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USABILITY AND ACADEMIC IMPACT OF AI TOOLS ON HIGHER EDUCATION IN SRI LANKA

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ABSTRACT

This study explores the perceived usefulness and usability of Artificial Intelligence (AI) tools among university students in Sri Lanka and how these perceptions relate to learners' performance. As AI adoption expands across different sectors of society, understanding its benefits in the educational context is especially important in developing countries like Sri Lanka. Using a quantitative approach, this research aims to measure students' use of AI tools, assess their perceived usefulness for academic tasks, and analyze how these perceptions correlate with students' self-reported academic performance. Descriptive analyses and statistical analyses, including correlation analysis, linear regression, t-tests, and Analysis of Variance (ANOVA), were conducted to investigate the relationships between perceived AI benefits, usage patterns, academic performance, and demographic factors among university students in Sri Lanka. The findings are expected to reveal a positive relationship between perceptions of AI tool usage and improvements in student learning and performance, which would imply that AI could be a valuable resource in higher education. Additionally, the study will investigate demographic differences in perceptions of AI and its utilization. Ultimately, the results will provide concrete evidence to support the strategic design and structured implementation of an AI enhanced online learning platform in Sri Lankan universities, offering students a more innovative and effective learning experience. The findings of this study emphasize the importance of structured AI literacy programmes and policy level strategies for integrating AI tools into Sri Lankan higher education to enhance the learning quality.

KEYWORDS: *Artificial Intelligence (AI), AI Tools, Education, Academic Performance, University Student, Sri Lanka*

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1. INTRODUCTION

The emergence of Artificial Intelligence tools like ChatGPT and Google Gemini, as well as specialized tools like Grammarly AI features, QuillBot, and creative platforms like Midjourney/DALL-E, has proven to be an important turning point in various domains. The field of education, in particular, has been positioned for a major change as these tools become more integrated into the academic field. Their potential extends from efficient research and writing processes to fostering a more in-depth understanding of complex academic subjects and significantly enhancing learning efficiency (Chiu *et al.*, 2022; Song and Song, 2023).

The increased use of AI has escalated across different sectors and has had transformative effects on industries and in daily life. According to Korteling et al. (2021), it has increasingly become recognized that AI can perform actions that have been associated with human cognition and that AI has the potential to augment human abilities in the collaborative process of humans and AI (Korteling *et al.*, 2021). They emphasize that for collaboration purposes, it is vital to understand the key differences between human and artificial intelligence to achieve the full potential of collaboration with AI. The pervasive presence of this technology across sectors demonstrates the increasing impact it will have on how future generations will work and how they will engage with information.

AI is being adopted globally in a variety of new applications, extending from robotics and autonomous systems, data analytics, and personalized services. In Sri Lanka, the use and adoption of AI is taking hold, and a variety of applications are beginning to emerge across various sectors of society. For instance, there is interest within the legal framework of Sri Lanka for AI technology to help support systems to become more efficient, directional, and help facilitate decision making (Perera *et al.*, 2025). Likewise, the ecommerce sector in Sri Lanka has adopted Generative AI applications with successful improvements to the platform and experience of a user (Huang and Kumarasinghe, 2024). These examples point to an organized effort in the country to leverage AI for national development and technological advancement.

In the educational domain, AI technologies are changing the global landscape of education by personalizing learning experiences, automating administrative tasks, and providing intelligent tutoring systems (Pedro *et al.*, 2019). In Sri Lanka, too, education related AI initiatives are ongoing, and research is being conducted to investigate how technology will enhance teaching and learning, and how to prepare students for an AI influenced world (Aflal *et al.*, 2024).

Despite the emerging global and local expansion of AI in education, there is still a major shortage in comprehensive studies, particularly on the perceived benefits and real usability of various AI tools among Sri Lankan university students (Gunasekara, De Silva, and Jayewardenepura, 2024). While testimonials, evidence and general views point to good involvement, empirical data proving the extent of AI's positive impact on academic work from the students' perspective is few. Understanding these attitudes is critical for developing effective policies and strategically integrating AI into educational systems.

This study attempts to fill this knowledge gap by experimentally analyzing the perceived benefits of AI technologies among Sri Lankan university students, as well as their relationship with academic success. Specifically, the research aims to,

- Determine the demographic features and AI usage trends of Sri Lankan university students.
- Investigate the relationship between students' overall perceived benefits of AI tools and their self-reported academic success.
- Conduct group comparisons of perceived benefits based on demographic parameters such as gender, year of education, and field of study.
- Examine the relationship between AI usage frequency/time, perceived benefits, and academic success.

This research aims to provide new insight into the state of artificial intelligence in Sri Lankan higher education, and it adds value to the field of educational

technology by providing substantial evidence of the positive usability and the perceived learning outcomes gained through the use of AI tools. This study will be utilized as the foundation for a sufficiently justified, strategic plan for the future development and implementation of an AI learning platform, specifically for Sri Lankan university students, intended to ensure a transformation of learning experiences and academic outcomes.

Related Work

The discussion of AI in education has progressed tremendously, from theoretical to practical applications. Early concepts emphasized AI's ability to automate complex activities and augment human intelligence (Chiu et al., 2022). The increasing prevalence of artificial intelligence tools in higher education is transforming the nature of student engagement with learning materials and student completion of academic tasks. Fošner (2024), found that university students greatly utilize AI based applications for text generation, summarization, and content revision (Fošner, 2024). This study highlights students' awareness of the effectiveness and time saving benefits of these tools of engagement, as well as student concerns about ethics and implications for the quality of learning.

The AI tools like ChatGPT, Google Gemini, Grammarly AI features, QuillBot, and creative platforms like Midjourney/DALL-E are increasingly being used in academic contexts, promising to simplify research, improve writing processes, develop a deeper grasp of complicated subjects, and greatly increase learning efficiency (Chatwal, Garg and Rajput, 2023). Holmes et al. (2021) offer policymakers advice on AI and education, highlighting the expanding role of AI in educational planning (Miao and Holmes, 2021). Williamson and Eynon (2020) investigate historical strands and future directions in AI in education, stressing its ongoing progress (Williamson and Eynon, 2020).

A significant body of literature supports the idea that AI capability of revolutionize learning and teaching. AI platforms is capable of delivering personalized learning experiences by tailoring to each student's needs and preferences (Chen, Chen and Lin, 2020). This personalization strengthens the enhancement of engagement and academic success. Numerous studies demonstrate that AI plays a crucial role in providing individualized feedback, identifying suitable resources, and establishing adaptive learning paths that foster more independent and efficient study habits (Karadağ, 2023; Rahman and Watanobe, 2023). Zhai et al. (2021) conducted a comprehensive evaluation of AI in education from 2010 to 2020, identifying key applications such as intelligent tutoring systems and automated assessment tools to improve teaching effectiveness (Zhai et al., 2021). Bozkurt et al. (2021) also extensively reviewed AI research in education over the past fifty years, commenting on its broad impact on the educational landscape (Bozkurt et al., 2021).

The genuine utility and acceptance of AI tools are heavily dependent on student perspectives and the desire to adopt these technologies. Farhi et al. (2023) conducted research on students' perspectives, concerns, and perceived ethics related to ChatGPT use, revealing varying but typically high levels of engagement (Farhi et al., 2023). Von Garrel and Mayer (2023) investigated the use of ChatGPT and other AI based technologies in German students' academic environments and confirmed their increased use (Von Garrel and Mayer, 2023). Perceived benefits of AI based technologies colloquially increase with self-reported academic improvement, as AI is capable of supporting student activities like summarizing, grammar checking, and assignment structure support (reducing the time students need to study) (Rahman and Watanobe, 2023). This demonstrates that the use of AI is capable of assisting students when they perceive AI as a benefit to their academic achievement.

Despite its immense potential, integrating AI into education presents numerous challenges and ethical concerns. Academic integrity, the trustworthiness of AI generated knowledge, data privacy, and fair access to these technologies are all critical challenges. Kooli (2023) conducted a critical analysis of the ethical implications of chatbots in education and research, emphasizing the significance of strong ethical frameworks (Kooli, 2023).

Other studies have noted issues such as ambiguity regarding how to utilize AI technologies appropriately, restricted availability due to cost or infrastructure, and shifting institutional rules on AI application (Siemens, Dawson and Lynch, 2013; Owoc, Sawicka and Weichbroth, 2021). Furthermore, the broader societal implications, such as whether AI will harm the viability of higher education or replace human tutors, are being debated (Chiu, 2021; Karaca, Çalışkan and Demir, 2021; Batista, Mesquita and Carnaz, 2024). These disputes underline the significance of careful planning and explicit guidelines for AI implementation in order to limit dangers and ensure responsible use.

For successful integration of AI, it requires significant curriculum development and an understanding of regional differences. Another study takes a holistic view of what an AI curriculum should consist of for K-12 schools and pre-tertiary education, as this study highlights the importance of foundational AI literacy. The use of artificial intelligence in education varies by area (Chiu, 2021; Xia et al., 2022). For example, Bozkurt et al. (2021) investigate AI research in Turkey's education sector, highlighting both the benefits and constraints specific to that setting (Bozkurt et al., 2021). While Yigitcanlar et al (2022), conducted a comparison analysis of AI adoption across different urban service sectors, providing a broader geographical perspective of AI usefulness (Yigitcanlar et al., 2022). The incorporation of AI into the Sri Lankan legal system and the use of Generative AI in local ecommerce platforms (Huang and Kumarasinghe, 2024; Perera et al., 2025) indicate a growing national interest in AI, laying the groundwork for its implementation in education, which is consistent with national development goals.

While much study has been done on AI's overall impact on education, more context specific studies are required, especially in impoverished countries like Sri Lanka. Empirical research into the specific usability challenges and benefits experienced by Sri Lankan university students is crucial. Understanding these localized perspectives, combined with a thorough examination of current educational infrastructure, will aid in the development of effective and culturally appropriate AI integrated online learning platforms.

This study aims to close this gap by empirically demonstrating the positive use of AI among Sri Lankan university students, and thereby advocating for the strategic development of AI enhanced learning environments.

Theoretical Framework and Research Gap

The foundation of this study is the Technology Acceptance Model (TAM), which was proposed by Davis in 1989. The TAM framework explains that users' acceptance of technology is explained by two constructs, which are perceived usefulness and perceived ease of use (DAVIS, BAGOZZI AND WARSHAW, 1989). In this study, students' perceptions of the benefits of AI tools can be viewed as perceived usefulness, while usability in this study maps on to perceived ease of use. According to the TAM framework, these factors shape users' intention to use the technology and how they actually engage with it.

By applying this model, the study can put into context how university students evaluate and use AI tools in their academic work. Although AI in education has been widely studied internationally, there is a notable lack of empirical research focused on Sri Lanka. Existing studies have primarily addressed institutional readiness and educators' viewpoints, with limited focus on students' direct experiences.

This study addresses that gap by offering localized, quantitative insights into how Sri Lankan university students adopt and engage with AI tools, including their usability and perceived academic impact.The findings contribute to theoretical advancement by applying the Technology Acceptance Model (TAM) within a developing country higher education context, and offer practical guidance for universities aiming to implement inclusive and effective AI integration strategies.

Followed by TAM framework, this study addressed the following research questions:

- What are the patterns of AI tool usage among university students in Sri Lanka?

- How do students' perceived benefits of AI tools relate to their self-reported academic performance?
- Are there significant differences in perceived benefits across gender, year of study, and academic discipline?
- How do frequency and duration of AI tools usage correlate with perceived benefits and academic outcomes?

2. METHODOLOGY

The primary data was gathered through a Google form and analyzed using the R Studio tool, and then the questionnaire was distributed among various university students in Sri Lanka. Data were collected from the 1st to the end of June 2025, and the online form was spread through WhatsApp Groups while targeting undergraduate students from both Government and private universities to extend the work of study to a wide range of diversity. The data were collected from various faculty sectors.

Data for this study were collected using a self-developed questionnaire entitled "Exploring the Use of AI Tools for Academic Work Among University Students in Sri Lanka", which was designed to capture different aspects of AI tool use in an academic context, relevant to university students in Sri Lanka. The rationale for developing this questionnaire was the perception that there were no existing, single, validated questionnaires designed to encompass all these dimensions of AI tools (generative AI, writing aids, creative tools, etc.) and usage aspects in this unique context. The questionnaire was created by referring to past validated scholarly work questionnaires and studies. These scholarly work questionnaires and studies were used to create our questionnaire to investigate the perception of AI usage in Sri Lanka.

Before collecting the data from the target audience, a pilot survey was carried out among fifteen users to check the nature of responding behavior and to determine the average time taken to complete the survey. Based on the results of the pilot run, the final questionnaire was carefully structured to capture a comprehensive understanding of student engagement with AI tools in academic environments in a reasonable time frame (3-5 minutes) without exhausting the responders.

The questionnaire was segmented into three sections. The first section began with a demographic information section, designed to collect fundamental participant data such as age, gender, year of study, and field of study. These questions were designed using the study done by (Ayo-Ajibola et al., 2024a). This information is essential for analyzing patterns and drawing correlations between background characteristics and AI tool usage.

The second section of the survey contains questions to assess the behavioral tendencies of students related to their use of artificial intelligence tools. For this section, questions were derived and developed using studies of (Nam, 2023) and (Malmström, Stöhr and Ou, 2023). The survey asked participants if they used AI tools, how often, and what the average time spent on AI tool use on a weekly basis. Students were also asked to clarify for what academic tasks they used AI assistance, whether it be for writing, research, data analytics, or coding, as well as to identify the AI tools used (ex: ChatGPT, Grammarly, or coding assistants like GitHub Copilot). This section provided insight into how ingrained AI tools have become in the daily academic lives of undergraduate students.

The third section, Perceived Benefits and Impact, was a major focus of the survey. It was composed of several items using a Likert-type scale intended to analyze students' subjective assessments of the effectiveness and benefits provided by AI tools. When creating the questions for students' perception towards the AI tools, the studies (Reina-Parrado, Román-Graván and Hervás-Gómez, 2025) and (Ayo-Ajibola et al., 2024b) have been used.

Survey respondents were first asked to assess the degree to which AI tools helped them gain a better understanding of academic concepts that were difficult for them to grasp, save time while studying, improve the quality of their academic work, and improve their overall learning engagement. Additional items examined their perceptions of whether or not AI contributed to their academic performance, their levels of motivation while using AI, the overall benefits they

perceived from using AI tools, and how AI tools contributed to promoting their overall independence in learning.

At the end, the questionnaire provided a qualitative, open-ended question in the Suggestions for Improvement portion where participants could provide their own insights, worries, or advice on how universities and developers could improve the integration of AI tools to assist students more in their academic journey.

From the data collection process, 143 fully completed questionnaires were obtained and subsequently analyzed using both descriptive and inferential statistics. Ethical considerations were strictly adhered to throughout data collection. Participants received informed consent statements at the outset of the study that explained they could withdraw at any time without any penalties. Also, rigorous measures were taken to ensure the anonymity and confidentiality of all responses.

3. RESULTS

In total, 143 university students from Sri Lanka participated in this research study on the use of AI tools in academic work. The dataset is mostly comprised of responses where students indicated their use of AI tools for their university academic work. Demographic information was collected related to age, gender, year of education, and field of education. There was a wide range of respondents from multiple fields of Education, including Medicine, Information Technology, and Engineering, represented in the study.

Validation of the Adapted Questionnaire

Cronbach's Alpha is a metric used to assess the degree of association of a set of items as a group, which can help assess whether or not the items are reliably measuring the same underlying concept. For the Likert scale set, Cronbach's Alpha was computed to measure students' perceptions of AI tools and supports for academic learning. The Cronbach's Alpha value of 0.934 indicates that the items have great internal consistency. The standardized alpha was 0.936, and the Greatest Lower Bound (G6) dependability was 0.950, indicating that the scale is reliable. Table 1 gives a summary of the demographic distribution.

Table 1: Cronbach's Alpha Summary Table.

Parameter	Value
Standard Cronbach's Alpha	0.93
Standardized Cronbach's Alpha	0.94
Greatest Lower Bound (G6)	0.95
Average inter-item correlation	0.65
Signal-to-Noise ratio (S/N)	14.65
Asymptotic Standard Error (ASE)	0.01
Mean (item mean)	3.65
Standard deviation (item SD)	0.67

Descriptive Analysis

The survey sample consisted of 143 university students in Sri Lanka. Among them, except for four students, all reported using AI tools for academic purposes.

Table 2: Demographic Summary of Responders.

Demographic	Category	Student Count	Percentage (%)
Age	21-23	37	25.9
	24-26	77	53.8
	Above 26	29	20.3
Gender	Female	77	60.8
	Male	56	39.2
Year of Study	1st Year	21	14.7
	2nd Year	10	7
	3rd Year	42	29.4
	4th Year	70	40
Field of Study	Arts	5	3.5
	Engineering	35	24.5
	Information Technology	55	38.5
	Management	16	11.2
	Medicine	7	4.9
	Science	25	17.5

The characteristics of the respondents revealed a gender split of 60.8% female and 39.2% male. The mean age of the respondents was 24 to 26 years in the majority (53.8%), followed by 25. 9% 21-23 years and 20. 3% over 26 years. There were no respondents in the 18-20 year range. The highest recorded academic

standing was fourth year undergraduate courses (49%), followed by 29.4% third year, and 7% second year. Approximately 14.7% first year, and on the whole, most respondents were in some stage of undergraduate study. By discipline of study, the highest representation was in Information Technology (38.5%), followed by Engineering; no further participants were in the Arts (3.5%). This sample has contributed towards a good representation of both technical and non-technical domain studies. Table 2 gives a summary of demographic distribution.

A descriptive analysis of AI use patterns suggested that the majority of students (56.1%) spent on AI for 1-3 hours daily, 21.6% around 3-5 hours, 15.1% less than 1 hour, while 7.2% spent more than 5 hours, with an average of 2.21 and a standard deviation of 0.79. Figure 1 demonstrates the frequency of AI usage.

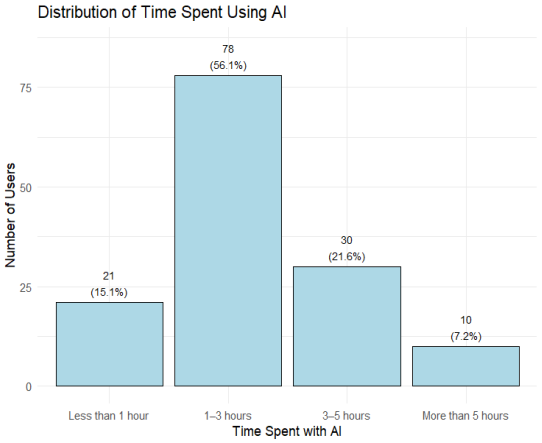

Figure 1: The frequency of using AI tools (N = 143)..

Further, the survey captured the usability of different AI tools and for what type of task the students use (Figure 2) AI technologies. The majority of the students are using ChatGPT, Grammarly, and Google Gemini as AI tools, while the responders are primarily using AI for study or clarifying concepts (118 responses), grammar checking (104 responses), and summarizing (98 responses). The most often used AI tools were ChatGPT (132 responses), Grammarly - AI features (93 responses), and Google Gemini 86 responses). On the contrary, they also infrequently use AI tools to generate ideas and presentations, and assignments. Figure 3 shows the frequency of AI tool usage among the responders.

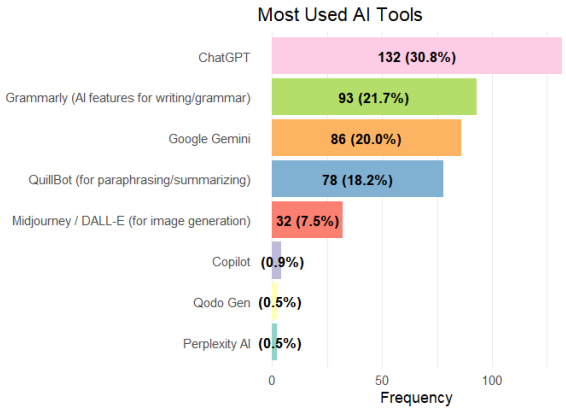

Figure 2: Most Used AI tools (N = 143).

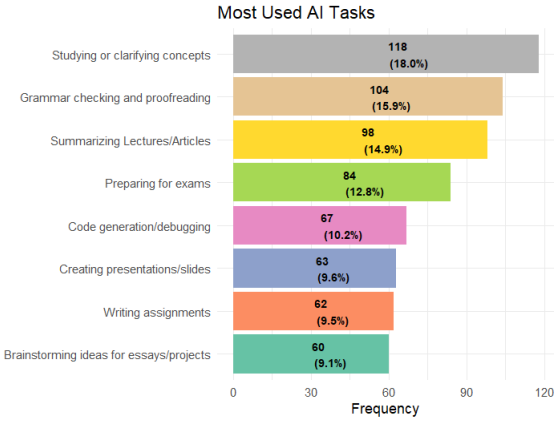

Figure 3: Frequency of use of AI on tasks (N = 143).

Statistical Analysis

To determine the students' overall positive perception of AI tools, a "Perceived Benefits Composite" score was calculated. This composite was created from the mean of nine Likert-scale questions that evaluated perceived benefits, including the AI tool's ability to make understanding of the complex topics, saving time, improving the quality of work, and enabling an engaging and independent learning environment. The mean score for students' overall perceived benefits of using AI tools was 3.67 (SD = 0.59; 5-point Likert Scale), indicating a positive perception of AI usage among students (Figure 4)

Comprehensive Descriptive Statistics

	Variable	n	Mean	SD	Median	Trimmed	MAD	Min	Max	Range	Skew	Kurtosis	SE
Q_Understand_Complex	1	139	3.94	0.62	4.00	3.92	0.00	3.00	5	2.00	0.04	-0.41	0.05
Q_Save_Time	2	139	3.72	0.71	4.00	3.68	1.48	2.00	5	3.00	0.10	-0.52	0.06
Q_Improve_Quality	3	139	3.68	0.76	4.00	3.65	1.48	2.00	5	3.00	0.10	-0.59	0.06
Q_Engaging_Learning	4	139	3.64	0.77	4.00	3.62	1.48	2.00	5	3.00	0.05	-0.51	0.07
Q_Improve_Performance_Belief	5	139	3.61	0.72	4.00	3.57	1.48	2.00	5	3.00	0.13	-0.41	0.06
Q_Motivated_Study	6	139	3.54	0.70	3.00	3.44	0.00	2.00	5	3.00	0.79	-0.46	0.06
Q_Overall_Beneficial	7	139	3.68	0.70	4.00	3.62	1.48	2.00	5	3.00	0.40	-0.76	0.06
Q_Independent_Learning	8	139	3.53	0.73	3.00	3.42	0.00	2.00	5	3.00	0.87	-0.44	0.06
Q_Integrate_University	9	139	3.94	0.78	4.00	3.98	0.00	1.00	5	4.00	-0.82	1.67	0.07
Perceived_Benefit_Composite	10	139	3.67	0.59	3.62	3.61	0.56	2.12	5	2.88	0.64	-0.02	0.05

Note:
Trimmed mean removes 10% of extreme values from each end before calculation.

Figure 4: The Likert scale statistics (N = 143) from R Studio tool.

A linear regression analysis was used to study the relationship between students' overall perceived benefits from AI tools and their self-reported academic success. The dependent variable, "changes in academic performance" (scaled from 1 to 5, with 5 representing "significantly improved" and 1 representing "significantly declined"), was regressed on the composite score of "students overall perceived benefits from AI tools". The linear regression results are reported in Table 3 and 4.

Table 3: Regression Model Summary

Statistic	Value
N (complete cases)	128
Residual df	127
R^2	0.112
Adjusted R^2	0.105
Residual Standard Error	0.679
F(1,197)	15.97
p-value	< .001

Table 4: Coefficients for Regression Model.

	Intercept	Perceived Benefit Composite
Estimate	2.43	0.421
Standard Error	0.394	0.105
t-value	6.18	4
p-value	< .001	< .001

The model reveals a statistically significant positive relationship between students' overall perceived benefits from AI tools and their changes in academic performance (t = 3.996, p = 0.00011). For every one unit increase in the composite score for perceived benefits, the changes in academic performance score can be predicted to increase by 0.4207 units. The model showed 11.17% of the variance in changes in academic performance (Adjusted R-squared = 0.1047), and the overall model was statistically significant (F(1, 127) = 15.97, p = 0.00011).

To identify potential differences, a statistical test was conducted between students' overall perceived benefits from AI tools across various demographic factors. A Welch Two Sample t-test was used to compare the perceived benefits of AI tools for male and female students. The results indicated a statistically significant difference found in perceived benefits (t = -2.4224, df = 105.86, p = 0.01712). The average perceived benefit for female students was 3.573, whereas male students perceived a higher mean score of 3.821 (Table 5). This suggests that gender has an influence on how people perceive the benefits of AI systems.

Table 5: Welch Two Sample t-test.

Statistic	Value
t-value	-2.4224
Degrees of freedom (df)	105.86
p-value	0.01712
Mean – Female	3.5727
Mean – Male	3.8208
Mean difference (Male – Female)	0.2481
95% Confidence Interval	-0.4511 to -0.0450

One way ANOVA test was performed to compare differences in perceived advantages between Year of Study groups (1st Year, 2nd Year, 3rd Year, and 4th Year). The ANOVA results showed statistically significant differences in perceived benefits between these groups (F(3, 135) = 6.305, p = 0.000492)(Table 6). This implies that students' perceptions of the benefits of AI tools are considerably influenced by their academic year.

Table 6: Perceived advantages between Year of Study groups.

Statistic	Year of Study	Residuals
Degrees of freedom	3	135
Sum of Squares	5.9	42.09
Mean Square	1.9656	0.3118
F-Value	6.305	6.305
P-Value	0.001	

Another one way ANOVA test was conducted to analyze differences in perceived advantages across students from different disciplines (arts, engineering, information technology, management, medicine, science). This showed statistically significant differences in perceived benefits in this domain across these areas of study ($F(5, 133) = 2.323$, $p = 0.0464$). Table 7 depicts the results of the ANOVA test.

Table 7: Perceived advantages across the Field of study

Statistic	Field of Study	Residuals
Degrees of freedom	5	133
Sum of Squares	3.85	44.13
Mean Square	0.771	0.3318
F-Value	2.323	
P-Value	0.046	

Correlation analysis evaluated the correlations between AI usage patterns, students' perceived benefits, and academic performance changes. Table 8 shows the correlation matrix for major factors.

Table 8: Correlation Analysis for AI Usage

	Perceived Benefit Composite	Academic Performance Score	AI Frequency Numeric	AI Time Numeric
Perceived Benefit Composite	1.000	0.334	0.271	0.474
Academic Performance Score	0.334	1.000	-0.061	0.294
AI Frequency Numeric	0.271	-0.061	1.000	0.196
AI Time Numeric	0.474	0.294	0.196	1.000

A moderate positive connection ($r = 0.474$) was found between the time students spent using AI tools and their overall perceived benefits, showing that longer term involvement is connected with greater perceived advantages. A lesser positive association was discovered between the frequency of AI tool use and overall perceived benefits ($r = 0.271$).

Moreover, the time students spent with an AI tool showed a positive correlation with changes in academic performance ($r=0.294$). On the other hand, the frequency of AI tool usage showed a very weak, minor negative correlation with changes in academic performance ($r = -0.061$), implying that time spent using an AI tool may impact performance more than how often a student uses an AI tool. Similarly, the correlation between students' overall perceived benefits and changes in academic performance was positive and moderate ($r = 0.334$).

Even though the final dataset included 143 respondents, the effective sample size varied across analyses due to exclusions and missing data. First, from the 143 total respondents, only participants who indicated that they used AI tools ($n = 139$) were entered into the inferential analyses. The sample sizes have further decreased for the ANOVA and t-tests due to missing Likert-scale items that indicated a participant's Perceived Benefit Composite score. These partial responses were effectively excluded in analyses that required complete cases. In correlation analyses, pairwise deletion was employed to allow the most available data for each variable pair, this explains the additional variation in size across correlation coefficients. In the regression predicting Academic Performance Score, the usable sample was reduced to 128 since ten individuals chose 'Not sure' or left the academic performance question blank, resulting in the values being missing, and thus removed by the listwise deletion process.

4. DISCUSSION

This study focussed on examining the influence of AI tool use on university students perceived academic benefits and academic performance in Sri Lanka, using a larger sample of 143 students who use AI. The findings reinforce and strengthen the preliminary analyses of several of the trends that emerged, and offer some additional insights. These findings provide strong evidence to support the premise that there is a relationship between students perceiving AI positively as a benefit to their learning, which then relates to improved academic outcomes. This empirical link is critical for encouraging the strategic integration of AI into educational frameworks, since it demonstrates that developing a positive opinion of AI's utility is associated with concrete academic benefits. The comparatively low adjusted R-squared value indicates that, while perceived benefits are important, other

variables not included in this model also influence improvements in academic performance.

The constant high mean Perceived Benefits Composite score (3.70 out of 5) indicates that the academic community has a strong overall positive opinion of AI tools, which supports earlier findings and aligns with global trends in AI integration in education. The key applications of AI for summarizing, grammar checking, and writing, as well as the popularity of tools such as ChatGPT, demonstrate AI's significance in improving efficiency and accessibility for a variety of academic jobs. The continuous issues of information verification and ethical concerns highlight the need for improved AI literacy and appropriate integration tactics within educational contexts.

The linear regression analysis shows a strong positive association between students' perceived gains from AI technologies and their self-reported academic success. This study is significant because it implies that a more positive impression of AI's utility is directly related to reported improvements in academic outcomes. The larger sample size has strengthened the statistical power of this discovery, supporting the argument that having a positive attitude toward AI tools can help students excel in academics.

A key distinction from prior analyses is that there was a statistically significant difference in perceived benefits across gender. The finding that male students reported significantly greater perceived benefits than female students deserve further inspection. This could result from several variables, such as whether males and females were equally comfortable using technology, or whether males and females have equally been exposed to AI use in their specific fields of study, or whether they have equally valued AI use in the task they were tackling. Accordingly, there is an opportunity for targeted approaches or support to achieve more equitable perceived benefits across genders.

The observed gender difference, which indicated male students reported higher perceived benefits, reflects patterns recognized by Fošner (2024), suggesting that men could possibly have a stronger technology self-efficacy and might have been exposed to AI driven disciplines such as computing and engineering (Fošner, 2024). Furthermore, the increased benefit perceptions of fourth year students, also correspond to the previous study of Farhi et al., (2023), indicating that extended academic experiences lead to increased understanding of the value of AI's utility (Farhi et al., 2023). In a practical sense, the findings indicate the need to design AI literacy programming for students in early years of study and those from underrepresented student groups to ensure equitable skill development. To bridge these gaps, universities might incorporate workshops on ethical and successful AI use into their orientation programmes and course curricula.

Furthermore, the ANOVA test for Year of Study had a significant effect on perceived benefits. According to the post-hoc analysis, final year students (particularly, fourth year students) view AI technologies to be significantly more valuable than first and third year students. This shows a potential learning curve or increasing awareness for AI's utility as students move through their academic careers, which could be due to more demanding academic challenges or increased exposure to varied AI applications. This study could help with the staggered deployment of AI literacy programmes, which customize content to different academic levels.

While the Field of Study ANOVA became statistically significant with a higher sample size, the lack of significant pairwise differences in post-hoc tests indicates a more subtle pattern. It suggests that overall differences exist, but no particular field stands out significantly in terms of perceived benefits, or that the differences are more modest over numerous fields rather than remarkable contrasts between specific pairs. This could imply that AI benefits are widely acknowledged across specific fields, but to varying levels of interest or application.

The correlation analysis helps to clarify the complexity of AI utilization. The significant positive correlation between time spent using AI and perceived benefits ($r = 0.504$) and academic achievement ($r = 0.294$), as opposed to the lesser correlation with frequency of usage, indicates that the depth and duration of AI engagement are more important aspects. This means that casual or infrequent use may not produce the same perceived benefits as more

constant and focused use of AI tools. This distinction is crucial for guiding students on how to use AI tools for academic purposes successfully.

5. CONCLUSION

This study examined the use of AI tools by university students in Sri Lanka, focusing mainly on the perceived benefits and implications for academic performance. The findings significantly support a broadly favourable opinion and valuable application of AI tools in the Sri Lankan academic context. Students positively welcome AI for jobs like summarizing, grammar checking, and studying, demonstrating AI's ability to improve academic efficiency and accessibility.

Crucially, the study found a statistically significant positive association between students' perceived benefits from AI tools and their self-reported academic achievement. This shows that fostering a positive perspective of AI's utility is capable of helping students feel more successful academically. Furthermore, the study found significant differences in reported benefits by gender and year of study, with male and later year students reporting higher perceived benefits. The duration of AI engagement, rather than just frequency, was found to have a greater impact on perceived benefits and academic performance.

These findings collectively provide strong evidence for the favourable usability and great potential of AI tools to improve learning among Sri Lankan university students. The discovered correlations and positive perceptions provide strong evidence that an AI integrated online learning platform would be well received and beneficial. Utilizing these findings, specifically the areas where AI is already viewed as highly beneficial, and perceived benefits factors, can help further design an AI based system to promote student engagement, enhance learning experiences, and improve academic performance for students in Sri Lanka. This study is an important step toward advocating for and developing such an advanced educational platform.

Limitations and Future Works

A few limitations could be addressed in future studies, such as this study used self-reported data that can be impacted by recall and social desirability bias, and generalizability across all Sri Lankan universities is limited by the use of convenience sampling via WhatsApp groups. Also, this study did not verify perceived academic improvement using objective measures of performance, such as GPA. Future studies can employ consistent or mixed methods designs to track actual learning outcomes while including a wider range of universities, and examine how learner AI literacy and ethical awareness contribute to sustained use.

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