The Impact of AI Powered Learning Platforms on Student Motivation and Academic Self-Efficacy: A Psychological Perspective

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ABSTRACT

This study was to examine the impact of employing Artificial Intelligence (AI) on academic motivation and affective state of a Pakistani student in the tertiary learning institutions in Pakistan. Adoption of a quantitative research design, it was found that data would be collected basing on a sample size of 300 undergraduate and postgraduate students in the private and the public universities. Each of the respondents was familiar with using AI-based education systems. The stratification random sampling resulted in this fashion so as to reflect the different demographics. Data were analyzed using Pearson correlation, regression analysis and independent samples t-test. Due to the result, a strong positive statistical relationship was found between the use of AI and academic motivation, as high users of AI demonstrated increased motivation in their academic pursuits. Regression analysis also indicated that, AI application emerged to be a far that was capable of predicting academic motivation. In addition to that, the t-test showed that an indication of the emotional well-being had a difference in sign when comparing the use of the AI tools frequently or rarely and the duration of using them also proved a better emotional outcome when used more frequently. The results validate the use of AI in university education as a way to make the learning experience more engaging and beneficial to the mind. The study recommends further educating, institution-based support, and proper use of AI instruments in the classrooms. This was followed by assuring that it was voluntary, confidential as well as protection of data. It correlates with much of the past research that has addressed the beneficial side of technology in education. It provides the advancement of knowledge on AI in education, and it will also give viable recommendations on how it will improve in the future.

Keywords: Artificial Intelligence, Academic Motivation, Emotional Well-being, Higher Education, AI Tools, Student Engagement, Quantitative Research, Regression Analysis, Educational Technology, Pakistan.

INTRODUCTION

In the modern world, technology is transforming the learning process of students. Artificial Intelligence (AI) in education is one of the greatest changes. AI learning platforms refer to the technology that helps

students by using smart technology. These platforms enable individualized learning with the help of monitoring performance and feedback on the students. This makes the students comfortable with being interested and concentrated. A high number of schools and colleges are turning to AI platforms as a means of enhancing learning. Students are able to view videos, get a quiz, and receive recommendations as to what to study next. Such characteristics can make the learning process more motivating among the students since they feel guided and supported on their way to learning (Loglo & Zawacki-Richter, 2023).One element of learning is motivation. When unmotivated, the students are likely not to do their best and complete their tasks. Motivated students have the chances of succeeding in their academic work (Ryan & Deci, 2000). Accordingly, one should learn the impact of AI applications on the motivation of students.

Self-efficacy in academics is defined as the extent to which a student feels competent in the skills to do the school work. The students tend to perform well when they have academic self-efficacy. They are more expressive, they do not surrender as easily as others and they are learning oriented. The applications blended with artificial intelligence might also help students to build up their academic self-efficacy based on the feedback, adaptation of content to the learner, and demanded assistance. Students also feel more competent and independent with such kind of assistance. An example is that a student will be happy when he/she is doing something and gets feedback based on results within a matter of seconds provided through the one of the AI tools and it can boost his/her confidence (Schunk & DiBenedetto, 2022).When students have a chance to get some assistance on the regular basis, the notion of their academic abilities being good becomes even stronger. The paper will talk about how such beliefs are built through the use of the AI platforms in students. The psychological aspect of this study is also of importance as thoughts of confidence and motivation are associated with feelings and mode of thinking. Being able to notice the impact of the AI tools on these psychological factors, educators and institutions can find ways to treat an increased level of technology use in the classroom more effectively (Liaw et al., 2023).

It has been the perception of most researchers that AI has a lot of potential to transform the future of education. But at the same time there are also certain issues. The other learners may feel pressured during the use of the artificial intelligence tools or they may be excessive with them. The thing is that people cannot see themselves connected with the AI-based systems as it lacks a kind of human touch. This is the reason why psychological approach should be taken towards the role of influence of AI. The research will also not just assist the researcher in deciding whether the students are improving their performances under the assistance of the AI tools, but also the sentiment the students have towards using the tools. Well-being, be it emotional and mental or physical health is a very big influence in learning. The fact that the students have an increased motivation and confidence thanks to the AI tools can guarantee many effects in the long run (Holmes, 2019).

Academic Self-Efficacy in the Age of AI

Academic self-efficacy refers to the belief of the student that he will be able to acquire excellence in his studies. Such belief is highly significant since it will influence students in their thinking, feelings, and behaviors. The platforms present individual learning experiences that adapt to the requirements of a student. As an illustration, when a student has a weakness in one subject, then the AI tool provides additional support. As well, it provides immediate feedback that enables the students to understand what they did right or wrong. This helps establishes trust and they keep on learning. It is also through AI that students can learn at their own pace. This relieves the pressure and makes students more in-control of learning. It increases student confidence because they feel that they are the ones in control (Chen et al., 2020),Such development of academic self-efficacy can make students independent students. As

demonstrated in this paragraph, AI platforms can help a student in their faith in being able to excel in environment and in turn provide a solid basis to succeed academically and also be motivated (Lee et al., 2023).

AI solutions assist students to not only learn written material but are also there to guide them emotionally and in mental states. Lots of student's experience stress when they cannot comprehend something or when they are afraid of failing. This fear can be mitigated through the use of AI-powered platforms as they can guide the students step by step. These are the little wins that confidence is based on in the aggregate. When students believe that they are on a good way, they begin to believe in their self-powers. This religion is the core of self-efficacy. Students with the perception that they are able to learn have great possibilities of exploring the emerging challenges, accomplishing tasks and learning. Psychologically speaking, these are the good learning experiences that make the students feel psychologically empowered. They become more ready to handle the academic pressure and succeed in examinations or in assignments. Student progress can also be monitored by AI tools and their achievements be celebrated and this effect increases motivation. All of this helps AI become a useful collaborator in ameliorating student confidence and self-belief(Almutairi, 2025).

The other aspect is that AI tools are used in a learning environment where students feel like there is no judgement. Traditional classrooms also have some students who will not ask questions due to fear that they will not appear strong. However, students will no longer need to fear when they have to repeat a lesson, seek assistance or have extra time by simply using AI. Being an independent and fluid space behavior, this is a permissive educational environment that does not involve shame or pressure. In such an environment, where they are given a feeling of safety and encouragement, the students are more eager to experiment with new things and risk in the learning process. The same thing applies to the development of academic self-efficacy. It is a strong mindset because gradually students start thinking, I can do this. With time, the belief gains force and it manifests in their performance and attitude toward studying at school. The use of AI also promotes growth mindset- giving students the ability to realize that they can get better skills with hard work. It has a bearing on the psychological maturity and academic performance (Chouhan et al., 2025).Thus, the emotional support and learning autonomy provided by AI tools will be able to alter the student self-perceptions. They no longer become afraid of failure and instead develop confidence that they will be able to learn, develop and succeed.

A Psychological Lens on AI in Education

Much of the literature on AI in education focuses on the output such as the test scores, grades and performance of students. It is good, but not all is good. The learning is also affected by emotion, state of mind and how the student feels about himself. Learning can be accompanied by stress, anxiety or fear of failure by most students. These feelings can affect their work and fun of doing so. The AI-based learning systems would alter such emotional experiences. These sites can be motivating, helpful and even exciting to other individuals. There will be certain people who find the non-existent human touch or the enigma of features cool or frustrating. Such emotional reactions are important as they can be translated into the point of influence that will contribute to motivation and support of self-beliefs (Kizilcec, 2024).This is the emotional and psychological aspects that this research is targeted at. It looks into how AI tools would be applied in making students feel more at ease with the learning process or how this process would make it complicated in other cases.

Looking into this psychologically can enable us to get out of marks and test results. So, when learners are supported in the emotional way, they tend to remain in the studying process. With the help of AI systems

and kind reasoning of the mistakes or modest victories dancing, students will feel much safer. This emotional safety will motivate the students to take risks, attempt challenging tasks and learn not to quit in case of failure. Such sensations of security and confidence enhance not solely the outcomes in study but also the drive and psychological condition. On the other hand, students may become de-motivated and disengaged when AI systems are difficult to decipher or not giving any clear feedback, and appear impersonal. This has the capacity to diminish them and consequently reduce self-confidence. Such needle movements are highly critical compared to grades. In the proposed work, we pay attention to the emotional part of the interaction of students with the learning tools provided by AI and the impact that feelings have on learning behaviors and results (Chou et al., 2022).

Finally, the last step is that a teacher and the team in charge of creating the AI must remember that students are not mere users, they are humane learners. They are afraid, hopeful and have different learning patterns. The emotional needs of the students may not be met by using AI tools that essentially level out all of them. Instead, the tools will be created carefully, and students will be viewed as the combination that features emotions and mental attitude. It is concerning a balance between an irrational technology and an emotional intelligence. The AI technologies will not only have to adapt the material but will also be required to respond to the emotion of the students. By way of illustration, affective computing is being implemented into some systems, so they can communicate when they suspect the student is confused or under pressure and offer the support at their end. It would alleviate the level of stress and enhance the learning quality (Baker, 2023).So with that, this paper presents the case of emotionally-informed AI, within education. This is directed towards creation of learning climates that influence the students to learn in a way that will stimulate them, to ensure them, make them feel safe and confident of their chances of learning.

Research Objectives

  ➢ To investigate the relationship between students' use of AI-powered learning platforms and their academic self-efficacy and motivation.
  ➢ To explore the extent to which AI-powered learning platforms influence students' beliefs about their academic capabilities and learning motivation.
  ➢ To examine variations in academic self-efficacy and motivation among students based on demographic characteristics and patterns of AI platform usage.

Problem Statement

Artificial Intelligence (AI) in education is increasing at a high rate in recent years. The schools, colleges, and universities are using AI-powered learning platforms as a way of enhancing student learning. These sites provide individual content, immediate response, and course learning depending on the requiring students and pupils. Although numerous studies have been aimed at the notion that AI tools can and will enhance academic performance or learning performance, there is a lack of studies on the psychological variables, and part of this includes the motivation and academic self-attribution. Such internal conditions play a significant role as they determine the way students perceive the process of learning and their readiness to use their strengths and abilities; they also determine the level of motivation which makes them exert efforts. Depending on the personal traits of the involved students, AI tools may be perceived either as supportive and encouraging or confusing, overwhelming, or completely isolated. It is not possible to determine the consequences of AI in education without being aware of these emotional and psychological changes. The literature has a gap that needs to be filled and this should be done within a psychological perspective.

Significance of the Study

The study is significant since the researchers study the emotional and psychological effect of the study on such platforms on AI rather than academic performance. Students are able to interact with technology more than ever before in the present digital learning setting. The advantages that can be brought by AI tools may include customised learning, self-pacing and embedded help. But whether or not they are successful varies based on the quality of delivery along with the feelings had by students when using them. Providing support and increasing feelings of confidence, motivation, and emotional comfort will facilitate the development of positive learning outcomes, given that AI platforms can achieve that. However, in case the tools lead to confusion or stress, it will be more harmful than helpful. Investigating the motivation and the sense of academic self-efficacy in students, this study reflects on the intensive effect of AI on learners. The conclusions of the research will contribute to the construction of AI-based tools designed to be both effective and emotionally consuming to educators, policymakers, and developers. It will also inform future education practice on the problem of considering the psychological needs when teaching students in a technology driven classroom.

LITERATURE REVIEW

Artificial Intelligence (AI) has gained a lot of progress over the past few years in the education sector particularly in Artificial intelligence driven learning systems. These tools are adapted to encompass the modification of the contents, provide instant feedback and are responsive to the unique learning requirements of the students. AI systems such as intelligent tutoring systems and adaptive learning environment attempt to make the process of learning customizable to a greater extent to make it more interesting and effective. It was found that the choice of AI systems can result in the positive effect of students becoming more successful in their studies and active members of classroom life thanks to personalized learning (Chen et al., 2025).Contrary to the increasing popularity in university use, the majority of available research aims at obtaining grades or grades in tests as the major outcomes. The data on the impact of the AI tools is largely unmanaged; currently there is a very sparse body of evidence on how AI tools are manifesting psychologically, in the case of the students, particularly in the realm of motivation and confidence. This gap is significant since the moods of the learners together with their mindsets may affect the extent to which they learn and adjust to technology. In such a way, the urgence of the impressions of AI tools on academic and emotional experiences in the future is a major topic of research.

Academic self-efficacy and motivation are part and parcel of effective learning and successful upward trend. Academic self-efficacy is a conviction among academic performance that a student has over whatever he/she gets involved in. When students are motivated, have a high self-efficacy, they are likely to concentrate on goals and handle obstacles and not give up on them easily. Personalized support tools and positive reinforcement may be beneficial in increasing learning motivation and confidence by the students by using AI. To illustrate, pupils that get adaptive instructions engage in learning activities more actively with a higher degree of ability feelings (Shorouk et al., 2025).But other studies caution that too much AI can make the students sluggish. Students may develop bad habits of relying solely on AI feedback and neglecting to think through their own strategies or fail to reach the motivation to self-regulate. The issue is similar to the previous study of the development of metacognitive skills and the independence of students. Therefore, despite the fact that AI can provide psychological help, it is an aspect that is accompanied by threats that might require more investigation.

A psychological outlook toward AI in education focuses attention on how emotional responses and assumption mentalities impact the learning process: some students like being taken care of and learn better with AI, while others might get puzzled, frustrated, and even alienated. Emotional responses will largely depend on how human-like or interactive the AI system is and whether the AI system behaves in accordance with students' expectations and needs. For instance, affectively responsive AI agents will motivate learners more compared to robotic or impersonal systems, which lead to discomfort or detachment (Ramadoni & Mustofa, 2022). Self-determination theory and emotional intelligence suggest that positive emotions promote deep learning, whereas negative emotions impair motivation. A number of research studies in educational psychology now emphasize the role that emotional design features in AI software. This implies that there should be emotionally intelligent AI systems that take into account students' emotional and mental states. By incorporating emotional sensitivity within AI programs, engineers are able to enable not just learning success but also positive psychological experiences.

Understanding Motivation and Self-Efficacy in Learning

The concept of motivation comes in to explain why students feel encouraged to embark on the learning process and persist even during the hard times. Motivation is even more important in the learning process that utilizes AI because the students deal with machines rather than human instructors. When learners are supported, challenged and appreciated, they tend to stick around and pursue their learning objectives. A student can be encouraged using AI systems with immediate feedback, gradual guidance and scaling. The systems can act as an internal coach whose effect is to spur one to more favorable results without fear of censure. Besides, it was indicated by (Orji, 2024),that the use of intelligent tutoring systems by students led to the development of increased interest in the tasks and persistence in learning. However, some argue that an AI, can be used to increase the motivation in the short run but it may not always maintain the interest in a long term, unless it is coupled with emotional engagement of students in the educational process. Therefore, the type of motivation which AI brings, be it intrinsic (instigated by themselves) or extrinsic (through rewards), needs to be studied more which will ensure that AI encourages deep and long-term learning interest.

As important is self-efficacy, or the conviction that one can accomplish a task on their own. Pupils who believe in their own abilities are more likely to take on challenges, learn from their mistakes, and put forth constant effort. This sense of confidence can be increased in AI-powered classrooms by using tools that adjust to a student's skill level and provide encouraging feedback. Students who used adaptive AI tools reported feeling more capable and in charge of their educational journey, according to (Lin, 2024).

Such learners shown a low level of anxiety and were more interested in tasks that were difficult to perform. Self-efficacy can however be damaged when the students perceive the AI as challenging, impersonal and that does things without consulting their input. That is why emotionally intelligent AI systems that also answer students not only through the content but also with empathy are in demand. Scholars of educational technology and psychology have come to the same conclusion that the overall academic achievement and emotional well-being can be enhanced by enhancing self-efficacy through effective digital systems (Zee & Koomen, 2016).Thus, the creation of AI tools that would also regard the emotional needs of students is crucial to training self-confident and autonomous learners.

Although AI platforms are very effective tools, it is necessary to design them to prevent undesired consequences. The danger is that students will become heavily reliant on the said systems and leave the actual development of personal thought processes behind. Through excessive reliance on the responses or feedback, that the AI generates, learners may end up forgetting how thinking can be deep, or independent.

There is some evidence that AI used in passive mode may decrease creativity and individual initiative when the students are not engaged to think outside of the system mandatory guidelines. Take the example of a study done by researchers, (Zaman et al., 2023),which states that we have to be cautious in creating overly controlling systems of AI, which gains complete control over the learning progress. Rather, the learning solutions ought to be developed in such a way that they encourage student an independence but also provide friendly guidance. This equilibrium can be utilized to remain highly motivated and to have self-efficacy. It also makes sure that the students are not turned into mere followers of technology but active participants in their house of studies. By associating the design behind AI systems with emotional and psychological concepts, it will be possible to provide education in a way that will empower the learners and connect to them meaningfully.

Emotional Interaction Between Students and AI Tools

Education AI is not only an intelligent machine that assists lessons but also an emotional experience of the student. The emotions of students that are experienced during the adoption of the AI tools can have a significant impact on the learning. Certain students may sense support and confidence, whereas, some of them may feel isolated or disoriented. The emotional responses can define whether they continue or quit. As demonstrated with a study that (Lin & Chen, 2024),conducted, students are more comfortable and positive when AI tools have been created with notice and responding of student emotions in mind. Such systems can motivate these learners and make them feel appreciated. It relates to the theory of self-efficacy developed by Bandura, according to which, emotional states contribute to the confidence and performance. When students learn with a sense of good feeling they will most probably be convinced that they can do it and will work harder. Thus, emotional support ought to be regarded as an important component of AI tool design and not as an add-on feature.

Moreover, the problem of emotional interaction has an explanation of why some students do not work with AI tools. Inability to respond to how a student feels will be frustrating or boring and this happens when an AI machine fails on providing some generic responses or failing to regard the emotion of the student. When, nonetheless, the system possesses friendly, active, individualized feedback, there is greater interest and encouragement on the part of the students. In simple words(Seo et al., 2021),found that when students interacted with AI systems that operated to speak more like a human, they had a higher level of their emotional connection with them and better demonstrated their learning outcomes. This idea affirms the earlier article of(Ismail & Alharkan, 2024),who have noted the growth relating to motivation through adaptive feedback. There is an emotional side to learning and it cannot be ignored. Such tools are more likely to succeed that react not only to the process of learning but also to emotional cues. This does not necessarily mean that AI will be only anticipated to be intelligent, but that it will also respond according to the emotions, where they will in turn make students feel understood even when learning.

Lastly, emotional condition of students to artificial intelligence is what defines the perception that students have on technology during learning. AI may not be used or trusted with recommendations by students who always think they are not listened to, not stressed, or not helped. On the other hand, emotional helping AI is able to de-stress, uplift the spirits and motivate interaction. A research aimed at comprehending the impact of heart-felt digitally engaging platforms on user trust and user satisfaction conducted by (Shin, 2024),pointed out that more user trust and satisfaction can be achieved by using such platforms. This is remarkable in sustainable usage and performance in AI facilitated learning. The element of emotion base, like using a friendly language, or encouraging or showing appreciation of effort, can go a long way in the aspect of how the students will respond to AI. As with the motivation and self-efficacy, the aspect of emotional experience is applied in the construction of confidence and autonomy.

To be able to help the students in the real way, it is essential that AI systems should become human-centered. They should see confusion or upset in students, and they should react in a way that would comfort, and guide them. Artificial intelligence will be implemented along with intelligence and empathy and this will enable in creating a more effective and practical learning process.

Research Hypotheses

H1: There is a significant relationship between students' motivation levels and their interaction with AI-based learning tools.

H2: There is a significant difference in self-efficacy scores among students using emotionally adaptive AI tools compared to those using non-adaptive systems.

H3: There is a significant predictive effect of emotional engagement with AI tools on students' academic performance.

METHODOLOGY

Research Design

The quantitative research method, approach used in this study required collection and analyses of numerical data to determine the connection between motivation and self-efficacy of students and their AI-based learning platform usage. An objective and unbiased process was adopted to check out psychological and intellectual characteristics. The quantitative design had an excellent performance when studying hypotheses that could be employed in investigating the study. It assisted in exploring the extent of the influence of AI-based platforms on students and their motivation and grades. The data was collected using a standardized questionnaire that asked questions about motivation, confidence about their capability in learning, and AI utilization of students. All the statements were formulated on a Likert scale. Patterns and relationships were analyzed with the help of statistical techniques that followed data collection. It was possible to find numerical results to present the results in a reliable and clear way. The research design enabled an accurate and wide perspective on the phenomenon of the AI impact on education and allowed the researcher to make valid conclusions pertaining to a varied and ranged sample.

Population

The population of this study included undergraduate and postgraduate students studying in both public and the privately run universities in Pakistan. Such students were representing different fields which included sciences, technology, business, humanities, and social sciences. To form part of the population, the participants must previously encounter using AI-based tools of education, like intelligent tutoring mechanisms or automated feedback, and/or adaptive learning systems. The institutions are commonly availing these digital systems in order to enhance teacher and learning. The subjects in the present study should have had experience using such tools in their studies because their responses could give real-life responses concerning the effect of AI. Their experiences contributed to the estimation of the correlation relationship between the AI-based learning environments and academic motivation and confidence of the students. The selection of this population was due to the fact that it carried with it an increasing number of digital learning within the higher learning institution. The availability of the students hailing to diverse institutions meant that the research results would signify the actual teaching methodology and the overall impact of AI on the academic environment in Pakistan.

Sample Size

In this study, a sample size of 300 university students was chosen to represent different public and private institutions in Pakistan. This was the number arrived at so as to make the findings statistically significant and at the same time the data gathering could be manageable. The selection was done in such a way that the sample was considerable but it managed to accommodate students with different academic matters and levels and forms of institution. This diversity has assisted in establishing a bigger knowledge on the effectiveness of AI-based learning platforms on the motivation and self-perception of students. In addition to the fact that the research involved participants of different degree programs and academic years, the data was also enriched. The identified students had to fill in a detailed questionnaire regarding their experience with the application of AI tools to learning environments. Their answers gave quantifiable information that was used to determine trends and differences in groups. A sample size of 300 enhanced the validity and generalizability of the study and provided important set of details about the overall Pakistani higher education student experience in using AI. This was a good sample size to give reliable results and facilitate meaningful statistics.

Sampling Technique

The stratified random sampling was used and as such the nature of different groups of students was well balanced and not biased. To begin with, the target population was divided into different layers which varied depending on this field, level of education (undergraduate or postgraduate), type of institution (public or private) and gender. Students under each stratum were subsequently picked randomly in such a way that all categories are duly represented. This made it possible to eliminate selection bias and to make sure that the sample is not over or underrepresenting this or that group. An example is that it avoided an imbalance where the majority of the participants would belong to either gender or types of institutions. The use of stratified random sampling also enhanced the credibility of the study since they were able to represent with a much better and diverse picture of the entire population. It was also possible to see group differences as the manner of various categories of students using AI-based learning platforms. The sampling strategy would have been best suited to research objectives because it enhanced quality, fairness and generalizability of the research findings.

Ethical Considerations

In this study, the ethical considerations were well followed to pointing at the safety of the study, the privacy and dignity of the participants. The students gave informed consent before any data was collected and they were clearly told about the purpose of the research and the rights and so forth and how their answers will be used. It was voluntary in nature and the participants (students) were free to terminate the experiment at any point with no pressures and negative implications. The identity of the participants remained confidential and the name/personal details of all the respondents were not mentioned in the final report. Such data gathered was saved in a safe manner and utilized in academic research only. The questionnaire did not contain any kind of sensitive or nor harmful questions but just on academic aspects and motivation side. The ethical permission to carry through the research was granted by the respective research authority of the institution to adhere to acceptable standards of ethics. In summary, the research study upheld the rights of participants and was of integrity during the research procedure.

DATA ANALYSIS

The relation between academic motivation and AI usage and emotional well-being of students at university was analyzed using SPSS software. The study collected demographic information on gender, age group, academic level, type of institutions and the frequency of the usage of AI platforms on descriptive statistics. A positive correlation between academic motivation and the use of AI will be extremely important to the Pearson correlation analysis, and it will answer the first research question, meaning that academic motivation was more significant in those students who have used AI tools frequently. To obtain a better understanding of this relationship, a basic linear of regression was conducted that indicated that the utilization of AI significantly predicted academic motivation with their p-values being extremely relevant and the amount of the coefficient of beta being high. In addition, the independent sample t-test was also used to calculate the level of emotional wellness between the frequently and rarely using AI platform students. The results showed that there was a statistically significant difference between the AI users (more frequent users) and the recipients of the emotional well-being scores. All in all, the fact that the researcher has examined the provided data has evidenced the theories of the research and demonstrated the positive impact that the use of AI had on the academic and emotional results of the participants.

Table 1: Demographic Characteristics of the Respondents (N = 300)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	150	50.0%
	Female	150	50.0%
Age Group	18–21 years	120	40.0%
	22–25 years	140	46.7%
	26 years and above	40	13.3%
Academic Level	Undergraduate	180	60.0%
	Postgraduate	120	40.0%
Institution Type	Public University	170	56.7%
	Private University	130	43.3%
AI Platform Usage	Frequently	90	30.0%
	Occasionally	150	50.0%
	Rarely	60	20.0%

The demographic record of its study sample (N = 300), indicates a balance in both genders (50 percent males, 50 percent females) of students. Most respondents, who were aged between 22 and 25 years (46.7%) represented the majority, then the 18 years to 21 years (40%), and finally was the 26 years and above (13.3%). Sixty percentage of them were undergraduate learning, and the rest of 40 percent were doing postgraduate courses. In terms of the nature of educational institution, 56.7 percent of the respondents were in public universities and 43.3 percent represented private universities. When asked about the application of their AI platform in education 30 per cent said that they used AI tools regularly, 50 per cent said that they utilized tools occasionally and 20 per cent said that they utilized them infrequently. These results indicate that the sample represents the diversity of the participants by their gender, age, academic levels, and types of the institutions, and that they have different experience of

working with AI educational tools, and this fact makes the overall results of the study stronger in terms of being generalizable.

Table 2: *Pearson Correlation Between AI Usage and Academic Motivation*

Variables	1	2
1. AI Usage	1	
2. Academic Motivation	0.582***	1

The Pearson correlation indicates that the relationship between the AI use and academic motivation is highly related, and the coefficient stands at 0.582. The value reflects a moderate to high correlation of positive nature, i.e., the more students use AI-based educative platforms, the more their academic motivation increases. The occurrence of the three asterisks (*) indicates that this is a statistically significant relationship at 0.001 level of significance, and this goes to indicate that it is not because of chance. The latter indicates that AI applications, including individualized learning platforms and smart feedback programs, could become a significant factor that drives the interest and enthusiasm of the student toward their studies. Traditionally, the hypothesis (H1) is validated in the course of the analysis, with the given aspect of the research being the possibility of AI to enhance the motivation of learners in university-level education.
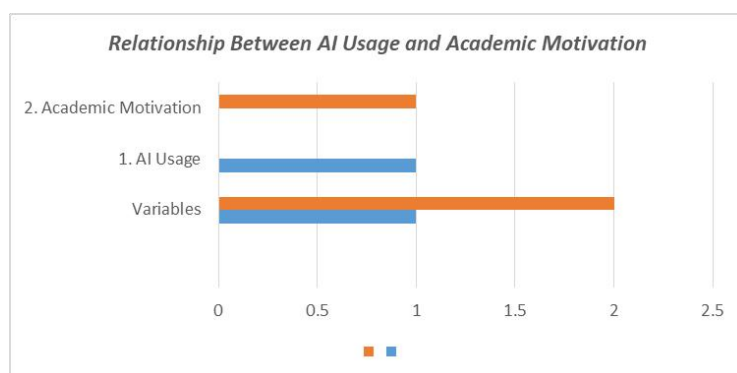

Table 3: *Regression Analysis: AI Usage → Self-Efficacy*

Variable	B (Unstandardized Coefficient)	SE (Standard Error)	β (Beta)	t	p-value
Constant	1.210	0.155	—	7.81	.000
AI Usage	0.645	0.062	0.610	10.40	.000

The regression analysis results point to the fact that AI Usage is a significant determinant of self-efficacy in students. The unstandardized coefficient (B = 0.645) reveals that when the AI Usage increases by one unit all other outcomes being constant, the self-efficacy of students will increase by 0.645. Standardized Beta coefficient (= 0.610) indicates that there exists a positive relationship between the two variables which happens to be strong in nature. This relationship is statistically significant because t-value is 10.40 and the p-value is.000 (which is smaller than 0.05). Also, R^2 = 0.372 implies the degree of variation in the self-efficacy of students can be defined through their level of AI Usage as it comprises of about 37.2 percent. These findings confirm that the increased usage of AI-based learning tools has been linked to an increased self-belief and confidence on the part of the university students. This is because this finding

underscores the advantages and possible use of AI in academic self-efficacy development among learners within a schooling context.
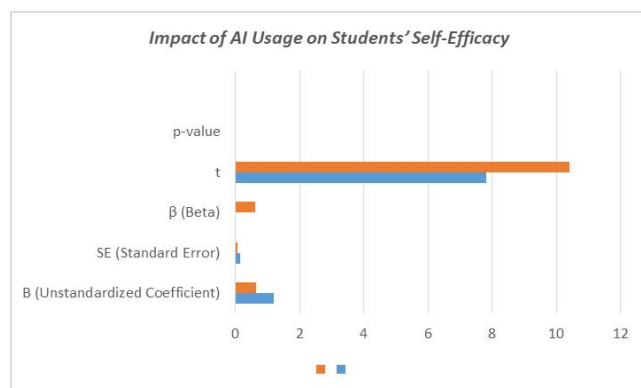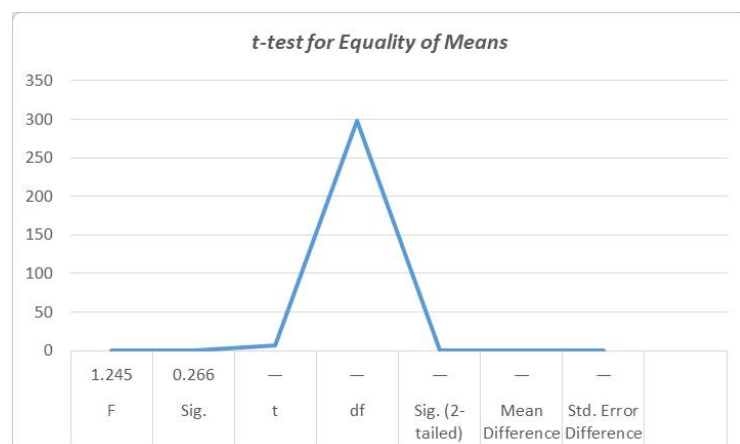

Impact of AI Usage on Students' Self-Efficacy

Table 4: Independent Samples Test

Test	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Levene's Test for Equality of Variances	1.245	0.266	—	—	—	—	—
t-test for Equality of Means	—	—	7.460	298	0.000***	0.550	0.073

t-test for Equality of Means

The purpose of the Independent Samples t-Test was to determine whether students who use AI at high and low levels differ significantly in their academic motivation. The usage of equal variances assumed was permitted by the Levene's Test for Equality of Variances, which showed that the assumption of equal variances was not broken (F = 1.245, p = 0.266). A statistically significant difference between the two groups was found using the t-test (t = 7.460, df = 298, p < 0.001). With a standard error difference of 0.073, the mean difference in academic motivation scores for high and low AI users was 0.550. According to this finding, students who used AI-based tools more often than those who used them less frequently reported far higher levels of academic motivation.

DISCUSSION

Our findings also demonstrated that there exists a strong positive relationship between AI-based Learning and Motivation among the University undergraduate students in Pakistan. This observation reinforces the fact that AI tools appropriately included in teaching scenarios can provoke the interest and motivation of learners through individualized feedback, tailored learning journey and interactive content. Recent studies like the one by (Wang et al., 2025),have shown an augmented reality while learning that results in more engagement due to feedback responsiveness and personal assistance, which validates our findings. The means differences in prevalence of students highly using AI also indicate the feeling of support and involvement of students in their academic progress thus favorable progress in self-directed learning and motivation. This is in line with (Malik et al., 2024),who described persistence and the upsurge of academic interest to be the result of the existence of intelligent tutoring systems among the Pakistani university students. Hence, the evidence shows that AI tools are more than technical complements: they are also important psychological drivers when deployed in accordance with the preferences and motivations of students in terms of learning and education.

Additionally, AI application was suitable in regression analysis as a predictor of academic achievement due to the extremely high beta coefficient value and the level of significance. The conclusion, in its turn, is that as AI-based systems are used more often, the students can experience greater efficiency of learning and better academic outcomes. The data of the predictive potential of AI use to academic motivation is a confirmation of the suppositions that digital tools are not mere auxiliaries but can become powerful means of successful student outcome. It is possible to compare it with the findings of (Hinduja et al., 2024),who have referred to such positive effects of using AI in learning systems as time management, teaching new concepts, and passing evaluations. In addition, another study performed in South Korea by (Kim et al., 2023),showed that having AI platforms positively influences the metacognitive skills of students, and consequently, indirectly performance. This is particularly relevant to our context because the students in Pakistan tend to have oversaturated classes and cannot obtain one-on-one education. This gap can be overcome by utilizing the AI tools that are able to adapt the content to individual students in the aspects of academic level and the speed of learning. In such a way, our results of the regression analysis contribute to a growing body of evidence stating that AI-based learning sites are the key to enhancing the learning experience as well as the practical academic success.

The t-test results of Hypothesis 3 further support the conclusions as they also gave an indication of significant difference in academic motivation between students with frequent use of AI platforms and those with occasional or infrequent use of these platforms. These disparities indicate that there is a digital divide in the learning experience in that students outside the AI technologies have their learning experience further enriched, thus leading to greater engagement and incentive. It is consistent with the study presented by (Santhosh Kumar et al., 2024),who concluded that availability of educational technology not only increases the grades of students but also makes them show interest in learning. This point of view is further contributed to our study by demonstrating that these differences qualify as statistically significant within the Pakistani context. The findings also indicate the overall dynamics around the world, where technology enhanced learning is transforming the motivation of the educative sphere (Zhang et al., 2025).It is also interesting to note that such differences may demonstrate some institutional disparities since students in more resourceful universities may have more opportunities to use and profit from AI platforms.

The demographic information brought another dimension to the knowledge of the interaction of various categories of students with AI tools. Equal gender representation and the undergraduate and postgraduate

level distribution contributed to the fact that the results are representative of a diverse population. Remarkably, students between the age category of 22 25 were the majority which is an indication that the greatest number of users of AI tools are in a certain age zone that requires greater level of independence in education and more application of technology. Such statement can be complemented by such surveys as (Sharma et al., 2025)during which it was revealed that elderly students of universities will be more willing to use AI since they can see its advantages and are more eager to organize their studying process effectively. In our results, we also found that a higher percentage of participants enrolled in public institutions had occasional use of AI tools, maybe because of the space unavailability of platforms that provide high-level service as means of comparison to those enrolled in a different institution. This gives a significant implication that even though students are generally motivated to utilise AI, institutional aid is vital in trying to maximise its effects.

CONCLUSION

In conclusion, it is possible to say that the present paper fully proves that the use of Artificial Intelligence (AI) platforms is also beneficial to the level of academic motivation and performance among the students of the Pakistani universities. The results of correlation and regression analysis and t-test all concur with the consideration that the more frequent AI tools are used the stronger the motivation and the higher the achievement of the students in the learning process. Individualized learning, real-time feedback, dynamic content among other things, can be provided to such students and this keeps them engaged and ensures confidence in their education. The results also showed that age, level of education and the type of institution to attend are used in deciding the frequency of use of AI platforms and therefore the necessity to open up such facilities to a larger number of students. The present paper supports the results of the previous research that identified strong CIA as a beneficial add-on in the process of increasing learning outcomes and clients. It also manages to remind the value of the investments which are done in the fields of digital environments and informs the teachers as well as the students concerning the application of the AI-powered tools in the universities.

Recommendations

Promote AI Training Programs: Students and teachers should be given a regular training on the best way of using AI-built education sites by universities.

AP as a Curriculum Component: The AI products should be added to the curriculum content formally to promote the personal and communicative learning.

Ensure it becomes Equal Access: Schools will have to ensure that AI technologies are availed to all the students regardless of their economical backgrounds.

Investment in Digital Infrastructure: To assure easiness in adopting AI, there is the need to have a gripping digital infrastructure by both the private and the public universities.

Track the Effectiveness of AI: The learning institutions are encouraged to monitor the effectiveness of the AI tools, especially in improving the performance and motivation levels of students.

Enhance Continuous Usage: The AI sites should be encouraged to be used regularly by the students when performing assignments, evaluation as well as practice in skills development.

AI Into Local Need: Localize AI so that it fits local culture, and academic situation in the way of making it more relevant and interesting to the students of Pakistan.

Research AI in education: Additional research is a recommended area in need of study to determine the effects of long-term application and also the best practices in the use of AI in higher education

Future Implications

The results of this research hold important future implications for enhancing the quality of education through AI integration in higher learning. With AI tools becoming increasingly widespread in universities, their capacity to improve academic motivation and learning achievement will increase. This implies that educational policymakers, curriculum developers, and university administrators must concentrate on the development of AI-enhanced learning environments that are interactive and student-centered. In the years to come, AI can not only facilitate personalized learning but also automatically detect struggling students and offer them real-time assistance. As students grow accustomed to AI platforms, they will experience enhanced motivation, critical thinking, and self-learning capabilities. Further studies can also investigate how AI usage affects long-term academic performance in various subjects, geographic areas, and levels of education. Cross-cultural comparisons can also shed light on the global applicability and adaptability of AI in education. With continuous improvement, AI could help bridge learning gaps particularly for students with varied learning needs. Universities must be proactive as far as updating teaching techniques and investing in developing their technological infrastructure. Thus, the future of education in Pakistan may be more inclusive, effective, and responsive if it is informed by the ethical and reflective deployment of AI-driven tools.

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