and useable (Scherer et al., 2020; Teo, 2021; Oad et al., 2024). Whereas the use of AI tools in improving the involvement, motivation and achievement among students has widely been studied, comparatively less focus has been given to its effect on learning autonomy. Learning autonomy is the ability of students to take the initiative of their own learning by setting of goals, self-monitoring, making decisions as well as regulation of learning strategies. Independent learners are in a better place to suit the complicated learning conditions and participate in the lives long learning (Zimmerman, 2022).

Autonomy is especially significant in the context of learning that occurs with the assistance of AI, since in such a case the students tend to work with learning technologies by themselves without close supervision of tutors. Recently, there were empirical studies that suggested that AI tools can be used to achieve the independence of learning because it provides self-paced learning, personal feedback, and more control over learning processes (Khosravi et al., 2022; Zhai, 2022; Naeem et al., 2022). Once the students see AI tools as an educational resource and understood as easy to use, students will be interested in using such technologies to learn independently, which will enhance their feeling of autonomy. Nevertheless, most empirical studies involve the exploration of such relationships have been undertaken in highly technologically developed settings, which creates a gap in the knowledge concerning the impact of AI tools on developing areas in terms of learning autonomy. The application of AI-based learning tools is in the infancy phase in the Pakistani education setting. Despite the growing introduction of digital technologies in secondary and higher education complexes, there is still very little empirical research on the psychological and self-regulatory conditions of lessons with the support of AI.

The academic performance of the students in District Shaheed Benazirabad has been shown by the previous works to be positively impacted through AI-based learning tools, and it is possible to project that such technologies can significantly influence the level of academic results of students (Samo et al., 2024; Kolachi et al., 2024). However, the academic performance is but one aspect of the learning success and there is the need to broaden this line inquiry to higher levels of learning outcome like learning autonomy. The way the educational value and usability of AI tools are perceived by students and impact their learning autonomy is an essential issue that educators, policymakers, and the developers of educational technologies need to understand. This information may also be used to design and initiate AI-enhanced learning spaces that do not only improve the performance but also enables students to become independent and self-directed learners. This is especially so in situations as in Shaheed Benazirabad, encouragement of learner autonomy has the potential to help in enhancing learners' educational resilience and flexibility. Thus, the current paper will focus on investigating the effects that perceived educational value and usability of AI tools can have on the learning autonomy of students in District Shaheed Benazirabad. The proposed study will advance the existing literature regarding AI and learning autonomy, as well as contribute to the existing body of literature by offering a context-specific insight that would facilitate the evolution of future educational practices and policies.

Over the last few years, the use of artificial intelligence (AI) tools in the educational field has become increasingly fast, and it has provided numerous opportunities to accomplish the personalized, flexible, and technology-based learning. Previous studies have been mostly concentrated on the effects of AI-based tools on enhancing student engagement and academic outcomes with an outcome-based measure of learning success (Holmes et al., 2022; Samo et al., 2024; Shah et al., 2024). Nevertheless, the growing dependence on the AI-based learning environment makes students take more significance in the process of managing their learning processes and, consequently, learning autonomy as an essential educational outcome becomes more crucial. Although the application of AI tools is on the rise, very little empirical research has been conducted in examining the impact of the perception of students regarding the value and usability of the educational tools on their learning autonomy, especially when learning is in the development stage. Current carried out studies have covered the areas of technology acceptance and performance results, which leaves a knowledge gap on the psychological and self-regulatory aspects of AI-assisted learning (Scherer et al., 2020; Zimmerman, 2022; Akram et al., 2024). The wide divide can be found in other areas like the District Shaheed Benazirabad, where contextual factors might influence how students learn to use AI tools in different ways. It is necessary to address this gap to educate the efficient design and implementation of AI-based learning tools that are not only beneficial to performance but contribute to a student learning not only to perform but also to learn independently and autonomously.

1.2 Aim and Objectives of the Study

The aim of this study is to examine the influence of the perceived educational value and usability of AI tools on students' learning autonomy at the university level.

1.3 Objectives

1. To examine the influence of the perceived educational value of AI tools on students' learning autonomy at the university level.

2. To analyze the relationship between the perceived usability of AI tools and students' learning autonomy at the university level.

1.4 Research Questions

1. What is the influence of the perceived educational value of AI tools on students' learning autonomy at the university level?

2. What is the relationship between the perceived usability of AI tools and students' learning autonomy at the university level?

This work is important because it builds on the current literature on the topic of artificial intelligence application in education, shifting it to alternatives other than performance-based results, namely the learning autonomy presented by students, which is a critical element of self-regulated and lifelong learning. The research offers empirical data on the psychological and self-directed learning advantages of education supported by AI-facilitated learning platforms through considering the impacts of the perceived education value and usability of AI tools on autonomy in learning. The results will have a practical implication on teachers and higher management of universities as they will help identify and apply AI tools that are both educationally significant and user-friendly in addition to being technologically superior. The research is also useful in the theoretical explanation of the technology acceptance, as it contextualizes its constructs in frames of autonomous learning. It is assumed that the results will be informative to policy makers and creators of educational technologies in how they can utilize AI based learning technologies to facilitate independent and self-directed learning, especially in emerging educational environments.

2. Literature Review

2.1 AI Tools in Higher Education

Due to the development of adaptive technologies, learning analytics, and intelligent support systems, the incorporation of artificial intelligence (AI) tools into higher education has become a faster process. AIs help with the customized learning experience by changing their material delivery to the needs of the learners and providing them with real-time academic assistance. According to the recent empirical studies, AI-supported environments contribute to flexibility, accessibility, and learner control that are critical features of the modern system of higher education (Chiu and Chai, 2020; Ahmad, Sewani, & Ali, 2024). Due to the growing dependence on AI-based solutions in universities, there has been a pressing need to understand how students perceive these tools so that the use of AI in education can be effectively practiced. The studies have shown that technology by itself cannot ensure meaningful learning results but the perception of learners will influence the extent to which AI tools can be successfully used (Al-Fraihat et al., 2020). In its turn, it implies that when assessing educational environments that are supported by AI, scholars have an imperative to scan psychological and perceptual factors.

2.2 Perceived Educational Value of AI Tools

Perceived educational value refers to the estimations learners have associated with the scale of to which AI tools can lead to enhancing the quality of learning, the level of conceptual learning, and the scholastic advancement. In education studies, perceived value is considered to be a major factor that defines whether digital tools will be integrated in learning activities in a meaningful way by the learners. Students feel more likely to utilize AI tools not only when they are perceived as valuable in the educational context but also when they are willing to use them not in line with their mandatory commitments but in personal and independent studying engaging activities (Hew et al., 2020; Ahmad et al., 2024). Factors such as AI tools that can offer individualized feedback, adaptive assessment and smart learning recommendation allow learners to fulfill personal learning requirements and in so doing, enhance their trust in their ability to exert control to learning tasks independently. The recent empirical evidence suggests further that the perceived educational value is a significant factor that predicts the potential of learners to use AI systems in making academic decisions, solving problems, and self-studying (Zawacki-Richter et al., 2021; Jabeen et al., 2023). This dependency is an indication that school-based learning is moving towards a student-based and learner-centered learning modes. However, as much as there has been a growing amount of evidence that indicated an association between perceived educational value and technology adoption and academic achievement, a lot of the literature available is performance-based. In this regard, the contribution of perceived educational value to the development of higher-order learning outcomes, specifically learning autonomy, is not yet well investigated and deserves more empirical data concerning the topic.

2.3 Usability of AI Tools in Learning Contexts

The aspect of usability is a key element that determines how students engage with AI tools in education. It involves usability and user-friendliness, simplicity of user interface design and access to options, how effectively AI solutions can be employed without going out of his way. In the educational context, usability is what makes or breaks the matter where the learners will be able to, manipulate technological systems independently, without any sense of frustration or misunderstanding. As per the recent research, high usability significantly lowers the cognitive load of learners so that they could focus more on learning activities instead of coping with the technical complexities (Papanastasiou et al., 2021; Imran et al., 2023; Ahmad et al., 2025). The issue of usability is particularly significant in AI-based learning exercises since most learners often use the tools on their own and outside the instructional guidelines of the classroom. Empirical studies indicate that accessible AI so that users can develop a continuous interaction pattern and facilitate self-directed learning processes would be promoting learners to research learning functions, resources, and their progress without additional guidance (Liu et al., 2022; Akram et al., 2024). The clearly articulated system feedback and intuitive interfaces can enable users to make wise choices in regards to their learning tasks and hence promote self-regulated learning. On the other hand, the interfaces can be poorly designed or complex enough to prevent the liberty to learn only to a certain extent as it can make learners more dependent on the instructors or technical

support. To this end, usability is important in the definition of whether AI tools may serve as facilitators of autonomous learning or impediments to successful autonomous interaction.

2.4 Learning Autonomy in Higher Education

Learning autonomy is a well-known vital outcome of higher learning especially in learning settings that are technologically endowed. It means the ability of learners to be responsible in setting goals, tracking the progress, and assessing the results of learning. The autonomy in learning is linked to increased intrinsic motivation, openness, and lasting educational achievement (Ryan and Deci, 2020). Recent studies note that autonomy is not necessarily a by-product of using technologies but it depends on the way learners view the technology to manage their learning requirements (Henrie et al., 2021; Imran & Akhtar, 2023; Ahmad et al., 2024). Learning environments that make learners have control over the learning trajectories and feedback mechanisms would tend to encourage more autonomous learning behaviors with the use of AI.

2.5 AI Tools and Learning Autonomy

According to the emerging literature, AI tools have a significant potential to promote learning autonomy, as they can serve as the most efficient means to support the major self-regulated learning strategies, which include goal setting, reflection, time management, and progress monitoring. The Intelligence Fleet of AI-powered feedback systems, intelligent tutoring engines, and learning analytics dashboards can help learners gain independent and on-time and personalized feedback about the learning progress to understand what and where to improve learning strategies to address weaknesses and capitalize on strengths (Jivet et al., 2020; Ahmad et al., 2024). The above-mentioned AI-enhanced features will enable learners to have more control over their learning processes, which is rather consistent with the main idea of autonomous and self-directed learning. Furthermore, AI technologies make learning flexible and self-paced, which means the students can learn the materials in their own way and suit their personal needs and preferences. Having such flexibility motivates the learner to take charge of his or her academic advancement and in addition to, making thoughtful choices as far as learning activities are concerned. Nevertheless, despite the increasing liberation of the AI tool as the facilitator of autonomous learning, limited empirical studies are explicitly correlated with the perceptions of AI tools as facilitators of learning autonomy, especially their perceived educational and usability value. The gap in this study is particularly strong in the developing education settings, where differences in technological infrastructure, computer literacy, and student preparedness can cause a major difference in the efficiency of AI-enabled learning environments. As a result, it is necessary to conduct more empirical studies to learn better the role of AI devices to promote learning autonomy in various academic environments.

2.6 Theoretical Framework

The current research is based on established theoretical outlooks, which discuss acceptance of technological aspect of education by students, and its impact on psychological outcomes associated with the learning conditions. In particular, this paper relies on the Technology Acceptance Model (TAM) and Self-Determination Theory (SDT) to explore the

influence of the perception that students have towards AI tools that will define their learning autonomy. The combination of these theories will offer a full perspective of the technological and motivational sides of an AI-based learning environment.

The Technology Acceptance Model (TAM) provides a sound theoretical framework of understanding the perceptions related to the acceptance of artificial intelligence tools by students. TAM states that perceived usefulness and perceived ease of use are the two main factors that determine the intentions people have towards the adoption and use of technology. These constructs have been widely used in the learning environment to examine the discussions of the acceptance of digital learning systems and new technologies among the learners (Venkatesh & Bala, 2021; Hafeez, Iqbal, & Imran, 2021; Ahmad, Noorani. & Sewani, 2025). Perceived educational value in the current research reflects the essence of the principle of perceived usefulness since it reflects the beliefs of the students on how much the AI tools can be useful in improving the quality of learning and academic growth. Similarly, the notion of usability is equal to that of perceived ease of use, where the focus is put on the impressions of students of easy interaction and access in chances of using AI-tools.

As an extension of TAM, Self-Determination Theory (SDT) focuses on autonomy as a primary psychological need leading to intrinsic motivation, successful learning, and self-regulation (Ryan & Deci, 2020). Considering SDT, autonomy-supportive learning environments allow autonomy to be achieved, where the learners take charge of their learning processes by making independent decisions, setting goals and self-monitoring. This autonomy can be achieved by AI tools that are viewed as educationally useful and easy to go through as the tools allow a learner to independently control learning processes and control the pace of learning. Combining TAM with SDT, the given study will create a strong theoretical prism that will connect the perceptions towards technology with learning autonomy as one of the psychological outcomes of students. The study is supported by this hybrid framework that explains the manner in which perceptions of AI tools are used to bring about autonomous learning behaviours in institutions of higher learning.

Even though there is a growing research interest in AI-plied education, a lack of empirical studies analyzing psychological outcomes and self-regulation following the usage of AI tools exists. Specifically, the lack of focus has been placed on the nature of how perceptions of students with regards to the practical and educational value of AI tools impact the learning autonomy, particularly in the university setting. The available literature largely has focused on technology adoption, engagement and performance-based performance and seldom on the high-order learning properties that include autonomy and self-regulation. Additionally, most of the empirical data is technologically progressive in its origin, with developing areas being under-represented in the literature. To fill this gap, the current research examines how perceived educational value and usability of AI tools affect learning autonomy in students of a specific setting (District Shaheed Benazirabad) and thus adds context-specific information to the existing and ever-growing body of research on AI in education.

2.8 Conceptual Framework

Figure No 1: Conceptual Framework
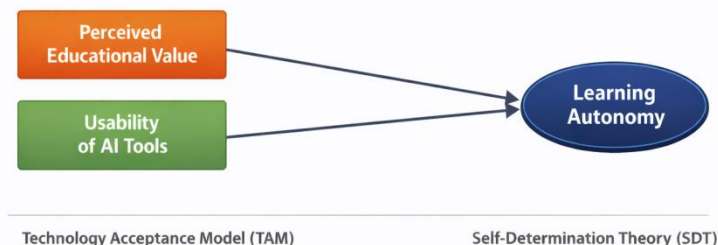
The theoretical framework of the current research illustrates the hypothesized connections between the perceptions of students towards the use of AI tools and their learning freedom. In this concept, the educational perception of AI tools and usability of AI tools will be iii, whereas learning independence of students will be the dependent variable. The framework presupposes that the opinions of students in relation to the usefulness and simplicity of the interaction with AI tools are one of the influential factors in determining the ability to learn autonomously. In particular, as perceived educational value indicates, students have convictions about how much AI tools can be helpful in increasing the quality of learning, comprehension, and academic growth. Students are more likely to use AI tools to engage in self-regulated and independent learning, make decisions and use the tools as educational resources when the latter is perceived as a valuable tool in the educational process. On the same note, usability is the perceptions of students with regards to the ease and accessibility, and ease of use of AI tools. The usability is also high, allowing the learners to interact with AI applications without unnecessary efforts, thus facilitating self-directed exploration and self-directed learning behaviour. The model builds on the theory of Technology Acceptance Model (TAM) and Self-Determination Theory (SDT). TAM offers the technological approach that clarifies the effect of the perceived usefulness and ease of use on the users acceptance of technology which in this case are operationalized in terms of perceived educational value and usability. SDT adds to this point of view because it emphasizes the importance of autonomy in learning as one of the primary psychological consequences that realization when learners feel in control and independent in their learning activities. In combination, these theoretical backgrounds justify the hypothesized direct correlations between the perceptions of AI tools and the learning autonomy of students.

2.9 Research Hypotheses

H1: There is a significant influence of the perceived educational value of AI tools on students' learning autonomy at the university level.

H2: There is a significant relationship between the perceived usability of AI tools and students' learning autonomy at the university level.

4. Research Methodology

3.1 Research Design

The current investigation was in the form of quantitative research where a correlational research design was implemented. The quantitative research was suitable because it facilitated the objective measurement and statistical analysis of numerical data that were collected using a structured questionnaire. It is a type of design that is typically utilized to analyze the associations between variables and the concept of hypothesis testing in the educational research (Creswell, 2014). The correlational design was found appropriate in this research since it involved the investigation of the correlations between the educational usefulness of AI tools and the usability of AI tools and the autonomy of students in their learning without controlling any forces. This method has made it easy to examine phenomena that occur in natural settings as observed in university learning in District Shaheed Benazirabad.

3.2 Population

The research sample was a group of undergraduate students at the universities in the District Shaheed Benazirabad of the public sector. The total population was comprised of about 8,950 undergraduate students spread over three public universities namely; Quaid-e-Awam University of Engineering, Science and Technology (QUEST), Peoples University of Medical and Health Sciences (PUMHS), and Shaheed Benazir Bhutto University Shaheed Benazirabad (SBBU 5). The choice of these universities was due to the essential fact that these are the primary large public universities that act within the district and have an active use of digital and AI-based learning tools.

3.3 Sampling Technique

The proportionate stratified random sampling method was used to guarantee adequate sample of representation of students in each university. The samples were proportional in the universities and were used to divide the population into three stratums depending on their population size. Simple random sampling was used within the various stratum to ensure that all the students had equal opportunities when it came to selection. The method minimised sampling bias and increased the generalisability of the results.

3.4 Sample Size

Yamane (1967) formula was selected to determine the sample size because the studies involved a known population and the level of confidence is 95 per cent. A sample size of 370 undergraduate students was reached through considering the overall population of students 8,950. The sample was administered proportionately in the three universities, which is presented in Table 1.

Table No 1: Population and Sample Distribution

University	Population (N)	Sample (n)
QUEST	3,750	155
PUMHS	3,100	128
SBBU SBA	2,100	87
Total	8,950	370

3.5 Data Collection Tool

The structured questionnaire was designed based on existing validated instruments and used to gather data with the help of a structured questionnaire. The questionnaire had two sections. The information was collected in the first section, which focused on demographics, such as gender, age, year of study, and university affiliation. The second section assessed the perceptions of the important constructs of perceived educational value of AI tools, usability of AI tools, and learning autonomy on a five-point Likert scale (Strongly Disagree 1, Strongly Agree 5). To establish the significance of perceived educational value and usability, items were based on the existing literature regarding technology-acceptance, whereas learning autonomy were based on studies regarding autonomous and self-regulated learning. Subject experts revised the questionnaire to make sure it ascertained clarity, relevance, and content validity.

3.6 Data Collection Procedure

The information was obtained by using an online survey via Google Forms, thus allowing obtaining a significant amount of data in a large sample (Cohen, Manion, and Morrison, 2018). Informed consent was obtained and the goal of the study explained to the participants. People were given permission to participate in the study voluntarily and were placed under pressure to be open to give answers. The data collected were automatically saved into a safe database where they were to be analyzed.

3.7 Data Analysis Techniques

The data obtained were analyzed with the help of the Statistical Package of the Social Sciences (SPSS), version 26. Demographic characteristics and variables in the study were summarized using descriptive statistics (frequencies, percentages, means and standard deviations). Pearson correlation coefficient was used to evaluate the associations between the perceived educational value, the usability of AI tools, and the learning autonomy. Moreover, the predictive value of perceived educational value and usability was determined using simple linear regression analysis on the learning autonomy of students. All the hypotheses were that of the 0.05 level of significance.

3.8 Research Ethics

Ethical considerations were strictly followed in the research. It was voluntary participation and the respondents were assured of confidentiality and anonymity. No identifying data was obtained and participants were told that they would not be penalized in case they requested to be pulled out of the research. The research adhered to the set of ethical rules in guaranteeing that the research was conducted with respect, fairness and integrity.

4. Results and Findings

This part of the research describes the statistical findings and their correlation. The sample used is the undergraduate students of three university institutions that are located in District Shaheed Benazirabad and are under the control of the Ministry of Education of Pakistan. The coding and analysis of the responses were done in SPSS (Version 26) so as to be accurate. The results include, the demographics of the respondents, the reliability of the instruments used, the descriptive statistics of the study variables, correlation analysis, and hypothesis testing of the study variables through regression, which meet the study aim and objectives as far as learning autonomy of the students is concerned.

4.1 Demographic Characteristics of Respondents

Table No 2: Gender Distribution of Respondents

| Gender	Frequency (f)	Percentage (%)
Male	222	60.0
Female	148	40.0
Total	370	100.0

Figure No 2: Gender Distribution
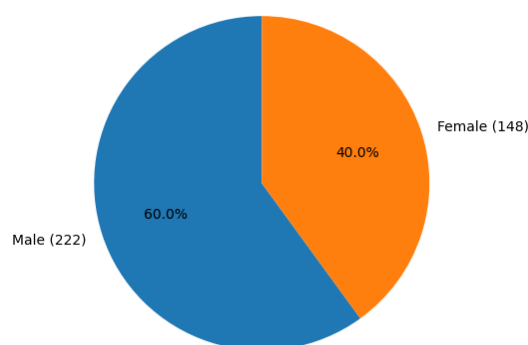
The above table and graph indicate the gender distribution of the participants in the research. Out of 370 respondents found in the undergraduate group, 222 respondents (60%) were male, and 148 respondents (40%) were female. Therefore, it turned out that most of the participants were male.

Table No 3: Age Group Distribution of Respondents

| Age Group	Frequency (f)	Percentage (%)
18 years or less	32	8.6
19–21 years	160	43.2
22–24 years	167	45.1
25 years and above	11	3.0
Total	370	100.0

Figure No 2: Age Distribution

Age Group Distribution of Respondents (N = 370)
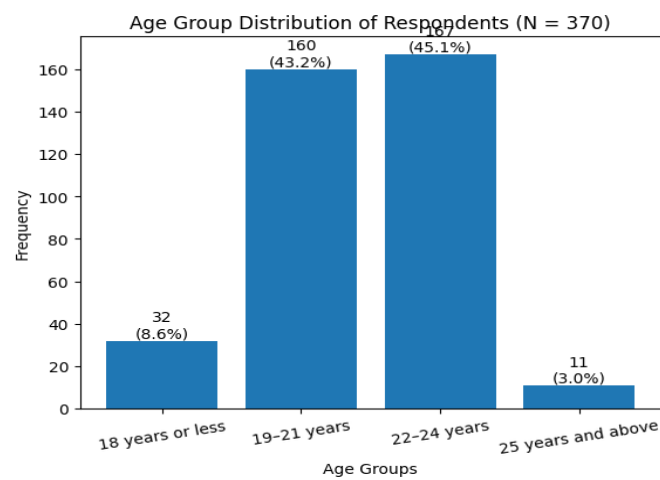
The age distribution of the participants was represented in the table and graph above. There were 370 students that were covered. These were 167 respondents (45.1%) between 22-24 years, and 160 respondents (43.2%), who were between 19-21 years. Fewer in number, 32 respondents (8.6%), were 18 years old or less, only 11 respondents (3%) were 25 years old and above. This distribution suggests that the sample mainly comprised of young adults actively involved in the higher education field with 22-24 age group having the biggest proportion.

Table No 4: Year of Study Distribution of Respondents

Year of Study	Frequency (f)	Percentage (%)
1st Year	105	28.4
2nd Year	52	14.1
3rd Year	19	5.1
4th Year	194	52.4
Total	370	100.0

Figure No 3: Study o the Participants
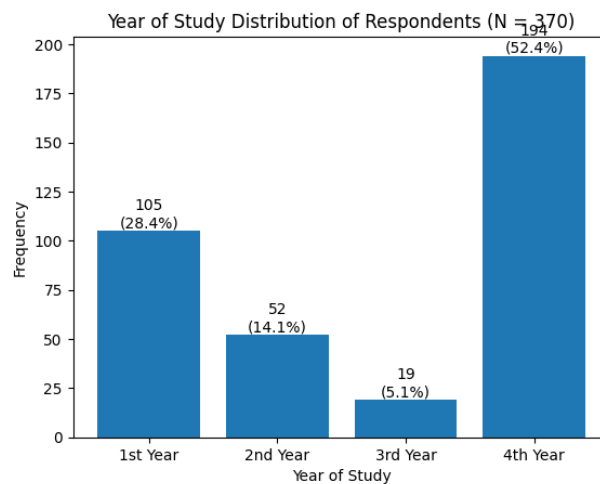
The above table and graph present the year of study of the participants. The total participants were 370, Fourth year students had the highest number of 194 who made up 52.4 %of the sample. This was conducted by first-year students (105 respondents, 28.4%). Second year students on the other hand included 52 respondents (14.1%), and third year students were the fewest with 19 respondents (5.1%). Hence, the sample population comprised of mostly fourth-year students.

4.2 Reliability Analysis

Table 5: Reliability Statistics (Cronbach's Alpha)

Variable	Items	Cronbach's Alpha (α)
Perceived Educational Value	7	.835
Usability of AI Tools	7	.826
Learning Autonomy	7	.787
Overall	21	.901

The analysis of reliability showed internal consistency satisfactory in all the variables of the study. Cronbach's alpha coefficients of Perceived Educational Value (0.835), Usability of AI Tools (0.826), and Learning Autonomy (0.787) were above the traditional expected alpha of 0.70 and thus confirmed the reliability of each scale. Additionally, total consistency and reliability of the 21-item instrument was α = .901 which is also excellent consistency. These results testify to the validity of the questionnaire as an instrument in the measurement of the study constructs and the appropriateness of the latter to be subject to further statistical procedures.

4.3 Descriptive Statistics

Descriptive statistics suggest that the general perception of respondents is quite positive on each of the variables in the study. Perceived Educational Value of AI Tools showed the largest mean (M=4.34, SD=.497) indicating that students think that AI tools have a positive impact on their learning. The average score of Learning Autonomy was also high (M=4.21, SD=.443), which suggests that students consider them autonomous learners when

using AI tools. Similarly, the Usability of AI Tools had a favorable mean (M= 4.14, SD=.567) as students found them easy to use. Small standard deviations used by all the variables imply a high percentage of respondent agreement, which shows uniformity of perceptions.

Table No 6: Descriptive Statistics of Study Variables

Variable	Mean (M)	Standard Deviation (SD)
Perceived Educational Value	4.34	.497
Usability of AI Tools	4.14	.567
Learning Autonomy	4.21	.443

4.4 Pearson Correlation Analysis

Table No 7: Pearson Correlations among Variables

Variables	1	2	3
1. Perceived Educational Value	1		
2. Usability of AI Tools	.593**	1	
3. Learning Autonomy	.589**	.552**	1

Note. ***p < .01 (two-tailed).

Pearson correlation showed statistically significant, positive correlation among all variables of the study at the 0.01 level of significance (two tails). Perceived Educational Value had a moderate positive relationship with Usability of AI Tools (r =.593, p = .000), which means that students with a high perceived educational value of AI tools will also perceive them as simple to use. Learning Autonomy also showed a strong positive correlation with Perceived Educational Value (r =.589, p = .000), implying that the higher the perceived value of AI tools, the higher the student autonomy in learning. Likewise, Usability of AI Tools had a significant positive correlation with Learning Autonomy (r = .552, p =.000). These results indicate that perceived educational value as well as usability are significant variables when it comes to the learning autonomy of the students.

4.5 Hypothesis Testing

4.5.1 H1: There is no significant effect of perceived educational value of AI tools on students' learning autonomy.

Table No 8: Model Summary

R	R²	Adjusted R²	Std. Error
.589	.347	.345	.359

The summary of the model shows that there is moderate positive relationship between the two study variables where the correlation coefficient (R) is 0.589. The coefficient of determination (R^2) of 0.347 supports the idea that nearly 34.7% of the variance of the undergraduate students in their learning autonomy is explained by perceived educational worth of AI tools. As a result, the effect of the independent variables in explaining student autonomy in learning in the study universities is substantive.

Table No 9: ANOVA

Source	df	F	Sig.
Regression	1	195.40	.000
Residual	368		
Total	369		

The analysis of variance outcome showed that the regression model is significant F(1, 368) =195.40, p =.000, which means the research model is fitting the data. The value of the significance is less than the traditional cutoff of 0.05 thus establishing statistical significance of the results.

Table No 10: Coefficients

Predictor	B	β	t	Sig.
Constant	1.928	—	11.973	.000
Perceived Educational Value	0.525	.589	14.234	.000

The simple linear regression analysis was carried out to find out whether the perceived educational value of AI tools predicts the learning autonomy of students. This model has a t-value of significant value t = 14.23, p = 0.000 and it has proved that perceived educational value is a valuable predictor of learning autonomy. As can be seen, perceived educational value has a positive impact on learning autonomy of students (B = 0.53, b =.59) whereby an increase in perceived educational value correlates with increased learning autonomy in students. Based on this, study reject the null hypothesis saying that there is no significant impact of perceived educational value of AI tools on learning autonomy on the part of students.

4.5.2 H2: There is no significant effect of usability of AI tools on students' learning autonomy.

Table No 11: Model Summary

R	R²	Adjusted R²	Std. Error
.552	.305	.303	.370

The investigation indicates that there is a positive relationship between learning autonomy of students and the usability of AI tools. The relationship between the two variables is moderate (R = .55). The model explains 30.5% of the variation in the learning autonomy of students (R^2 = .31) indicating that students who find AI tools more use-able are more likely to portray higher learning autonomy.

Table No 12: ANOVA

Source	df	F	Sig.
Regression	1	161.80	.000
Residual	368		
Total	369		

In this ANOVA table, the degrees of freedom (df), F -value, and the p -value are given of the regression model. The findings demonstrate the regression model to be statistically significant, F(1, 368) = 161.80, p = .000. As the p-value is lower than the standard.05 the model shows that it bears a reasonable fit with the data hence a solid representation of the relationship between the independent and dependent variable.

Table No 13: Coefficients

Predictor	B	β	t	Sig.
Constant	2.417	—	17.337	.000
Usability of AI Tools	0.432	.552	12.951	.000

A linear regression analysis was conducted to investigate the impact of usability of AI tools on learning autonomy of the students. The results suggest that the predictability of learning autonomy among students is positive based on the usability of AI tools. The unstandardized regression coefficient is B = 0.432 which states that the change in learning autonomy by one unit score in the perceived usability is approximated to 0.43. The form of the standardized coefficient, b =.552, indicates a moderate-strong positive correlation. Our AI tool usability t -value is statistically significant, t = 12.95, p = <.001, which means that usability is a significant contribution to the model. In this respect, the research hypothesis is rejected.

4.6 Summary of the Results

Table No 14: Summary of Hypothesis

Hypothesis	Relationship	β	R²	Sig.	Decision
H1	Perceived Educational Value → Learning Autonomy	.589	.347	.000	H1 Rejected
H2	Usability of AI Tools → Learning Autonomy	.552	.305	.000	H2 Rejected

4.7 Discussion of the Findings

According to the results, the perceived educational value of AI tools has a positive correlation with learning autonomy of learners. Students, who see AI tools as the mean of education and help, also show more independent learning in their knowledge. This conforms to the previous studies that posit that the perceptions of various learners about the usefulness and relevance of AI technologies can positively influence their self-directed learning practices (Suryana & Hamsar, 2025); Haider et al., 2024). When the students note the importance of educational tools, they would use planning, monitoring, and reflection techniques that are typical of independent learning. The findings support the belief that the combination of AI tools and straightforward educational advantages can support scaffolding of self-regulated learning of students and facilitating learner agency (Frontiers in Education, 2025; Akram, Fatima, & Ahmad, 2024).

Likewise, the paper established that the usability of AI instruments has significant associations with learner autonomy in learning. Ease of using AI tools enhances the motivation among the learners to use it in their learning process and, therefore, promotes independent decision-making and autonomous learning practices. The result could be explained with the fact that prior studies have shown that usability of the educational technologies is one of the most important parameters that should be considered in promoting self-regulated learning; when the interface is intuitive and easy to interact with, it enables students to concentrate on the learning strategies, instead of overcoming the technological hurdles (Ouyang, 2025; Pirzada, Tabassum, & Ahmad, 2024). Effective AI tools that learners feel are within reach motivate them to be proactive, track their learning process and re-strategize, which empowers them to undertake learning activities on their own.

5. Conclusion

The present research reviewed how perceived educational value and usability of AI tools affected the learning autonomy of undergraduate students. The findings mean that the two variables have positive relationship towards the capacity of students to learn independently. There are greater chances that students who value AI tools as educationally significant will plan, monitor and regulate their learning processes effectively thereby showing greater autonomy levels. Equally, students who can easily access AI tools and feel comfortable using them are more likely to adopt the use in studying habits and reinforced the expression of independent learning habits. The results highlight a crucial factor in the successful adoption of AI tools in higher education, which is not only the availability but also students are the ones who have to perceive their educational relevance and usefulness. The enablers can be pedagogically gainsaid and user-friendly tools that can enable students to

assume control of their learning. This points to the possibility of AI technologies to go beyond being passive learning resources and actually serve as learning stimulants in a higher education environment when it comes to promoting self-managed and autonomous learning. Comprehensively, the research adds to the accumulating body of literature supporting the idea that AI-based learning settings can promote the sense of learner agency under the conditions of being developed with the focusing on both the value and usability as education factors. Considering the experiences and perceptions of students, educationalists and instructional designers can provide a stronger support on autonomous learning ultimately improving the academic engagement, motivation and lifelong learning capabilities.

5.1 Implications of the Study

This research study has various practical implications of higher education. First, the incorporation of AI solutions that are deemed meaningful in the education process can improve the autonomous learning habits of the students, motivating them to organize, observe, and control their learning more efficiently. Second, it is vital to make AI devices usable and accessible since technological tools that offer user-friendliness tend to be adopted and be proactively applied by learners. A combination of these insights implies that educators and instructional designers must exercise care in the choice and application of AI tools that, not only, will present learning goals but also assure a hassle-free user experience.

5.2 Recommendations of the Study

On the basis of the research results, the following recommendations are offered:

- Adopt AI tools that are pedagogically relevant and user friendly in assisting learners to be autonomous and self-directed in learning.
- Focus on designing AI-enabled learning platforms with intuitive interfaces and clear educational objectives to promote engagement and independent learning.
- Provide training and workshops to make students more familiar with AI tools and, therefore, feel more usable and be able to impact their learning autonomy the most.

5.3 Recommendations for Future Research

According to the results of the current research, it is possible to recommend the following lines of future research:

- Future research needs to examine more variables that might contribute to the learning autonomy of students in AI-enhanced settings, such as AI literacy, online competence, motivation, and support of the teacher.
- The longitudinal research may be carried out and provide information regarding how the perception of students towards the use of AI tools and autonomous learning behaviors evolves with time.
- Studies ought to be conducted on the magnitude of the effects of AI tools in various fields of study since different subject areas may hold the utilization and learning abilities differently.

- Emerging studies can adopt experimental research methods to determine the utility of any particular AI tools or interventions in stimulating autonomous learning and therefore offering more causal evidence.
- It might be beneficial to include qualitative research methods, including interviews or focus groups that would enable seeing the experiences, problems, and methods of the students when utilizing AI tools to facilitate autonomous learning.

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