Review of Qualitative Research in the Era of Generative Artificial Intelligence

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Abstract

The purpose of this study was to investigate how generative Artificial Intelligence (GAI) can be used for qualitative research purposes and to identify the benefits and challenges of such integration. The study employed the scoping review framework as outlined by Arksey and O'Malley (2005), suitable for emerging research areas like generative AI. This involved a systematic literature review using a binary format search string, combining terms related to GAI with "qualitative research". The literature search was conducted across multiple databases, yielding 685 scholarly articles. Following a rigorous screening process based on titles, keywords, and abstracts, the final sample consisted of 55 peer-reviewed papers. The findings indicated that GAI, particularly tools like ChatGPT, significantly impacts qualitative research, offering benefits such as assisting in analyzing large volumes of text data, sentiment analysis, data mining, and providing guidelines for research design. GAI tools also show promise in areas like automated data analysis and brainstorming research ideas. However, the finding included some challenges on ethical issues like transparency and bias, as well as concerns about reliability and the potential for misleading outcomes. We therefore suggest that while GAI has the potential to revolutionize qualitative research, particularly in social sciences, careful consideration is needed regarding its integration. We further advocate that future research should focus on developing frameworks for effectively integrating GAI in qualitative research while addressing ethical concerns and ensuring the reliability of outcomes.

Keywords: *Artificial Intelligence, Generative Artificial Intelligence, Qualitative Research, Review Study, ChatGPT*

Introduction

The emergence of generative Artificial Intelligence (ChatGPT and GPT-4) has recently garnered significant attention, highlighting the growing interest in the integration of Artificial Intelligence (AI) in educational space (Adamopoulou & Moussiades, 2020) The aspiration of the technological world is to refine devices' utilization to such an extent that human intervention is significantly (Aydın & Karaarslan, 2022). ChatGPT and GPT-4 (Chatbots) have emerged as powerful tools that can support educators in various ways including research. Questions and concerns have been raised within the scientific community about the extent to which such AI tools can be utilized for scientific research purposes (Stokel-Walker & Van Noorden, 2023). These questions are mainly about the perceived "aura of neutrality and impartiality associated with AI decision-making in some corners of the public consciousness, resulting in systems being accepted as objective even though they may be the result of biased historical decisions or even blatant discrimination"(Littman et al., 2022)

Qualitative research fundamentally involves the researcher's direct personal experience as it seeks to gain a profound understanding of externally observable behavior and internal states within a specific context. It allows for an in-depth exploration of real-world problems within their natural contexts, typically featuring broad and open-ended research questions that are receptive to unanticipated findings. This approach recognizes the researcher's personal insights as integral parts of the inquiry, playing a critical role in understanding the phenomenon under investigation (Patton, 2002).

Likewise, GAI holds promising potential in mirroring human capabilities in writing and providing assistance to researchers in the same way a human would. This AI system is capable of grappling with real-world problems, and of finding potential solutions to open-ended questions (Latif et al., 2023). Its design allows it to generate a myriad of possible research questions in a short period, which can be highly beneficial in educational research (Dwivedi et al., 2023). Furthermore, its ability to generate ideas, provide feedback on argumentation and structure, and even assist in formulating research paper outlines makes it a potentially valuable tool in conducting qualitative research (Sok & Heng, 2023).

This study was conducted to investigate the various facets of GAI and their implications for qualitative research. This includes an exploration of their potential, inherent biases, challenges, and many others. This information is intended to help shape best practices in the field, allowing for improved utilization of GAI and contributing to the development of more effective, efficient, and insightful qualitative research methods. In that regard, the objective of the scoping review was to summarize the evidence required for answering our two research questions:

1. How can generative artificial intelligence (GAI) be used for qualitative research purposes?
2. What are the benefits and challenges of using GAI for qualitative research purposes?

Theoretical Framework

Epistemological Trends of Qualitative Research

The history and evolution of qualitative research has seen a gradual transition in its epistemological foundations. As per the Seven Moments of Qualitative Research framework by Denzin and Lincoln (2000) as cited in (Tobin & Begley, 2004), the evolution of qualitative research has transitioned from a positivist worldview and has unfolded across various stages over time (Ormston et al., 2014). These stages of development have not only helped broaden the onto-epistemological foundations of qualitative research but have also resulted in the emergence of a variety of qualitative research methodologies. These developments are evident in the varied range of case study designs and the approach to constructing themes within qualitative case study research (Mishra & Dey, 2022; Priya, 2021).

Tobin and Begley (2004)'s 'work on methodological rigour within a qualitative framework' presented the historical transition of qualitative research through seven distinct moments. These included *the traditional period*, extending from the early 1900s to World War II, focused on providing valid, reliable, and objective interpretations, and researchers sought to offer objective accounts which reflected the positivist paradigm. The modernist phase, from the post-World War II era through the 1970s, embraced social realism, naturalism, and life-like ethnographies, leading researchers to question qualitative methods. From 1970 to 1986, during the blurred genres period, there was a shift towards symbolic interactionism, constructivism, hermeneutic inquiry, positivism, and post-positivism, stimulating researchers to mix methods(Richards, 2009; Tobin & Begley, 2004). The crisis of representation in the mid-1980s saw an anthropological challenge, calling into question the validity, reliability, and objectivity, which resulted in writings that became more interactive. The performative period of the late 1980s through the 1990s dealt with a struggle for making sense of the crisis, with activist pedagogy and action-oriented research emerging. The post-experimental period of the late 1990s through the new millennium focused on fictional ethnographies, ethnographic poetry, and multimedial texts, as researchers sought to commit writings to the needs of society(Spencer et al., 2014; Tobin & Begley, 2004). Looking ahead, the future is seen as an evolving perspective, the direction of which is yet to be determined(Tobin & Begley, 2004), suggesting that artificial intelligence could be the next significant influence on qualitative research methodologies(Ciechanowski et al., 2020; Nyaaba et al., 2023).

Moving towards the future, the final stage of the Seven Moments of Qualitative Research, as envisaged by Denzin and Lincoln, emphasizes future developments in qualitative research. An important assertion here is the collaboration between artificial intelligence (AI) and qualitative research. This would be a significant shift from previous trends that were heavily focused on human-centered approaches. This argument suggests that the process of knowledge acquisition in qualitative research will be significantly supported or even collaborated with AI technologies (Tomaszewski et al., 2020; Van Dis et al., 2023; Zhai & Nyaaba, 2023)

Potentials of AI in Qualitative Research

Artificial Intelligence (AI) is indeed transforming many facets of qualitative research, and the potentials ranges from planning to analysis. In the planning phase, AI can help researchers formulate relevant research questions, identify suitable data sources, and design effective data collection methods (Longo, 2020).AI has made a significant impact on data analysis,

especially when dealing with large and complex datasets(Weigel et al., 2022). This AI-assisted data analysis often yields more reliable and comprehensive insights, helping researchers make more informed conclusions. Furthermore, AI can also streamline the interpretation and presentation of research findings, ensuring they are communicated effectively to the intended audience. Figure 1 presents the segments of qualitative research where AI's intervention can bring about significant improvements, leading to superior and more influential outcomes as delineated by (Longo, 2020):

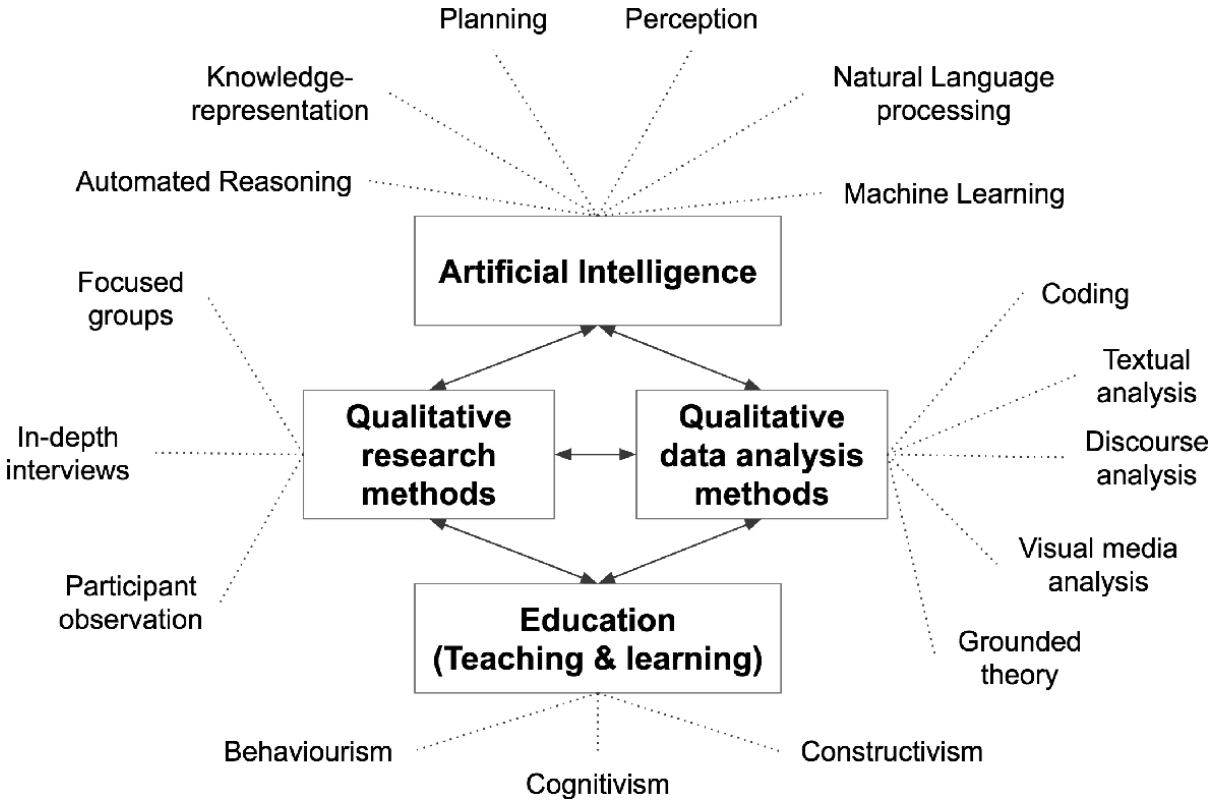


Fig. 1 Adopted from Impact of AI in Qualitative Research (Adopted from Longo, 2020, p. 3)

Validity and challenges of Qualitative Research

Qualitative research, in contrast to quantitative research, places greater emphasis on validity, often referred to as trustworthiness within this context, rather than on reliability(Mardis et al., 2014). The trustworthiness of qualitative research is achieved through a variety of methods, necessitating collaborative efforts in this kind of study(Priya, 2021). The authenticity of the research is gauged by the statement made, the methodologies employed, and the conclusions drawn. As per Hayashi et al. (2019), the principal forms of validity in qualitative studies are descriptive, interpretative, and theoretical validities. In the context of qualitative research methodology with GAI, ethical issues take on a distinct dimension (Feuston & Brubaker, 2021). This raises questions about the accuracy and authenticity of AI-mediated to capture the depth and richness of qualitative data (Rietz & Maedche, 2021).

Method

The research method employed in this study was guided by the scoping review framework of (Arksey & O'Malley, 2005), a particularly useful approach when dealing with emerging research areas like generative AI, which substantial research is not yet available. We chose this framework because Arksey and O'Malley (2005) were the first to outline a methodological procedure for conducting scoping reviews although other authors have since

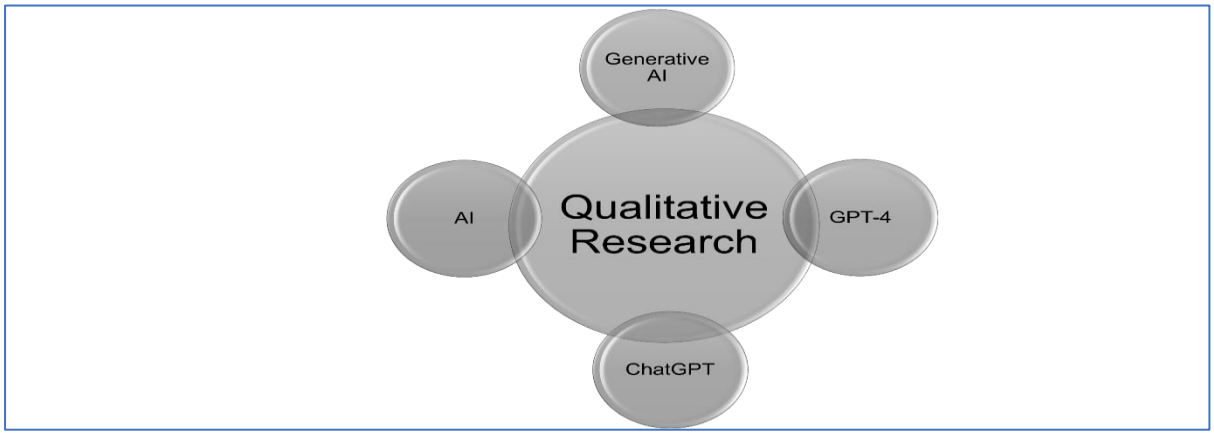
made adaptations and expanded on it (Westphaln et al., 2021). However, after reviewing the work of Westphaln et al. (2021), we notice that the rationale given for the adaptation and modifications may not be applicable in our case hence the decision to stick with the original framework.

Arksey and O'Malley (2005) advises that scoping reviews can be useful for examining the scope of existing literature and deciding whether to undertake a full systematic review on a topic. Additionally, scoping reviews can be useful for summarizing and disseminating research findings as well as identifying existing research gaps on a particular research topic (Arksey & O'Malley, 2005). Using the latter framework involves a five-step procedure of framing the research question/s, identifying relevant literature, selecting from the literature, charting and collating the data as well as summarising and reporting the findings (Arksey & O'Malley, 2005).

Search Strings

Considering the polysemous nature of the terms related to the study, we implemented a strategic approach in conducting the literature review. This involved crafting a search string that used alternative keywords for "generative AI" (GAI), pairing these terms in a binary format with "qualitative research," which served as a constant key term as found in Fig. 2. This approach addressed the inherent challenges of polysemy, where a single term, such as GAI, may carry multiple meanings depending on the context. By combining variable key terms associated with GAI with the constant term "qualitative research," the search was optimized to generate the most relevant literature in the context of our study. This strategy provided a clear and structured pathway to identify and situate the findings of the review within the broader evidence base. Data charting was then performed to systematically categorize and interpret the extracted information. This process allowed for a more coherent and organized assessment of the collected data.

Fig. 2: Search Strings



Data Analysis

The data was subjected to thematic analysis, a method we used to identify and categorize the data into themes. This analysis technique ensured a clear and comprehensive picture of the findings, thereby enabling us to meaningfully connect our results back to the original research questions. The final step of this method involved the summary and report of the findings, providing a detailed account of the outcomes and their relevance to the research topic and questions. Leaning our study to scoping review methodological framework ensured a robust and reliable outcome, establishing its credibility.

Search Results

The scoping review was conducted in June 2023 by retrieving scholarly articles from sites such as Google scholar, ProQuest, ERIC, ArXiv and Web of science. "Generative AI" OR "ChatGPT" AND

"Qualitative Research" was used as the search term - primarily to prevent exponential results that would arise from including terms such as chatbots. The search yielded a total of 685 scholarly articles derived from the five databases mentioned earlier. An initial screening was conducted by reviewing the titles and keywords of these 685 papers. The initial screening yielded a total of 150 papers eligible for inclusion – as a result of which the remaining 535 papers were excluded. A second screening criteria was applied by reviewing the abstracts of the 150 papers resulting from the initial screening. This yielded a total of 57 papers eligible for inclusion. After removing 2 duplicates from the 57 papers, the final sample reviewed included 55 papers The screening process and procedures are presented in the scoping review flowchart below. Papers included in the review are very recent considering that they were published between the period 2020 – 2023. Specifically, 33 papers were published in 2023, 6 papers in 2022, 15 papers in 2021 and 3 papers in 2020 and reflect the nascent and evolving nature of GAI. The screening process and procedures are presented in the scoping review flowchart in Fig. 3.

Fig 3. Scoping review flow chart

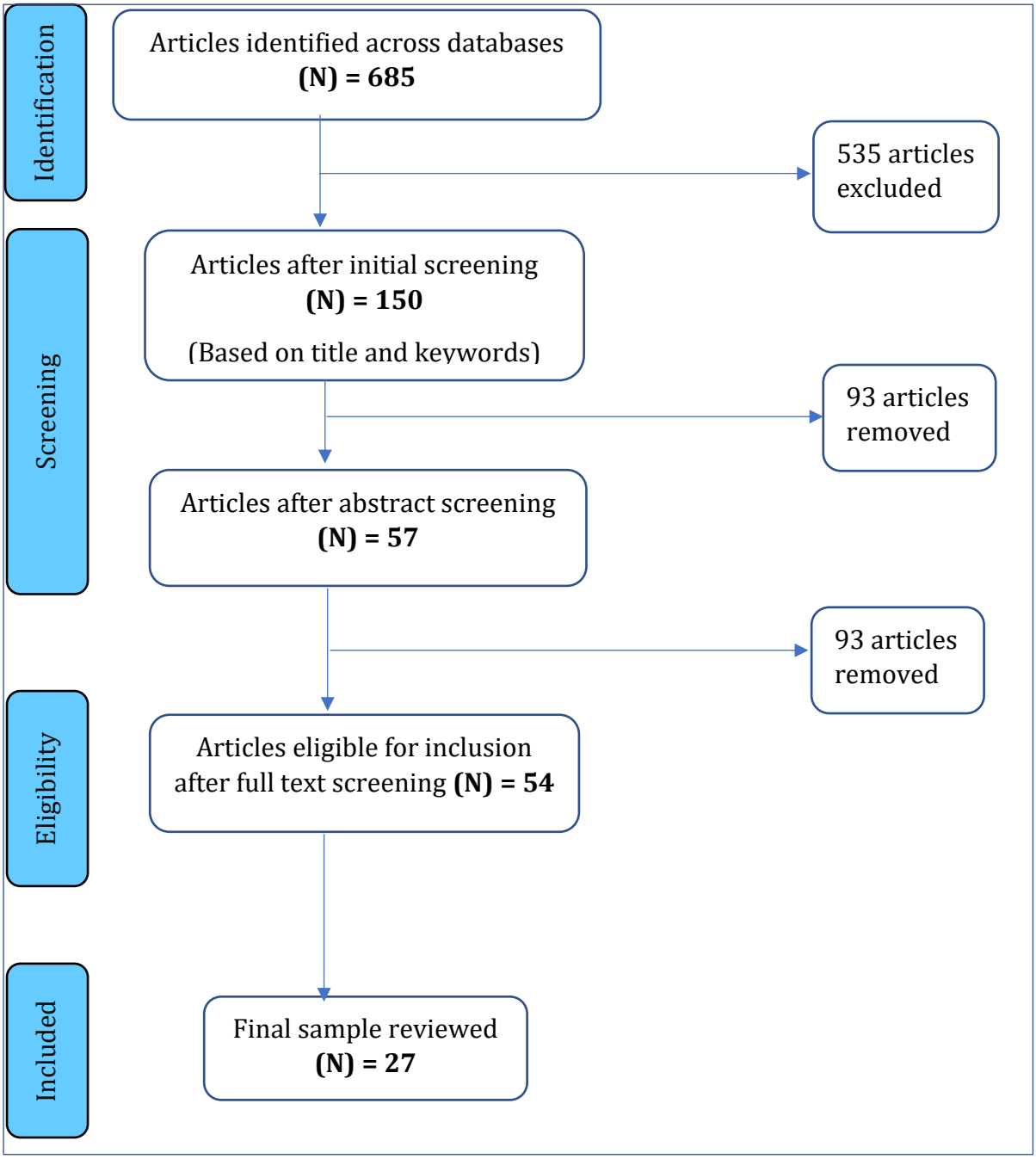


Table 1: Review Findings of GAI in Qualitative Research

Author/s	Year	Article Type	Journal	Issues discussed
Akbar, Khan & Liang	2023	Peer reviewed	IEEE Transactions	ChatGPT significantly impacts qualitative research but has ethical challenges as well.
Cheng, K., Li, Z., He, Y., Guo, Q., Lu, Y., Gu, S., & Wu, H	2023	Peer Reviewed	Annals of biomedical engineering (Springer)	ChatGPT can provide suggestions and generate
Chinonso, Mfon-Ette Theresa & Aduke	2023	Peer Reviewed	Global Academic journal of humanities and social sciences	GAI tools such ChatGPT may assist researchers in analyzing and comprehending vast volumes of text data.
Ciechanowski et.al.,	2020	Peer Reviewed	Journal of business research	GAI can be useful for sentiment analysis and data mining (secondary data collection)
Fonseca, A.,Luis Araujo, Chimenti,Paula Castro Pires de Souza, & Suarez, M. C.	2023	Peer Reviewed	Journal of contemporary administration	A framework for conducting interpretive research using deep learning algorithms. The interweaving of computational and interpretive methods has the potential to integrate rigorous social science research. Using advanced present day computational tools in qualitative research presents an opportunity for social science scholars from developing countries.
Durand & Hattingh	2020	Peer Reviewed	IEEE Explore	GAI can be useful for collecting secondary data (data mining)
De Paoli, S.,	2023	Peer Reviewed	arXiv	Using LLMs for thematic analysis in qualitative research and the need to discuss the methodological implications of same.
Dönmez et al.,	2023	Peer Reviewed	Journal of STEAM Education	AI provide opportunities to researchers in terms of approval, creativity, and offering different perspectives. However, it is seen that there are reliability problems in producing content and it brings ethical and plundering issues
Ellerton	2023	Peer Reviewed	JHU Muse Visible language	GAI can be useful for automated summarization, automated data analysis, automated question generation, automated essay writing and automated reference generation.
Ghosh, S., & Caliskan, A.,	2023	Peer Reviewed	AAAI/ACM	ChatGPT perpetuates gender biases and stereotypes when used for translations.
Iskender, A.	2023	Peer Reviewed	European Journal of Tourism Research	ChatGPT was used as an interviewee instead of a human subject.

Ismail Dönmez Sahin Idil Salih Gulen	2023	Peer Reviewed	Journal of STEAM education	GAI can provide some guidelines for research design although there could be challenges therein.
Karthikeyan C.,	2023	Peer reviewed	International Journal of Science and Research	ChatGPT can be useful for brainstorming research ideas and for translating text data.
Hurlburt, G.	2023	Peer reviewed	IEEE	ChatGPT holds significant potential for academic research but yet it can be misleading
Mogavi, R. H., Deng, C., Kim, J. J., Zhou, P., Kwon, Y. D., Metwally, A. H. S., ... & Hui, P.	2023	Peer reviewed	arXiv	GAI for text-based analysis, annotation, sentiment analysis and storytelling.
Owens, B.	2023	Peer reviewed	Nature	GAI for brainstorming research ideas, conducting literature reviews and generating graphics
Rahman, et.al.,	2023	Peer reviewed	Journal of Education, Management and Development Studies	ChatGPT is quite successful for generating new ideas, developing research outlines, literature reviews, methodological design as well as data analysis and findings
Sallam, M.	2023	Peer reviewed	Healthcare	GAI can be useful for literature reviews, generating codes and analysing data. Ethical issues such as transparency and hallucinations need to be considered.
Stokel-Walker, Chris; Van Noorden, Richard	2023	Peer reviewed	Nature	ChatGPT and other LLMs can assist experienced researchers who have the ability to spots any challenges thereof.
Susarla, Anjana; Gopal, Ram; Thatcher, Jason Bennett; Sarker, Suprateek	2023	Peer reviewed	Journal of Information systems research	GAI can be used as a sounding board for new ideas. Can contribute to an iterative process of idea formulation, assessment of the quality, novelty, or state of the related research and idea refinement.
Tafferner, Z., Illés, B., Krammer, O., & Géczy, A.	2023	Peer reviewed	MDPI - Sensors	Capability of GAI for literature reviews is found to be unreliable.
Uprety, Zhu & West	2023	Peer reviewed	Wiley	ChatGPT can be useful for reviewing and extracting textual information.
Zhu, C., Sun, M., Luo, J., Li, T., Wang, M.,	2023	Peer reviewed	Journal of knowledge management and eLearning	GPT-4 can simplify complex theories and concepts because it has been trained on expert knowledge.
Zohnny, Hazem; McMillan, John; King, Mike	2023	Peer reviewed	Journal of medical ethics	GAI cannot do qualitative research on its own
Nyaaba, et al.	2024	Peer Reviewed	Journal of AI	Generative AI in Academic Research: A Descriptive Study on Awareness, Gender Usage, and Views among Pre-Service Teachers
Glaser, V. L., & Gehman, J.	2023	Peer reviewed	Journal of Management Inquiry	AI facilitate three distinct ideal-typical agentic possibilities: Generative AI as a research assistant that supports researchers by functioning as an administrative assistant and interactive conversation partner; generative AI as a data analyst that can be programmed by the researcher to analyze data with enhanced, dynamic pattern recognition; and generative AI as co-author that can act as a

				semi-autonomous agent in the pursuit, discovery, and refinement of new knowledge.
Schmitt, B. (2023).	2023	Peer reviewed	An International Journal.	Generative AI can provide much-needed validation of the subjective nature of qualitative research and can also generate insights beyond human intuition.

Findings

From Table 1. the scope of work identified thus far shows that whereas GAI is a relatively new and emerging field, it has drawn the attention of various disciplines including qualitative research. Results from the review shows how GAI can be used in qualitative research as well as the challenges therein;

Idea Generation

Authors such as Donmez et. al., (2023), Ellerton (2023); Karthikeyan (2023), Hulburt (2023); Rahman et. al., (2023), Susarla et. al., (2023) and Owens (2023) suggest that GAI tools such as ChatGPT can be useful for identifying research gaps, brainstorming ideas for research and generating an outline to guide the research. In that regard, Owens (2023) reports that 27% of his 672 respondents alluded to using ChatGPT for generating research ideas in their own work. Likewise, Susarla et. al., (2023) also gives an indication that ChatGPT can serve as a starting point for identifying research problems. According to them, this can be done by using GAI technology to explain key terminologies relating to the research question/s as well as for checking the quality of the research questions. For example, Donmez et. al., (2023) used ChatGPT in for generating research questions in their own work. Irrespective of these prospects, Susarla et.al., (2023) comments that there is the tendency for these tools to regurgitate questions from its database rather than generate entirely new set of questions. In similar vein, Hulburt (2023) advises that ChatGPT can sometimes produce misleading research problems or questions. For this reason, Rahman et. al., (2023) advises the need for human due diligence to be used alongside these GAI tools for generating research ideas and questions.

Literature reviews

According to the papers reviewed, GAI tools such as ChatGPT can also be useful for summarizing texts and conducting literature reviews (Karthikeyan, 2023; Hulburt, 2023; Rahman et. al., 2023; Sallam (2023); Susarla et.al., 2023; Tafferner et. al.,2023; Owens, 2023) and Zhu et.al., (2023). The point is emphasized by Zhu et.al, (2023) who observed that GAI tools have the ability to simplify advanced concepts and theories into an easy-to-understand language. However, scholars such as Hulburt (2023) as well as Rahman et.al, (2023) note that such literature reviews may be bereft of the quality associated with manually conducted literature reviews. For instance, they contend that ChatGPT cannot produce a coherent literature review because it falls short of generating proper referencing, emphasizing key points or synthesizing the main ideas. Similarly, Susarla et.al., (2023) and Zhu et.al., (2023) also mentions instances of hallucinations which occurred in their experimentation with ChatGPT. In their case, they noticed that some references provided by ChatGPT were fabricated. Hence, these authors suggest that using GAI tools such as ChatGPT to conduct literature reviews may lead to the lack of critical insights.

Research Design/Methodology

Another way via which GAI tools can be used for research purposes is in terms of generating a research design and a corresponding methodological framework. Scholars such as Cheng et.al., (2023), Donmez et. al., (2023), Karthikeyan (2023) as well as Hulburt (2023) gives an indication that GAI tools such as ChatGPT may be useful for generating methodological checklists, providing methodological suggestions, checking for clarity and simplifying methodological procedures. Additionally, it may also be useful for generating sample sizes, identifying methodological gaps and providing exemplars for researchers (Cheng et.al., 2023;

Donmez et.al., 2023; Rahman et.al., 2023). For instance, Rahman et.al (2023) explains that GAI tools can serve as a reference point for scholars seeking to gain insights about the appropriate methods to use. Notwithstanding, Donmez et. al., (2023) advises that such methodological insights may not entirely be accurate considering that the results generated by algorithms depends on the quality of the data that they are trained upon.

Data collection / data mining

Ciechanowski et.al., (2020), Durand and Hattingh (2020), Donmez et.al., (2023), Karthikeyan (2023), Mogavi et.al., (2023), Susarla et.al., (2023), Uprety et.al, (2023) as well as Zhu et. al., (2023) also suggests that GAI tools may be useful for the purposes of mining or collecting data from the internet and other web sources. Ciechanowski et.al, (2023) in particular mentions that such data collections approaches may be useful for conducting sentiment analysis, social network analysis amongst others. Susarla et.al, (2023) and Zhu et.al., (2023) on the other hand suggests that using GAI tools for data collection or mining could actually generate ideas for data analysis and interpretation. According to them because GAI tools like ChatGPT are trained with some expert level knowledge, it enables the technology to produce outcomes similar to that of an expert. Stokel-Walker and Van Noorden (2023) are of the opinion that results generated by GAI may lack the depth and specificity that researchers require in their work. Additionally, Flores et. al., (2023) hints of inherent biases that might have been built into these data sets in the course of collating and labelling the data.

Data coding and thematic analysis

The findings also suggests that GAI tools such as ChatGPT can be useful for coding and analysing qualitative data as long as the transcribed data is provided (Akbar, Khan & Liang, 2023; De Paoli, 2023; Ellerton, 2023; Karthikeyan, 2023; Rahman et. al., 2023; Sallam, 2023). So far as this condition is met, Akbar et. al., (2023) observes that ChatGPT can derive codes, identity key ideas, patterns and categories from the transcripts. These assertions have been confirmed by De Paoli (2023) who conducted an experiment to test the viability of using GAI tools for inductive thematic analysis. Irrespective of the positive results realized, De Paoli (2023) recommends the need to consider the methodological implications of using same for qualitative analysis whiles Akbar et.al., (2023) also cautions against the possible validity or credibility threats therein.

Writing, Editing and Reporting

Authors such as Sallam (2023), Stokel-Walker and Van Noorden (2023) also gives an indication that GAI tools such as ChatGPT may be useful for drafting parts of a research reports and even disseminating same. However, Domnez et.al., (2023) suggest that doing so may present ethical challenges such as plagiarism, research authorship as well as contentions over who bears the ultimate responsibility for such write-ups.

Ancillary Research Tasks

Beyond using GAI for planning and aiding the research process, the review also suggests that GAI tools may be useful for ancillary research activities such as translating and editing texts (Ellerton, 2023; Fonseca et.al., 2023; Ghosh and Caliskan, 2023; Karthikeyan, 2023; Sallam, 2023). For instance, Ghosh and Caliskan (2023) used ChatGPT to translate Bengali based texts into English – following which they highlighted the technology's inability to detect nuanced details such as gender-neutral pronouns in the Bengali context. As a result, they

concluded that ChatGPT may perpetuate existing gender biases and stereotypes when used for text translations.

Discussion

The scopus of evidence reviewed gives an indication of the potential benefits and challenges for using GAI tools in qualitative research. This is because qualitative research follows the scientific process of identifying a problem, drafting a set of research questions, reviewing literature, making design and methodological choices, collecting and analysing the data as well as reporting findings (Maxwell, 2013; Paulus and Lester, 2022). In that regard, the findings suggests that qualitative researchers can benefit from the use of GAI tools for the most part of the qualitative research process. For instance, with respect to research problem identification, Fonseca et.al., (2023) states that using GAI tools could help qualitative researchers gain broader insights about a particular research topic beyond the scope of their knowledge and expertise. This assertion affirms Longo (2020) model on AI capability to support in knowledge representation, cognition, and perception in qualitative research. Additionally, qualitative researchers may find GAI tools helpful for conducting literature reviews and identifying research gaps (Karthikeyan, 2023; Hulburt, 2023; Rahman et. al., 2023; Sallam (2023); Susarla et.al., 2023; Tafferner et. al.,2023; Owens, 2023; Zhu et.al., (2023).

In a similar vein, scholars such as Cheng et.al., (2023), Donmez et. al., (2023), Karthikeyan (2023) as well as Hulburt (2023) also claim that GAI tools might be helpful for creating research design and methodological checklists – in which case it could provide some fundamental design and methodological guidelines for qualitative researchers. This is in a line with Longo (2020) model on AI capability to assist researchers on their qualitative research design. Besides that, qualitative researchers can also use GAI for collecting secondary data online. This is the case because scholars such as Ciechanowski et.al., (2020), Durand and Hattingh (2020), Donmez et.al., (2023), Karthikeyan (2023), Mogavi et.al., (2023), Susarla et.al., (2023), Uprety et.al, (2023) as well as Zhu et. al., (2023) suggest that GAI is trained on high level data sets that enables it to generate outputs akin to an expert. Iskender (2023) also mentions using ChatGPT as an interviewee or respondent in his own research. This might be helpful for qualitative researchers although greater caution may be required in that regard.

The findings also show that GAI tools might be useful for generating codes, categories and conducting thematic analysis in qualitative research (Akbar, Khan & Liang, 2023; De Paoli, 2023; Ellerton, 2023; Karthikeyan, 2023; Rahman et. al., 2023; Sallam, 2023). In fact, De Paoli (2023) demonstrated this in an experiment by using GAI to re-analyse a dataset that had already been analysed by other researchers and compared the themes that emerged from both analysis. Based on that, De Paoli (2023) concludes using GAI tools can identify some themes similar to what human researchers would although it could present some methodological challenges. The findings also suggest that GAI tools may be beneficial to qualitative researchers in terms of translating, co-writing, editing or even proofreading their work. However, there are risks of biases and stereotypes (Nyaaba et al., 2024), lack of contextual interpretation as well issues about plagiarism and authorship (Ellerton, 2023; Fonseca et.al., 2023; Ghosh and Caliskan, 2023; Karthikeyan, 2023; Sallam, 2023; Stokel-Walker and Van Noorden, 2023;).

Over the last three decades, the field of qualitative research have consistently evolved – mostly underpinned by advancements in technology and digital tools. The meteoric rise and popularity of GAI tools such as ChatGPT gives an indication that GAI technology is here to stay and presents yet another stage for qualitative research and practitioners. Although Zohnny et.al., (2023) concludes that GAI cannot do qualitative research; at least in its current state, it does offer tools that may enhance the conduct of qualitative research. However, in its current form, GAI remains a "blackbox" technology which represents the avantgarde of positivism and its underlying mathematical logic (Hulburt, 2023; Sallam, 2023), – all of which originate from a rival epistemology to qualitative research. What this means is that qualitative researchers aiming to apply GAI tools in their work may have to think deeply about the axiological, theoretical and methodological implications of using same.

Considering that current scholarship about the use of GAI in qualitative research is fragmented, future research could look towards addressing the various issues identified in this scoping review. Specifically, future research could look at the axiological, theoretical and methodological issues involved in using GAI tools in the qualitative research process. Additionally, future research could focus on how GAI tools may be used for qualitative methods such as ethnography and or ethnography, arts-based inquiry / visual inquiry, hermeneutics, grounded theory, case studies and the various forms of qualitative research. There is also the need to explore an appropriate design framework for incorporating GAI in qualitative research as well as what may constitute the responsible use of GAI in qualitative research.

Conclusions

In conclusion, this study sheds light on the key role GAI, like ChatGPT, can play in qualitative research. The investigation, anchored in the scoping review framework of Arksey and O'Malley (2005), was thorough, methodical, and tailored to the complexities of emerging technologies in research. GAI tools have demonstrated considerable promise in enhancing the qualitative research process. They aid in the efficient analysis of voluminous text data, conduct sentiment analysis, and facilitate data mining, thereby significantly contributing to research design and methodology. Moreover, these tools exhibit capabilities in automated data analysis and generating innovative research ideas.

However, this optimism is not without its challenges. The study highlights critical ethical concerns, including issues around transparency and embedded biases within AI systems. Furthermore, the reliability and potential for misleading outcomes with GAI usage cannot be ignored. Moving forward, the study strongly suggests a balanced approach in integrating GAI into qualitative research. The potential of GAI to transform social science research is immense, but it must be harnessed with caution. It is imperative to develop comprehensive frameworks that effectively blend GAI with traditional qualitative methods, all the while addressing ethical dilemmas and ensuring the reliability of the research outcomes. As we stand at the cusp of a technological revolution in research methodologies, it is crucial to navigate this new terrain with a keen sense of responsibility, ethical awareness, and a commitment to preserving the integrity and depth of qualitative research.

Limitations of the Study

We would like to admit that this study, while comprehensive in its exploration of GAI in qualitative research, has certain limitations, particularly concerning the use of the scoping

review methodology. Scoping reviews, by their nature, are exploratory and broad, designed to map out existing literature rather than provide in-depth analysis or systematic synthesis of data. This approach, while effective in collating a wide range of information, may not capture the depth and intricacies of each study included in the review. Additionally, the scoping review framework, as applied in this study, prioritized breadth over depth, which might have led to an overlook of finer, nuanced details of individual studies. Also, our reliance on publicly available literature on recent GAI research and predefined search terms may have inadvertently excluded relevant studies not indexed in the searched databases or not containing the specific keywords. This limitation could potentially affect the comprehensiveness of our findings and conclusions. Despite these limitations, the study provides valuable insights into the current state and potential applications of GAI in qualitative research, laying a foundation for more targeted and detailed future investigations.

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