A SYSTEMATIC LITERATURE REVIEW ON ETHICAL FRAMEWORK FOR ADOPTION OF GENERATIVE ARTIFICIAL INTELLIGENCE

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ABSTRACT

Generative Artificial Intelligence (GAI) has rapidly disseminated within a brief period. Given GAI's early development and widespread presence, significant issues have arisen concerning the training and functioning of its underlying models, especially in ethical domains such as those related to ChatGPT and NLP. Thus, it is imperative to engage in more extensive discourse on the subject. Despite these advancements, GAI continues to pose substantial ethical concerns, such as the potential for the fabrication of scientific results which creates false information. These concerns underscore the necessity of addressing ethical challenges to maintain the integrity and efficacy of educational and research environments. This study aims to critically analyze the ethical challenges, limitations, and potential studies for adopting GAI systems through a systematic literature review. We utilized the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methodology to examine and evaluate relevant research studies. The research targeted articles published in 2023 and afterward. This systematic search was conducted from May 11 to May 17, 2024. From 712 records retrieved from nine academic databases, 9 duplicate record papers, 503 publications were determined to be incomplete and unrelated, 46 papers cannot be retrieved, and 28 are not peer-reviewed. As a result, twenty-three (23) research publications were found from 126 papers were qualified for consideration. The systematic literature review revealed that challenges related to the existing ethical framework for GAI adoption include addressing ethical concerns, establishing an evaluation model, formulating global principles for the ethical use and development of GAI-based systems, creating frameworks to regulate the ethical and responsible use of GAI, and addressing privacy and security issues, alongside the necessity for clear guidelines and ethical parameters for ethical GAI. The limitations identified in recent studies include insufficient empirical evidence and validation, a need for practical implementation, insufficient specific guidelines, insufficient evaluation metrics, and measurement instruments, and the necessity for further exploration of ethical considerations. The prospective studies within the current research framework involve the development of practical implementation standards, guidelines, and best practices; the creation of evaluation metrics; the formulation of regulatory frameworks to ensure ethical use; the collection of stakeholder perspectives; and the exploration of ethical implications alongside industry-specific analyses. Overall, this review can be used as a guide for researchers and all interested parties to encourage further research and experimentation related to ethical GAI adoption in the future.

Keywords: Ethical Framework; Generative Artificial Intelligence; Systematic Literature Review; Adoption.

1.0 INTRODUCTION

In a comparatively short amount of time, Generative Artificial Intelligence (GAI) has spread so widely. Given the field's nascent stage, degree of ubiquity, and even pervasiveness, as well as the fact that some issues raised by the application of GAI stem from how these tools' underlying models are trained and function that emphasizes how crucial it is to have greater discussion about it [1]. The unsupervised or partially supervised machine learning framework known as GAI allows the input samples to be dissected or semantically edited by means of perturbing the input distribution or creating a distribution that fits the target samples' posterior distribution. In image and video production, sequence modeling, voice enhancement, and other fields, these techniques have been widely used to generate precise target samples and aid in the analysis of the intrinsic relationship between attributes [2]. Progression in Natural Language Processing (NLP) has been noteworthy with the introduction of Generative AI (GAI) models such as GPT-3. After being trained on a large amount of text data, these models are highly accurate at producing text that resembles that of a human being, responding to inquiries, and carrying out other language-related tasks. Furthermore, there have been swift advancements in GPT-3 and ChatGPT, which have been trained on significantly larger datasets, such as texts from a massive online corpus. These systems

have demonstrated state-of-the-art performance on a wide range of natural language tasks, such as computer programming, question answering, essay writing, and translation. The GPT-4 leverages Midjourney characteristics in industrial automation to extend GAI and transcribe text-to-image processing. Thus, based on the GPT-4 framework, ChatGPT established itself as a "cultural phenomenon" by the end of 2022 and became the most talked-about issue on the internet [3].

It also draws attention to ethical issues associated with the application of AI in these fields, namely with ChatGPT and NLP. Notwithstanding these developments, GAI still presents significant ethical issues, such as worries about anxiety brought on by AI and, most importantly, the possibility of falsifying scientific findings [4]. These worries highlight the need to deal with ethical dilemmas to preserve the honor and efficiency of learning and research settings. We utilize the terms “ethical issues,” “ethical challenges,” “ethical concern,” “ethical dilemmas,” and “ethical considerations” interchangeably. To maintain the integrity of data created by AI, these problems call for a thorough analysis of the ethical implications and the implementation of validation procedures. Future research should concentrate on recognizing and handling these ethical dilemmas in order to guarantee GAI's responsible integration into academia and protect its ethical practices [5].

A regulatory framework that is specifically designed to respond to the rapidly evolving AI landscape and address not only the technical aspects but also the broader ethical, societal, and economic implications is necessary to promote the responsible and ethical use of AI. This is especially true in light of the growing adoption of generative AI models [6]. Adopting GAI means navigating a maze of social, ethical, and regulatory issues. From an ethical perspective, legislators ought to take GAI's wider ramifications into account. The development and application of such technologies should be guided by ethical principles that prioritize upholding human rights, dignity, and values. Guaranteeing that GAI conforms to the norms and values of society is crucial. Collaborating with industry, academia, and regulatory agencies, policymakers should support research on the moral applications of AI. As a result, best practices and ethical guidelines that keep up with technological advancements may emerge [7].

1.1 An Overview of The Previous Research on The Ethical Framework Challenges For GAI Adoption

Numerous concerns about the ethical, legal, and socioeconomic implications of this GAI technology are being raised. Some have even called for a halt to the advancement of AI systems. The appropriate use of AI-generated material, algorithmic biases, and data privacy are all concerns that universities need to address. If these issues are not resolved, people may be reluctant or doubtful to use ChatGPT. Universities can concentrate on increasing awareness, offering assistance and training, resolving ethical issues, encouraging interdisciplinary collaboration, and creating policies and standards that support the responsible and efficient use of ChatGPT in order to get over these obstacles [8]. Universities must actively participate in dialogue, solicit feedback from interested parties, and foster an atmosphere that promotes creativity and experimentation while maintaining academic integrity and rigor. It is essential to provide explicit policies and standards around the use of AI models in higher education. Institutions ought to create guidelines that address challenges [9] such as ethical concerns, data privacy, algorithmic bias, and academic integrity in addition to defining what constitutes a responsible and permissible use of AI. Effective communication of these policies is necessary with all parties involved, including faculty, staff, and students. It is essential to conduct research and development initiatives centered on artificial intelligence in higher education. This involves researching how AI models affect student learning outcomes, using algorithms to detect and reduce bias, figuring out how to integrate AI models with human knowledge, and looking into moral guidelines for using AI in the classroom [10].

The use of ChatGPT and generative AI in general can have positive effects, but there are a number of difficult issues that come with it [9], such as privacy and data security issues, ethical issues, and the possibility of escalating inequality if AI governance measures are not in place. As AI technologies proliferate, AI ethical principles that speak to citizens' distinct experiences, values, and cultures must be developed in addition to legislative frameworks. As a result, it is imperative that ethical standards for AI reflect the requirements and actual experiences of its users. To develop and address cultural diversity in the usage of generative AI, it is imperative that local values, cultures, and lived experiences be incorporated into AI regulatory frameworks and ethical norms. This is an important perspective that is currently absent from the global AI conversation [11].

Performing routine audits of AI models with an ethical AI focus could also aid in maintaining technology control. assessment metrics to promote group development in the creation of more fair AI systems [12]. Human-centered AI (HCAI) collaboration should respect ethical norms and human values. A variety of issues, including as prejudice, privacy, and hazardous content, should be covered by the ethical considerations. The ethical considerations that need to be made become more complex as generative AI, like ChatGPT, functions in various sociocultural situations around the globe. In order to be fair and accountable, an HCAI should respect individuals of all genders, ethnicities, nations, and religions without discriminating against them. Anything that could hurt people—such as obscene, violent, or sensual content—should not be presented. To fully utilize

emerging technologies and accomplish desired outcomes, regulations and policies are necessary. Therefore, the interests and legal rights of human stakeholders must be considered while drafting regulations and policies [13].

Further research is necessary to fully understand the ethical issues of generative AI. The tremendous progress in artificial intelligence has exposed hazards and ethical dilemmas that need to be thought through and looked at. Concerns including privacy, bias, responsibility, and the social impact of AI should all be covered in research. Establishing guidelines and structures to guarantee the beneficial and responsible use of these technologies is essential. It is imperative to create ethical standards and laws to control the expansion of AI in accordance with societal demands and advancements [8]. Future research must also get insight into the decision-making process of AI and its consequences for humans and society. Research should be done on incorporating AI into different facets of life in order to strike a balance between innovation and ethics. Current studies frequently concentrate on brief user encounters. Studies on long-term user adaptation are needed, taking into account elements like user preferences, shifting demands, and robots' or AI systems' capacity to continuously learn from and adjust to changing user requirements [14].

1.2 Research Questions

This systematic literature review will be guided by the following research questions (RQs):

- RQ1: What challenges surround the current ethical framework for GAI adoption?
- RQ2: What are the limitations within the framework of recent studies?
- RQ3: What are the potential studies that fall under the current research framework?

1.3 Rationale and Contributions of This Current Review

To control AI's expansion in accordance with societal demands and advancements, regulations and ethical guidelines must be developed [14]. Evidence-based insights from research can help direct policy choices and best practices. Academic institutions have the ability to set up procedures for ethical reviews in order to assess the incorporation of ChatGPT and other AI models. These procedures ought to weigh the advantages and disadvantages of each option, handle data privacy issues, examine algorithmic biases, and guarantee adherence to pertinent ethical guidelines [10]. Bringing to light a dearth of thorough investigation of the unfavorable impacts and ethical challenges associated with GAI [15], this SLR attempts to evaluate and compile a list of challenges, limitations, and potential studies on Ethical Framework for Adoption of GAI. This review paper makes multiple contributions to the field. First of all, it offers a summary of the present status of research on the ethical framework challenges for GAI adoption, making it possible for scholars to pinpoint the dominant topics and future lines of inquiry in the area. In order to direct future research efforts, this evaluation identifies the limitations within the framework of recent studies and the potential studies that fall under the current research framework that need more study.

2.0 METHODOLOGY

The PRISMA approach was used to address the three primary research questions [16], [17], [18]. The PRISMA method was used to locate, acquire, and select research-related publications as well as to read and extract data from those studies. The procedure for conducting research is as follows [19]. The next step is to choose journals and databases and start looking for research articles that the study will use. The criteria for the study, such as the publication categories, quality standards, and search years, are determined by the research questions. Databases and journals are searched using custom Boolean queries. These searches produce a list of articles that, after being compared to the inclusion and exclusion criteria, will be processed to produce the final analysis. We also investigated the quality of assessment employed in each study. In the end, the most current study cycle is used to retrieve the pertinent data required to answer the research questions.

2.1 Data Sources and Databases

The systematic literature review looked at many reliable databases. We searched nine databases and indexing systems: IEEE Xplore, Emerald, Web of Science (WoS), Sage, Association for Computing Machinery (ACM) Digital Library, Springer Link, Nature, and SciSpace. They were selected because they offered a variety of research resources pertinent to the examination of the Ethical Framework challenges, limitations, and potential studies for Generative Artificial Intelligence (GAI) Adoption, in addition to their thorough and in-depth coverage of the field.

2.2 Search Strategy

The title, abstract, and/or keywords were present in the search term that was utilized in the nine databases. The literature search for the eight databases was done between May 11 and May 12, 2024. Additional searches on

SciScpace were carried out on May 17, 2024. Publications are covered by the SLR until May 17th, 2024. Figure 1 displays the SLR search query for the databases.

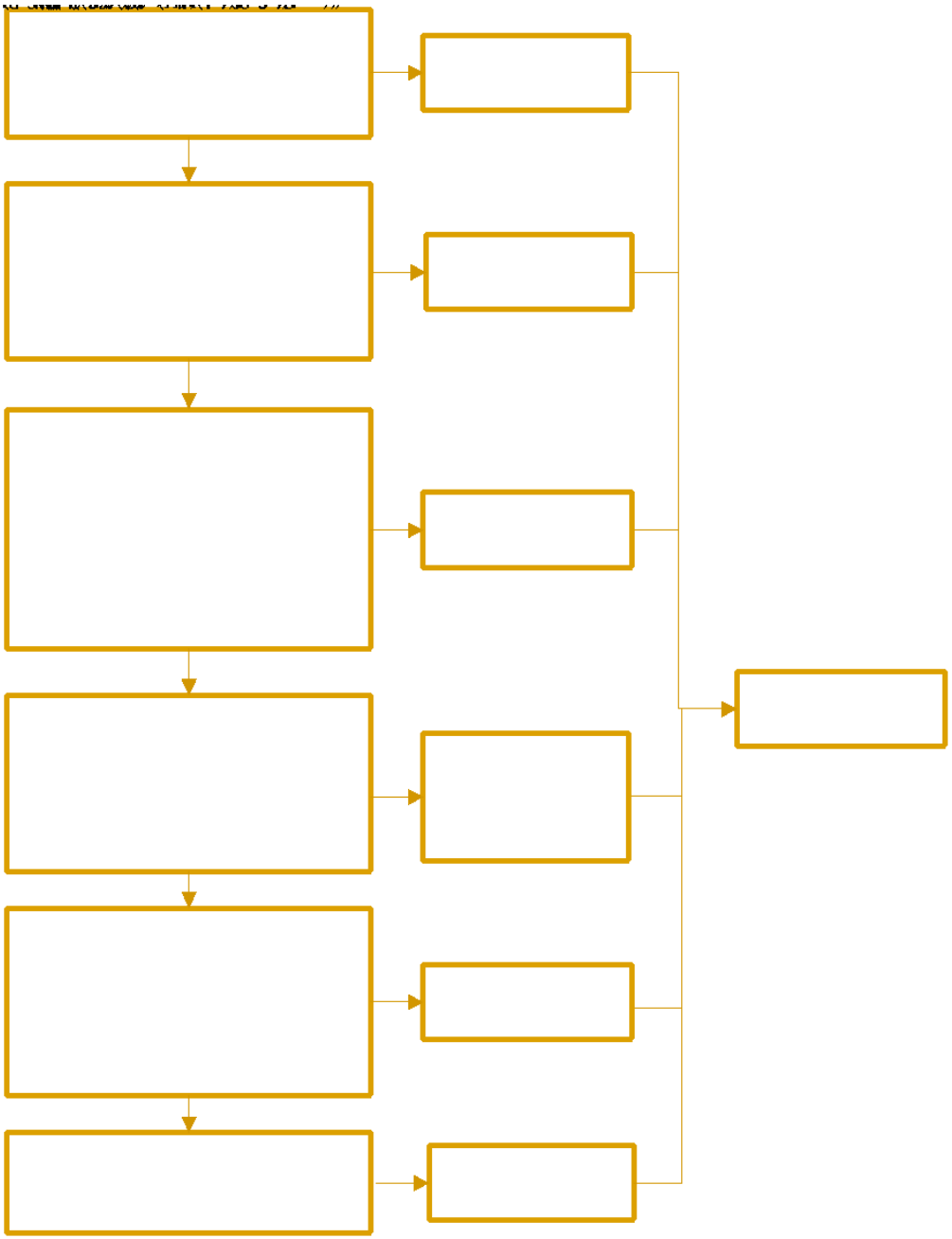

Fig. 1: The database's SLR search query

2.3 Criteria For Inclusion and Exclusion

The following were the requirements for inclusion:

- Full article publicly accessible
- published in 2023 and later
- Written in English
- Contains keywords, abstracts, and titles that are relevant and desirable

The following were the requirements for exclusion:

- unreviewed articles
- publications released before 2023
- publications published in languages other than English
- reports and documents not available to the public
- searched terms are not present in the title, abstract, or keywords.

2.4 Quality Assessment (QA)

The quality of each chosen article was assessed apart from the inclusion and exclusion criteria. Additionally, it gives the reader confidence that each one complies with SLR requirements because it is derived from validated quality control questions [20]. To evaluate each article's quality level included in this SLR, we used a set of questions for quality assurance [21]. The following inquiries form the basis of the modified criterion:

- QA1. Does the study's subject matter relate to the adoption of the Ethical Framework for Generative Artificial Intelligence (GAI)?
- QA2. Is a context description included in the study?
- QA3. Does the publication describe the study's methodology?

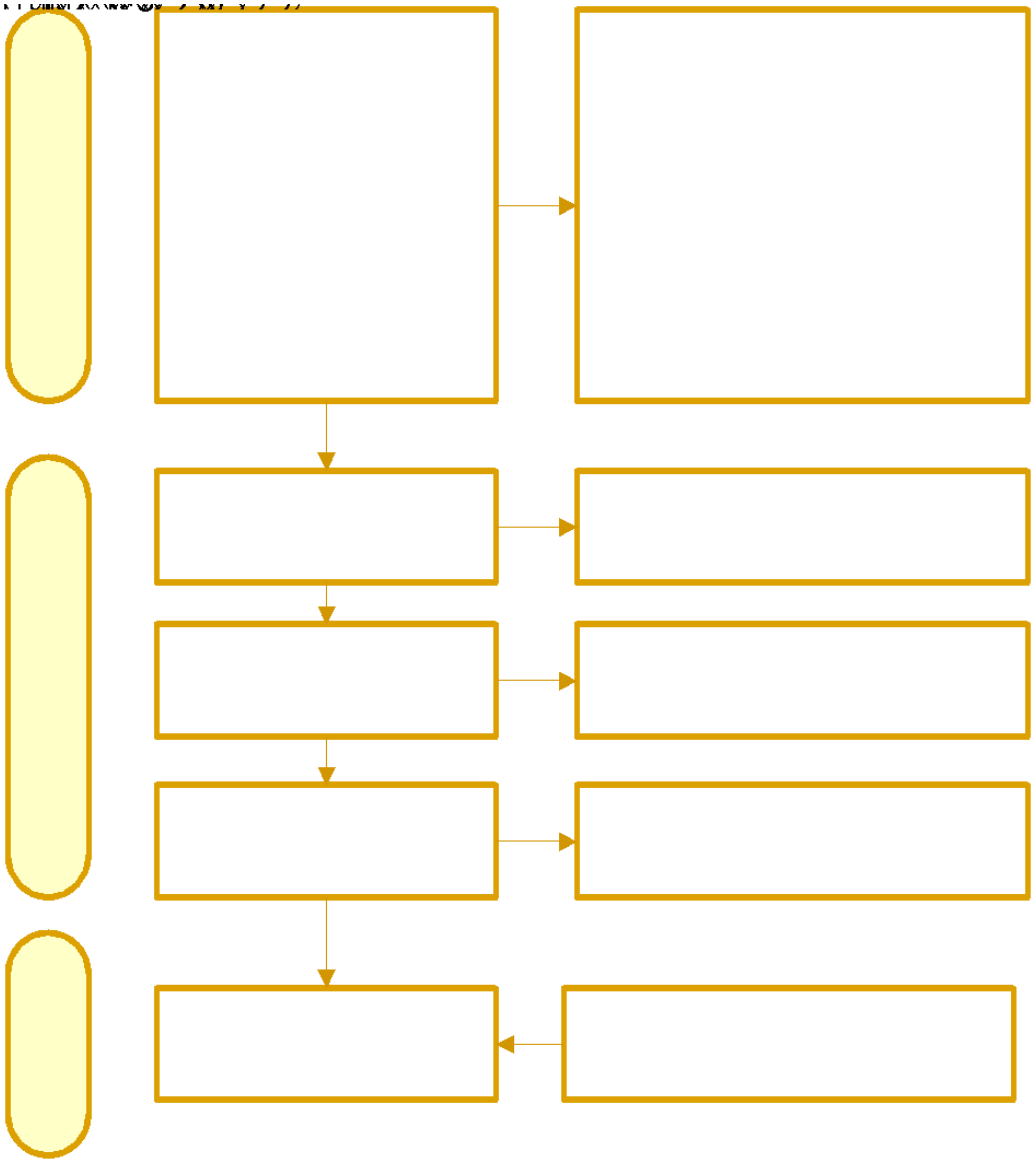

Fig. 2: PRISMA flow diagram

The quality assurance of the selected studies was assessed in each component of our SLR using the above 3QA. The Table I. represents the number of included papers from each database used. Figures 3 illustrate the dominance of 2023 published papers in the SLR.

The procedure for choosing the studies for the systematic review is shown in Fig. 2. Using a particular search strategy, 712 documents were initially found in the nine databases under analysis. After the removal of nine duplicate papers, based on their titles and abstracts, 503 publications were determined to be incomplete and to be unrelated to the Ethical Framework for Generative Artificial Intelligence (GAI) Adoption. The initial screening did not include these publications. Thus, a request to retrieve 200 papers was made. Due to limited access to the premium journal, 46 papers cannot be retrieved, and 28 are not peer-reviewed, such as those on arXiv. As a result, 126 papers were qualified for consideration. 105 of the studies were eliminated because they did not

satisfy at least three of the previously mentioned criteria and had quality issues as determined by the quality assessment technique. Following that, all 23 investigations are appropriate for further examination in light of the QA findings. Chapter III provides an explanation of the research analysis.

Table 1: Results of the articles selection procedure

Database	First results	Included papers
ACM	113	0
IEEE	37	0
Scopus	9	2
Wos	3	1
Sage	81	1
Emerald	81	0
Springer Link	238	3
Nature	10	0
SciSpace	140	14
	712	**21**

3.0 RESULTS AND DISCUSSION

The SLR of the ethical frameworks for GAI adoption's demographic data is displayed in Figures 3 through 7. There is a lot of space for more research in this area, as indicated by Figure 3. The SLR papers' distribution per country is shown in Figure 4. There were just three countries mentioned: Estonia, Hong Kong, and India. The domain of SLR papers is depicted in Figure 5, with N/A coming in first, education and research coming in second with 18%, and research and innovation coming in third with 9%, and other domains such as nephrology education, nursing education, engineering education, universities education, military to healthcare, business, industry, healthcare, cybersecurity, public sector, and games.

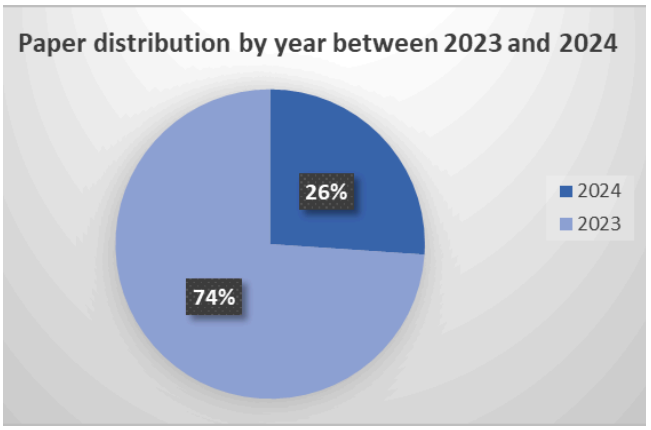

Fig. 3: Paper distribution by year between 2023 and 2024

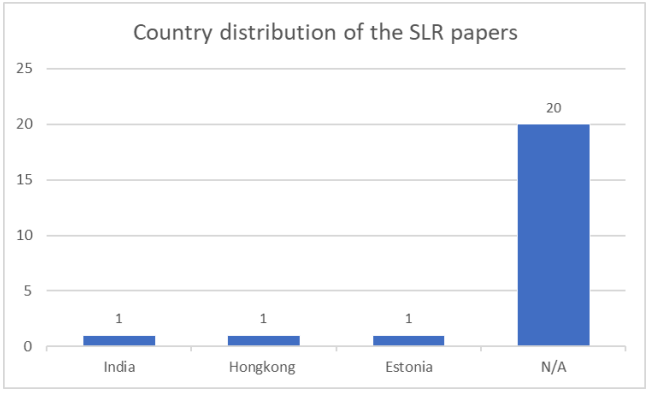

Fig. 4: Country distribution of the SLR papers

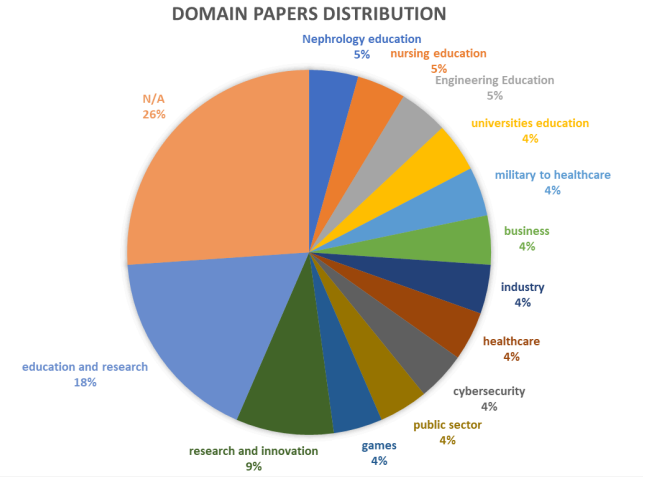

Fig. 5: Domain of the SLR papers

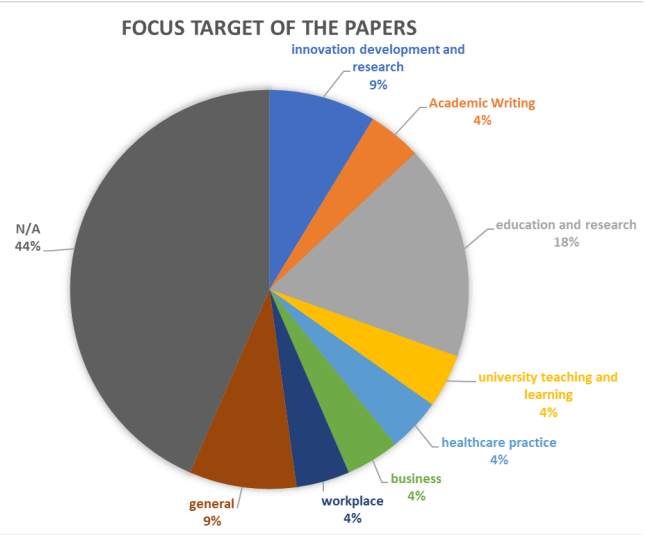

Fig. 6: Focus target of the SLR papers

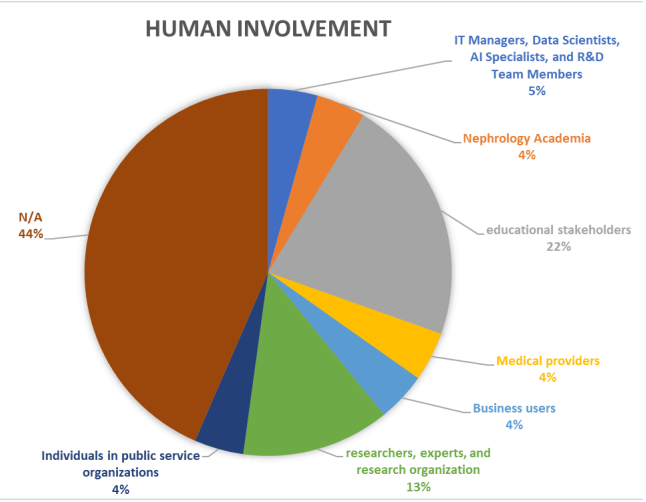

Fig. 7: Human involvement in the SLR papers

Figure 6 illustrates the focus target of the SLR papers which first is N/A, second from education and research by 18%, third from innovation development and research, and general by 9% and other focus involving academic writing, university teaching, and learning, healthcare practice, business, and workplace. Figure 7 captures human involvement in the SLR papers which are dominated by first N/A, second educational stakeholders at 22%, and third researchers, experts, and research organizations at 13% and involving such as IT and R&D, medical providers, business users, and public service stakeholders.

3.1 RQ1: What Challenges Surround The Current Ethical Framework For GAI Adoption?

Even though GAI has been adopted in various fields, there are still obstacles and restrictions that must be recognized and overcome to guarantee its efficacy, especially related ethical aspects. The challenges surrounding the current ethical framework for GAI adoption are to be discussed in this section. The relevant problems are shown in Figure 8 based on the results that relate to research question 1. Additionally, each of these difficulties is explained in brief in the following subsections:

3.1.1 Address Ethical Concerns

The majority of national AI policies have placed a strong emphasis on ethics, which deals with "the standards of right and wrong, acceptable and not acceptable," to promote the responsible and appropriate management of AI technology[22]. The ethical ramifications of implementing artificial intelligence (AI) technology, especially generative AI (Gen AI), in education, must be addressed as their use grows in popularity. Discussions concerning the potential advantages and disadvantages of integrating Gen AI into educational settings have been triggered. The field of applied ethics has developed to assist people in critically analyzing choices and addressing basic ethical issues in a variety of professional domains, including public policy, technology, law, and medicine, as traditional ethical frameworks are insufficient to offer clear guidance to these complex issues. As the name suggests, applied ethics provides more context-specific norms than broad ethical theories by applying ethics to specific situations and issues through the use of principles, virtues, rules, and judgments.

The branch of applied ethics known as "cyberethics" deals with the moral, legal, and societal ramifications of cyber technology. It includes moral concerns about computing and communication equipment, from standalone PCs to networked, connected technologies. Even though the phrases "internet ethics" and "cyberethics" are occasionally used synonymously, there are some minor differences between the two. Internet ethics is a subset of computer ethics that focuses mostly on online behavior and examines topics including digital security, online privacy, and proper online conduct. However, cyberethics covers a wider variety of subjects, such as internet addiction, disinformation, and academic honesty. The application of AI has grown in popularity in the contemporary digital era. Numerous organizations have launched various efforts to develop moral guidelines for using AI that benefit society. The scope of cyberethics has broadened to include ethical concerns surrounding students' use of AI as a result of the growing integration of AI tools into educational settings. These concerns include the need for accountability in AI-driven decisions, the risk of relying too heavily on AI for learning and decision-making, the potential for overuse or misuse of AI technologies, and the digital divide brought on by unequal access to AI. Teachers may help students make decisions that respect ethical norms and enable them to take advantage of the potential presented by AI integration in nursing school by including cyberethics within the framework of ethical principles. This strategy guarantees that ethical issues are kept at the forefront of educational processes and that the ethical implications of AI technology are carefully investigated[23].

3.1.2 Providing Evaluation Model

To determine the degree of AI's presence in academic writing, the efficacy of AI-enhanced plagiarism detection systems, and the long-term effects of AI use on academic integrity, it also calls for thorough investigation. To provide a thorough overview of how to use AI into academic writing and peer review, an example framework has been put forward. A peaceful setting that utilizes AI's potential while maintaining high academic standards might be imagined with the help of preemptive measures and thorough assessments [24].

However, if AI-generated responses are accepted without rigorous analysis, it may lead to uncertainty over who has the last say in decisions—the student or AI. A multidimensional strategy is needed to mitigate these biases, including a thorough analysis of fairness, justice, and equity as well as the rectification of algorithms employed in student evaluation or grading. In order to identify the best methods for teaching ethical considerations connected to the use of Gen AI, research should assess the effectiveness of different approaches to incorporating cyberethics into curriculum. To determine whether pedagogical approaches—such as case-based learning, role-playing, and online learning modules—are best for training students to utilize AI in an ethical and responsible manner, such an assessment might compare them [23].

Expanding on the requirements of developing AI systems, which necessitate updated assessment methods and adaptable oversight, such as general-purpose AI and technologies. The rapid development of AI systems necessitates evaluation methods that are both flexible and adaptable. Assessment methods need to be malleable and adaptive so they can accommodate the consequences of technological advancements over time if regulation is to progress in tandem with these developments (and inversely). To find mutually beneficial solutions that can supplement government initiatives, the AI community's practitioners and users need to embrace more thorough evaluation techniques. Specifically, when it comes to evaluating ML and AI models, the usual go-to is leader-board metrics, which aren't always accurate and can even be harmful when they aren't. The use of aggregated measurements could lead to a more responsible assessment. However, to accommodate and incorporate new performance indicators, evaluation methods, or even modeling activities that may be suggested in the future, prospective assessment methodologies like the one described above need to be flexible and extensible[25]. In order to keep up with technological, ethical, and social developments as well as to make sure that AI systems are still in conformity with the policy, it is important that they undergo continuous evaluations and updates. Part of this process involves checking in on how AI systems are doing in areas like justice, privacy, and human rights on a regular basis [26]. Additional research is needed to create a more effective framework, and a suitable evaluation model that verifies ethical AI should be created[27].

3.1.3 Providing Global Principles For The Ethical Use And Development Of GAI-Based Systems

These national and regional regulations' strong emphasis on ethics shows how little they can do to advance the use of AI technologies. On the one hand, some nations find it difficult to develop regulations regarding the use of AI because it is difficult to establish a universal definition of ethical values. To properly regulate AI techniques in compliance with established legal and ethical standards, nations may eventually need to set up institutional support systems [22]. All things considered, a more complete picture must take into account the following four dimensions: the aforementioned foundations and necessities, a philosophical perspective on AI ethics, a risk-based strategy for AI regulation, and worldwide standards for the responsible application and advancement of AI-based systems. Legislators should think about ways to establish worldwide licensing requirements and make sure that countries work together to keep AI safe. This includes looking at possible intergovernmental supervision institutions and ways to define standards [25].

3.1.4 Developing Frameworks To Regulate The Ethical And Responsible Use Of GAI

The need for an ethical framework is made even more urgent by the fact that AI is set to become more prevalent in several fields, including governance, transportation, and education [28]. Additionally, the framework mandates that AI applications be designed in a way that is morally upright, open, non-discriminatory, and auditable. Ethical Use and Risk Management: creating rules and regulations for the responsible application of generative AI technologies. The governance dimension emphasizes how critical it is to address concerns about academic misconduct, data privacy, accountability, and openness. To promote responsible use and preserve trust within the university community, the framework makes sure that stakeholders are aware of and respond to the ethical issues surrounding AI technologies [22]. It suggests reorienting attention from opposition to the development of strong ethical frameworks and standards to guarantee responsible AI use. As noted in earlier talks regarding ethical conundrums, a framework for ensuring responsible AI use, transparency, and academic integrity must be developed immediately[24].The ethical issues raised by AI have made a strong ethical framework necessary in the quickly changing field of artificial intelligence. This paradigm aims to control how AI affects people's lives and interactions while protecting human rights, promoting social benefit, and upholding people's autonomy and privacy [28]. A more effective framework and an appropriate evaluation model that checks for ethical AI should be the subject of future research and development. The proliferation of ChatGPT highlights the critical need for well-thought-out frameworks and methods to govern the ethical application of artificial intelligence[27].

3.1.5 Address Privacy And Security Concerns

Ensuring data privacy for users of generative AI technologies is essential, given the sensitivity of both patient and military data, which could have detrimental effects if compromised. Ethical considerations related to equity, autonomy, and privacy in the context of generative AI usage are essential to address. Privacy ensures the protection of confidentiality and access to specific information regarding an entity.Privacy is essential in military and medical healthcare applications due to their confidential nature. Generative AI systems in healthcare must adhere to Health Insurance Portability and Accountability Act (HIPAA) regulations regarding data disclosures and ensure security to prevent breaches. Developers should receive guidance on the appropriate use of healthcare data for training systems prior to deployment. The use of generative AI models poses potential privacy risks, such as prompt injection, which allows for malicious actions by overriding the original prompt, and jailbreak, where training data may be exposed through generated content. The ability of generative AI to handle personal data and produce sensitive information necessitates robust security measures to protect against data breaches and

cyberattacks. Developing these systems with a focus on data privacy and security will help maintain the confidentiality of protected patient information. Implementing robust measures to safeguard the privacy of sensitive data collected and generated by AI systems is essential [29].

Data privacy is a significant concern when employing real data for training generative models, particularly if the outputs generated can be linked to specific individual data points. Privacy and security protect individual privacy, particularly in contexts where AI-generated content may impersonate or misuse personal information. The significance of AI ethics is heightened as these models increasingly dominate various applications. It is essential to address these issues to guarantee that AI operates safely for its users and upholds their rights. Privacy concerns encompass data leakage, surveillance, profiling, and impersonalization, whereas security issues involve adversarial attacks, manipulation, dependency, and tampering. User data must not be utilized without explicit consent, particularly in the context of training AI models. Data rights and privacy must include informed consent, guaranteeing that personal or sensitive data is utilized only with explicit consent. Effective anonymization requires the implementation of robust mechanisms to obscure data, thereby reducing the likelihood of personal identification.Synthetic data serves as a viable alternative in sensitive applications where real data is either inaccessible or raises privacy concerns [30].

The use of AI in education has raised ethical questions and concerns about a number of topics, including student autonomy and personal data. The debate centers on the fundamental ideas that support ethical AI, even in light of the recent announcement of criteria for trustworthy and ethical AI [31]. As a result, the business buzz around generative AI raises ethical questions. Because it is becoming more and more important to secure not only information but also people and our ability to live well, ethics are at the heart of cyber security. An expanding area of ethical research is cyber security, with growing literature on the moral dilemmas, dangers, and problems related to These days, the world depends so much on secure networks and systems to safeguard identities, private data, and means of subsistence that breaches can cause severe disruptions and catastrophic consequences for people's lives. As demonstrated by the possible dangers to generative AI models, including LLMs, companies must be mindful of the elevated risk to security and privacy. Although we are aware of some of the ethical concerns that generative AI raises, there hasn't been much effort to systematically apply ethical frameworks or lenses to these concerns [32].

3.1.6 Need For Clear Guidelines And Ethical Parameters

There are no obvious answers to ethical issues, and when generative AI is used, decision-makers frequently overlook the importance of ethical standards [29]. This emphasis on governance pushes academic institutions to create precise rules and regulations so that employees and students can successfully negotiate the complicated ethical terrain of artificial intelligence. The governance dimension emphasizes how critical it is to address concerns about academic misconduct, data privacy, accountability, and openness. To promote responsible use and preserve trust within the university community, the framework makes sure that stakeholders are aware of and respond to the ethical issues surrounding AI technologies. This emphasis on governance pushes academic institutions to create precise rules and regulations so that employees and students can successfully negotiate the complicated ethical terrain of artificial intelligence [22]. The abundance of guidelines and recommendations has resulted in a complex environment, complicating the decision-making process regarding which guidelines to adhere to in specific contexts [33]. Establishing clear guidelines and ethical parameters is essential to ensure that AI functions as a supportive asset rather than a hindrance to academic integrity. A balance must be achieved to enable the ethical and efficient use of AI in academic settings. This entails developing policies and procedures that enable academics to utilize AI tools, while also ensuring that such tools are used in accordance with the rigorous standards of academic integrity [24].

3.2 RQ2: What Are The Limitations Within The Framework Of Recent Studies?

This part presents the findings from research question 2, which were derived from a review of the literature on the limitations within the framework of recent studies. The related limitations are arranged based on their literary significance. The results of the limitations within the framework of recent studies are shown in Figure 9. These limitations fall into six main topics, which will be covered in more detail below.

3.2.1 Lack Of Empirical Evidence And Validation

According to [34] in early 2023, few studies have empirically investigated the impact of ChatGPT on student performance and behavior. Additional research is required to assess the advantages and potential drawbacks of ChatGPT-assisted learning for students. Furthermore, some recommendations in the reviewed articles were grounded in the researchers' intuitive beliefs rather than empirical data. Consequently, more rigorous studies are necessary to provide evidence-based guidance for applying ChatGPT in education. However, the author(s) identified several studies concerning the adoption of Generative Artificial Intelligence (GAI) that have been

conducted utilizing adoption models such as the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) [35], UTAUT [36], Diffusion of Innovation Theory (DoI) [37], as well as qualitative, observational, exploratory cross-sectional case studies [38], explorative inductive using qualitative approach[39] and descriptive statistics [40]. Nevertheless, none of these studies provide empirical evidence with a focus on the ethical perspective for GAI adoption. Thus far, research has examined the ethical implications of GAI in fields like the public sector [41], resource-based view (RBV), diffusion of innovation theory (DIT), with the moderating role of environmental dynamism and ethical dilemmas [42], and employing a qualitative research technique known as "red teaming" on OpenAI's ChatGPT1 to gain a deeper comprehension of the pragmatic aspects of ethical risks in contemporary LLMs [43].

3.2.2 Need For Concrete Practical Implementation

The effective implementation of ethical principles is hindered by the absence of a framework for addressing the tensions that emerge during their application. The adoption of a risk-based approach may serve as a viable solution to this issue, as supported by numerous sources. There are no specific proposals in the literature regarding the implementation of a risk-based ethical assessment. Various ethical frameworks identify a common obstacle to the effective implementation of ethical principles: the resolution of tensions that emerge when applying these principles to AI systems [44]. The practical application of artificial intelligence in university environments include the following key areas such as monitoring and evaluating the implementation of artificial intelligence and offering training and support for educators, staff, and students in AI literacy [22]. A practical method for putting reliable AI systems into place enables the definition of legal responsibility for AI-based systems through a specific auditing procedure. How crucial it is to approach reliable AI from a pragmatic standpoint. It is not always possible to link reliable AI requirements and concepts into operational protocols that can be automated, validated, and audited. To accomplish this, the field must embrace and standardize blueprints and models that emphasize realistic regulatory scenarios. Regulations that specify what, when, and how AI systems can be used in real-world applications are necessary [25]. [32]suggesting a set of guidelines for the moral use of generative AI in a corporate setting to reduce the danger to cyber security, considering the moral obligations and ethical issues that have been explored.

3.2.3 Lack of Specific Guidelines

Growing public concern about AI's possible negative societal implications has led to the release of numerous AI ethics standards and policy documents written by academic consortia, industry players, and national and international government bodies[45]. Ethical frameworks and guidelines are necessary to guarantee that large language models are created and applied in a responsible and ethical manner [26]. [24]highlights how urgently standardized reporting and checklists for the use of AI tools in medical research are needed, but it also calls for careful disclosure of relevant details about the AI tool being used, such as its name, version, and particular prompts. Sustaining the legitimacy and dependability of academic writing supported by AI requires this kind of openness. The application of AI in education has encountered numerous problems pertaining to ethical considerations and justification. Despite recent efforts to establish ethical criteria for AI in education, the issue of achieving a global consensus and standardized protocols persists. The regulation and ethical consensus of these technologies are essential for using their diverse capacities in education[31]. These ideas must be incorporated into curricula and suitable guidelines must be created to guarantee the moral and responsible application of GAI in education. Instilling critical thinking in students, creating clear guidelines, and developing comprehensive strategies for ethical AI integration are all crucial tasks for educators. Clear ethical AI practices guidelines that stress that GAI is a learning aid and not a substitute for critical thinking must be developed by educators and administrators[23]. The abundance of guidelines and recommendations has resulted in a complex environment, complicating the decision-making process regarding which guidelines to adhere to in specific contexts, specifically generative artificial intelligence. Preventing misuse is a crucial step to ensure that generative AI contributes positively [46].

3.2.4 Lack of Evaluation Metrics And Instrument Measurement

Although generative AI demonstrates promising outcomes, it lacks universally accepted model evaluation measures. The conventional evaluation metrics, including precision, recall, and F1 score, become challenging to apply and are less likely to represent human judgment accurately. A comprehensive assessment and testing process tailored to specific use cases would guarantee the development of resilient and robust AI systems, hence reducing system failures and the response time to such errors. The implementation of the proposed ethical principles, whether through evaluative methods (e.g., Likert scale, prompting, or semantic similarity-based approaches for empathy) or by employing AI metrics and enforcement strategies, represents a potential future direction for investigation[29]. Additional research is necessary to create a more efficient framework, and a suitable evaluation model should be developed to assess ethical AI [27]. Several ethical aspects and issues, as well as the current (deficit of) tools and measurements to address them [51]. Pilot testing, monitoring and

evaluation, and the establishment of an evidence base emphasize the necessity of testing and evaluating AI applications in education via pilot projects to establish a robust evidence base for their effectiveness. Policymakers could allocate funding for pilot projects that evaluate the application of AI tools in particular settings or among specific demographics. Continuous monitoring and evaluation of AI integration are essential for ensuring its success. The necessity for continuous monitoring, evaluation, and support is essential to guarantee the effective and equitable implementation of AI technologies[22]. The necessity for adaptable evaluation procedures that can be modified swiftly to address the rapid development of AI systems is evident. The swift evolution of AI can unexpectedly create new high-risk scenarios that are not encompassed by existing regulations [25]. There are increasing concerns that the integration of generative AI is not supported by sufficient guardrails or safety evaluations [32].

3.2.5 Ethical Considerations Need Further Exploration

In both the public and private domains, the application of artificial intelligence is expanding and having an impact on several aspects of society. There are concerns associated with artificial intelligence, including the potential to exacerbate societal problems, violate individuals' right to privacy, and eliminate human agency. To mitigate these concerns, academic institutions and other organizations have sparked conversations about the ethics of artificial intelligence (AI), developed ethical frameworks and standards, and are working toward the implementation of full regulations for the subject. It is for this reason that the suggested future fields of research on artificial intelligence ethics should investigate the opinions of citizens toward the utilization of AI in the provision of services. There is also the possibility of investigating whether the ethical principles of artificial intelligence, as well as how AI is unintentionally supporting cultural ideologies in various parts of the world. Some further actions that can be made to advance the conversation on artificial intelligence ethics in a society that is always changing and culturally complex and to construct a future that is commensurate with the expectations of future generations are the fields of research [41]. Future research should examine the long-term impacts of Generative AI utilization on educational outcomes and ethical decision-making competencies. Longitudinal research could monitor students exposed to Gen AI and evaluate their ability to make ethical decisions in practical situations [23].

3.3 RQ3: What Are The Potential Studies That Fall Under The Current Research Framework?

Several potential study directions are indicated by the challenges and limitations that have been highlighted. The results show that there is a tendency for some potential studies that fall under the current research framework. According to the findings of research question 3, the relevant potential studies are displayed in Figure 10. These potential studies can improve the GAI adoption and applications. Additionally, the following subsections provide a brief explanation of each of these possible studies:

3.3.1 Developing Real-World Or Practical Implementation Standards, Guidelines, And Best Practices

The practical application of AI ethics in this field has received even less attention in the literature. The situation of AI ethics in practice is covered in very few empirical research. To mitigate the hazards and ramifications of artificial intelligence, ethical frameworks and principles have emerged globally. An ethical convergence emerged in a mapping study of the worldwide landscape on AI rules, according to academics. Importantly, though, there are differences in how ethical principles are perceived, their significance, the issues, or people they relate to, and how they ought to be applied [47]. [47] propose standardization as a means of achieving an alignment of ethical standards at the level of technological governance. Nonetheless, they make one wonder if these policy tools affect the stakeholders that support them or the actual application of AI. Specifically, do AI engineers follow ethical rules when working with AI? [48] claimed that there is a lack of practical adherence to the ethical ideals stated in the guidelines. When creating new technology, engineers and designers are not always conscious of the ethical decisions they are making, and neither are employers who use new technology in their organizations. Therefore, it is frequently only after the technology has been put into use those possible ethical problems and their (unwanted) effects on employees become apparent [49]. Therefore, people are not the only ones who bear the responsibility for making moral decisions but also go one step further and suggest establishing a public AI ethics commission to oversee the actual application of these laws[41].

3.3.2 Developing Real-World Or Practical Implementation Standards, Guidelines, And Best Practices

Continuous monitoring and evaluation are essential for GAI such as ChatGPT to assess its responses, ensuring they maintain fairness and inclusivity. This involves routinely evaluating the model's responses for bias and soliciting user feedback to identify and rectify deficiencies in the model's performance. The policy must mandate the regular evaluation and updating of AI systems to ensure adherence to the policy and to accommodate evolving technological, ethical, and societal factors. This encompasses regular assessments of the effects of AI

systems across multiple dimensions, including fairness, privacy, and human rights [26].The evaluation pillar employs rigorous testing and assessment procedures to determine the ethical integrity of AI systems. To achieve ethical AI, impartiality and impartial outcomes are of utmost importance. This pillar advocates for a thorough evaluative framework that includes technical expertise, social consequences, and risk analysis. Incorporating risk assessment facilitates the identification and mitigation of potential risks and vulnerabilities in AI systems. Consequently, AI practitioners, armed with a comprehensive assessment, may detect and amend biases, so guiding the technology towards an ethical path [28]. Establishing actionable ethical principles, including the formation of an ethical AI committee, the development of significant and functional validation metrics, the establishment of standards for validation metrics, the integration of AI ethics throughout the entire AI lifecycle, and the teaching of AI ethics [50].

3.3.3 Developing Framework Regulations To Ensure The Ethical Use

Although there is significant momentum for the integration of generative AI, it is imperative to examine the ethical obligation of data protection and the mitigation of hazards. The swift integration of generative AI appears to outpace the industry's comprehension of the technology and its associated ethical and cybersecurity dangers. Companies must address the risks posed by emerging vulnerabilities associated with generative AI, necessitating the development of novel governance and regulatory frameworks. Employee training, procedural adherence, and managed execution constitute an ethical obligation to safeguard workers, confidential company information, and the public. Companies may now avert costly and superfluous repercussions of generative AI by tackling ethical and cybersecurity issues and investing in data protection strategies [32]. The policy must emphasize the significance of ethical considerations in the development and utilization of AI systems. This encompasses the promotion of transparency, equity, accountability, and the respect for human rights in all AI-related endeavors[26]. Promoting a culture of transparency and ethical AI utilization, improving peer-review mechanisms with technologies designed to detect AI-generated plagiarism, and championing elevated ethical norms within the community. Furthermore, establishing explicit rules for the proper utilization of AI tools and educating scholars on AI ethics are essential strategies [24].

3.3.4 Gathering Stakeholder Perspectives

The implementation of ethical principles necessitates the formulation of legislation and specific regulations, which should involve not only policymakers but also essential stakeholders, including industry leaders and technology experts, to adapt to technological advancements[49]. Addressing this situation requires cooperative efforts from all those concerned. In academia, including educational institutions, academic journals, and researchers, there exists a collective need to address unethical AI utilization in scientific articles [24]. To guarantee that ethical considerations are integrated into the design and functionality of Generative AI systems, Transparency and Explainability will offer lucid elucidations regarding the operational mechanisms and decision-making processes of the AI, rendering this information accessible to users and stakeholders. Feedback will enable users and other stakeholders to offer input on AI outcomes and any related ethical issues[30]. Formulating an AI policy framework by incorporating feedback from diverse stakeholders to identify and address any deficiencies in the framework. Collaboration and communication among all stakeholders, including institutions, educators, students, staff, and external entities such as accreditation and quality assurance authorities, are crucial for the effective implementation of any policy. Every organization must engage actively in the formulation and implementation of AI-related projects and collaborate to attain the intended results. Simply advocating for the integration of AI in education is inadequate; stakeholders must meticulously assess which AI technologies to utilize, identify the optimal techniques for their application, and comprehend their actual capabilities [22].

3.3.5 Exploring The Ethical Implications

It's not always easy to navigate these ethical challenges because we frequently encounter demands from our ideals that contradict one another. The application of sophisticated LLMs, for example, can increase our capacity for precise forecasting but also impair our comprehension of their operation. Although there are many amazing uses for generative AI, it may also lead to job losses and human deskilling. The following addresses several ethical issues with generative AI and automation in education, including consent and data protection. algorithmic prejudice, Openness and opacity, Fairness and accessibility, contrasting the individual and community approaches to education and learning, Human-centered and human-in-the-loop education Comparing innovative speed to sustainability, safety, trustworthiness, and equality efficacy versus efficiency, The honor of scholarly work [51].

On the other hand, this development has also led to ethical dilemmas, particularly in academic writing. The ability of AI to automate time-consuming processes such as data analysis and literature reviews has opened the door for unethical behavior, as researchers have begun including AI-generated material in their articles,

potentially compromising academic integrity. In addition to casting doubt on the legitimacy of current scholarly pursuits, this circumstance raises a number of ethical issues that call into question the integrity of editorial oversight and the legitimacy of the peer-review procedure. Examples of this wrongdoing are cited, since they appear in both well-known and obscure journals, as well as in graduate theses and grant applications. Due to the publish-or-perish mentality, this mild AI penetration suggests a systemic vulnerability in the academic publishing industry. Using advanced AI-driven plagiarism detection tools, adding a "AI scrutiny" phase to the peer-review process, providing comprehensive training for academics on ethical AI use, and encouraging a transparent culture that recognizes AI's role in research are some of the ways to reduce the unethical use of AI in academia. There is an urgent necessity for cooperation amongst academic institutions in order to promote an atmosphere of moral AI use and maintain prestigious academic integrity in the face of swift technological progress[24].

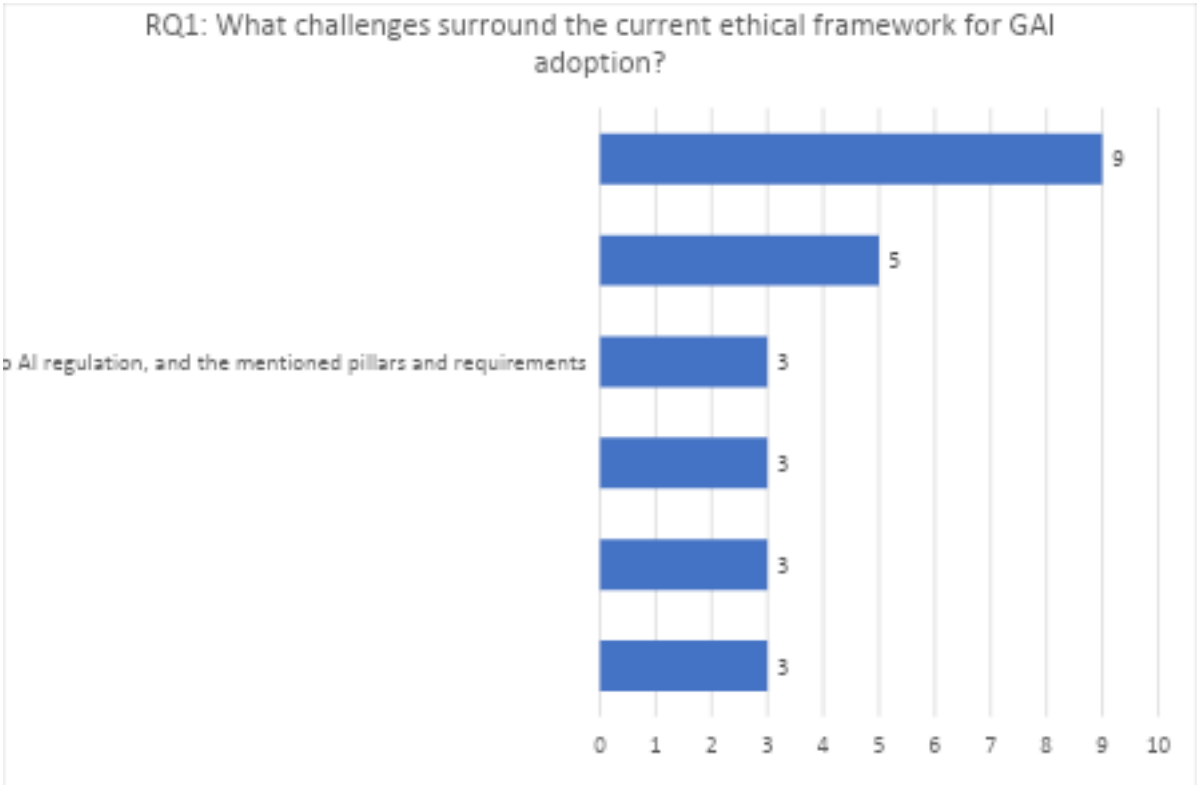

Fig. 8: The challenges of the ethical framework for GAI adoption

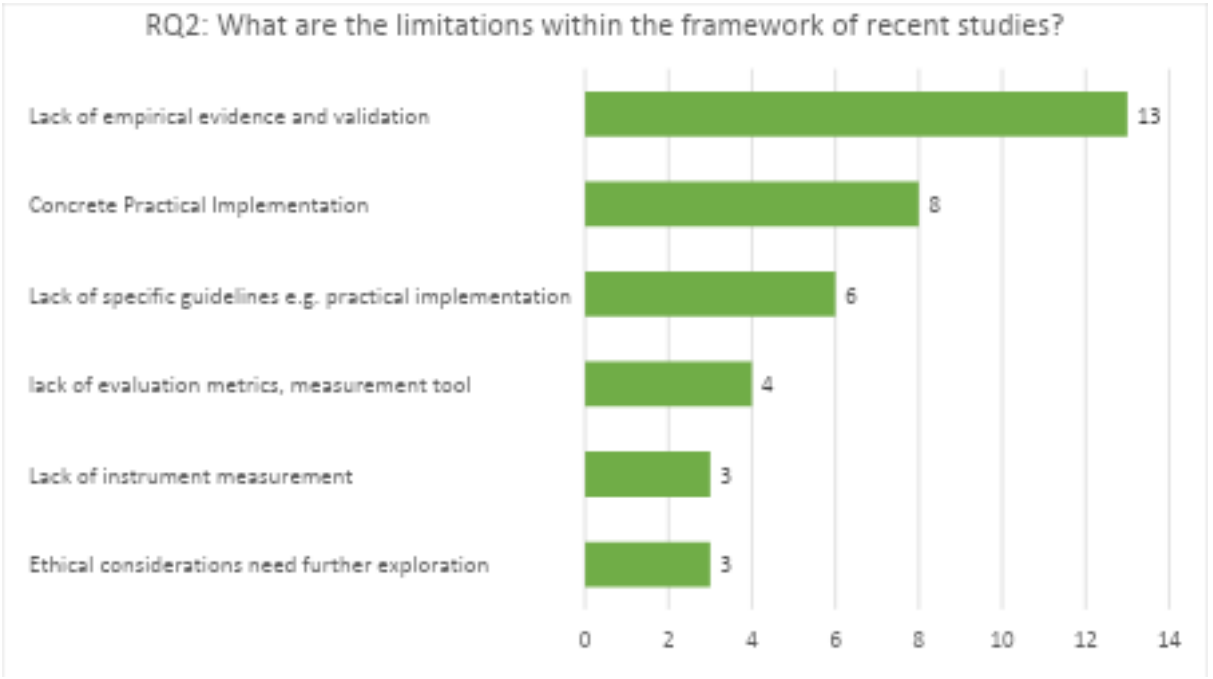

Fig. 9: The limitations of the ethical framework for GAI adoption

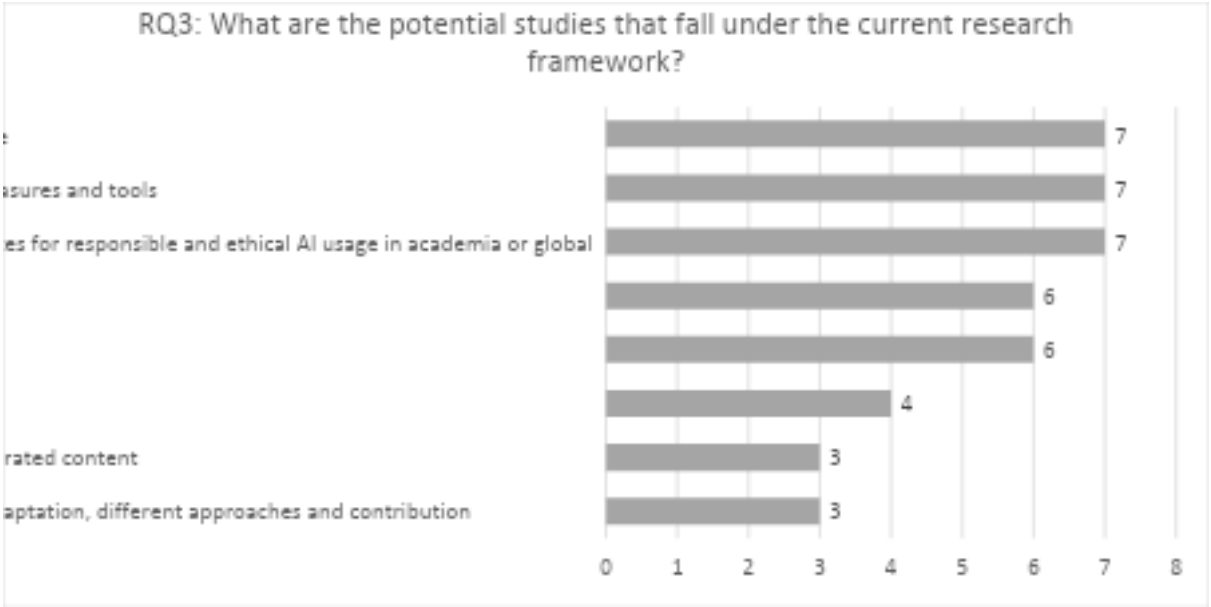

Fig. 10: The potential studies that fall under the current research framework

3.3.6 Different Industry-Specific Analysis

Generative AI possesses transformational potential across various disciplines. Nonetheless, its formidable potential entails distinct ethical considerations [30]. Future studies could enhance understanding of GAI adoption through a more nuanced examination of varying contexts, sector specifics, and an expanded range of related terminology. Future researchers are advised to gather data from respondents distributed throughout various geographical locations. In that scenario, the findings obtained could have exhibited greater generalizability [42]. AI ethics necessitates extensive research into its practical foundations, encompassing concepts, coding, best practices, infrastructure, education, and communities of practice [52]. Another approach is to investigate if specific public sector norms are at odds with AI ethical principles, as well as how AI unwittingly reinforces cultural ideas in various global locations. These avenues for further investigation represent further measures to enhance the discourse on AI ethics within a continually growing and culturally intricate society, thereby fostering a responsible future for subsequent generations [41]. Therefore, it is important to support collaboration across many industries and disciplines about the application of ethical concepts, and the integration of these ideas into practical scenarios to assess AI's adherence to ethical standards and its implications[50].

Figure 8 illustrates the preeminence of challenges within the ethical framework for the adoption of GAI in resolving ethical concerns, consequences, and considerations. Figure 9 demonstrates that the primary limitations of the ethical framework for GAI adoption pertain to insufficient empirical data and validation. Figure 10 highlights prospective research on the ethical framework for GAI adoption concerning developing real-world or practical implementation standards, guidelines, best practices, evaluation metrics, and framework regulations to ensure ethical use. The identification for RQ1 to RQ3 from the SLR of 23 documents can be seen in Table I below.

Table 2: Summary Of the Studies In Review

Research Question	Results		References
RQ1: What challenges surround the current ethical framework for GAI adoption?	1	Address ethical concerns, implications, and considerations	[22], [23], [24], [28], [29], [31], [32], [42], [51]
	2	Environmental dynamism	[42]
	3	Infrastructure and skills	[42]
	4	Financial Considerations	[42]
	5	Readiness and support	[42]
	6	Academic integrity	[24]
	7	Systemic vulnerabilities	[24]

Research Question	Results		References
	8	Detection and identification	[24]
	9	Need for clear guidelines and ethical parameters	[24], [33], [49]
	10	Fair use of AI-generated content and AI agents	[28], [51]
	11	Human-centered learning	[51]
	12	Academic Misconduct	[22]
	13	Governance of AI	[22]
	14	Encouraging a Balanced Approach to AI Adoption	[22]
	15	Risk of Misinformation	[29], [30]
	16	Human-AI Collaboration, human-centric AI	[28], [29]
	17	Privacy and Security Concerns, data rights	[28], [29], [30]
	18	Legal Considerations	[29]
	19	Lack of explainability and accountability	[32]
	20	Data governance and compliance	[32]
	21	uncertainties and unintended consequences AI and robots in the workplace	[49]
	22	quickly evolving work	[49]
	23	business model seeks for efficiency, productivity, and accuracy	[49]
	24	evaluation model which checks for ethical AI to quantify ethical values and make AI ethics operable	[23], [25], [26], [27], [50]
	25	techniques and frameworks to regulate ethical and responsible use AI	[25], [27], [52]
	26	abstract ethical principles	[50]
	27	lacking effective collaboration among stakeholders	[50]
	22	lacking the communication of ethical principles to real-world applications	[50]
	23	Standardization	[50]
	24	Balancing the AI performance and ethical values	[50]
	25	Transparency	[28]
	26	lack of concreteness and clear instructions for effective implementation	[44], [53]
	27	no universal consensus has been reached on the best ethical theory in general	[31]
	28	moderate attention is given to a practical set of ethical standards in the field of education in particular	[31], [52]
	29	AI ethics policy guidance specific to children and K-12 education has lagged behind	[45]
	30	holistic vision contemplates four essential axes: the global principles for ethical use and development of AI-based systems, a philosophical take on AI ethics, a risk-based approach to AI regulation, and the mentioned pillars and requirements	[25], [46], [52]
	31	biases present in training data	[30]
	32	The ethical and responsible use of ChatGPT in educational settings is a complicated and multi-dimensional issue that calls for an approach	[52]
	33	Sustainability, PrivAcy, Digital divide, and Ethics (SPADE) evaluation	[26]
	34	empirical research on AI ethics in the public sector is limited	[41]
	35	lack of a comprehensive review on the ethics of AI as applied to games	[54]
	36	The proliferation of guidelines and recommendations has created a complex landscape that makes it difficult to decide which guidelines should be followed in a particular context.	[33]
	37	broader risks related to artificial intelligence that have been further exacerbated by GenAI	[46]
RQ2: What are the limitations	1	Perspectives of managers	[42]
	2	Different Industry-specific analysis	[42]
	3	Geographical limitations	[42]

Research Question	Results		References
within the framework of recent studies?	4	Lack of rival model analysis	[42]
	5	Scope for further exploration	[41], [42]
	6	Implementation challenges such as resistance	[24]
	7	may not be easily generalized to other academic disciplines	[24]
	8	rapid evolution of AI technology	[24], [51]
	9	lack of evaluation metrics, measurement tool	[22], [24], [27], [54]
	10	Lack of specific guidelines e.g. practical implementation	[22], [23], [27], [28], [32], [53]
	11	Lack of empirical evidence and validation	[23], [25], [26], [27], [28], [30], [31], [32], [44], [45], [49], [52], [54]
	12	Limited focus on student perspectives	[23]
	13	Concrete Practical Implementation	[22], [29], [31], [33], [44], [45], [46], [51]
	14	Balancing Ethical Considerations	[51]
	15	Ethical considerations need further exploration	[22], [29], [41]
	16	Dynamic Nature	[29]
	17	Limited discussion on stakeholder perspectives	[32]
	18	Limited case study or real case example e.g. workplace case study	[28], [49]
	19	Subjectivity in ethical decision-making	[27], [50]
	20	Complexity	[50]
	21	Lack of instrument measurement	[31], [44], [52]
	22	small sample of AIEdK-12 ethics policy documents	[45]
	23	unit of analysis limited focus on design and development of AI	[41]
	24	Lack of mitigation strategies for risks identified	[33], [46]
RQ3: What are the potential studies that fall under the current research framework?	1	Longitudinal analysis	[42]
	2	Cross-cultural analysis, how AI is inadvertently supporting cultural ideologies in different regions of the globe.	[41], [42]
	3	Organizational readiness	[42]
	4	Different Industry-specific analysis, Contextual Adaptation, different approaches and contribution	[42], [51], [53]
	5	developing standards, guidelines, and best practices for responsible and ethical AI usage in academia or global	[24], [25], [26], [28], [29], [45], [49]
	6	exploring the ethical implications of using AI-generated content	[22], [24], [42]
	7	gathering stakeholder perspectives	[24], [30], [49], [51]
	8	developing evaluation metrics and validation, measures and tools	[22], [24], [27], [29], [32], [44], [54]
	9	Impact assessment e.g. Long-term impacts on learning outcomes and ethical decision-making	[23], [32]
	10	Student perspectives and experiences	[23]
	11	Empirical Studies e.g. educational settings	[26], [32], [51], [52]
	12	Implementation Guidelines e.g. practical guideline	[22], [25], [27], [28], [31], [32], [44]
	13	Real-world or practical Implementation	[29], [33], [44], [46], [49], [50]
	14	Framework regulations to ensure the ethical use	[25], [26], [27], [30], [45], [49]
	15	keep up with technological advance	[49]
	16	promote ongoing research and development	[28]
	17	risk-based approach	[44]
	18	need for more pedagogically responsive ethical approaches to AI integration in K-12 education	[45]

Research Question	Results		References
	19	examine citizens' perceptions of the use of AI in delivering public services	[41]
	20	whether certain public sector values conflict with AI ethical principles	[41]
	21	mitigation strategies for risks identified and ethical issues	[33], [46]

4.0 CONCLUSION

This study provided an analysis of the Ethical Framework for Adoption of Generative Artificial Intelligence (GAI). The review encompassed published works regarding the Ethical Framework for the adoption of GAI technologies which were published after 2023. A total of 712 record documents were initially picked from nine academic databases. Twenty-three (23) primary studies were selected following the screening procedure based on the established selection criteria and quality assessment. The evaluation was fundamentally centered on the challenges, limitations, and potential studies. The systematic literature review was conducted by addressing three research questions. The results of the systematic literature review indicated that challenges surrounding the current ethical framework for GAI adoption revolve around addressing ethical concerns, providing an evaluation model, providing global principles for the ethical use and development of GAI-based systems, developing frameworks to regulate the ethical and responsible use of GAI, addressing privacy and security concerns and need for clear guidelines and ethical parameters for ethical GAI. the limitations within the framework of recent studies pertain to lack of empirical evidence and validation, need for concrete practical implementation, lack of specific guidelines, lack of evaluation metrics and instrument measurement and ethical considerations need further exploration. The potential studies that fall under the current research framework refer to developing real-world or practical implementation standards, guidelines, and best practices, developing evaluation metrics, developing framework regulations to ensure ethical use, gathering stakeholder perspectives, exploring the ethical implications and different industry-specific analyses.

One of this study's drawbacks is the duration of the literature search. The risk of temporal bias is one significant disadvantage. Because the search period is limited, relevant papers published after that time may be missed by the SLR. The lack of developing trends, recent achievements, or critical insights may result in a knowledge gap in the state of the area. Second, the inclusion and exclusion criteria, which only allow documents published in English, may be susceptible to criticism. Our objective was not to dismiss other foreign languages but rather to reflect the global standing of English in modern science. Third, using only the terms "ethics" and "ethical framework" in the search query construct may have omitted possibly relevant papers about other similar studies.

The authors will contemplate future trends and prospective research directions to fully realize the potential of this technology, some areas require more research and development. Developing a more effective and significant ethical framework for GAI requires the use of multidisciplinary approaches. Researchers from education, computer science, psychology, and other related subjects working together will advance a comprehensive understanding of learning and hasten the development of a robust and broadly applicable framework. Furthermore, it can be quite helpful to carry out the recommended possible research mentioned to obtain a deeper knowledge of the outcome.

ACKNOWLEDGMENTS

The authors express their gratitude to the Indonesia Endowment Fund for Education, the ASEAN University Network for Technology-enhanced Personalised Learning (AUN-TEPL), the Faculty of Computer Science and Information Technology at Universiti Malaya for supporting this research.

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