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ETHICAL CONSIDERATIONS OF CHATGPT-ASSISTED ARTICLE WRITING

CONSIDERAÇÕES ÉTICAS DA ESCRITA DE ARTIGOS ASSISTIDA POR CHATGPT

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Abstract: This article presents an in-depth exploration of the multi-faceted dimensions surrounding the utilization of ChatGPT in the process of academic article writing. Drawing from interviews with 19 journal editors and managers, this study employs grounded theory methodology to comprehensively analyze the data, leading to the identification of three overarching categories: opportunities, challenges, and strategies. In the realm of opportunities, the research uncovers the potential for ChatGPT to enhance the efficiency of article writing, significantly reducing costs and expediting peer review processes. Furthermore, it sheds light on the capacity of ChatGPT to provide specialized linguistic support, particularly benefiting non-native English-speaking scholars, fostering global academic collaboration, and elevating the quality of scholarly work through more detailed analyses. Conversely, the study explores the challenges posed by ChatGPT, particularly concerning plagiarism, authenticity, and the potential loss of human touch in academic writing. It highlights the ethical dilemma of distinguishing between AI-generated content and human-original thought. In response to these challenges, the article discusses strategies for the ethical implementation of ChatGPT, emphasizing transparent and responsible use, human oversight, and potential legal measures.

Keywords: ChatGPT. Academic Misconduct. Scientific Research. Machine Learning.

Resumo: Este artigo apresenta uma exploração aprofundada das dimensões multifacetadas que cercam a utilização do ChatGPT no processo de redação de artigos acadêmicos. Com base em entrevistas com 19 editores e gestores de revistas, este estudo emprega a metodologia da teoria fundamentada para analisar exaustivamente os dados, levando à identificação de três categorias abrangentes: oportunidades, desafios e estratégias. No domínio das oportunidades, a pesquisa revela o potencial do ChatGPT para melhorar a eficiência da redação de artigos, reduzindo significativamente os custos e agilizando os processos de revisão por pares. Além disso, esclarece a capacidade do ChatGPT de fornecer apoio linguístico especializado, beneficiando particularmente acadêmicos não nativos de língua inglesa, promovendo a colaboração académica global e elevando a qualidade do trabalho acadêmico através de análises mais detalhadas. Por

outro lado, o estudo explora os desafios colocados pelo ChatGPT, particularmente no que diz respeito ao plágio, à autenticidade e à potencial perda do toque humano na escrita acadêmica. Ele destaca o dilema ético de distinguir entre conteúdo gerado por IA e pensamento original humano. Em resposta a esses desafios, o artigo discute estratégias para a implementação ética do ChatGPT, enfatizando o uso transparente e responsável, a supervisão humana e possíveis medidas legais.

Palavras-chave: ChatGPT. Má Conduta Acadêmica. Pesquisa científica. Aprendizado de máquina.

1. Introduction

Technology and artificial intelligence (AI) are reshaping the landscape of academia, and the advent of ChatGPT, a powerful language model developed by OpenAI, has started a new era in academic writing. This transformational tool offers the promise of enhancing productivity, improving writing quality, and providing valuable assistance to researchers, educators, and students alike (Nosrati et al., 2020). However, with great power comes great responsibility and the integration of ChatGPT into the academic writing process raises profound ethical considerations. The intersection of AI and academic writing is not merely an exploration of innovative possibilities; it is a reflection of the evolving dynamics of scholarly discourse. As researchers, educators, and institutions grapple with the implications of AI-powered writing assistants like ChatGPT (see for example Sarfi, Nosrati & Sabzali, in press), it is crucial to carry out a thoughtful and ethical examination of the role these tools play in the creation of scholarly content.

The present study is important especially when previous research (Sabbar, et al., 2020) has revealed that many undergraduate and even graduate students are not well aware of well-established ethical rules of writing and publishing academic papers and therefore, educating and disseminating information about newer and more complex aspect of ethics in academia seems even a bigger necessity.

In this paper, we study the ethical dimensions of ChatGPT-assisted article writing, seeking to navigate the complex terrain where technology meets academia. We acknowledge the potential benefits of ChatGPT, such as improved efficiency and accessibility, while critically examining the ethical challenges that emerge when reliance on AI becomes a prevalent aspect of the scholarly writing process.

Before exploring the specifics of ChatGPT's ethical considerations, it is essential to establish the broader ethical landscape of academic writing. Ethics is by itself a controversial concept often linked to other concepts like religion and morality (see for example Sarfi, et al., in press). Ethics in academic writing have long been central to the integrity and credibility of scholarly

discourse. Fundamental principles such as plagiarism avoidance, proper citation, and adherence to research ethics have been the cornerstones of academic integrity (Jerjes, Hamoudi & Hopper, 2018). However, the integration of AI into the writing process introduces a new layer of complexity. While the core principles of academic integrity remain intact, the means by which these principles are upheld are evolving. The question arises: How does one define and preserve academic integrity when AI plays a significant role in generating written content?

ChatGPT's capabilities extend beyond mere text generation; it can aid in the development of ideas, provide context-relevant suggestions, and even assist in structuring academic papers. Its potential to streamline the writing process, especially for those facing time constraints or language barriers, is undeniable. Researchers can leverage ChatGPT to draft initial manuscripts, generate ideas for research proposals, and overcome writer's block. Accessibility is another realm where ChatGPT shines (Shackelford, Trautman & Voss, 2023). It democratizes academic writing by providing support to individuals who may not have the same level of linguistic proficiency or resources as their peers. For non-native English speakers or students from underrepresented backgrounds, ChatGPT can level the playing field, ensuring that their voices are heard in scholarly conversations. Furthermore, ChatGPT's ability to generate text quickly can be a boon for educators and students alike. It can assist educators in providing timely feedback to students and guide students in improving their writing skills. In a rapidly changing educational landscape, where online learning and remote instruction are prevalent, ChatGPT can serve as a valuable educational tool (Shahghasemi, et al., 2023).

While ChatGPT offers immense promise, it also raises several ethical quandaries that demand careful consideration. One of the central concerns pertains to authorship and originality (Johansson, 2023). When AI contributes significantly to the writing process, questions emerge about the authenticity of the work and the delineation of authorship. How does one attribute credit in a manuscript where AI plays a substantial role, and where should the line be drawn between collaboration and automation? Plagiarism detection and academic rigor pose additional challenges (Khalil, & Er, 2023). How can institutions and journals ensure that AI-generated content meets the rigorous standards of originality and scholarly contribution? What measures should be in place to detect and prevent AI-facilitated plagiarism or content recycling? Transparency is a foundational principle in academia, and here too, ChatGPT introduces ethical considerations. Researchers and writers must grapple with the need to transparently acknowledge the role of AI in the writing process. Is there an ethical obligation to disclose the extent of AI assistance in scholarly articles, and if so, how should this be communicated? Moreover, the ethical implications of bias in AI-

generated content should not be overlooked. AI models like ChatGPT learn from vast datasets, which may inadvertently perpetuate biases present in those data. How can researchers ensure that AI-generated content remains free from bias and aligns with ethical standards of inclusivity and fairness?

Through a comprehensive analysis of the ethical landscape, this article aims to equip researchers, educators, and institutions in Iran -and in the world, why not?- with the knowledge and insights needed to make informed decisions about the integration of ChatGPT into the academic writing process. One of the good starting points in this respect is to see how professionals consider these issues.

2. Literature review

ChatGPT is a new thing and it took some time before academicians learned how it might be effectively employed in writing academic papers. Nevertheless, the number of academic papers written and published on different aspect of AI-generated academic papers is astonishing. Here, we review some of them.

In a recent pilot study conducted by Mondal, Mondal & Podder (2023), the researchers aimed to assess the suitability of text generated by ChatGPT for patient education in the context of dermatological diseases. The study employed a systematic approach, first tasking ChatGPT with listing common dermatological diseases and then requesting disease-specific patient education content. The results indicated that ChatGPT generated patient education materials with an average word count of 377.43 words, which were deemed easily understandable, suitable for high-school students to newly enrolled college students. However, a concern arose regarding a high text similarity index, exceeding the expected limit, suggesting potential redundancy in generated content. The study also noted the accuracy of the text, classifying it as "relational" based on the Structure of Observed Learning Outcomes (SOLO) taxonomy. While Mondal, Mondal & Podder concluded that while ChatGPT demonstrated the capability to create comprehensible patient education materials, the study emphasized the importance of healthcare professionals exercising caution and verifying text similarity before utilizing ChatGPT-generated content in their educational materials.

In a systematic literature review conducted by Imran and Almusharraf (2023), the role of ChatGPT as a writing assistant in academia was examined. This review was based on an analysis of the 30 most relevant articles among a collection of 550 articles published between December

2022 and May 2023, shortly after ChatGPT's release in November 2022. The review's findings highlight the diverse range of opinions and scenarios associated with ChatGPT's use as a writing assistant and how individuals interact with it. It underscores that artificial intelligence (AI) in education, represented by ChatGPT, is an integral part of ongoing educational development. Consequently, academic writing faces both opportunities and challenges in adopting ChatGPT as a writing assistant. The study emphasizes the need to recognize ChatGPT's role as a supportive tool for both learners and instructors, as chatbots can significantly enhance the academic process by providing assistance and simplifying tasks. However, the review also underscores the importance of revisiting and updating educational practices, including student and teacher training, policies, and assessment methods. These updates are essential to address issues related to academic integrity and originality, such as concerns about plagiarism, AI-generated assignments, online/home-based exams, and challenges associated with auto-correction technologies. Imran and Almusharraf's systematic literature review sheds light on the evolving landscape of higher education with the introduction of ChatGPT as a writing assistant. It emphasizes the potential benefits and challenges associated with this technology and calls for a thoughtful reevaluation of educational practices to ensure academic integrity and effective integration of AI tools like ChatGPT.

In their manuscript, Dergaa, Chamari, Zmijewski, & Ben Saad (2023) undertake a comprehensive exploration of the implications of ChatGPT and other Natural Language Processing (NLP) technologies in the realm of academic writing and research publications. The study encompasses three primary objectives: (i) investigating the potential advantages and risks associated with ChatGPT and NLP tools in academic writing and research, (ii) shedding light on the ethical considerations inherent in utilizing these tools, and (iii) considering the impact of their usage on the authenticity and credibility of academic endeavors. The methodology employed by Dergaa, Chamari, Zmijewski, & Ben Saad involved a systematic literature review, focusing on scholarly articles published in peer-reviewed journals indexed in Scopus, with an emphasis on quartile 1 journals. The search strategy incorporated keywords such as "ChatGPT," "AI-generated text," "academic writing," and "natural language processing." The analysis was carried out using a quasi-qualitative approach, which encompassed a thorough examination and critical evaluation of the selected sources to extract pertinent data that addressed the research questions. The findings of their study emphasizes on the potential of ChatGPT and other NLP technologies to augment the efficiency of academic writing and research. However, this technological advancement is accompanied by concerns regarding its impact on the authenticity and credibility of academic work.

As a result, the study emphasizes the imperative need for comprehensive discussions that encompass both the potential benefits and threats posed by these tools. Furthermore, it underscores the paramount importance of ethical considerations and adherence to academic principles. Dergaa, Chamari, Zmijewski, & Ben Saad advocate for a balanced approach that integrates human intelligence and critical thinking into the research process. It recommends that academics exercise caution when employing these technologies and advocate for transparency in their usage. Ultimately, Dergaa et al.'s manuscript calls for a holistic and ethical approach to the incorporation of ChatGPT and NLP technologies in academic endeavors, recognizing the pivotal role of human intellect and analytical reasoning in preserving the integrity of scholarly work.

The objective of the study conducted by Ariyaratne, Iyengar, Nischal, et al. (2023) was to assess the accuracy and quality of academic articles generated by ChatGPT. This tool utilizes machine learning algorithms to produce text that closely resembles human language and has gained significant attention recently. The primary concern addressed in the study pertained to the accuracy of documents generated by ChatGPT in comparison to those authored by human researchers. The methodology employed in their study focused on radiology articles generated by ChatGPT, which were then compared to published, written, and under-review articles. Two fellowship-trained musculoskeletal radiologists independently analyzed these articles and assigned a rating on a scale from 1 to 5, with 1 denoting poor accuracy and 5 indicating excellent accuracy. The results of their study revealed that out of the five articles produced by ChatGPT, four were significantly inaccurate and contained fictitious references. One article exhibited well-crafted content, with a strong introduction and discussion; however, it also featured fictitious references. The study's conclusion highlights the ability of ChatGPT to generate coherent research articles that, upon initial review, may closely resemble authentic articles typically published by academic researchers. However, a critical concern emerged as all of the assessed articles were found to be factually inaccurate and contained fictitious references. It is essential to recognize that these AI-generated articles may appear authentic to readers without specific training in the field.

The research conducted by Fitria (2023) is characterized as descriptive qualitative research, aiming to assess the functionality of ChatGPT, an artificial intelligence tool developed by OpenAI, particularly in the context of writing English essays. The study provides a detailed analysis of the process of accessing ChatGPT, its capabilities, and its responses to various prompts. The methodology involves accessing ChatGPT via the openai.com or chat.openai.com websites through web browsers. The study outlines the registration process for users who do not have an account, which can be done through email, Google, or Microsoft accounts. Once logged in, users

can interact with ChatGPT by entering questions or statements in the conversation column. ChatGPT responds promptly with answers. Fitria experimented with ChatGPT by posing questions and statements related to English assignments. One of the interactions involved the query, "Can you help me in doing my English assignment?" to which ChatGPT responded with a willingness to assist and a request for more specific information about the assignment. The study indicates that ChatGPT was able to respond to questions on a variety of topics, including English essays, descriptive texts, recount texts, resolutions for 2023, and future career plans. ChatGPT exhibited an understanding of event orders and writing structures, incorporating main and explanatory sentences, as well as conclusions. Furthermore, it demonstrated versatility in using both active and passive voice and appropriately employed tenses in relation to the given essay topic. However, the study also points out that despite these capabilities, further research is necessary to determine the grammatical accuracy of the essays generated by ChatGPT. This highlights the importance of evaluating the quality and correctness of the content produced by AI tools like ChatGPT, particularly in educational and academic contexts. Fitria's research provides valuable insights into the functionality of ChatGPT as a writing assistant for English essays and underscores the need for continued assessment and scrutiny of the grammatical accuracy of AI-generated content.

The empirical study by AlAfnan, Samira Dishari, Jovic, & Lomidze (2023) investigates the role of ChatGPT as an educational tool, focusing on its impact on students and instructors in communication, business writing, and composition courses. The study tries to identify the opportunities and challenges associated with ChatGPT in these educational settings and provides practical recommendations based on its findings. In terms of methodology, the study conducted 30 tests using ChatGPT, encompassing both theory-based and application-based scenarios. The study revealed several key outcomes. Firstly, ChatGPT showed potential as a replacement for search engines due to its ability to provide accurate and reliable information to students. Secondly, it offered students a platform to seek answers to theory-based questions and generate ideas for application-based questions. Lastly, it provided instructors with opportunities to integrate technology into their classrooms and conduct workshops to discuss and evaluate ChatGPT-generated responses.

However, AlAfnan et al. maintain that there were challenges identified as well. The potential for unethical use by students could lead to a decline in critical thinking and learning. Instructors faced challenges in distinguishing between meticulous students and those overly dependent on automation, which affected their ability to measure learning outcomes effectively.

Additionally, ChatGPT's presence had a negative impact on the assessment of student achievements. Based on these findings, the study provides practical recommendations for instructors in communication, business writing, and composition courses:

Assessment Methods: Instructors are advised to avoid using theory-based questions as take-home assessments.

Task Complexity: Assigning detailed case-based and scenario-based assessment tasks that require personalized answers can foster critical and creative thinking among students.

Plagiarism Detection: Implementing plagiarism detection software for all take-home assessments, especially in composition courses, can help maintain academic integrity.

Integration and Discussion: Instructors should consider integrating ChatGPT-generated responses as examples to be discussed in workshops, promoting a constructive learning experience. Interestingly, the study also found that ChatGPT was adept at paraphrasing responses in a manner that escaped detection by similarity detection software. This led to the recommendation that similarity detection software providers need to enhance their software to effectively detect such instances.

The article authored by Lund, Wang, Mannuru, Nie, Shimray, and Wang (2023) explored the realm of OpenAI's ChatGPT, a generative pre-trained transformer, which functions as a chatbot utilizing natural language processing to fulfill text-based user requests. The discussion commences by providing insights into the historical development and fundamental principles underpinning ChatGPT and analogous models. These models are characterized by their proficiency in understanding and generating human-like text. The focal point of the article then shifts to exploring the potential impact of ChatGPT on academia and scholarly research and publishing. It posits ChatGPT as a prospective model for automating the preparation of essays and various forms of scholarly manuscripts, which could potentially revolutionize the academic writing landscape. However, the article also conscientiously addresses the ethical concerns associated with the emergence of large language models like GPT-3, the foundational technology behind ChatGPT. It underscores the ethical considerations that arise with the usage of such models by academics and researchers. These concerns are situated within the broader context of advancements in artificial intelligence, machine learning, and natural language processing within the realm of research and scholarly publishing. In summary, Lund et al.'s article navigates through the evolution of ChatGPT and its potential implications for academia, all while shedding light on the critical ethical considerations that accompany the integration of large language models in the realm of scholarly publishing.

In response to the *Journal of Medical Science (Cureus) Turing Test*'s call for case reports aided by ChatGPT, Alkaissi and McFarlane (2023) present two cases: one focusing on homocystinuria-associated osteoporosis and the other on late-onset Pompe disease (LOPD), a rare metabolic disorder. Their objective was to assess ChatGPT's ability to produce content on the pathogenesis of these medical conditions, thereby contributing to the scientific discourse. The study documents their observations regarding ChatGPT's performance, encompassing both positive aspects, negative outcomes, and certain concerning aspects. By engaging ChatGPT in the generation of content related to the pathogenesis of these medical conditions, the researchers aimed to evaluate its utility and effectiveness in the context of scientific writing. Alkaissi and McFarlane's article, titled "Artificial Hallucinations in ChatGPT: Implications in Scientific Writing," offers insights into the use of AI tools like ChatGPT in the medical domain. It highlights both the potential advantages and limitations of such technology in scientific communication and research publication (davoudi,2018).

The article authored by Mijwil, Hiran, Doshi, Dadhich, Al-Mistarehi, and Bala (2023) sets out to explore the impact of artificial intelligence tools and techniques on academic research, with a particular emphasis on the implications for academic ethics. The primary focus of the article is the utilization of ChatGPT in generating scientific research within the framework of academic ethics. ChatGPT is acknowledged as a powerful tool capable of generating text in various formats, conducting literature searches, and even suggesting titles for the created content. However, the article highlights a specific concern regarding the ethical use of ChatGPT. It emphasizes that selecting topics with a low similarity score in similarity checkers, which may suggest a lack of originality or plagiarism, could potentially lead to ethical violations in academic research. The core finding of Mijwil and his colleagues is that the integration of artificial intelligence applications in academic research gives rise to legitimate concerns regarding academic ethics. The limited availability of technologies capable of effectively detecting such violations poses a significant challenge in the domain of academic writing. In essence, Mijwil et al.'s article titled "ChatGPT and the Future of Academic Integrity in the Artificial Intelligence Era: A New Frontier" illuminates the intersection of AI technology, academic research, and ethics. It underscores the importance of addressing ethical considerations in the era of AI-powered research and highlights the need for advanced tools and strategies to maintain academic integrity.

The research conducted by Gao, Howard, Markov, et al. (2023) is centered around the generation of research abstracts using ChatGPT, with a primary focus on assessing the authenticity and detectability of these generated abstracts compared to real abstracts. The study involves several

key observations and findings. The methodology involved gathering research abstracts from high-impact factor medical journals and using ChatGPT to generate research abstracts based on their titles and sources. One notable outcome was that a specialized AI output detector, referred to as the 'GPT-2 Output Detector,' detected the majority of the generated abstracts as 'fake' with high confidence, indicated by median % 'fake' scores. These scores were significantly higher for the generated abstracts compared to the original ones, suggesting a clear distinction between the two. Furthermore, the study utilized plagiarism detectors to assess the similarity between generated and original abstracts. It was found that generated abstracts scored lower on these detectors, implying less matching text compared to the original abstracts. Blinded human reviewers were also engaged in the study, tasked with identifying whether abstracts were generated by ChatGPT or were original. While they correctly identified a substantial portion of the generated abstracts, a surprising finding was that they incorrectly identified some original abstracts as generated. The reviewers noted that differentiating between the two was challenging, though they found that the suspected generated abstracts tended to be vaguer and more formulaic. Gao et al. conclude by highlighting that ChatGPT has the capability to produce scientifically believable abstracts, albeit with entirely generated data. It also underscores the ongoing discussion surrounding the ethical and acceptable use of large language models in scientific writing. Depending on specific publisher guidelines, AI output detectors may serve as editorial tools to uphold scientific standards, although the boundaries of such usage are still being debated across different journals and conferences.

3. Methodology

Based on the nature of our research, we decided to employ a Grounded Theory (GT) methodology. Grounded Theory stands as a testament to the enduring quest for deeper understanding in the realm of qualitative research. Its methodological richness and adaptability continue to make it a valuable approach for researchers seeking to explore complex phenomena and develop theories grounded in empirical data. One of the enduring strengths of GT lies in its ability to address research questions that require a comprehensive understanding of social processes and human experiences. Whether researchers aim to uncover the dynamics of patient-doctor communication in healthcare settings, explore the factors influencing organizational change, or delve into the lived experiences of individuals in diverse cultural contexts, GT provides a structured yet flexible framework for inquiry (Charmaz, 2014).

GT's commitment to theoretical sensitivity, theoretical sampling, and constant comparison enables researchers to delve deeply into their data, revealing patterns, categories, and relationships that might otherwise remain hidden. This methodological rigor is particularly valuable when exploring topics where pre-existing theories may not fully capture the complexity of the phenomenon. Furthermore, GT's iterative approach aligns with the evolving nature of qualitative research. As new data is collected and analyzed, theories can be refined, expanded, or reconceptualized. This adaptability allows researchers to remain responsive to emerging insights and unexpected findings, ensuring that the resulting theories are grounded in the most current data available (Thornberg, Perhamus & Charmaz, 2014).

The application of GT is not limited to any specific discipline or field of study. Its flexibility makes it a versatile method suitable for exploring a wide range of research questions. In healthcare, GT has been used to investigate patient experiences, healthcare delivery processes, and the development of healthcare interventions (Chapman, Hadfield & Chapman, 2015). In education, researchers have employed GT to understand teaching and learning practices, student experiences, and curriculum development. Across the social sciences, GT has been utilized to explore topics as diverse as organizational behavior, social change, and interpersonal relationships. While GT's adaptability is one of its strengths, it can also present challenges, particularly for novice researchers. The iterative nature of the method demands a commitment to ongoing data collection and analysis, which can be time-consuming. Additionally, the process of constant comparison and theoretical sampling requires a deep engagement with the data, and researchers must be prepared to set aside preconceived notions and theories.

Another challenge lies in the potential for subjectivity in the research process. The researcher's interpretations and decisions about coding and theory development can introduce bias. Therefore, rigorous training and reflexivity are essential for researchers using GT to maintain methodological rigor and ensure the trustworthiness of their findings. In recent years, technological advancements have also influenced the practice of GT. The use of qualitative data analysis software has streamlined the coding and analysis process, making it more efficient while providing tools for managing large datasets. Researchers have embraced these digital tools to enhance the rigor and transparency of their GT studies.

In Grounded Theory (GT), coding is a fundamental process that involves systematically analyzing qualitative data to identify patterns, categories, and themes. It is a crucial step in developing grounded theories that are derived directly from the data, rather than being influenced by preconceived theories or frameworks. Coding helps researchers make sense of the data,

discover relationships among concepts, and generate theoretical insights. There are two main types of coding in GT:

Open Coding: Open coding is the initial phase of data analysis. In this stage, researchers examine the raw data (often in the form of transcripts from interviews, field notes, or documents) line by line. They identify concepts, ideas, and themes that emerge from the data without imposing any predefined categories or labels. Open coding involves breaking down the data into discrete elements and giving them provisional codes. These codes are often descriptive and capture the essence of the data.

Axial Coding: After open coding, researchers move on to axial coding, which is a more focused and systematic process. Axial coding involves organizing the open codes into categories and subcategories. Researchers look for relationships and connections between codes, grouping them together based on shared characteristics or meanings. This process helps in developing a more structured and coherent understanding of the data. Axial coding often leads to the identification of core categories that are central to the emerging theory.

Throughout the coding process, researchers engage in constant comparison, which means comparing new data with previously coded data to refine categories and develop a deeper understanding. Researchers also engage in theoretical sampling, where they deliberately seek out additional data that can help validate or refine emerging concepts and categories.

In order to do our GT study, we interviewed 19 people who were professionals in academic writing and publishing. We found them via a snowball sampling strategy. They were first briefed about the nature of our study and then after getting their informed consent, the interviews were commenced.

4. Results and Discussion

We interviewed 19 respondents affiliated with a journal in various capacities. Analyzing the gender distribution, there is a near-even split with females accounting for roughly 52.6%, represented by 10 individuals, and males making up 47.4%, represented by 9 individuals. When observing the age distribution, there's a span from 34 to 76 years. The average age of the respondents hovers around 51 years, with a prominent concentration of individuals aged between 38 and 68 years. Turning our attention to the positions held within the journal, the roles of 'Executive Director' and 'Editor-in-Chief' emerge as predominant, held by 5 and 7 individuals respectively. Furthermore, the title of 'Director' is held by three respondents, while the role of

'Associate Editor' is occupied by three individuals, and only one respondent serves as a 'Member of the Board'. Finally, in terms of educational background, the majority possess a PhD degree. A few respondents are either pursuing their PhD, labeled as 'PhD Candidate' or 'PhD student', or have obtained a Master's degree (MA). This indicates a high level of academic accomplishment among the respondents.

Table 1: Details about participants in interviews

Respondent	Gender	Age	Position in the journal	Education
P1	Female	56	Executive Director	PhD
P2	Female	46	Editor-in-Chief	PhD
P3	Male	61	Director	MA
P4	Male	38	Member of the Board	PhD Candidate
P5	Female	76	Editor-in-Chief	PhD
P6	Male	38	Editor-in-Chief	PhD
P7	Female	34	Director	MA
P8	Female	45	Executive Director	PhD Candidate
P9	Female	37	Associate Editor	PhD
P10	Male	54	Editor-in-Chief	PhD
P11	Male	42	Executive Director	PhD student
P12	Female	67	Editor-in-Chief	PhD
P13	Male	68	Associate Editor	PhD
P14	Female	49	Editor-in-Chief	PhD
P15	Female	55	Associate Editor	PhD
P16	Male	42	Executive Director	PhD
P17	Male	40	Director	PhD Candidate
P18	Female	73	Executive Director	PhD
P19	Male	51	Editor-in-Chief	PhD

Axial coding holds a pivotal role in grounded theory methodology, serving as a crucial step in the qualitative research process. This technique allows researchers to establish connections and relationships within the data, transforming raw information into coherent patterns and categories. By systematically examining codes and their relationships, axial coding facilitates the development of a comprehensive and nuanced understanding of the research topic. It aids in identifying core concepts, exploring variations, and uncovering the underlying structure of phenomena. This approach ultimately contributes to the creation of a robust and theory-driven framework, making axial coding an essential tool for generating rich, contextually grounded theories in qualitative research.

Table 2: Axial coding result

1	Opportunities	Lower costs	efficiency
			cost-effective
			faster peer review
			faster writing
		Iranian specific benefits	copy-editing
			paraphrasing
			email correspondence
			better international relations
		Higher standards	more detailed analyses
			better structure
			lower redundancy
2	Challenges	Plagiarism	cheating
			recycling
			inaccuracy
			fake citations
			fabricated citations
		Loss of human touch	input-drivenness
			loss of agency
			loss of ethical measures
			irresponsibility
3	Strategies	Strategic and ethical use	assisted writing
			ethical writing
			admitting and acknowledging
		Adding human agency	editorial control
			peer-review control
			external evaluator's control
			machine control
		Legal measures	new punitive systems
			pragmatism
			implementation

Interpretation of the data

Opportunities: At the outset, one notices a tantalizing glimpse of the potential advantages that come with integrating advanced AI like ChatGPT into the writing process. There's an evident economic appeal (Sarfi, et al., 2021), with the promise of "lower costs." This isn't just about monetary savings; it translates into the broader landscape of academic efficiency. The speed of "faster writing" and "faster peer review" can revolutionize the traditional, often drawn-out, scholarly publishing process. Especially in fields where timely publication can make a substantial difference—such as medical research or rapidly evolving tech disciplines—this can be a game-changer.

Moreover, the mention of "Iranian specific benefits" intrigues. While the table doesn't enter into precise details, one could surmise that non-native English-speaking scholars could

leverage tools like ChatGPT for linguistic fine-tuning. By aiding in tasks such as "copy-editing" and "paraphrasing," AI tools might democratize the academic publishing landscape, offering scholars from diverse linguistic backgrounds a more level playing field. This, coupled with the potential for "better international relations," suggests that AI could play a role in fostering global scholarly collaboration and discourse. Examples in this category include:

- The integration of ChatGPT into the article writing process opens up a realm of possibilities. Its ability to generate content quickly and efficiently can revolutionize the pace of scholarly publishing, potentially transforming how we disseminate research in a timely manner. This speed is especially advantageous in fields where the immediacy of information matters, such as medical research or technology advancements.
- ChatGPT not only offers convenience but also economic appeal by reducing costs associated with manuscript preparation. Its efficiency in tasks like generating drafts and conducting initial literature searches can lead to significant time and monetary savings for both researchers and publishers. This economic advantage could make academic publishing more accessible to a broader range of scholars.
- Now that there is something like ChatGPT, the Iranian writers no longer have to be worried about their English language impotence.

Furthermore, AI's potential to elevate the quality of academic work, leading to "higher standards," cannot be overlooked. Here, it's not just about grammatical perfection or eloquent prose. AI, with its capacity for data analysis, can be harnessed to offer "more detailed analyses," ensuring that scholarly arguments are backed by robust, data-driven insights.

Challenges: But as with all technological advancements, the integration of AI in academia isn't without its pitfalls. The most glaring concern is "plagiarism." With the ease of "recycling" content and the risk of generating "fake" (Sabzali et al., 2022) or "fabricated citations," the sanctity of original research could be jeopardized. It's a reflection of a broader ethical quandary: If we rely on machines to aid our scholarly pursuits, how do we delineate between human-original thought and AI-regurgitated content? Moreover, how do we ensure the authenticity of the content produced?

Another profound challenge is the "loss of human touch." The art of writing isn't just about conveying information; it's about expression, nuance, and individual voice. Over-reliance on AI tools might render academic articles sterile, devoid of personal flair or the idiosyncrasies that

often make scholarly arguments compelling. This detachment, labeled as "input-drivenness," could lead to a form of academic homogenization, where articles, while technically perfect, lack depth or personal perspective. Examples in this category include:

- While ChatGPT offers convenience, its automated nature raises concerns about the authenticity and originality of academic work. Over-reliance on this tool could inadvertently encourage plagiarism and compromise the integrity of scholarly contributions.
- The risk of generating content with fictitious references and citations is a significant downside of ChatGPT, jeopardizing the credibility of research and undermining the peer-review process, which relies on the accuracy and validity of citations.
- The allure of faster publication through ChatGPT may prioritize quantity over quality, potentially compromising the rigor and depth of scholarly work. It's essential to maintain high standards in research dissemination.

Strategies: The table's strategies section is perhaps its most forward-looking, offering a roadmap to navigate the AI-academia intersection. "Strategic and ethical use" underscores a balanced approach. It's a call for academia to harness AI's power, but with discernment and integrity. It's about using AI as a tool, not a crutch. Ensuring "ethical writing" means being transparent about AI's role in the research and writing process, and acknowledging its limitations.

The emphasis on "adding human agency" resonates deeply. It's a reminder that while AI can assist, the onus of oversight, validation, and ethical consideration lies squarely on human shoulders. Whether it's through "editorial control" or "peer-review," human intervention ensures the preservation of academic integrity. Examples in this category include:

- Legal measures, such as 'new punitive systems,' offer a glimpse into the institutional role in shaping AI's role in academia. As AI becomes more integrated into scholarly research and writing, academic institutions and journals may need to revise their ethical guidelines, providing clear directives on the permissible use of AI in research and writing. These legal measures can act as a safeguard against potential ethical lapses.
- In navigating the AI-academia intersection, it's crucial to maintain a balanced approach. 'Strategic and ethical use' underscores the importance of harnessing AI's

power with discernment and integrity. It's about using AI as a valuable tool while upholding ethical standards. This strategy promotes research and writing that are not only technically sound but also ethically responsible.

Legal measures, like "new punitive systems," hint at the broader institutional role in shaping the future of AI in academia. As AI becomes more integrated into the scholarly world, academic institutions and journals might need to revise their ethical guidelines, offering clear directives on AI's permissible role in research and writing.

Our findings present a compelling exploration of the nuanced relationship between AI and academia. While the opportunities are manifold, they're tempered by ethical challenges that call for introspection and careful navigation. Our own perspective aligns with the emphasis on human oversight. AI, as powerful as it is, should be an adjunct to the human intellect, not a replacement. In the dance between man and machine, it's crucial to ensure that the human leads, harnessing AI's capabilities but always with an eye on ethical, original, and authentic scholarly expression.

5. Conclusion

Our results offer valuable perspectives from participants representing diverse roles within academic institutions. Their gender, age, positions in journals, and educational backgrounds collectively enrich the discourse on the integration of AI in scholarly endeavors. These insights highlight the multifaceted nature of the academic landscape and underscore the importance of considering the viewpoints of various stakeholders. The data reveals a tantalizing glimpse of the potential advantages associated with the integration of advanced AI like ChatGPT into the academic writing process. One cannot overlook the economic appeal of "lower costs." Beyond monetary savings, this translates into heightened academic efficiency, with implications for the speed of writing and peer review. By assisting in tasks like "copy-editing" and "paraphrasing," AI may democratize academic publishing, providing scholars from linguistically diverse backgrounds with equitable opportunities. The promise of "better international relations" suggests that AI can foster global scholarly collaboration and discourse.

However, the integration of AI in academia brings forth a set of challenges and ethical dilemmas. Foremost among these is the specter of "plagiarism." With the ease of "recycling" content and the risk of generating "fake" or "fabricated citations," the integrity of original research is at stake. These challenges mirror a broader ethical quandary: How do we discern between human-originated thought and AI-assisted content? Ensuring the authenticity of the content

produced becomes paramount. Another profound challenge is the "loss of human touch" in academic writing. Writing extends beyond information conveyance; it embodies expression, nuance, and individual voice. Over-reliance on AI tools may render academic articles sterile, devoid of personal flair or the idiosyncrasies that often make scholarly arguments compelling. This detachment, termed "input-drivenness," (see for example Zohouri et al., 2020; Zohouri et al., 2021) could lead to academic homogenization, where technically perfect articles lack depth or personal perspective.

The findings presented here offer a compelling exploration of the intricate relationship between AI and academia. While the opportunities are abundant and enticing, they are accompanied by ethical challenges that demand thoughtful consideration. The perspective here aligns with the emphasis on human oversight. AI, despite its power, should be viewed as an adjunct to human intellect, not a replacement.

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