



A Quantitative Study on the Impact of the Use of ChatGPT and Google Gemini on the Academic Performance of IT Undergraduates at NIIBS Campus

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Abstract: The introduction of generative Artificial Intelligence (AI) in education systems has changed the dynamics of the academic processes, particularly for technology-based courses. In this case, an exploratory study of the effects of the use of LLM tools (i.e., OpenAI's ChatGPT and Google Gemini) on the academic performance of Information Technology (IT) undergraduates at the Faculty of Computing and Information Technology (FCIT), NIIBS Campus. With the help of the scientific approach of empirical research, statistical data were collected through surveys conducted among 49 current undergraduates enrolled in the IT degree program. The research focuses on several important factors related to the penetration of AI tools, their usage frequency and overall effectiveness in terms of GPA achievement. From the study, it was found out that AI technology is widespread among IT students, as 65.3% of participants use both ChatGPT and Google Gemini in multiple platforms. Moreover, 57.1% use them often or very often. From descriptive statistical results, there is evidence of a clear demarcation between task optimization and academic performance. While students exhibit significant levels of operationally positive benefits from speedier completion of assignments (Mean = 3.98/5.00) and enhancement of their quality (Mean = 3.94/5.00), the level of direct impact on terminal GPA performance is notably conservative (Mean = 3.55/5.00). In terms of performance, the study reveals a bell-shaped curve distribution pattern for moderately proficient performance levels in grades (53.0% GPA from 2.5 - 3.0), despite an overwhelming majority perception (89.8%) that AI aids learning positively. There emerges an architectural design of "Academic Integrity Paradox" where efficient structure could induce dependency and ultimately skill degradation. The conclusions drawn by the paper include institutional recommendation for formal inclusion of AI literacy and assessment defense-based approaches.

Index Terms: Academic Performance, Artificial Intelligence (AI), ChatGPT, Google Gemini, Undergraduates

1 INTRODUCTION

The use of Artificial Intelligence (AI) within higher education institutions has been escalating at an extraordinary rate, thereby transforming the way conventional ways of learning, teaching and interactions among undergraduates are performed. In the past several years, novel generative AI tools like the widely known OpenAI ChatGPT and Google Gemini are no longer just experimental computer programs but are now widely used for educational purposes.

These state-of-the-art systems utilize large language models (LLMs) to generate various output types depending on the input provided by the user. From generating source code, complex mathematical equations, summaries of text structures to comprehensive literature reviews, LLMs can accomplish everything in seconds through the processing of natural languages. These generative tools have quickly become indispensable to any IT-related academic process.

The IT profession is intrinsically linked to innovation in the digital world, making it common for IT

undergraduates to be some of the first adopters and users of AI applications. Being able to prompt the machine and receive contextual responses in code snippets or debugging guidance completely transforms how students deal with algorithmic logic and work through their software engineering courses. While such AI tools make for great learning resources, they also drastically change the way in which students acquire information, solve technical challenges and learn key theoretical concepts. Thus, contemporary studies of higher education must not only focus on how undergraduates embrace technology but rather how such a constant exposure influences actual academic results.

1.1 Problem Statement

The increasing prevalence of applications such as ChatGPT and Google Gemini among the user base of undergraduate computing education entails two contradicting stories about efficiency and cognitive dependence. Firstly, these applications allow the user instant support and solutions. The user receives prompt help with completing challenging academic tasks, having advanced programming logic simplified and implementing assignments faster. Secondly, inefficient and overly dependent use of these automatic systems poses significant threats in the long term.

The dependency on outputs generated by machines may cause deterioration in critical thinking abilities, reduced troubleshooting skills and even cases of unintentional plagiarism. For instance, in an IT syllabus, using solely a computerized system to provide workable code or solve a theoretical problem without any mental effort from a student may result in concealing deficiencies in one's subject knowledge.

Consequently, the application of an efficient tool becomes paradoxical. Although the tool may improve performance in the short run, there is no guarantee that its usage does not harm cognitive and problem-solving abilities in the long run. Therefore, this study attempts to explore whether a connection exists between AI usage patterns and objective academic performance by the IT undergraduates at the Faculty of Computing and Information Technology (FCIT) of the NIIBS campus.

1.2 Research Questions

For an in-depth examination of the above phenomenon, the study seeks to answer the following research questions:

1. How frequently do IT undergraduate students use AI tools for academic purposes?
2. What AI tools are mostly used?
3. Is there a significant relationship between AI tool usage and academic performance?

1.3 Research Objectives

The study is structured around three primary objectives:

1. To identify the level of AI tool usage among undergraduate students.
2. To examine the purposes of AI tool usage in academic activities.
3. To analyze the relationship between AI usage and academic performance.

1.4 Significance of the Study

This study will offer useful information to various parties involved in technology-oriented higher education:

- Administrators of NIIBS Campus: Gives useful data-driven insights that can be utilized in formulating a fair academic integrity policy that would foster innovations but not at the expense of

strict evaluations.

- Lecturers / Faculty Members: Presents teachers with a better understanding of AI utilization by students and helps instructors introduce innovative teaching techniques and evaluation criteria and create specialized modules on AI literacy.
- Undergraduate Students: Facilitates positive self-assessment in terms of AI usage and encourages a change from dependence on AI toward problem-solving and programming abilities.

2 LITERATURE REVIEW

This literature review examines existing research on generative AI, Google Gemini, ChatGPT, and their applications in higher education. It highlights research gaps concerning IT undergraduates at the NIIBS Campus in Sri Lanka, while addressing the role of the aforementioned tools on academic productivity and learning, the motivational and ethical issues related to dependence on AI, and impacts on critical thinking and academic performance.

2.1 Previous Studies Related to AI in Higher Education, Sri Lanka

Artificial Intelligence (AI) tools have transitioned from an emergent idea to a critical component of higher educational institutions. The current digital transformation continues to redefine traditional methods used for learning, conducting research and teaching within higher education while significantly impacting state universities and specialized technology libraries in Sri Lanka [1], [2].

Several empirical studies have been conducted in recent years that measure students' basic use of AI tools in academic settings among undergraduate students. For example, a recent quantitative study conducted at the Sri Lanka Institute of Information Technology (SLIIT) Library indicates that current undergraduate students want to integrate various AI automation technologies into their everyday academic activities [2].

The rapid technological transition driven by Gen Z undergraduates, who have a natural affinity toward digital technology and regularly use these tools to perform advanced tasks such as programming and creating documents [3], is more than just a phase. It's a sign of a fundamental change in the education system of Sri Lankan universities through AI [3].

The growth of large data models and advanced LLM's have also sped up the movement from secondary school to higher education systems, showing that those who had early access to technology in secondary school are able to take advantage of advanced automated learning methods in their postsecondary schooling [3].

2.2 Academic Productivity, Motivation and Usability Metrics

The investigations described above provide evidence of how well undergraduates use generative AI platforms such as ChatGPT or Google Gemini. Many published studies demonstrate significant improvement in learning efficacy, process management and academic motivation because of utilizing AI tools. Most university undergraduates report that AI tools (based on how quickly they respond to questions asked using natural language) are of great benefit [4].

Further empirical evidence suggests that generative AI has a powerful, positive effect on undergraduates' motivation towards learning [4]. Personalized learning assistants (generative AI) have also enabled undergraduates to labor through difficult subjects, develop confidence in their ability to perform at an

academic level and ultimately engage with harder course material [5].

In addition, research found that ChatGPT used as a purposeful guide provides undergraduates with greater mastery of challenging topics and greater efficiencies in productivity for writing and revising content when using this tool [7]. In the area of technical fields, ChatGPT functions as a flexible teacher to provide support to undergraduates who struggle to understand abstract theoretical paradigms by assisting them with their efforts to develop logical code and to comprehend abstract computational concepts [9].

Evidence of the practical effectiveness of the application can be seen in comparative research that illustrates the strong congruence between the practical effectiveness of the tool and its correlation with improved undergraduate performance metrics [9], [10].

2.3 The Academic Integrity Paradox: Risks and Irresponsible Use

While offering undeniable advantages to student productivity, the uncontrolled development of generative AI poses numerous threats related to independent learning, critical thinking and conventional assessment techniques. The primary issue in modern academic literature is the threat caused by the improper usage of ChatGPT to student ultimate accomplishments and their capabilities [6].

In case students use an AI application to produce assignments without making an effort of their own, they will simply copy the output and thus, create an illusion of competence. High grades for the aided assignment will not reflect the student's real level of understanding and knowledge.

This concern is directly related to the underlying tenets of higher education itself. Group evaluations assessing the impact of ChatGPT on student creativity and performance caution that the use of such automated writing tools may inhibit students' ability to think creatively and perform original analyses [7]. Overall assessments of the various implications of AI integration in academia indicate that without instructional guidelines, AI will likely have a negative effect on students' research and analytical abilities [10].

In addition, recent research into the impact of AI on academic integrity violations in Sri Lanka highlights the immediate need for institutions to conduct a thorough evaluation of their current policies [10]. The reason behind this recommendation stems from the fact that the style generated by automated writing resembles human language, thus defeating the purpose of any anti-plagiarism measures used by institutions [10]. In addition, while an evaluation of AI tools reveals that they do help increase efficiency, institutions have to be wary of data protection issues [13].

2.4 Research Gap

Whereas the above sources provide many interesting ideas, a review of the contemporary literature reveals several important research gaps:

- **The Private Campus Research Gap:** The majority of the studies on Sri Lankan students conducted to date consider state-funded institutions or the large established universities of the country such as SLIIT [9], [10]. However, little data exists regarding the specialized private campuses such as the NIIBS Campus.
- **Student Discipline-Specific Data:** Most of the studies undertaken currently consider the undergraduate students as one group [11]. It becomes critical for future studies to address IT and computing students because their curriculums require continuous work with programming tools.

- The Correlation Research Gap: Although numerous studies have been conducted previously to capture students' views and satisfaction rates as well as potential gains from the integration of technology into learning, very few studies analyze whether the use of AI correlates quantitatively with GPA clusters.

3 METHODOLOGY

The methodology section explains the research design and strategy, study population, and sampling, as well as the data collection procedure and tools for processing data. It explains how data was quantitatively surveyed and then analyzed using SPSS and Excel to show the relationship between AI and the academic performance of the IT undergraduates at the NIIBS Campus.

3.1 Research Approach

Through a highly systematic and methodologically rigorous real-time quantitative research design, the researcher can examine all pertinent aspects of factors influencing student experience (student interaction patterns, frequency of interaction, cognitive perception of their educational environment, cumulative grades, etc.).

By systematically coding a multitude of data points pertaining to student interaction patterns with other students and faculty/staff, the frequency of their interactions, how they cognitively perceive their educational environment and their cumulative grade point average (GPA), the researcher is able to leverage quantitative statistical analysis methodologies to identify relationships and patterns in the data, providing the researcher with more robust, objective conclusions concerning the inclusion of AI technologies in a university setting.

Additionally, using a deductive methodology, the researcher has developed specific, systematic questions, which subsequently will allow him to conduct a comprehensive evaluation and testing of his hypotheses, ensuring that the conclusions drawn from the data will be systematically replicable.

3.2 Research Methods

In order to generate accurate and quantifiable insights regarding the target population of undergraduates, this study employs a cross-sectional survey technique through the use of an online questionnaire approach. This approach is extremely effective in terms of collecting quantitative data from targeted participants within one given moment in time.

This research design has been specifically chosen due to its numerous advantages:

- High Standardization: Each participant is asked to respond to the same set of questions which are organized according to a 5-point Likert scale.
- Anonymity and Expressive Freedom: Since no personal information will be gathered (except name and email), students may freely respond to questions concerning the extent of their use of AI, academic performance, etc.
- Analytical Readiness: The generated dataset may be easily divided into matrices suitable for statistical analyses.

3.3 Population and Sample

- Target Population: The target population comprises all those undergraduate students who are currently studying at the Faculty of Computing and Information Technology (FCIT) at the NIIBS Campus.

- **Sample Size:** The final sample size is made up of 49 unique undergraduate participants who filled out the survey questionnaire.
- **Sampling Method:** In conducting this research, I applied a clever mix of convenience sampling and voluntary response sampling methods.

3.4 Data Collection

The data for the research was collected using an efficiently developed online questionnaire, which was developed on Google Forms platform. The survey link was intentionally distributed through popular mobile apps, such as WhatsApp and Messenger, to reach as many IT undergraduate students studying at the NIIBS Campus as possible.

Using a 5-point Likert Scale, the questions within the online questionnaire were designed to evaluate the following characteristics related to the use of generative AI platforms:

- How often the IT students use generative AI platforms.
- The factors and types of learning activities that motivate IT students to use AI platforms.
- The impact of generative AI platforms on the efficiency and productivity of work process and their contribution to GPA improvement.
- The level of awareness of the ethical issues involved in using AI platforms and the risk of losing critical thinking skills.

3.5 Data Analysis

Results of the study were analyzed through the application of a formalized analytical processing pipeline utilizing the initial validation of the raw data collected in Microsoft Excel and through the primary inferential analyses in IBM SPSS Statistics. After the extraction of the raw survey data from Google Forms, a set of data cleaning protocols were utilized to validate the inclusion criteria, exclude incomplete survey responses and convert the categorical variables into comparable numeric matrices for analysis.

Once the data preparation process was completed, baseline descriptive data were calculated to determine the demographics of the 49 undergraduate information technology respondents, establishing the frequency distributions and percentage ranges for the penetration of each platform, the students' multi-platform use behaviors and the baseline academic years. Ordinal data, collected through the five-point Likert scale items on student perceptions about workflow speed, the quality of artifacts, and the impact on grades were collated into discrete numeric tracking distributions for the purpose of conducting statistical analyses.

In order to characterize the structural validity of research hypotheses and create an empirical base for the study, non-parametric inferential modeling was conducted via Pearson's Chi-Square Tests of Independence within the SPSS software environment. To map intersections between blocks of categorical independent variables (usage frequencies of student AI tools and structures of platform adoption) and blocks of categorical dependent variables (self-reported cumulative GPA tiers), we constructed crosstabulation tables and computed the Pearson's Chi-Square statistic across several contingency tables. The Chi-Square statistic evaluated whether observed distributions of the crosstabulation tables deviated significantly from expected null frequencies (the frequency expected to occur under the null hypothesis), thus, measuring the degree of independence between students' technology-related habits and their university-related, formal achievements.

3.6 Participant Profile and Characteristics

From an analysis of the total 49 responses, the following demographic information was found:

- **Gender Distribution:** There were 27 females (55.1%) and 22 males (44.9%).

- **Distribution in Terms of Academic Year:** Even though participation was not limited by academic year, it should be noted that the majority of responses came from third-year students, with 38 out of 49 (77.6%) of the total respondents falling in this category. This large proportion helps obtain insightful responses from upper-level students who will be graduating soon and handling tough coursework.
- **Participant Qualification:** All the participants were qualified by the compulsory criterion of being IT undergraduates at the NIIBS campus and regular users of online learning platforms.

3.7 Ethical Considerations

Some of the measures adopted to ensure high academic standards in the research include the following:

- **Informed Consent:** Prior to beginning the research process, all participants were shown an introductory statement explaining the exact objectives of the research in the academic context to ensure that their participation was purely voluntary.
- **Anonymity and Confidentiality:** In the process of compiling data, no personal information will be gathered (except name and email), students may freely respond to questions concerning the extent of their use of AI, academic performance, etc.
- **Data Privacy:** The raw data from the spreadsheets and outputs from the survey were kept safely in Google Drive by the principal researcher for academic use.

4 FINDINGS / RESULTS

This Findings and Results section include quantitative study data such as the frequency, perceived academic productivity, AI tool usage, and the distribution of GPAs and related statistics. This section attempts to show the effect of ChatGPT and Google Gemini on the academic performance, academic output, quality of academic output, and learning of IT undergraduates at NIIBS Campus based on the surveys.

4.1 AI Tool Penetration and Usage Frequency

It is apparent from the data that the integration of generative AI technologies is deeply rooted in the students' work processes at the FCIT of the NIIBS Campus.

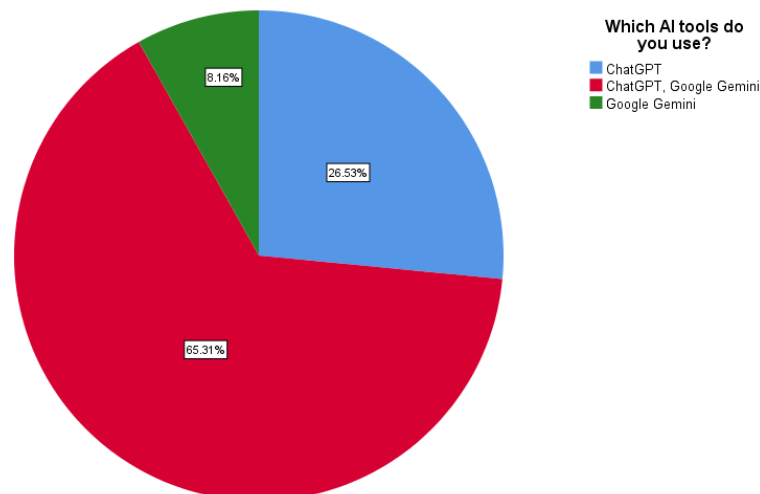


Fig. 1. Usage of AI tools illustrated in a pie chart

Fig. 1 shows 65.3% of all participants reported that they use both ChatGPT and Google Gemini when conducting research and the results of these participants indicate that the majority of students prefer using multiple resources to accomplish their work across various education platforms. The participants likely prefer to use a combination of ChatGPT and Google Gemini to complete different types of tasks, such as coding assistance through ChatGPT while clarifying complex concepts via Google Gemini, so that the student can maximize all resources available to them in relation to their particular study needs.

Statistics					
How often do you use AI tools for your studies?					
N	Valid	49			
	Missing	0			

How often do you use AI tools for your studies?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Often	15	30.6	30.6	30.6
	Rarely	1	2.0	2.0	32.7
	Sometimes	20	40.8	40.8	73.5
	Very Often	13	26.5	26.5	100.0
	Total	49	100.0	100.0	

Fig. 2. Frequencies for AI tool usage

As shown in Fig. 2, with regards to the analysis of the frequency of use of the application by the participants, it was found out that the majority of the participants, whose percentage is 57.1%, had been using these applications very often. In addition to this, 30.6% of participants reported that they "Often" use these AI tools. Moreover, 26.5% of the total number of participants confessed to have used the application "Very Often". From this analysis, it is evident that these applications tend to be used often by the participants. However, an insignificant share of students, 2.0% indicated they used the tools "Rarely" or "Not at All".

4.2 Impact on Academic Productivity and Perceived GPA

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
AI tools help me complete assignments more efficiently	49	3	5	3.98	.661
AI tools improve the quality of my academic work	49	2	5	3.94	.556
Using AI tools has improved my GPA or grades	49	2	5	3.55	.647
Valid N (listwise)	49				

Fig. 3. Descriptive analysis of the impact of academic performance

As shown in Fig. 3, it is noteworthy to underline that there is a definite gap regarding the perceived impact of AI assistance on practical work completion speed and grades.

- **Efficiency of Assignment Completion (Average Rate = 3.98/5.00):** This measure received the highest rating since students agree that they benefit from the use of AI tools in terms of speed of completing coursework and other technical assignments.
- **Quality of Generated Texts (Average Rating = 3.94/5.00):** The next factor which received a relatively high score is related to the fact that AI assistance contributes to improving the quality of students' output.
- **Direct Effect on GPA (Average Rate = 3.55/5.00):** At the same time, while all three factors above received relatively high rates, the last one is not that relevant for students in terms of their studies.

Thus, it can be said that undergraduate students perceive generative AI tools mainly as efficient ways to speed up some routine processes and think that these applications can be used only as process enhancers and not as a means of grade improvement.

4.3 Academic Performance (GPA) Distribution Analysis

As seen in the sample population analyzed, the academic profile of AI tool users has a normal distribution referring to a bell curve (Most of the students are in the middle of the academic spectrum) results of student performance levels indicate that the majority of students using AI tools achieve a level of performance that is neither at the extremely low or extremely high points of the academic spectrum and their level of competency is representative of stable average performance.

Thus, although some students are performing at an above average rate, while others might struggle to do so, the majority of all students using AI tools are experiencing success through their academic journeys by utilizing AI tools to enhance their overall learning and success in conjunction with their own personal performance level.

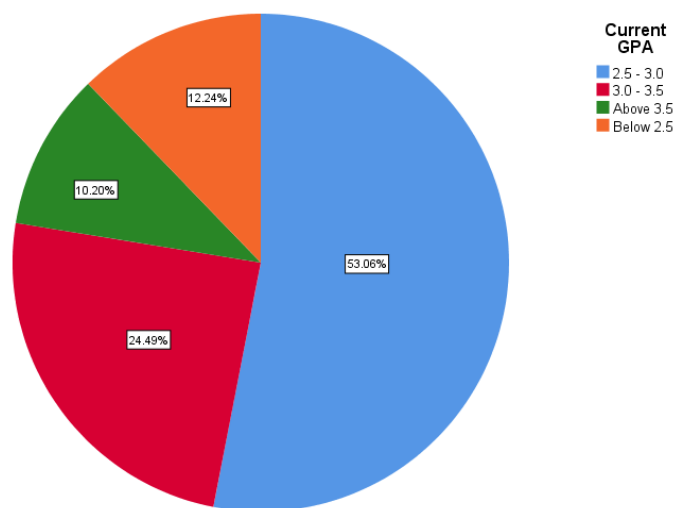


Fig. 4. Pie chart shows the count of the current GPA

Fig. 4 shows that a considerable percentage of students actively using AI tools, which stands 53.0% percentage have a GPA within the range of 2.5 to 3.0. However, a smaller percentage of students have demonstrated high academic standing, with a GPA within the range of 3.0 to 3.5. Specifically 24.5%

percentage of the students are included under this category. On the other hand, there are those students that are characterized by poor academic results with a GPA below 2.5 (12.2% percentage).

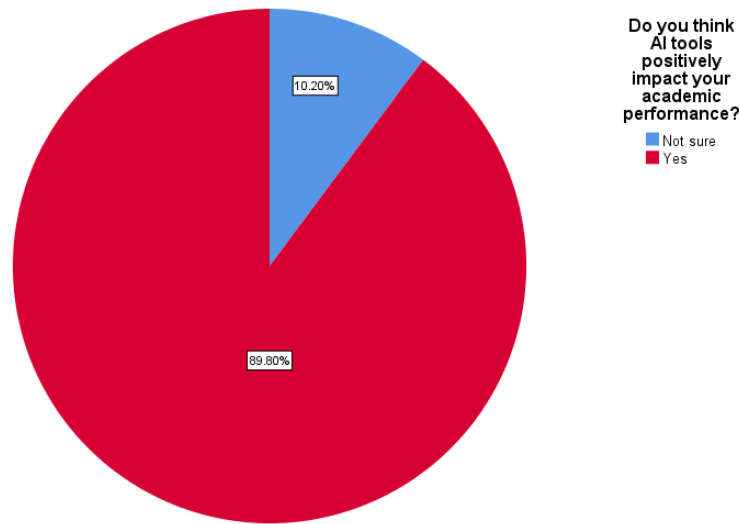


Fig. 5. Number of respondents who believe that AI tools positively impact their academic performance

Fig. 5 shows that although there are great discrepancies in the success rate among the undergraduate students, approximately 89.8% of participants believe that using artificial intelligence to help with their education has an overall positive impact on their ability to learn. This is an indication of a vast majority of students whom recognize that while they differ intellectually, they all see how artificial intelligence can be beneficial to their own success.

4.4 Inferential Analysis of AI Usage Frequency and Academic Performance

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.495 ^a	9	.690
Likelihood Ratio	6.628	9	.676
N of Valid Cases	49		

a. 13 cells (81.3%) have expected count less than 5. The minimum expected count is .10.

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.364	.690
	Cramer's V	.210	.690
N of Valid Cases		49	

Fig. 6. Pearson Chi-Square (X^2) tests of independence and symmetric measures for AI usage frequency and cumulative GPA

Fig. 6 shows that to test if the students' use of generative artificial intelligence impacted their academic performance, independent Pearson Chi-Square (X^2) test of independence was performed with 49 complete cases. The frequency of using the AI tool (independent variable) and each student's current GPA (dependent variable) were cross-tabulated for the statistical analysis.

There is a substantial proportion of study participants who can be classified at mid-level performance thresholds, independent of frequency of use of AI. Mid-range cumulative GPA's (e.g., between a 2.5 and a 3.0) were maintained by 53.3% of participants using AI "Often," 38.5% of users "Very Often," and 60.0% of users "Sometimes." Elite performance in academic standing was similarly restricted across all cohorts. Of those who used AI "Often," only 6.7% of users had a GPA > 3.5. Only 23.1% of those who used AI "Very Often" have GPAs > 3.5. A baseline segment of 12.2% of the total sample comprised the lowest performance tier with a cumulative GPA < 2.5.

The parameters of inference show that rejecting the alternative hypothesis is necessary because of the null hypothesis (H10). The Pearson Chi-Square test yielded an empirical X^2 value of 6.495 with 9 degrees of freedom ($df = 9$) and an asymptomatic two-sided significance (p-value) of .6900. The p-value for this test exceeds the traditional alpha .05 ($p > .05$) suggesting that random sampling variation accounts for the observed variance within the contingency matrix instead of any systemic correlation.

The independence of these variables has been verified through using symmetrical measurement indices with both the computed Phi coefficient ($\phi = .364$, $p = .690$) and Cramer's V coefficient ($V = .210$, $p = .690$) both indicating a weak and non-significant relationship between these two variables. In addition, given the sample size constraint ($n = 49$), there were 13 cells (81.3%) which had expected counts of less than 5 with a minimum expected count of .10.

As a whole, these statistics show a distinctly high frequency of AI use is NOT related to academic success at the NIIBS Campus, indicating that more interactions with automated systems will not necessarily result in higher or lower grades. Therefore, generative AI functions more as an enabler of workflow than as an enabler of academic performance.

4.5 Correlation Analysis of the AI Impact Index and Cumulative GPA

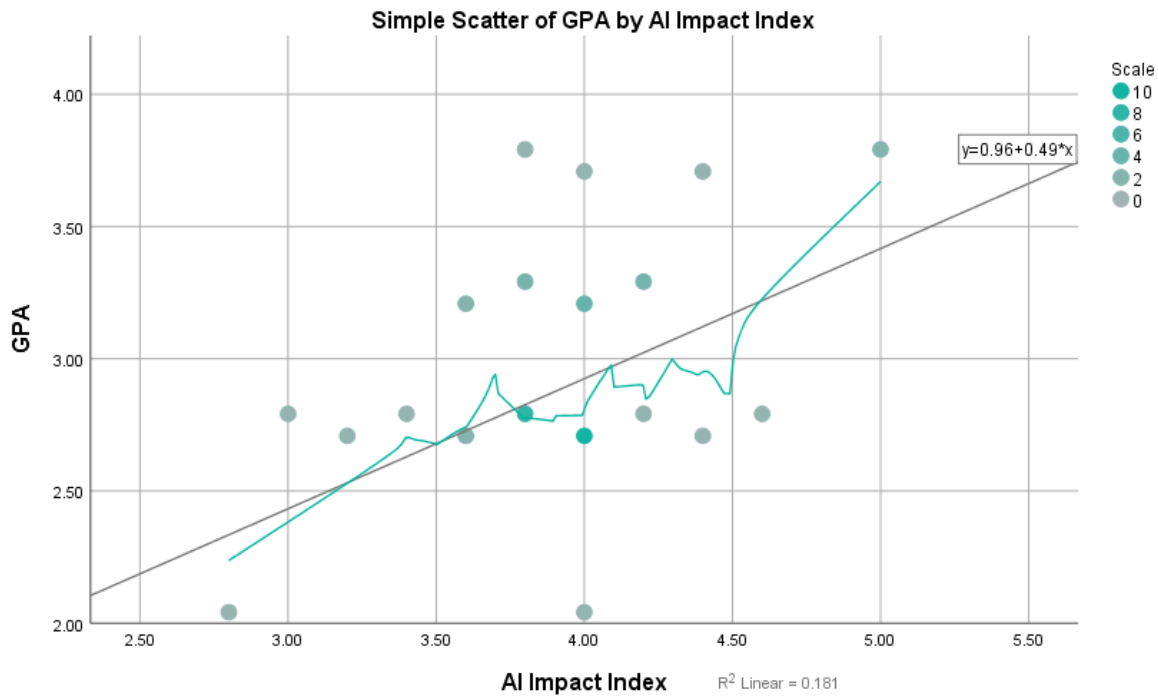


Fig. 7. Scatterplot mapping the relationship between the composite AI Impact Index and cumulative undergraduate GPA

As shown in Fig. 7, to assess the ongoing correlation between technology integration among IT undergraduates and their concrete academic performance, the correlation analysis was conducted for all 49 observations present in the collected dataset. To quantify the effect of technology on the undergraduates' perceptions, an index referred to as the AI Impact Index was created by summarizing and averaging the scores given to five different variables measured using the 5-point Likert scale: assignment completion efficacy, academic performance quality, conceptual understanding effectiveness, GPA enhancement perceptions and structured task efficiency. The resulting index can be regarded as the combined measure of the extent of use and dependence on artificial intelligence programs.

It is evident that the distribution of data points shown by the scatterplot matrix is scattered and does not have any linear pattern. This means that there are no obvious trends shown by the undergraduates in terms of how the GPA changes according to the AI Impact Index. The students with an AI Impact Index score of either 4.0 or 5.0 can be found in all possible GPA groups from below 2.5 up to GPA of more than 3.5. The highest density of points is seen where the AI Impact index of 3.5 to 4.5 overlaps with GPA of 2.5 to 3.0.

Such an apparent independence is completely validated from the perspective of the actual Pearson correlation variables, since mathematics proves that the AI Impact Index is indeed independent of the academic performances of IT undergraduates at the NIIBS Campus. As seen from the scattering of the coordinates, this pattern perfectly reflects the very high p-value obtained during the implementation of Pearson's Chi-Square tests ($p = .690$), thereby supporting the hypothesis that the rates of using technology cannot be considered an immediate predictor or trigger for terminal grades. In this respect, the described research indicates a clear case of productivity paradox associated with technology in higher education institutions, as despite the significant help offered to the students through the usage of generative AI applications, the increased

efficiency does not necessarily result in grades improvement.

5 DISCUSSION

This discussion section focuses on interpreting the study findings through the productivity paradox, which suggests that AI tools produce better and more efficient assignments without guaranteeing a higher GPA. The section illustrates how students can use AI learning tools responsibly, combines results with prior research, and addresses the dependency and academic integrity issues.

5.1 The Findings and the Productivity Paradox Interpretation

The empirical findings of this quantitative research demonstrate that there exists an operational division regarding the usage of generative Artificial Intelligence (AI) among IT faculty undergraduates at NIIBS Campus. 65.31% of the students reported using more than one platform while 57.14% of these respondents stated that they use these platforms on a regular basis. Therefore, generative AI has become an essential component of learning rather than an option for study assistance. This swift adoption mirrors the macro-technological changes seen by Sri Lankan Gen Z undergraduate students, who feel very comfortable utilizing automated systems to complete their technology-related coursework [11]

The main finding of this research is to demonstrate that there is a disparity between academic performance and GPA. While the average scores are very high for both assignment efficiency (average score 3.98) and output quality (average score 3.94), there is a much lower score for improving GPA (average score 3.55). This trend mirrors previous international studies that have shown that even though large language models dramatically enhance workflows and improve coding speeds, they do not necessarily translate into better GPA or in depth knowledge of the subject [12].

As such, students experience tremendous gains in speed due to the implementation of AI, but because final evaluations at the IT faculty of NIIBS are designed to assess individual problem-solving skills, their increased speed does not translate directly into improved academic standing. This can be seen by the fact that the largest group of people using AI (53.06%) are in the mid-level 2.5-3.0 GPA range.

5.2 Balancing Technical Scaffolding with Critical Skill Preservation

As indicated by the research, students perceive their interactions with AI as realistic. Even though 89.80% of students feel as though using AI has been a positive experience throughout their educational experiences, over 53.06% are concerned that over-use will result in academic dishonesty, reduced levels of critical thought development, or diminished ability to independently troubleshoot and resolve issues [12].

This awareness also serves to shield students from developing a false "illusion of competence", as described in recent education publications, where easy access to automated solutions results in a lack of understanding of their actual capability [12].

The findings of this research indicate that the NIIBS IT undergraduates are increasingly taking an active approach to verifying AI produced materials—65.20% stated they routinely perform programming debugging and fact checking of materials produced by AI before submitting them as part of any formal assessments. This baseline level of accountability is consistent with contemporary models of cognitive scaffolding and suggests that AI has the potential to be a valuable partner in the development of critical thinking and technical productivity if used appropriately [12], [13].

6 RECOMMENDATIONS

According to the quantitative data and the particular operational situation at the Faculty of Computing and Information Technology (FCIT) at NIIBS Campus, it is recommended that the following strategic actions be taken:

- **Add Targeted AI Literacy to the Existing Curriculum:** The computing faculty needs to integrate a structured AI literacy component into the First Year IT curriculum instead of trying to limit or ban these tools. These components would teach students how to construct prompts for AI systems, work collaboratively on debugging processes and verify the results from AI against official software documentation, with the goal of teaching students how to move from being passive recipients of information provided by AI to active verification of the information provided by AI.
- **Create Clear Guidelines for Using AI for Academic Purposes:** NIIBS Campus needs to create clear policies establishing what is considered acceptable versus unacceptable use of generative AI for assignments. The policies should set forth that using AI as a support tool or syntax checker is permitted. However, reproducing large amounts of code or text verbatim is prohibited and will be considered academic fraud [11].
- **Revise Examination and Evaluation Methods to Verify Authenticity in Light of Increased Use of AI:** Evaluative methods must extend beyond unsupervised coursework so that students receive authentic marks via different evaluation methods due to increased use of artificial intelligence in academia. Course we should incorporate real-time vivid examinations (Vivas), practical / lab tests, and live code defenses where students must verbally justify their design rationale (logic, architecture and syntax) for their submissions and how / why they arrived at their final product in front of the evaluator [12].
- **Expand Future Research Scope:** To confirm future validity, an increased number of respondents will be necessary for the final stage so as to conduct multiple academic analyses on a total of 49 respondents at the conclusion of this research. In subsequent phases of data collection, researchers will anonymous, objective grade record files (GPR) with anonymous GPA records rather than self-collected clusters. As a result of this change in methodology, researchers will use more advanced statistical techniques (such as Pearson or Chi-square) to confirm whether there were actual academic outcomes from any one of the different impact classes included in their current analysis [13].

7 CONCLUSION

The results of this quantitative study demonstrate that generative AI tools are embedded in the academic routines of undergraduate IT students at the NIIBS Campus. More than half of the students regularly use these tools and use a connected approach across multiple platforms, combining ChatGPT and Google Gemini, to complete technical assignments.

The greatest benefit of these tools is related to efficiency of operation. Students indicated that they save significant amounts of time and that their assignment presentations are better quality, when they use them. However, students differentiated between applying their efforts faster and receiving higher grade outcomes from their work, as seen in the moderate correlation between GPA impacts and the use of AI tools. While the majority of students emphasized the productivity benefits of generative AI, there remains a significant level of difference between their high degree of confidence regarding the capacity of AI tools to facilitate productivity versus their feelings of uncertainty about the potential long-term effects on their ability to think

critically and continue developing certain skill sets due to their reliance on AI.

In conclusion, the growing popularity of generative AI means that they are quickly becoming a viable, valuable asset to educational institutions. These devices provide their users with an invaluable resource by allowing them both to complete and simplify the work associated with programming, as well as reducing stress from their day-to-day workload. However, achieving successful academic results from using these tools will not be automatic and therefore all educational practitioners must do everything possible to help undergraduates utilize the benefits of these tools while still meeting their academic obligations.

Finally, the evidence collected demonstrates that most NIIBS IT undergraduates are currently using these tools in very large numbers, making it unrealistic to think that anything other than proper regulation will suffice. Our primary focus going forward should be developing effective, institutional policies that govern the use and misuse of these products based upon the fact that most current NIIBS IT undergraduates possess a basic understanding of the need to verify the quality of their work when using these tools and therefore, have a great deal of potential for implementation of institutional policy.

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