



Ethical aspects of GenAI use by university students: An international survey

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ABSTRACT

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This article examines a critical and timely issue in higher education: university students' attitudes toward the ethical use of generative artificial intelligence (GenAI) in learning. Addressing a notable gap in quantitative research, the study investigates how students perceive the ethical dimensions of GenAI use through a survey of 760 students across three universities in two European countries. Analyses were conducted across national and institutional contexts, as well as by demographic and academic variables, including gender, age, mode of study, type of program, and field of study. The investigation aimed to assess how various student groups evaluate the ethical considerations of GenAI use in their academic work. To this end, it employed a combination of descriptive and inferential statistical methods. Findings were interpreted through the frameworks of virtue ethics and constructivist learning theory. Results indicate that students, on average, assign only moderate importance to the ethical aspects of GenAI use a concerning outcome given the increasing relevance of ethics in technology-enhanced learning. Furthermore, students' ethical assessments were significantly lower than those of their instructors at the same institutions. The study concludes that students tend to undervalue ethical concerns related to GenAI, and that this tendency is shaped less by external or demographic factors than by internal institutional factors, including university culture and norms.

Contribution/Originality: This study contributes to the existing literature by quantifying university students' attitudes toward the ethical use of GenAI in learning. It employs a new estimation methodology through a cross-country survey and statistical analysis. This research is among the few studies that have investigated institutional and demographic factors shaping ethical perceptions.

1. INTRODUCTION

Approaches for integrating GenAI into the learning process by universities in different countries reveal the need to consider the ethical aspects of students' use of the technology (Akgun & Greenhow, 2022; Bulawan Aieron, Louie, Laika, Warren, & Pauline, 2024; Kenchakkanavar, 2023). This reality is based on the prescient observations of the European Council of October 2017, which stated that the EU needs a sense of urgency to address emerging trends such as AI, "while at the same time ensuring a high level of data protection, digital rights, and ethical standards," and invited "the Commission to put forward a European approach to artificial intelligence" (Calderwood, 2024).

Analogously, the warnings presented by the European Association of Universities about artificial intelligence tools and their responsible use in higher education learning, teaching, and research activities deserve special attention

(Chan, 2023). If students do not have the opportunity to learn about the ethical use of AI, they will be more susceptible to engaging in harmful use, which may constitute academic misconduct (Chan & Hu, 2023).

According to Chan and Lee (2023), by reviewing the GenAI policies in 40 universities, five key themes emerged: 1) academic integrity and ethical use of AI; 2) enhancing teaching and learning; 3) fostering AI literacy and skills; 4) information security and data privacy; and 5) supporting diverse educational needs and promoting equity. All universities identified academic integrity and ethical use of GenAI as the most significant issue. However, many institutions, although fervently supporting students' use of GenAI, do not pay much attention to ethical issues (Civil, 2023), with ethical considerations currently high on the minds of individuals, whether they are instructors, administrators, or students (Dai, Liu, & Lim, 2023).

Research indicates that institutional policies can provide guidance about teaching students on the ethical considerations surrounding GenAI, such as bias and fairness, as well as the potential consequences of using AI inappropriately in academic contexts (Drach et al., 2023). This may involve training students to use GenAI effectively and responsibly by critiquing its outputs and keeping all parties up to date about developments, opportunities, and limitations of GenAI tools as they emerge (Du Boulay, 2022). However, we found only one study that identified university arts and social science students in Hong Kong who frequently recognized ethical issues as an important consideration (European Commission, 2018).

Following on European Commission (2018), we did not, however, find studies that examined quantitative assessments of students' attitudes towards the ethical aspects of GenAI. We also did not find studies that have looked at comparisons of students' evaluations of the ethical aspects of their use of GenAI between different universities in the same country and/or different countries, in addition to differences between students of diverse faculties or majors, by gender, by age, by form of study, and type of programme (e.g., students of Master's or Bachelor's programmes).

Based on this stated gap in research, the aim of our study was to quantify university students' attitudes towards ethical aspects of GenAI application in the learning process. With this purpose, we set out to answer the following questions:

- 1) How do students at three universities evaluate the ethical aspects of their use of GenAI in the learning process?
- 2) Do students' evaluations significantly differ between universities within the same county and with a university in a comparison country?
- 3) Are there significant differences between students who ascribe to defining categories or specific faculties?

We conducted our study based on connectivism theory, as connectivism is a theoretical framework for understanding learning in a digital age. Connectivism hypothesizes the role of technology as providing learners with access to a wide range of information and resources, including the rapidly developing GenAI products and tools in recent years (Floridi, 1999). Connectivism posits that learning occurs when individuals are physically or virtually connected and exchange ideas, perspectives, and understanding through collective processes. As interactive AI expands, the human-machine collaborative learning process increases.

During our research, we reference the following theories: Firstly, virtue ethics theory (Foltynek et al., 2023; Fui-Hoon Nah, Zheng, Cai, Siau, & Chen, 2023) is relied upon for determining the level of students' moral character when they apply GenAI in their learning process. A virtue ethics approach treats personal character as the primary subject of ethics, and as such, a virtue is a characteristic disposition to think, feel, and act well in defined domains of life. This includes learning and scholarship. Secondly, constructivism theory (Hagendorff, 2020), as the results of our study may contribute to the development of better learning strategies in higher education in the era of widespread GenAI. Constructivist learning theory asserts that knowledge creation is an active process of assemblage rather than just passively taking in information. Through experience, people build their own cognitive representations and incorporate new knowledge into pre-existing mental structures. These distinct theoretical vantage points assist in framing our empirical study as it aspires to be relevant for helping to inform the development of ethical principles and guidelines to protect students' privacy and data security when using GenAI (see additionally concerns related to

information ethics) (Jin, Yan, Echeverria, Gašević, & Martinez-Maldonado, 2025). The above-mentioned theories were considered useful candidates for interpreting study results. The theories are interconnected only insofar as their usefulness is exploited in providing diverse insights into the views of study participants (this approach follows from the established practice of theoretical triangulation).

In addition to the above potential contributions to the empirical literature on university students' use of GenAI, we also make a methodological contribution consisting of an approach that quantifies ethical aspects of students' use of GenAI in the learning process. By quantifying university students' assessment of the application of GenAI in the learning process, we create an investigative starting point for studies that may follow, where it is possible to compare and/or refine our findings with data from other countries, universities, faculties, or specialties, and different categories of students.

The results of this study can be used by EU institutions and other international multilateral institutions, state institutions responsible for higher education, university administrators and teaching staff, as well as researchers and practitioners in the field of higher education concerning the implementation of GenAI in student learning. The article is structured in the following sections: The second section is a review of relevant scholarly literature. In section three, we present our methods and corresponding data. Section four consists of a presentation of findings and their interpretation. Lastly, we provide a discussion and conclusion followed by study limitations and recommendations for future research.

2. LITERATURE

2.1. Universities' Responses Towards Students' use of GenAI

As university students become increasingly reliant on the use of the GenAI, this can lead to a decline in student performance and critical thinking (Johnston, Wells, Shanks, Boey, & Parsons, 2024; Kadaruddin, 2025). Some scholars argue that the use of GenAI may have a negative impact on the quality of education and ultimately harm student learning outcomes (Kasneji et al., 2023; McDonald, Johri, Ali, & Collier, 2025; Moorhouse, Yeo, & Wan, 2023; Nazari, Shabbir, & Setiawan, 2021). However, some researchers suggest that GenAI can be used to provide personalized feedback and support to students, helping them to identify weaknesses and improve their skills in an adaptive way (Petricini, 2024; Prohorov, Tsaryk, & Faingloz, 2024). For instance, the University of Oxford is more open to ChatGPT and finds it a useful tool for both instructors and students.

Students have recognized the potential of GenAI applications such as ChatGPT for help and personalized learning support, writing, and brainstorming, as well as applications for research and analysis (Rodrigues, Silva, Borges, Franco, & Oliveira, 2025; Siebert, 1998). Nevertheless, university students lack a sufficient level of understanding in the application of GenAI, so there is a need for educators to dispel myths about GenAI and provide experiential learning opportunities. Chan and Lee (2023) notes that 36 of the 40 universities reviewed in their study had established clear policies outlining the roles and responsibilities of faculty, students, and administrators in implementing GenAI. Faculty were tasked with incorporating GenAI into their teaching and ensuring its ethical use by students. Students were held accountable for the ethical use of GenAI and engaged in critical discussions about its implications (Chan & Lee, 2023). This policy push by universities to keep affected parties accountable in the learning process is another form of literacy that is oftentimes overlooked (Siemens, 2005) on the concept of moral literacy: actively teaching students the importance of academic honesty and the reasons for ethical behaviour, particularly when using GenAI (Tuana, 2007).

2.2. The Importance of Ethical Aspects in Students' use of GenAI

Students and academics at universities in Hong Kong emphasised the importance of ethical and responsible use of GenAI and the need for clear guidelines and protocols, highlighting the crucial role of educators and policymakers in ensuring that GenAI integration supports academic integrity and promotes equitable learning (Walczak & Cellary,

2023). The main issue that arises in relation to ChatGPT in higher education institutions concerns academic integrity, i.e., the ethical issues of applying GenAI. When GenAI is used in the learning process, care should be taken to ensure that it aligns with ethical principles and does not cause any harm to individuals or society (Wang, Dang, Wu, & Mac, 2024). Incorporating GenAI literacy into higher education curricula can foster a culture of responsible GenAI use. This literacy includes encouraging students to think about the ethical implications of GenAI use (Warschauer et al., 2023). Students need to be taught about the ethical aspects of GenAI use and how to manage the risks that may arise if the ethical aspects of GenAI use are ignored (Zhai, 2023). There is considerable work to be done to ensure that ethical aspects of GenAI use are considered when applying large language models in the classroom (Calderwood, 2024).

2.3. Students' Attitudes Towards the Ethical Aspects of Using Genai in the Learning Process

Students in Hong Kong universities were concerned about unethical, dishonest, and irresponsible use of GenAI, including fraud, plagiarism, and even copyright issues, and expressed concerns that the results obtained from GenAI may be of low quality or include misinformation and biases (Civil, 2023). Students also expressed concerns about ethical issues when GenAI is applied in the learning process and the negative impact of GenAI applications on personal development (Calderwood, 2024).

Many students fear the above-mentioned ethical implications (Civil, 2023). Students have different beliefs and concerns about the ethical use of GenAI in education, especially in relation to academic integrity (Calderwood, 2024). Calderwood finds that students lack a full understanding of the technology and ethical implications of GenAI, leading to potential misuse. Therefore, students require an understanding of clear ethical principles and policies, and opportunities to practice relevant guidance for the regulation of the use of GenAI in higher education (Calderwood, 2024). Only a small proportion of students believe that their universities provide adequate support or tools for GenAI use, emphasising the need for clearer policies and better support to prevent misuse of GenAI (Civil, 2023). Some students view the use of GenAI-generated content as a form of academic dishonesty that detracts from their own creativity and endeavors (Calderwood, 2024).

There is a consensus in the available literature that ethical considerations in the application of GenAI by university students in the learning process are now a major issue in higher education (Calderwood, 2024; Civil, 2023). For example, among university students in Hong Kong, ethical issues were most frequently mentioned by Arts and Social Sciences students (Civil, 2023).

Despite the comprehensive recognition of the importance of ethical issues in students' use of GenAI, we found only a few empirical studies that examined students' views on the ethical aspects of GenAI use. However, these studies did not provide data on the attitudes of university students, their associated faculties, and defining student categories in relation to the ethical aspects of GenAI application. Additionally, we did not find studies on this topic that compared the attitudes of students from different universities within one country or across several countries. Likewise, we could not locate studies that quantified university students' attitudes towards the application of GenAI in the learning process.

3. MATERIALS, METHODS, AND DATA

Research methods were based on a survey of students from two countries: one Ukrainian university - West Ukrainian National University (WUNU) and two Latvian universities - Riga Technical University (RTU) and RISEBA University of Applied Sciences (RISEBA). The survey was conducted electronically using Google Forms. The survey questionnaires were sent to all students of WUNU and RISEBA, students of the Faculty of Economics at RTU, and were also posted on the RTU student portal. All survey participants were assured confidentiality.

The survey questionnaires were completed by 711 WUNU students, more than 6% of WUNU's student population, and 689 WUNU student questionnaires were recognized as valid. Questionnaires were completed by 262

students at RTU and RISEBA, approximately 2% of the student population of these universities. 258 questionnaires of students at Latvian universities were recognized as valid.

Respondents were asked to answer the question: How do you rate the importance of ethical considerations when using AI products in the learning process? For rating, we used a five-point Likert scale with the following levels of evaluation for the research question: high importance, above average importance, average importance, below average importance, ethical aspects are not important.

Respondents' answers were analyzed both for the total population of respondents separately for Ukrainian and Latvian universities and with the division of Ukrainian and Latvian students into different defining categories. The analysis was carried out by the following categories of students: gender, age, faculty and/or specialty of study, form of study, program of study (Bachelor's and master's programs), and by students who use or do not use GenAI in the educational process (Table 1).

Table 1. Distribution of student respondents by categories.

N ^o	Categories	WUNU	RISEBA & RTU
1.	Gender	285 male respondents (41.4%) 395 female respondents (57.3%) 9 people did not answer the question about gender (1.3%).	134 male respondents (51.5%) 117 female respondents (45.0%) 9 people did not answer the question about gender (3.5%).
2.	Level of education	52 master's program students (7.5%) 637 bachelor's program students (92.5%)	33 master's program students (12.7%) 220 bachelor's program students (84.6%) 7 students did not answer this question (2.7%)
3.	Age	under 25 years old — 653 (94.8%) students over 25 years old — 32 (4.6%) students 4 did not answer the age question (0.6%)	under 25 years old — 184 (70.8%) students over 25 years old — 70 (26.9%) students 6 did not answer the age question (2.3%)
4.	Format of education	Full-time students, there were 632 people (91.7%) Distance learning students — 38 people (5.5%) Part-time students — 9 people (1.3%) Students on an individual schedule — 6 people (0.9%) 4 students did not answer this question (0.6%)	Full-time students, there were 186 people (71.5%) Distance learning students — 39 people (15%) Part-time students — 29 people (11.2%) 6 students did not answer this question (2.3%)
5.	Faculty or specialty of studying	The faculty of computer information technology had 122 students. The Faculty of Law had 122 students. The Faculty of Finance and Accounting had 117 students. The Institute of Innovation, Environmental Management, and Infrastructure had 97 students. The Institute of International Relations had 97 students. The Faculty of Economics and Management had 82 students. The Faculty of Social and Humanitarian Sciences had 41 students. 10 students did not indicate their faculty	Business, Economics, and Finance — 165 students Engineering, Manufacturing, and Construction (incl. Architecture) — 36 students Natural Sciences, Mathematics, and Information Technology — 25 students Other Social Sciences — 27 students 7 students did not indicate their faculty
6.	Usage of ChatGPT or other generative AI products in learning process	The students who used GenAI in their educational process, there were 542 respondents (78.7%). The students who did not use GenAI numbered 147 respondents (21.3%).	The students who used GenAI in their educational process numbered 199 respondents (76.5%). The students who did not use GenAI numbered 61 respondents (23.5%).

To determine the quantitative values of the importance of ethical aspects in the application of GenAI in the learning process, the survey questionnaire rated high importance as 4, above-average importance as 3, average importance as 2, below-average importance as 1, and no importance as 0. To draw conclusions about the level of importance of ethical aspects of students' use of GenAI in the learning process, we compared views of GenAI use in the learning process by the instructors at these universities (Table 2).

We assessed whether there was a difference in the point of view of different categories of students by comparing various categories within WUNU and respondents from two Latvian universities, as well as between students of Ukrainian and Latvian universities. Students' answers were sorted by category according to the highest number of "High importance" responses to the lowest.

Between- or among-group differences were examined using non-parametric Mann-Whitney U tests (comparison of two groups) and Kruskal-Wallis tests (comparison of at least three groups). Statistical significance was determined at the 0.05 level. SPSS version 29 was used for statistical analysis.

4. RESULTS

4.1. Evaluating the Ethical Aspects of Students' use of GenAI

In this subsection, we will examine how important university students consider ethical aspects of GenAI application in the learning process. We will also compare the assessment of ethical aspects of GenAI by Ukrainian and Latvian university students. In addition, we will compare the assessment of ethical aspects of GenAI application by students and instructors at the same university. The results of the comparison are reflected in [Table 2](#).

Table 2. Comparison of answers of respondents - Ukrainian and Latvian university students and instructors.

Importance	Ukrainian students	Latvian students	Ukrainian educators	Latvian educators
Respondents' quantity	706	254	159	98
High importance	7.2%	11.3%	30.6%	21.6%
Above average importance	23.3%	21.1%	40.6%	25.8%
Average importance	48.4%	39.8%	18.7%	37.1%
Below average importance	10.1%	17.2%	6.2%	12.4%
Ethical aspects are not important	10.3%	9.8%	3.1%	3.1%

Comparing the responses of Ukrainian and Latvian university students, we found that the highest proportion of Ukrainian and Latvian students believed that ethical aspects of GenAI application in the learning process have a medium level of importance, with the proportion of Ukrainian students who gave such an assessment being 8.5 percentage points higher than Latvian students. Among all five levels of evaluation, only 7.2% of Ukrainian student respondents rated the ethical aspects of GenAI application in the learning process as having a high level of importance. This is the lowest level of evaluation among all evaluation levels of Ukrainian and Latvian university students and almost 1.6 percentage points lower than Latvian university students. Since Latvian university students had a higher proportion of students who rated "High importance" and slightly fewer for students who rated "Ethical aspects are not important," it could give the impression that Latvian university students place more importance on ethical aspects of GenAI application in the learning process. However, Ukrainian university students have a higher proportion of respondents who rated ethical aspects of GenAI application as more important in the categories "Above average importance," "Average importance," and a lower proportion of respondents than Latvian university students who rated "Below average importance."

We also compared our assessment of the ethical aspects of GenAI application by students and instructors at the three universities. As a result, we found that the share of instructors at both Ukrainian and Latvian universities who consider the ethical aspects of GenAI application in the learning process to be of high importance is several times higher than that of students at the same universities under examination. Additionally, the share of instructors who consider the ethical aspects of GenAI application in the learning process to be unimportant is three times lower than that of students.

Based on this analysis, we can draw the following conclusions: Firstly, when assessing the importance of ethical aspects of GenAI application in the learning process, we generally do not find significant differences between Ukrainian and Latvian university students. Secondly, the assessment of the importance of ethical aspects of GenAI

application in the learning process by university students is several times lower than that of instructors. Thirdly, based on the proportion of students who rated the ethical aspects of GenAI application in the learning process highly, the proportion of students who gave lower ratings, and the comparison of those ratings respectively, we can conclude that students of Ukrainian and Latvian universities consider GenAI not only an important tool for improving the quality of learning but also a serious ethical challenge.

These results confirm the need to develop and implement clear ethical standards and guidelines that will help students to use GenAI responsibly and effectively, minimizing possible negative consequences. It should be noted that a significant number of students, especially from the humanities and social sciences, express concern about the potential unethical use of GenAI, indicating the need to strengthen educational initiatives aimed at increasing ethical literacy in the application of AI in the learning process. It is also important to consider that students from different defining categories and faculties may have different perceptions and assessments of ethical issues, which requires an individual approach to teaching and the development of appropriate ethical standards for different disciplines and educational programmes.

4.2. Analyzing the Responses of Different Categories of Students at WUNU

In this subsection, we will consider the responses of students belonging to different defining categories in rating the importance of ethical aspects in the use of GenAI in the learning process. The distribution of WUNU students' responses by category is presented in Figure 1.

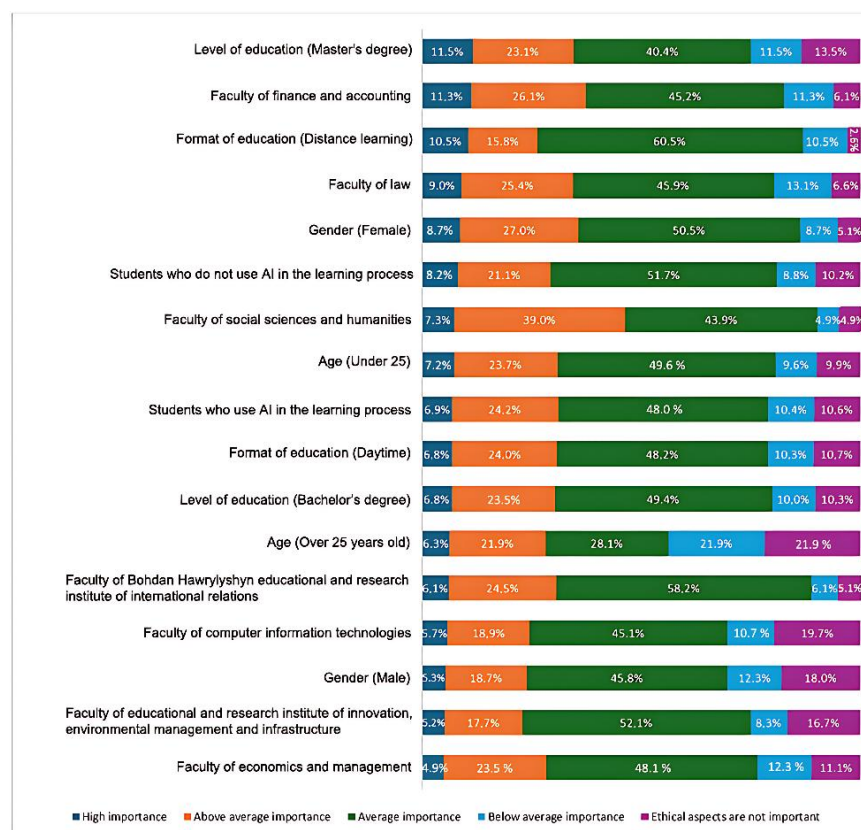


Figure 1. Distribution of WUNU respondents' answers by different categories of students.

Having analyzed the distribution of Ukrainian students' answers to the question about the importance of ethical aspects in the application of GenAI in the learning process, we have identified the following: Firstly, there is a very significant heterogeneity of answers between different categories of Ukrainian students. The proportion of students who rated the ethical aspects of GenAI application in the learning process as highly important ranged from 11.5% to 5.2%, with a difference of 2.2 times. The difference in the proportion of students who rated the ethical aspects as above

average was between 39% and 15.8%, a 2.5-fold difference. For those who rated the application as average, the range was 60.5% to 28.1%, with a 2.2 times difference. The proportion of students who rated the application as below average ranged from 21.9% to 4.9%, representing a 4.5 times difference. Additionally, the percentage of students who considered ethical aspects in the application of GenAI as not important varied from 21.9% to 2.6%, an 8.4 times difference. Overall, the level of assessment of the importance of GenAI in the learning process varied from 2.2 times to 8.4 times across different categories. The average difference across all five assessment levels was 3.76 times.

Second, our analysis showed that among Ukrainian students there was a significant difference of opinion on the issue of ethical aspects of application in the learning process of GenAI, not only between categories of students, but also within categories. To assess the presence or absence of statistically significant differences between the considered categories of students when answering the question "How do you assess the importance of ethical aspects when using AI products in the learning process?" we conducted a non-parametric Mann-Whitney U test.

No statistically significant differences in the answers were found for

- Students above or below 25 years old.
- BSc and Master students.
- Mode of studies.
- Those who use and those who do not use AI in the study process.

However, statistically significant differences were found for gender ($p < 0.001$), i.e., ethical importance tended to be more important for females. In Figure 2, females tended to give higher ratings for ethical importance (see mean ranks for reference).

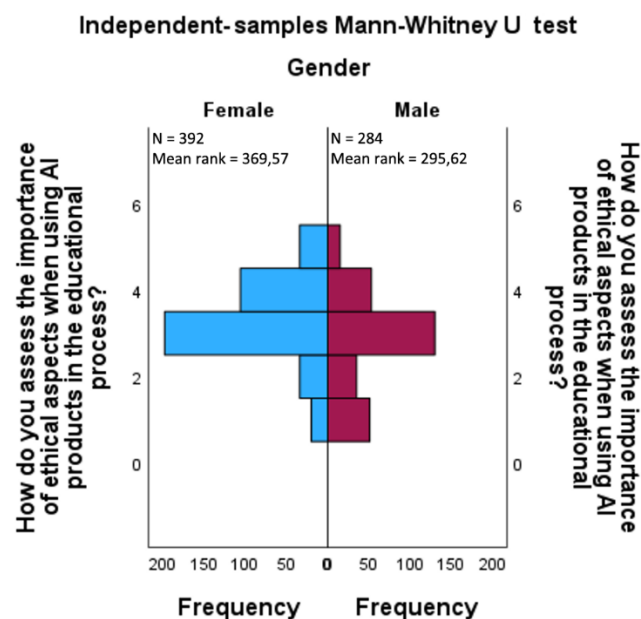


Figure 2. Independent-samples Mann-Whitney U test (Gender).

Also, a Kruskal-Wallis test revealed statistically significant differences among faculties ($p = 0.001$). Students of the Faculty of Finance and Accounting and the Faculty of Social Sciences and Humanities tended to assign higher importance to ethical aspects than students of the Faculty of Computer Information Technologies ($p = 0.034$; $p = 0.007$). Furthermore, students of the Educational and Scientific Institute of Innovation, Nature Management, and Infrastructure tended to assign less importance to ethical aspects than students of the Faculty of Social Sciences and Humanities ($p = 0.017$). No other differences among faculties were statistically significant. In Figure 3, The distribution of students' answers from different faculties is presented.

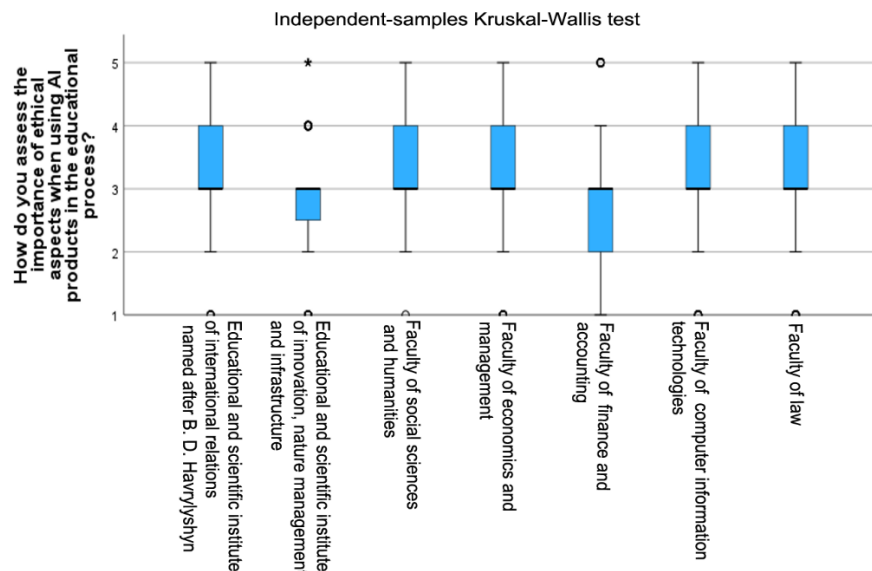


Figure 3. Independent-samples Kruskal-Wallis test (differences among faculties).

4.3. Analyzing The Responses of Different Categories of Latvian University Students

In this subsection, we will consider student responses from different categories to the question: "How do you assess the importance of ethical aspects when using GenAI products in the learning process?" The distribution of Latvian students' answers by category is presented in Figure 4.

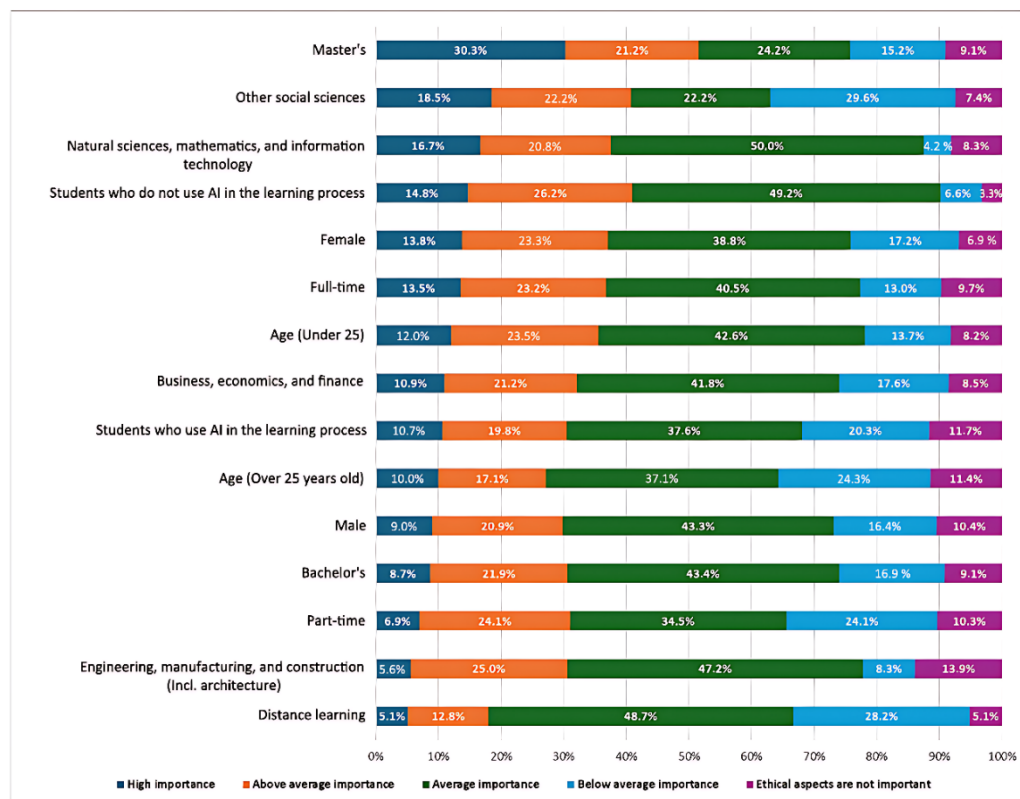


Figure 4. Distribution of Latvian respondents' answers by different categories of students.

There is a significant heterogeneity of responses among different categories of Latvian students regarding the importance of ethical aspects in the application of GenAI in the learning process. The proportion of students who rated the ethical aspects of GenAI application as highly important ranged from 30.3% to 6.1%, with a difference of five times. The difference in the proportion of students who rated above average was between 26.2% and 12.8%, a

twofold difference. For those who rated the importance as average, the range was from 50% to 22.2%, a difference of 2.6 times. The proportion of students who considered ethical aspects in GenAI's application as not important varied from 13.9% to 3.3%, with a difference of 4.2 times. The responses from different student categories varied depending on the level of assessment, with differences ranging from 2 times to 7 times. The average difference across all five assessment levels was 4.16 times, slightly higher than that observed among Ukrainian students.

Having compared the results of our analysis of students from the two countries, we can conclude that both among different categories of Latvian students and among different categories of Ukrainian students, there is a very significant heterogeneity of answers regarding the assessment of the importance of ethical aspects in the application of GenAI in the learning process. Additionally, our analysis showed that, similarly to Ukrainian students, among Latvian students there is a significant difference of opinions on the issue of ethical aspects of application in the learning process of GenAI, not only between student categories but also within categories.

To assess the presence or absence of statistically significant differences between the considered categories of Latvian students when answering the question: "How do you assess the importance of ethical aspects when using AI products in the educational process?" we conducted a non-parametric Mann-Whitney U test. The results of the test showed that no statistically significant differences were found for:

- Students above or below 25 years old.
- Gender.
- Mode of studies.

However, statistically significant differences were found for BSc and Master students ($p=0.039$), i.e., ethical importance tended to be more significant for Master students. Figure 5 illustrates that master's students tended to give higher ratings for ethical importance (see mean ranks for reference).

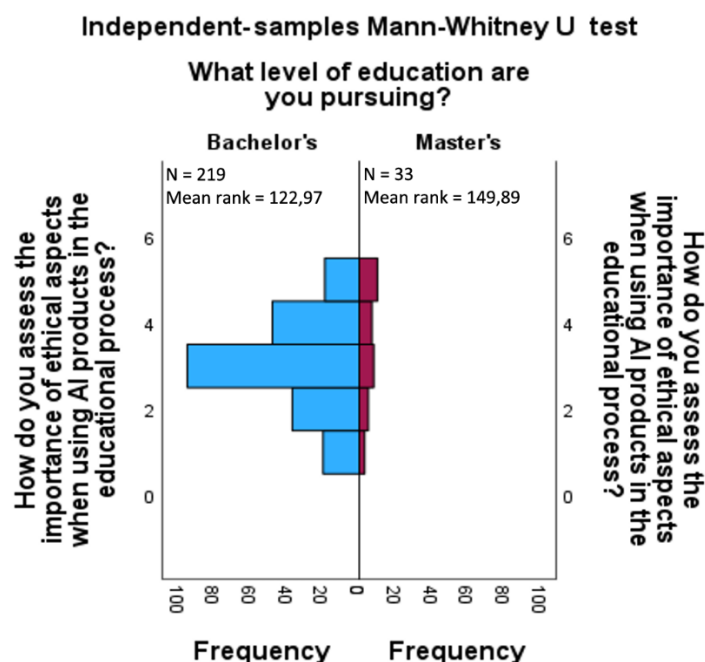


Figure 5. Independent-samples Mann-Whitney U test (level of education).

In Figure 6, it can be seen that GenAI users tended to give lower ratings for the ethical importance than non-users (see mean ranks for reference).

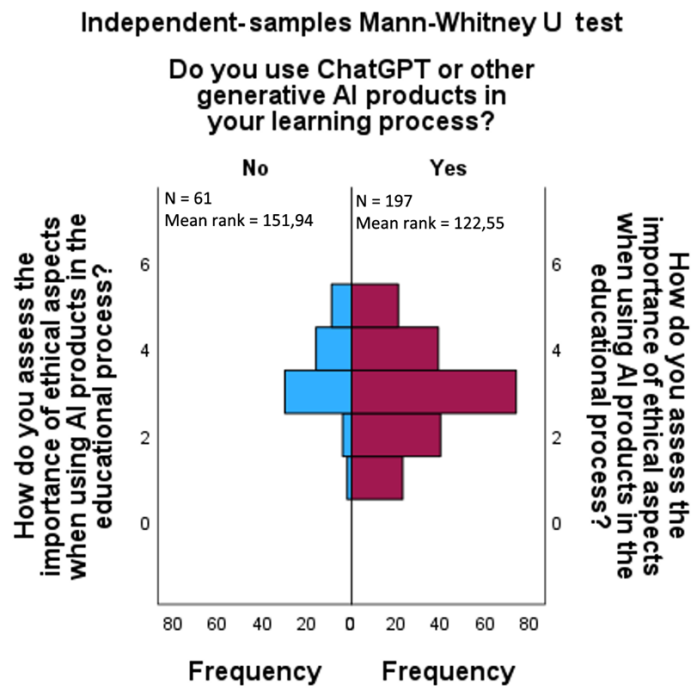


Figure 6. Independent-samples Mann-Whitney U test (use of generative AI).

The Mann-Whitney U test revealed statistically significant differences between those who use and those who do not use GenAI in the study process. Interestingly, those who do not use AI in the study process tend to assign higher importance to ethical aspects than those who use it. In Figure 5, GenAI users tended to give lower ratings for ethical importance than non-users (see mean ranks for reference).

Additionally, the Mann-Whitney U test revealed statistically significant differences between those who use and those who do not use AI in the study process. Interestingly, those who do not use AI in the study process tend to assign higher importance to ethical aspects than those who use it.

To determine whether there were statistically significant differences between the answers of Latvian students studying at different faculties regarding the ethical aspects of GenAI application in the learning process, we conducted the Kruskal-Wallis test (Figure 7).

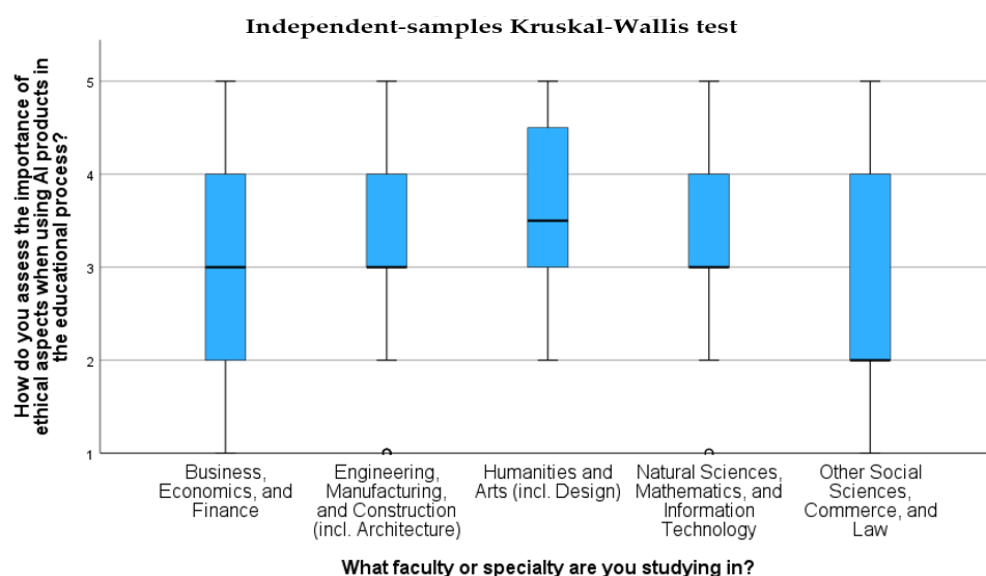


Figure 7. Independent-samples Kruskal-Wallis test (differences between the answers of Latvian students studying at different faculties).

Table 3 presents the summary of the Independent-Samples Kruskal-Wallis Test conducted on the data of Latvian students. The analysis includes a total sample of 254 participants, which ensures a sufficient basis for statistical testing. The test statistic is reported as 15.08, with 4 degrees of freedom, reflecting comparisons across different faculties. The p-value equals 0.05, which is generally considered the threshold for statistical significance.

Table 3. Independent-samples Kruskal-Wallis test summary.

Total N	254
Test statistic	15.08
Degree of freedom	4
P-value	0.05
a. The test statistic is adjusted for ties.	254

The results of the Kruskal-Wallis test showed no statistically significant differences among Latvian students studying in different faculties.

4.4. Determining the Level of Importance of Ethical Aspects for Ukrainian and Latvian University Students

In this subsection, we present an assessment of the level of importance for university students regarding the ethical aspects of GenAI application in the learning process. The results of our analysis show that WUNU students rate the importance of ethical aspects in the application of GenAI in the learning process slightly above the average level. The average score of WUNU students was 2.07, and the median was 2.08, with a high Likert scale score of 4, an above-average score of 3, an average score of 2, a below-average score of 1, and a response of no value of 0. The highest average scores were for female students (2.26) and distance education students (2.21). The lowest scores were for students above 25 years of age (1.69) and students in undergraduate programs (1.81). Among students from different faculties, the highest average score was among students of the Faculty of Social Sciences and Humanities at 2.39, and students of the Faculty of Finance and Accounting (2.25). The lowest average score was among students of the Faculty of Computer Information Technologies (1.80) and students of the Faculty of Economics and Management. However, as we have already shown in subsection 4.2, not all the categories of WUNU students are statistically significant. Among Latvian university students, the average score for the importance of ethical aspects of GenAI application in the learning process was 2.12, with a median of 2.08. The highest importance of ethical aspects was reported by students in master's programs (2.48), students who do not apply GenAI in the learning process (2.43), and female students (2.20). The lowest average scores were observed among students in distance learning programs (1.85), students over 25 years old (1.90), and part-time students (1.93). Among faculties, the highest average scores were for students in Natural Sciences, Mathematics, and Information Technology (2.33) and Other Social Sciences (2.15), while the lowest scores were for students in Engineering, Manufacturing, and Construction (including Architecture) (2.00) and Business, Economics, and Finance (2.08). The results of the analysis indicate that among Latvian university students and WUNU students, the quantitative assessment of the importance of ethical aspects when students use GenAI in the learning process is nearly identical. Statistical tests for significant differences in responses to the question "How do you assess the importance of ethical aspects when using AI products in the educational process?" between WUNU and Latvian students revealed no statistically significant differences ($p=0.914$). We can also conclude that the students of the universities considered in this study evaluate the importance of ethical aspects in the application of GenAI in the learning process only at an average level. This level indicates, firstly, that students underestimate the importance of ethical aspects of GenAI application in the learning process. Secondly, that students' underestimation of the ethical aspects in the application of GenAI in the learning process may lead to both a decrease in the quality of knowledge, skills, and abilities obtained by students and other negative consequences mentioned in the theoretical section of the article (see discussion for extended interpretation). Accordingly, future research may determine what measures and methods on the part of university administrators and

faculty members would be most effective in helping students to be more cognizant and appreciative of the importance of the ethical application of GenAI in the learning process. The previous sections have demonstrated that different categories of students evaluate the importance of GenAI applications at varying levels. Consequently, we compared the responses of the same categories of WUNU students and Latvian students to identify any patterns among these groups. For instance, among all categories of students, WUNU female students rated the importance of GenAI highest, and this difference was statistically significant. In contrast, among Latvian students, this indicator was only the fourth highest and was not statistically significant. Our analysis revealed that students over 25 years old, in both Latvian and WUNU groups, assigned the lowest scores to the ethical aspects of GenAI use. Specifically, WUNU students over 25 years old gave a score of 1.69, the lowest among all categories, while Latvian students in the same age group scored 1.90, the second lowest. However, statistical analyses indicated that the lower ratings of ethical aspects by students over 25 were not statistically significant in either group.

By comparing the indicators between students of the same type of faculties at Latvian universities and WUNU, we also did not find any similarities or patterns. The lack of similarities between the same categories of respondents from WUNU and Latvian universities may mean that respondents' answers about the ethical aspects of GenAI application in the learning process depend on the specifics of universities and, possibly, the countries in which the universities are located. However, the results of the comparison of responses from students of similar faculties of Latvian universities and WUNU could, to some extent, be influenced by the fact that the faculties of Latvian universities and WUNU are not fully symmetrical.

Since students from two Latvian universities participated in the survey, a check to determine whether the responses of students from these two universities regarding the ethical use of GenAI in the learning process are statistically significant is in order.

The Mann-Whitney U test revealed statistically significant differences between the two Latvian universities that participated in the survey ($p=0.003$). To be more precise, students at Riga Technical University (RTU) tended to assign higher importance to ethical aspects of GenAI use than students at RISEBA University. In Figure 8 RTU students tended to give higher ratings for the ethical importance (see mean ranks for reference).

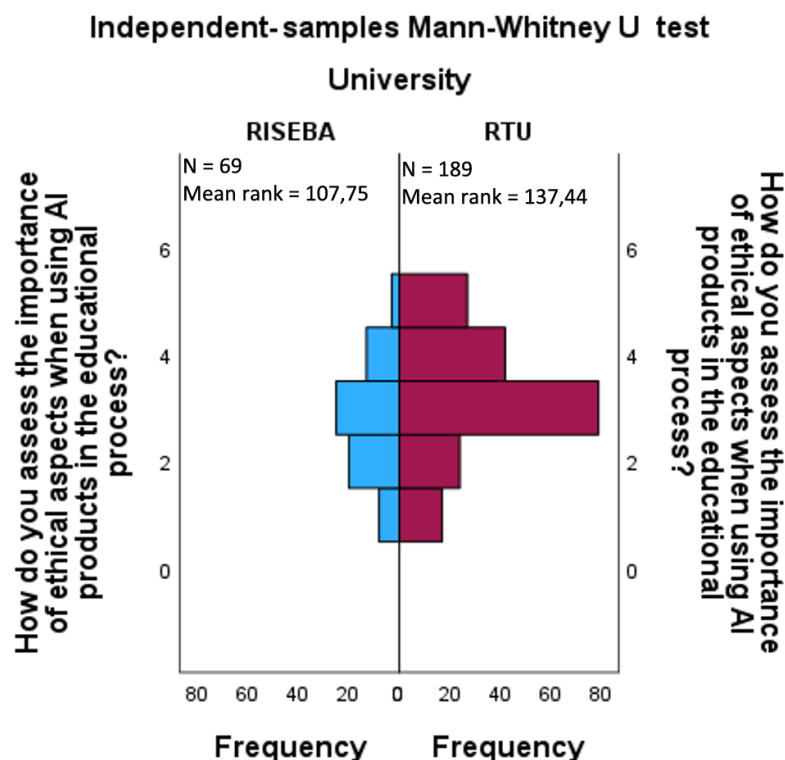


Figure 8. Independent-samples Mann-Whitney U test (University).

The results show that statistically significant differences in students' assessment of the ethical aspects of GenAI application in the learning process may not be a peculiarity of the country where the university is located, but rather the specificity and/or characteristics of a particular university.

5. DISCUSSION

The findings of this study indicate that university students generally do not prioritize the ethical aspects of GenAI application in the learning process, rating it at an average level of importance. This is a crucial insight as it highlights a gap between the perceived and required importance of ethical considerations in the use of advanced technologies such as GenAI. The disparity in the importance placed on these ethical aspects by students and their educators is also significant, with educators rating these considerations much higher.

Comparison across countries and universities: The comparative analysis between Ukrainian and Latvian students reveals some notable differences. While both groups predominantly rated the ethical aspects at an average importance level, a lower proportion of WUNU students answered that ethical aspects are of high importance, whereas Ukrainian university students had a larger proportion of students responding at the above-average level and, especially, an average level of importance, with a smaller proportion of responses at the below-average level of importance compared to responses from Latvian university students. This may suggest that there are underlying cultural or educational differences influencing students' perceptions of ethics in technology use.

The results also show that a small percentage of students, particularly Ukrainian students, rated the ethical aspects as highly important. This underlines a potential issue of the possible integration of ethical education within their curricula. The fact that educators in both countries rated the ethical aspects significantly higher than students points to a disconnect between teaching and student comprehension or valuation of principles and commitments toward honest and responsible AI use.

Differences among student categories: Analyzing the data by different student categories, such as gender, age, and faculty, reveals variations in the importance placed on ethics. For example, students from faculties closely related to technology and information, such as the Faculty of Computer Information Technology, showed a slightly higher awareness and importance placed on ethical use compared to students from other faculties. This may reflect the direct relevance and frequent exposure to ethical dilemmas within their field of study.

The literature notes that some students who do not use GenAI in the educational process refuse to use it to avoid ethical problems. However, our analysis of the differences in the level of assessment of ethical aspects between students who use and do not use GenAI was not significant.

Theoretical Insights: Connectivism tells us that within a digital age, the role of technology has an increasingly important role in learning, particularly with access to knowledge and resources. People are increasingly learning by being connected to technology in addition to other people. As interactive AI increasingly behaves like a person, can a mutual exchange of ideas, perspectives, and understanding be achieved, or is the collective learning process of person vis-à-vis machine significantly curtailed? This implicates the virtue of learning well and carrying out praiseworthy scholarship as a student. For as virtue ethics tells us, the morally important thing is having a disposition to think, feel, and act well in defined domains of life. As a moral philosophy, personal character is primary, and the findings of this study indicate that, in general, students have not been formed educationally to view the importance of thinking, feeling, and acting well when using GenAI.

Students are only intentionally formed in praiseworthy character through a process of education, whether formal or informal. This fact implicates higher education faculty, who are educators not only of content but also of character. As this study demonstrates, there is a clear ethical disparity between students and their instructors. Bridging the gap in perceived and required importance of ethical commitments toward the use of GenAI involves essential learning being formed in dispositions to think, feel, and act well. This cannot be achieved through rote learning alone; instead, it requires a teaching and learning philosophy informed by constructivism. Students who are encouraged to actively

build their understanding through challenging experiences that necessitate acquiring new knowledge and attitudes are more likely, over time, to change their prioritization of ethical aspects related to the use of GenAI. Implications for policy and practice include the need for higher education institutions to enhance educational efforts aimed at raising awareness and understanding of the ethical considerations of GenAI among students. This can be accomplished through dedicated courses, workshops, and the integration of an ethics curriculum such as case studies and exemplars to foster ethical reasoning and discussion within broader coursework. Additionally, institutions should consider developing and implementing comprehensive policies that guide the ethical use of GenAI. These policies should not only specify acceptable use but also provide frameworks for students to critically engage with the technology and its implications.

6. CONCLUSIONS

University students rated the ethical aspects of GenAI use in the learning process at an average level, which, given the increasing importance of ethical aspects in the learning process, is quite low. This assessment is based on the fact that, despite the importance of ethics in the application of GenAI by students noted in the literature, the assessment made by the students in our survey is only 0.1 points higher than the average level, and the students rated the ethical aspects of the application of GenAI in the learning process significantly lower than instructors at the same university.

In addition, both university students from the same country and university students from two comparative countries hold different views about the ethical use of GenAI applications. This difference exists among different categories of students and comparatively within the same categories of students. For Ukrainian students, statistically significant differences were found only for gender ($p < 0.001$), i.e., ethical importance tended to be more important for females. For Latvian university students, statistically significant differences were also found in other categories. Ethical importance tended to be more salient for master's students compared to students studying in bachelor programs, as well as students who do not apply GenAI in the learning process. Significant differences between ethical application of GenAI by students of different faculties and specialties were only apparent among WUNU students. At the same time, there were statistically significant differences between ethical application of GenAI by students of different faculties at the two Latvian universities.

These results show that statistically significant differences in students' assessment of the ethical aspects of GenAI application in the learning process may not be a peculiarity of the country in which the university is located, but the specifics and/or characteristics of a particular university per se and, in some cases, faculties or programs of study.

In our view, the main factors that influence the level of students' evaluation of the ethical aspects of GenAI application in the learning process are not external factors but internal factors, i.e., factors at the level of specific universities and their institutional cultures. These factors may include 1) the introduction of targeted lectures in the learning process to explain possible negative consequences of ethical neglect in the use of GenAI applications, both in the learning process and in a subsequent career; 2) providing comprehensive introductory training courses on the application of GenAI for students; and 3) professional development for university instructors in the use of GenAI products, ethical applications, and the risks involved, including the risk that students may be less able to analyze and control the reliability and quality of the information they receive as a result of GenAI. The aforementioned calls attention to the importance of ethical use and potential risks associated with GenAI and how thoughtful programmatic initiatives can be developed by university administrators, managers, and supervisors.

6.1. Recommendations

Integrating ethical education into university curricula is paramount for fostering responsible use of GenAI. Universities should incorporate comprehensive learning modules that address the ethical implications of GenAI, covering topics such as bias, fairness, plagiarism, and the consequences of misuse. This approach could help prevent

academic misconduct and instill a sense of ethical responsibility among students. Based on the findings of this study, both students and faculty are interested in and concerned about knowing and doing better in this area.

Establishing clear policies and guidelines regarding GenAI use is essential. Institutions must define the roles and responsibilities of students, faculty, and administrators to ensure adherence to academic integrity, data privacy, and ethical standards. Clear guidelines can provide a framework for the responsible use of GenAI tools and help mitigate potential ethical issues.

Promoting GenAI literacy and skills among students is crucial for effective and responsible GenAI usage. Universities should offer training programs that teach students how to use GenAI tools efficiently, critically evaluate their outputs, and understand their limitations and potential biases. These suggested programs are indicative of the theoretical understanding of the results of this study. Enhancing AI literacy will empower students to make informed decisions when utilizing GenAI technologies in their academic work.

Cultivating a culture of academic integrity is vital for ethical GenAI use. Institutions should engage students in discussions about the ethical implications of GenAI and encourage them to reflect on their use of GenAI in academic settings. By fostering an environment that values integrity and ethical behavior, universities can promote responsible GenAI practices.

Leveraging AI tools to support diverse educational needs and promote equity is an important consideration. Universities should ensure that all students, regardless of their background or field of study, have access to and can benefit from GenAI technologies. This inclusive approach will help bridge educational gaps and promote fairness.

Encouraging collaboration and sharing of best practices among universities can lead to the development of standardized guidelines for ethical GenAI integration. By working together, institutions can promote consistent ethical standards and address common challenges associated with GenAI use in higher education.

Ongoing research and evaluation are necessary to understand the evolving ethical challenges related to GenAI. Universities should conduct regular assessments of student attitudes and practices concerning GenAI use and utilize this data to inform policy and curriculum adjustments. Continuous research will help institutions stay abreast of new developments and adapt their strategies accordingly.

Providing resources and support for educators is essential for effective teaching and management of ethical GenAI usage. Universities should offer professional development opportunities and create support networks for faculty to exchange experiences and strategies. This support will enable educators to better guide students in the ethical use of GenAI tools.

Ensuring transparency and accountability in GenAI policies and practices is crucial. Institutions must regularly review and update their policies to adapt to new developments in GenAI technology and maintain accountability for ethical GenAI use within the academic community. Transparency will build trust and promote adherence to ethical standards.

Finally, implementing robust data privacy measures is paramount to protecting student information. Universities should establish stringent data privacy protocols to safeguard personal data and prevent misuse of information generated by or used in GenAI applications. Ensuring data privacy will protect students' rights and foster a secure academic environment.

6.2. Limitations and Recommendations for Future Research

Our study, while providing valuable insights into the ethical aspects of GenAI used by university students, is not without its limitations. Firstly, the research sample is limited to students from West Ukrainian National University (WUNU) and two Latvian universities (Riga Technical University (RTU) and RISEBA University of Applied Sciences). This geographical and institutional limitation may affect the generalizability of our findings to other regions and educational contexts.

Secondly, the study relies on self-reported data collected through electronic surveys. Self-reported data can be subject to various biases, including social desirability bias, where respondents may provide answers they believe are more socially acceptable rather than their true thoughts or behaviors. Additionally, the online format of the survey may have excluded students with limited internet access, potentially skewing the results.

Thirdly, our study focuses on the perception of ethical aspects of GenAI use, which is inherently subjective. Different students may interpret ethical considerations differently based on their personal experiences, cultural backgrounds, and levels of understanding of GenAI technologies. This subjectivity can introduce variability in the responses that may not be fully captured through a standardized survey instrument.

Fourthly, the study did not account for potential longitudinal changes in students' perceptions over time. As GenAI technologies and their applications in educational contexts continue to evolve, students' attitudes and ethical considerations may also shift. Longitudinal studies would be beneficial to understand how these perceptions change and what factors influence them over time.

Lastly, while the study included various categories of students (e.g., by gender, age, faculty, and program), it did not explore the potential impacts of other important demographic and contextual factors, such as socioeconomic status, prior exposure to AI technologies, and institutional policies on GenAI usage. Future research should aim to include a more diverse set of variables to provide a more comprehensive understanding of the ethical implications of GenAI in higher education.

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