Autonomous Adoption of AI Tools by Undergraduate Business Students: An Exploratory Study

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***Abstract*—This study investigates the use of Artificial Intelligence (AI) tools in an undergraduate business course to understand how students incorporate these technologies into their academic work. The research draws on data collected in the Fall 2024 semester where AI tools were neither encouraged nor discouraged but rather introduced by students themselves as their personal learning tool. This environment provided a natural setting to observe student behavior. Findings reveal that students primarily used AI tools, especially ChatGPT, for improving writing quality, generating ideas, and proofreading content, which is particularly valuable for non-native English speakers. Some students also reported using AI for quantitative tasks such as data analysis and coding, though to a lesser extent. The study further explores student motivations, which include enhancing efficiency, improving academic performance, and verifying answers. However, challenges emerged around the reliability of AI-generated content and ethical concerns related to plagiarism. The paper concludes by discussing implications for academic integrity, pedagogy, and the role of AI in shaping future learning environments in business education, while exploring possible differences in usage between undergraduate and graduate students.**

***Keywords*—Artificial Intelligence (AI), ChatGPT, motivation, academic integrity, learning tools**

I. Introduction

Since the last Coronavirus pandemic, the world of education has changed tremendously. From in-class teaching delivery, to a sudden online shift and two years later reopening of campuses and a new normal was established, different from before the pandemic. Many online tools created during that period remained and more hybrid teaching approaches are now utilized. Students expect the flexibility and accessibility of the online environment, and the learning support tools they have enjoyed. The latest addition to the set of learning tools utilized by students is the integration of Artificial Intelligence. Even if not formally introduced, it has become a new player in the assessment of students' work. There are many definitions for what we refer to as Artificial Intelligence. We can say that it is the field of computer science concerned with designing and developing systems capable of performing tasks that typically require human intelligence, such as learning, reasoning, problem-solving, perception, and language understanding. AI systems achieve this through algorithms and models that enable them to process data, recognize patterns, adapt to new inputs, and make decisions or predictions. Generative AI is a subset of artificial intelligence that uses machine learning models to create new content, including text, images, audio, video, or code [1].

Higher education must now deal with generative AI technologies, like ChatGPT, that students can use to perform various tasks, like answering online quizzes, solving assignments, writing projects and exams. Students commonly rely on Grammarly as a digital writing aid, using it to polish sentence structure, eliminate grammatical errors, and ensure their ideas are communicated more clearly [2]. Generative AI has certainly many benefits, but it also presents some important challenges [3].

AI can be identified as an unseen force in education, reshaping teaching and learning in university programs [4, 5]. Students are very open to exploring all these new tools to complete their assignments and projects. It certainly has the potential to enhance learning if properly used. However, it is possible that students might prioritize convenience over comprehension, relying heavily on AI-generated responses without engaging critically with the material [4].

Despite all its benefits, the integration of AI in education brings forward some important ethical issues. It raises significant questions concerning the academic integrity of the work being submitted, and of exams being completed with the help of AI. Researchers have also expressed concerns that these tools could foster over-reliance and potentially undermine critical thinking and analytical skills [4].

This study examines the multifaceted influence of Artificial Intelligence (AI) on higher education, with a focus on student engagement with AI tools. Through the descriptive analysis of data obtained from an online

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survey, this paper investigates how AI technologies are reshaping learning practices and eventually instructional approaches. It is important to understand how students use the tools, for what reasons and the perceived benefits. We have only witnessed the first steps of Artificial Intelligence in education, and its rapid progress is phenomenal. It is impossible to identify its potential when fully integrated into academic environments. It will certainly enhance educational outcomes but at what cost? It will also introduce some very important ethical dilemmas. Universities will probably have to adjust the curriculum and evaluation methods. This exploratory study contributes to an informed and balanced scholarly conversation on the responsible and effective adoption of AI in contemporary higher education. It will focus on tools used independently by students, from generative AI (ChatGPT) to specialized writing aids (Grammarly).

II. Literature Review

The integration of Artificial Intelligence (AI) tools into higher education has brought a profound shift in how students engage with their academic work. Applications such as ChatGPT and Grammarly have rapidly found a place in students' daily academic routines, assisting them with tasks ranging from writing assignments to data analysis [6]. As AI tools continue to gain momentum, it becomes increasingly important to explore the benefits they offer, the challenges they pose and how students interact with AI tools and their perceptions.

Recent surveys show that a significant number of college students in the United States have incorporated ChatGPT into their academic workflows [7]. Students often rely on the tool for brainstorming ideas and organizing written assignments. Similarly, some reports indicate that the increasing demands of academic workloads have driven many students to seek the efficiency offered by AI platforms [8].

Focusing on English as a Second Language (ESL) students, Mahapatra [9] found that AI tools provide immediate and meaningful feedback on grammar, word choice, and sentence structure. This feedback not only improved writing skills but also boosted academic confidence. Such findings demonstrate the growing role of AI as a support mechanism in diverse student populations.

It was found in Ref. [10] that habit and perceived usefulness are key drivers for adopting AI tools. Students familiar with digital technologies were more likely to embrace these innovations. Furthermore, it was observed that students use AI tools at various stages of the writing process, from brainstorming to editing, often enhancing their ability to express complex ideas more clearly [11].

Despite the advantages, the widespread use of AI in education introduces important ethical questions [12]. It seems that while students appreciate the convenience and support offered by AI, they often express concern about the authenticity and originality of AI-assisted work [9]. The fear of plagiarism being uncovered and the erosion of independent critical thinking are recurring themes. These concerns are reinforced in Ref. [10], where students are mindful of the risks associated with AI-generated content, especially in contexts where academic integrity is paramount.

It was found in Ref. [8] that nearly 69% of students questioned the accuracy of AI-generated outputs, choosing to use these tools mainly for idea generation and writing organization rather than relying on AI content without scrutiny. These findings underline the necessity for clear institutional guidelines to govern responsible AI usage.

Given the rapid adoption of AI technologies in academia, universities must develop thoughtful strategies to guide their use and implement explicit policies on acceptable AI usage, with particular attention to issues of authorship and plagiarism [8]. It stresses the importance of integrating education on ethical AI practices into the curriculum. It is proposed in Ref. [9] that a "critical literacy" approach, encouraging students to use AI tools thoughtfully while maintaining their analytical and independent thinking skills be developed.

Artificial intelligence tools like ChatGPT and Grammarly have become indispensable elements of contemporary higher education. They offer significant support for students' academic development, enhancing writing skills, productivity, and access to feedback. The widespread access of generative AI has become a very serious challenge for higher learning institutions [12, 13]. As the role of AI continues to expand, universities must proactively develop frameworks that encourage ethical usage and critical engagement. Future research should continue to explore the evolving impact of AI technologies on student learning and academic practices, ensuring that innovation strengthens, rather than compromises, the educational experience.

In this exploratory study, we aim to understand how undergraduate students in Business schools utilize AI technologies in their academic work.

III. Methodology

This study explores the use and impact of some Artificial Intelligence (AI) tools in academic settings, with a particular emphasis on their adoption in higher education.

A. The Course

Data were gathered from an undergraduate course of analytics in a school of business at a Canadian university during the Fall 2024 (September to December 2024) semester. Importantly, the use of artificial intelligence tools in the course was neither promoted nor prohibited, which allowed the researchers to observe its independent use. This selected course was taught by one of the authors of this paper.

B. The Questionnaire

With the goal of continuously improving students' learning experience, an online questionnaire assessing several aspects of courses is frequently distributed at the end of semesters. The survey instrument, adapted from Ref. [14], was designed to identify key information

regarding students' use of some AI tools. The survey was not mandatory, but students were explained the goals of the research and encouraged to participate.

C. General Usage of Artificial Intelligence Tools

This descriptive and exploratory study examines the reasons, the frequency of usage, the related concerns and the overall impact of some AI tools. Those tools can be considered as additional learning help since the selected course also includes assignments, examinations, PowerPoint notes and classroom teaching.

IV. Results and Analysis

A total of 56 out of 57 students responded to the online survey, with 66.1% female and 33.9% male. The average age of the respondents is around 22.2 years, with the following distribution: 21.4% are under the age of 20, 62.5% between 20 and 24, 12.5% between 25 and 29, and 3.6% are at least 35 years old. Of those, 41.1% assessed their level of Microsoft Excel experience prior to taking the course as minimal, 53.6% as moderate, and only 5.3% as extensive.

As part of the survey, students were asked to answer the following questions: *How frequently did you use AI tools?* and *What specific tools did you use?* Table I reveals that only 3.6% of respondents that they never utilized AI tools, while 96.4% reported using them to varying extents. Among those who used AI tools, 27.3% engaged with them daily, 49.1% weekly, 14.5% monthly, and 5.5% rarely. Notably, the most popular tool used by 89.0% of respondents is ChatGPT (Open AI) with Grammarly in second place being used by 33.1%. Gemini and Photomath are equally popular and used by 13.1% of respondents each. Perplexity AI is in fifth position with 9.2% usage. During the Fall 2024 semester, a similar study was performed in a graduate course in the same business school [4] and it was revealed that 100% of graduate students used ChatGPT and only 19% used Grammarly. The frequency of usage is higher among undergraduate students.

TABLE I. Overall Usage Frequency and AI Tools Used

Frequence of usage of AI tools		AI tools used during the semester	
Frequence	**%**	**Tools**	**%**
Daily	27.3	ChatGPT (Open AI)	89.0
Weekly	49.1	Grammarly	33.1
Monthly	14.5	Gemini	13.1
Rarely	5.5	Photomath	13.1
Never	3.6	Perplexity AI	9.2

Table II sheds light on how undergraduate students integrate AI tools into various academic tasks. The most frequent uses included essay writing and proofreading of papers, leading to refining written work. This is definitely a very good support for many students whose mother tongue is not English. Results also show that 14.3% of respondents use AI for mathematics related problems, 13.1% for data analysis and 7.1% for coding / programming. Only 2% of students answered that AI was used for Language learning.

TABLE II. Types of Assignments/Projects AI Is Used for

Types	%
Essay Writing	21.2
Proofreading	21.2
Mathematics	14.3
Data Analysis	13.1
Coding / Programming	7.1
Language Learning	2.0

Understanding why students choose to integrate AI tools into their learning strategies offers valuable perspectives. According to the results presented in Table III, 36.4% of respondents are primarily driven by a desire to streamline their workflow and cross-check their answers. Also 21.8% use AI tools to spark initial ideas when tackling challenging assignments. Another important motivation mentioned by 20.0% of students was the opportunity of saving time, while 12.7% report to improve the quality of their work. 9.1% claim that their motivation for using AI tools, was to better understand some topics. These findings suggest that learners perceive AI tools not only as a means of boosting productivity but also as a reliable aid in navigating complex academic tasks.

TABLE III. Motivations for Using AI Tools

Motivations	%
To verify or check my answers	36.4
To get ideas for starting my assignments	21.8
To save time	20.0
To improve the quality of my work	12.7
To better understand some topics	9.1

The Fall 2024 study [4] showed very different results. It revealed that 41% of graduate respondents use AI tools mainly to improve the quality of their work and 31% to get ideas to start their assignments. Verifying or checking their answers was the least important reason at 6%, while it is the most important reason (36.4%) for undergraduate students. Graduate students use AI tools with very different motivations than undergraduate students who seem to want quick help and are not so concerned about the overall quality of their work.

TABLE IV. Main Challenges when Using AI Tools

Challenges	%
Unreliable or inaccurate information	69.1
Ethical concerns about originality	12.7
While it can help answer difficult questions, it does not always improve understanding	10.9
Lack of transparency in AI generated suggestions	7.3

Students were asked what challenges they are facing when using AI tools. As shown in Table IV, the most frequently cited concern among undergraduate respondents, mentioned by 69.1% is the unreliability and inaccuracy of AI-generated responses. This issue is especially problematic for students lacking subject-matter expertise, as they may struggle to assess the validity of the information provided. At a much lower level, 12.7% of respondents expressed ethical unease, particularly around the possibility of using AI-generated content as their own. Since some universities may not have clear

guidelines as to what is considered plagiarism when using ChatGPT results, it is a source of concern. Students must navigate this new world of AI with caution. As we saw above, AI tools have become such a good complement to learning that the challenges described in Table IV should be addressed by university administrators.

The above-mentioned study [4] shows that 41% of graduate students, compared to 69.1% of undergraduate students, are concerned with possible unreliable or inaccurate information generated by AI. However, their ethical concern about the originality of the work produced is much higher at 31% compared to 12.7% for undergraduate students. The maturity and experience of graduate students might be a factor that can explain the different results.

TABLE V. HOW ARE AI GENERATED RESULTS INCLUDED

How it is included in your own work?	%
I only use AI for ideas and I write in my own words	67.9
I rephrase or edit AI generated responses	32.1
I use AI generated responses as they are	0.0

Table V presents how undergraduate students incorporate AI-generated results into their assignments and projects. A majority, 67.9%, reported using AI primarily for ideas and rewriting the answers in their own words, while 32.1% indicated that they rephrase or edit the AI-generated responses. The findings indicate that most students recognize the risks of plagiarism and have set their own limits regarding the use of AI tools. Despite the complete anonymity of their responses to the survey, some respondents might still be concerned that if they admit using the AI responses as generated, their identity might be traced back and they could be accused of plagiarism. That might explain the results as to why nobody used AI results as obtained.

TABLE VI. HOW DID AI TOOLS IMPACT THE QUALITY OF WORK?

Results	%
Significantly improve quality	36.4
Somewhat improve quality	58.2
No impact on the quality	5.4

When respondents were asked about the impact of AI tools on the quality of their projects and assignments, 36.4% reported that AI tools significantly improved the quality of their work, while 58.2% indicated that the tools somewhat improved their work. Only 5.4% stated that AI tools had no impact, as shown in Table VI. Similar results were obtained for graduate students [4].

V. DISCUSSIONS

This exploratory research indicates that undergraduate students use ChatGPT and Grammarly mainly for Essay Writing and Proofreading. Although they are university students, it seems that they do not feel confident about their writing skills. Universities could perhaps offer writing sessions to help in this area. On the other hand, graduate students use the tools primarily for research papers.

Since undergraduate students frequently use AI tools to verify or validate their answers, students should be taught that ChatGPT does not always provide the correct answers, and they must be critical of their findings. This is more of a concern for undergraduate students than for graduates. Overall, both groups believe that AI tools can improve the quality of their work. The impact on the pedagogy used in class is very important and must include guidelines on how to use ChatGPT.

VI. LIMITATIONS

There are several limitations in this exploratory research such as the relatively small sample size and the selection of the course from which data was collected. The course under study does not represent all academic disciplines. The data collection is also done at only one university. Since the data is self-reporting, it could be hiding other factors that students chose not to reveal. For future research, several courses from different areas of study should be selected and a larger sample size obtained.

VII. CONCLUSION

This paper presents an exploratory analysis of undergraduate students' autonomous use of Artificial Intelligence (AI) tools within academic contexts. Survey data indicate widespread engagement: only 3.6% of respondents reported never utilizing AI tools, while 27.3% employed them daily and 49.1% on a weekly basis. ChatGPT emerged as the most frequently used tool (89.9%), followed by Grammarly (33.1%). These applications supported a range of academic activities, like writing projects, revising their own writings, solving mathematics problems and perform data analysis. A very high percentage of respondents considered that the use of AI tools has improved the quality of their work.

Despite these benefits, the integration of AI into academic workflows introduces notable concerns. Respondents (69.1%) expressed apprehension regarding the reliability of AI-generated content. Those respondents are at the undergraduate level and their concern is much higher than that of graduate students (41%). However, the ethical concern related to incorporating AI generated outputs into original work is higher for graduate students who have more experience of research. Many reported reworking AI-generated text to maintain academic integrity.

The increasing prevalence of AI in student practices calls for institutional responses that are both clear and proactive. An updated academic code of conduct is necessary as it should incorporate elements of this new reality. Both instructors and students must be well informed of recent AI developments to identify the limits of the acceptable scope of AI assistance. Developing such guidance is inherently complex, given the evolving nature of generative AI technologies and their capabilities. Future research should examine the intersection of AI usage with higher-order cognitive competencies particularly critical thinking, creativity, and problem-solving to assess its broader educational impact. Addressing these challenges will be difficult given the continuous and rapid development of the field of AI.

Students have fully embarked in the world of generative AI and will use the tools whenever possible. Educators cannot be by-standers but must also take advantage of the new technology to prepare the leaders of tomorrow.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Danielle Morin led the research project in collaboration with Amirhossein Hosseinipour; The questionnaire was developed and approved by both authors; Danielle Morin analyzed the data and wrote the first draft of the paper; both authors had approved the final version.

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