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TEJD Resilience Paradigmatic

AI Prompts: Tools for Optimizing Scientific Research

Los *Prompts* de IA: Herramientas para la Optimización de la Investigación Científica

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Abstract

In the last decade, artificial intelligence (AI) has emerged as a transformative agent in producing scientific knowledge, impacting multiple disciplines in a transversal way. The research's purpose is to analyze the impact of AI-based prompts in optimizing data processing and structuring. A qualitative approach was adopted, based on the interpretive paradigm and hermeneutic method, with a descriptive cross-sectional design. The sample representative consisted of 25 academic researchers. For information collection, semi-structured interviews were used, whose analysis was carried out through open coding and NVivo software, allowing the identification of emerging patterns and significant trends. The results show that AI increases efficiency in data management and favors the identification of new lines of scientific inquiry. In addition, a notable reduction in processing times and increased precision in analyzing large volumes of information were observed. Consequently, the tools are consolidated as notable resources for contemporary research, particularly in contexts where the management of massive data and the optimization of comparative methodologies are decisive. It is recommended that they be incorporated into all phases of the knowledge-generation process and that ethical and regulatory frameworks be established to regulate the use of AI in research, promoting its integration as a complementary tool and not as a substitute for human reasoning in the construction of scientific knowledge.

Keywords: Prompts, AI, tools, optimization, scientific research.

Resumen

En la última década, la Inteligencia Artificial (IA) ha emergido como un agente transformador en la producción de conocimiento científico, incidiendo de manera transversal en múltiples disciplinas. La investigación tuvo como propósito analizar el impacto de los prompts basados en IA en la optimización del procesamiento y estructuración de datos. Se adoptó un enfoque cualitativo, sustentado en el paradigma interpretativo y método hermenéutico, con un diseño descriptivo de corte transversal. La muestra representativa estuvo conformada por 25 investigadores académicos. Para la recopilación de información, se emplearon entrevistas semiestructuradas, cuyo análisis se efectuó mediante codificación abierta y el uso del software NVivo, permitiendo la identificación de patrones emergentes y tendencias significativas. Los resultados evidencian que los prompts de IA no solo incrementan la eficiencia en la gestión de datos, sino que también favorecen la identificación de nuevas líneas de indagación científica. Además, se observó una notable reducción en los tiempos de procesamiento y un incremento en la precisión del análisis de grandes volúmenes de información. En consecuencia, las herramientas se consolidan como recursos notables para la investigación contemporánea, particularmente en contextos donde el manejo de datos masivos y la optimización de metodologías comparativas resultan determinantes. Se recomienda su incorporación en todas las fases del proceso de generación de conocimiento y se sugiere establecer marcos éticos y normativos que regulen el uso de la IA en la investigación, promoviendo su integración como una herramienta complementaria y no como un sustituto del razonamiento humano en la construcción del conocimiento científico.

Palabras claves: Prompts, IA, herramientas, optimización, investigación científica.

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Introduction

In recent years, Artificial Intelligence (AI) has revolutionized the methodological approach in various scientific disciplines, redefining how data is analyzed, and processes are automated. Its integration has proven to be a key resource for improving efficiency and precision in producing knowledge. Among the most promising advances are AI prompts, which allow researchers to interact with advanced systems to formulate hypotheses, analyze large volumes of information, and extract relevant data more quickly and accurately.

However, adopting these tools faces substantial challenges, mainly due to the lack of transparency in integrating AI technologies in the academic field. This gap creates a dissonance between their theoretical potential and practical application, translating into a persistent dependence on traditional analytical methods. Consequently, the pace of scientific production and the analytical depth of studies are limited. Resistance to the use of AI, exacerbated by a lack of specialized training and a general lack of knowledge about its capabilities, restricts the transformation of academic work and prevents maximizing benefits such as the automation of repetitive tasks and the efficient processing of large volumes of data.

Previous research, such as that of Smith (2021), Johnson (2020), and Brown (2019), has shown that AI prompts not only favor the generation of new scientific questions but also optimize the identification of complex patterns in data, significantly accelerating literature review and comparative analysis. The findings underline the innovative capacity of AI to enhance traditional methods, allowing researchers to focus on aspects of greater analytical and creative complexity. However, the widespread adoption of these technologies still faces considerable barriers, particularly in training and familiarization with their operation. In this context of accelerated technological advancement, overcoming obstacles to ensure the effective integration of AI into academic research is imperative.

The research's purpose is to analyze the impact of AI-based prompts in optimizing data processing and structuring. In this sense, the study is oriented around the following central question: How can AI prompts improve efficiency and accuracy in scientific research? The study seeks to establish a solid conceptual framework that identifies the areas in which AI can generate the greatest impact, thus facilitating its incorporation into academic research processes.

Methodology

A study was carried out within the interpretive paradigm in response to the stated objective and to contribute to generating knowledge about the benefits of AI prompts in research. According to Sandoval (2002), this paradigm is oriented towards "understanding the meaning of human actions within their social context, allowing the researcher to interpret the experiences of the subjects studied" (p. 67). In this sense, the study focused on exploring and analyzing researchers' perceptions regarding the use of AI prompts to identify their impact on the optimization of analytical processes and the formulation of hypotheses in the scientific field.

The method used was the hermeneutic one, which, according to Gadamer (1997), is based on the "interpretation of texts and phenomena through dialogue and contextual understanding, providing a deep interpretation of the data" (p. 123). The method allowed us to analyze the participants' responses and understand the meanings beyond the explicit words by considering the context and individual experiences of each subject. Through the hermeneutic process, it was possible to identify underlying patterns and emerging themes that would not have been visible through a superficial analysis. It also facilitated the construction of a coherent narrative by connecting the participants' perceptions with existing theories. This way, deep and well-founded conclusions were drawn, providing a comprehensive and in-depth view of the phenomena studied.

The research approach was qualitative, which, according to Denzin and Lincoln (2018), seeks to "explore and understand phenomena from the perspective of participants, prioritizing depth over statistical generalization" (p. 45). The approach focused on capturing the complexities and nuances of human experiences, which allowed the researchers to immerse themselves in the context of each individual and obtain a detailed view of their perceptions. Unlike quantitative methods, which seek replicable and generalizable data, the qualitative approach offers a rich and holistic view of phenomena by favoring the deep interpretation of social and cultural realities.

According to Merriam (2009), the objective of the qualitative approach "is to understand the how and why behind actions and behaviors, making it an essential tool for research in dynamic and complex areas" (p. 12). In the present study, the qualitative approach allowed for obtaining a detailed view of the researchers' perceptions of the benefits of AI prompts. The design was of the descriptive-interpretive type, which, according to Taylor & Bogdan (1986), focuses on "describing phenomena as they occur in their natural context, interpreting the meaning of said phenomena through qualitative analysis" (p. 78). In addition, it was a cross-sectional study since it was conducted at a

single point in time, which allowed "capturing a snapshot of the participants' current perceptions" (Hernández et al., 2014, p. 102).

The population under study consisted of 100 academic researchers participating in the Research Seminar diploma course who have integrated artificial intelligence tools into their research processes. The selection of this group was based on their recent and direct experience with advanced technologies, which guaranteed the relevance and timeliness of the data collected. According to Kerlinger (1986), the population "is the set of individuals who possess the necessary characteristics to be included in the study" (p. 84). In this case, only researchers with proven experience in using AI were selected, which allowed for a detailed analysis of its benefits and challenges in the academic field.

In qualitative research, the sample size is determined based on theoretical saturation, a widely used criterion to define the point at which data collection ceases to provide significant new information to the study (Glaser & Strauss, 1967, p. 61). In the present work, the sample of 25 academic researchers was strategically selected according to the level of technological experience and belonging to different disciplines to ensure sufficient diversity of perspectives, allowing the identification of recurring patterns in the perception and application of artificial intelligence prompts in scientific research. According to Morse (1994), theoretical saturation is reached when the data obtained begins to repeat the same categories without new codes or relevant dimensions emerging in the qualitative analysis. In this sense, the selected sample was adequate since it allowed a deep exploration of the participants' experiences without compromising the analytical integrity of the study.

The interview process was designed with questions that explored both the perceived benefits and challenges of implementing AI prompts, which facilitated the identification of relevant categories. The categories emerged from the arguments recurrently addressed by the interviewees and were validated through a rigorous qualitative analysis, ensuring that they faithfully reflected the collective perceptions of the participants.

The data collection instrument consisted of 10 open questions strategically designed to explore in depth the perceptions and experiences of researchers regarding the use of artificial intelligence prompts in their research processes. The main thematic axes addressed in the interviews included (1) efficiency in data analysis, (2) generation of new hypotheses, (3) improvement in the accuracy of the results, (4) facilitation in the bibliographic review, and (5) challenges in technological integration.

A neutral and open-ended question design was applied to minimize potential bias in responses, avoiding formulations that suggested a positive or negative assessment of the AI prompts. In addition, a flexible guide was used that allowed the interview to be adapted to the discourse of each participant, encouraging spontaneous and unrestricted responses. Regarding data processing, the interviews were recorded, transcribed verbatim, and subjected to a cross-validation process, in which the researchers reviewed the transcripts to ensure the fidelity of the information. Subsequently, the data were analyzed through open and axial coding with NVivo, which allowed the identification of emerging patterns and the establishment of relationships between key concepts. This methodological approach ensured analytical rigor and coherence in the interpretation of the findings, guaranteeing the reliability of the study.

Likewise, the validity of the results in qualitative studies does not depend on the sample size per se but on the richness and depth of the data collected (Creswell, 2013, p. 157). In the context of the present study, the purposive sampling strategy made it possible to ensure that the selected participants had direct and recent experience with AI tools, thus ensuring that the findings were representative within the field investigated. The choice of 25 participants is in line with methodological recommendations in qualitative studies, where it has been shown that between 20 and 30 in-depth interviews are usually sufficient to reach saturation in research seeking to understand complex phenomena (Guest et al., 2006, p. 75). Therefore, the selected sample size is methodologically sound and allows for drawing well-founded and transferable conclusions within the academic context analyzed.

The technique used was the semi-structured interview validated by experts, according to Quivy & Campenhoudt (2006), which allows the researcher to "obtain detailed information on the topics of interest, while leaving room for participants to express their opinions freely" (p. 89). These provided an invaluable opportunity to identify emerging and unforeseen aspects, significantly enriching the data analysis. The flexibility inherent in semi-structured interviews allowed participants to expand their responses, facilitating a deep understanding of the benefits and challenges associated with AI. Likewise, the instrument's structure guaranteed coverage of the key arguments of the study while promoting an environment for the personal and professional experiences of the interviewees to nourish the dialogue, favoring an open and enriching exchange.

A methodological and researcher triangulation approach was used to guarantee the validity and reliability of the study data, strengthening the interpretation of the results and reducing potential

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biases in the qualitative analysis. Semi-structured interviews, open coding, and NVivo software analysis were used for methodological triangulation, ensuring the data were analyzed from several angles. Additionally, researcher triangulation was employed, in which two specialists in qualitative technique independently examined the data's coding and classification, contrasting their views and reaching a consensus to settle disagreements. This technique improved the study's reliability by ensuring uniformity in the creation of emerging patterns and reducing subjectivity in the category assignment.

According to Patton (1999), triangulation of methods and researchers reinforces the credibility of qualitative research by allowing for a more rigorous contrast of data and their interpretations. In addition, the member-checking technique was applied, providing some participants with preliminary summaries of the findings to validate the interpretation of their responses and corroborate that they faithfully reflected their experiences with AI ads. These methodological strategies strengthened the reliability of the study, ensuring that the results obtained were representative and based on a systematic and transparent analysis.

The data analysis was carried out through open coding, a process that, according to Strauss & Corbin (2002), consists of the "systematic segmentation of data into conceptual units, allowing the identification of categories, the detection of recurring patterns and the generation of relationships between emerging concepts" (p. 137). The procedure enabled the analysis of participants' responses to key arguments, facilitating the identification of dominant and recurring trends associated with using artificial intelligence prompts in the research field.

The selection of the categories was based on the grouping of data according to recurring patterns and emerging concepts based on the responses obtained in the interviews (Strauss & Corbin, 2002). Key narratives were identified as the transcripts were analyzed, reflecting the researchers' experiences using AI Prompts. As a result, the coding process allowed the findings to be classified into five essential categories: efficiency in data analysis, generation of new hypotheses, improvement in the accuracy of the results, facilitation in the bibliographic review, and challenges in technological integration (see Table 1).

Table 1

Data Categorization

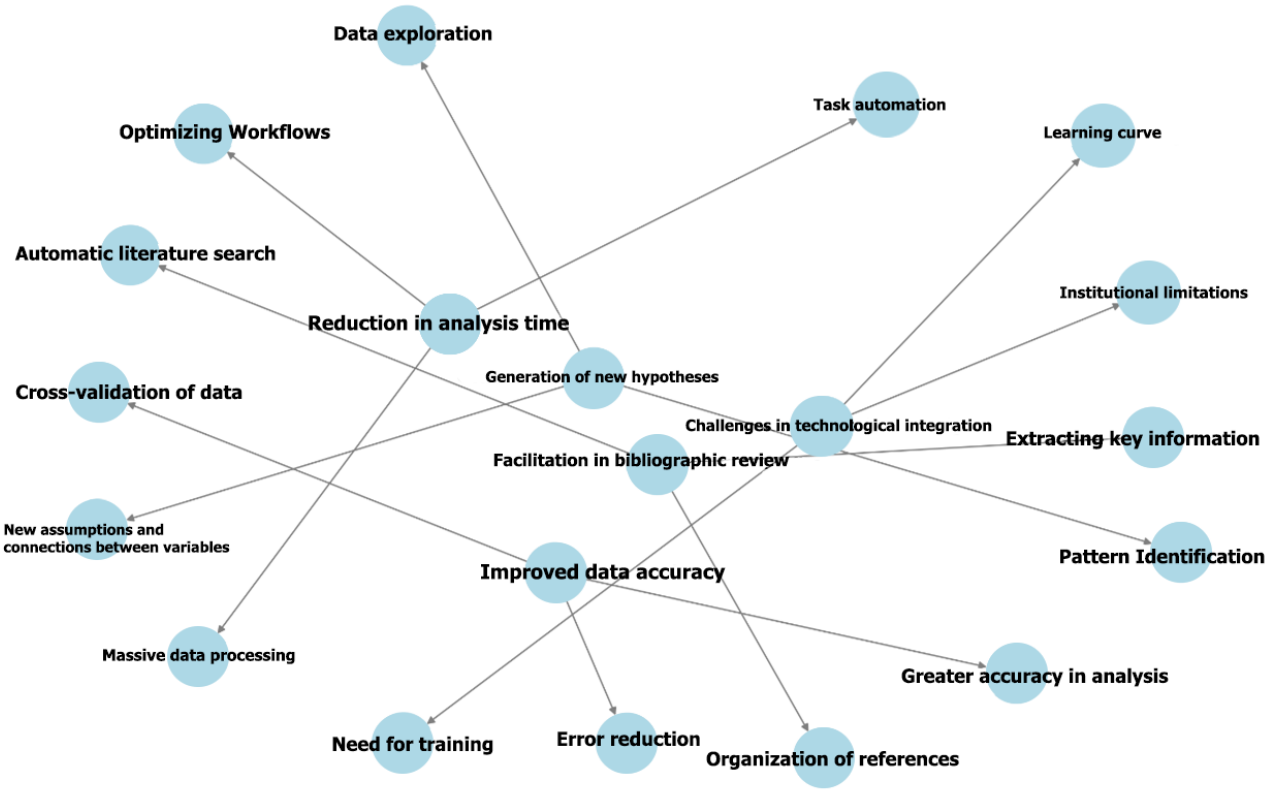
Category	Description
Reduction in analysis time.	Significant acceleration in processing large volumes of information.
Generation of new hypotheses.	Facilitation in the creation of new assumptions and connections between variables.
Improved accuracy of results.	Greater accuracy in identifying patterns and trends in data.
Facilitation in bibliographic review.	Simplification in the search and organization of scientific literature.
Challenges in technological integration.	Technology learning curve and training need to maximize the use of prompts.

Note. Presents the five key categories that emerged from the qualitative analysis of the benefits researchers reported in using AI prompts, prepared by Mujica-Sequera (2024).

Initially, a keyword and lexical frequency analysis was performed, which allowed the identification of the most prevalent terms in the researchers' discourses, thus establishing an empirical basis for subsequent coding. From this exploratory phase, an NVivo-assisted open coding process was implemented, segmenting the data into meaningful units and generating emerging categories from the discourse structure analyzed. The categories were consolidated through an iterative axial coding approach, establishing hierarchical and transversal relationships between the identified themes, which facilitated the construction of a comprehensive analytical model on the integration of AI in research. Furthermore, the use of NVivo (see Figure 1) enabled the visualization of thematic associations through the generation of conceptual maps and categorical interconnection models, strengthening the analytical interpretation and ensuring the internal coherence of the study. The structured process allowed the discovery of previously unnoticed subthemes and nuances, enriching the depth of the analysis and providing a more holistic understanding of the phenomenon studied. Data triangulation and contrast of emerging categories with existing literature strengthened the interpretive validity of the findings, ensuring their methodological robustness.

Figure 1

Conceptual Map: Relationships between Categories



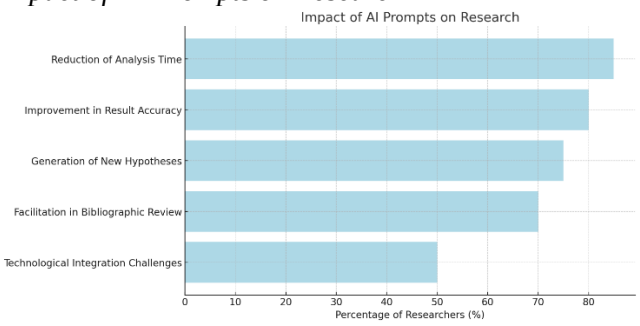
Note. Keywords and lexical frequency are displayed, prepared by Mujica-Sequera (2024).

Results

The results obtained from the interviews show a clear trend toward optimizing research processes using artificial intelligence prompts. Most participants (85%) indicated that the integration of these tools has significantly improved efficiency in analyzing large volumes of data. This advance has resulted in a substantial reduction in processing times, allowing researchers to focus greater efforts on their projects' analytical and creative phases, thus enhancing the depth and quality of their studies.

Figure 2

Impact of AI Prompts on Research



Note. The main benefits researchers reported in using AI prompts in their research processes are displayed visually. Prepared by Mujica-Sequera (2024).

In Figure 2, the main benefit highlighted by AI prompts is the reduction in analysis time, a finding that is consistent with the responses obtained during the interviews. Most participants highlighted how AI has facilitated the acceleration of routine data processing tasks, thus improving the overall efficiency of research work. The result suggests that AI has been a key instrument in transforming researchers' workflow, freeing up time for critical analysis and interpretation of results.

The improvement in the accuracy of results, which is also significant, demonstrates that AI prompts have substantially increased the accuracy of analyses. Participants reported that thanks to AI, they could detect hidden patterns and complex correlations that would likely have been missed with traditional methods. The process saves time and ensures that findings are robust and accurate. Furthermore, using AI increases researchers' ability to handle large volumes of data with more detail and rigor. Advancement emphasizes the value of AI prompts in strengthening the validity and reliability of scientific studies, allowing for greater confidence in the results obtained.

The generation of new hypotheses is another key area, as illustrated in Figure 1, which highlights how researchers use AI to optimize existing processes, open new lines of inquiry, and formulate innovative

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questions. AI prompts have made it possible to identify relationships and connections between variables that were not previously apparent, thus fostering greater creativity in hypothesis formulation. In this sense, the innovative use of AI makes it possible to transcend traditional approaches, expanding the scope and depth of academic research. Likewise, its role in generating new hypotheses reaffirms its potential to drive innovation in various scientific disciplines, consolidating itself as a key resource for expanding knowledge.

On the other hand, integrating these technologies faces significant challenges, especially regarding the training of researchers to maximize the use of AI tools. While its potential is widely recognized, the initial learning curve represents an obstacle for some academics, hindering its effective adoption. The lack of specific training in using these technologies is positioned as one of the main barriers, highlighting the need to develop training programs specifically aimed at the research community. In addition, the scarcity of institutional resources to support training processes further limits access to and use of AI in the academic field. In this context, the importance of investing in ongoing training initiatives that allow researchers to overcome these barriers and fully exploit the potential of artificial intelligence in generating knowledge is evident.

Table 2

Reported Benefits of Using AI Prompts in Research

Benefit	Researchers
Reduction in analysis time	85%
Improvement in the accuracy of results	75%
Generation of new hypotheses	70%
Facilitation in bibliographic review	65%
Challenges in technological integration	40%

Note. The main benefits researchers identified in using AI prompts are summarized. Prepared by Mujica-Sequera (2024).

The descriptive analysis of the data obtained in this study (see Table 2) revealed that most researchers recognize a positive impact on efficiency and accuracy derived from using artificial intelligence prompts in their research. The percentages recorded in the main categories are significant: 85% of the participants highlighted the reduction in analysis time, while 75% pointed out an improvement in the accuracy of the results. Likewise, 70% of the researchers underlined the capacity of AI prompts to facilitate the generation of new hypotheses, and 75% recognized their usefulness in simplifying the literature review process. The findings show the key role of AI in optimizing both the workflow and the quality of the results obtained in academic research.

One of the most relevant aspects identified by 75% of the participants was the improvement in the accuracy of the results. The researchers emphasized that AI prompts allowed them to identify patterns and trends in the data more accurately, leading to more reliable findings with a smaller margin of error. Consequently, the optimization of the analysis strengthened the validity of the conclusions obtained in their studies, increasing the methodological robustness and reliability of the results.

Regarding the generation of new hypotheses, 70% of the interviewees highlighted that AI prompts facilitated the formulation of new lines of research by allowing the exploration of novel relationships between previously unconsidered variables. This finding reaffirms the role of AI as an advanced analytical tool and a catalyst for innovation in scientific research, promoting the opening of new perspectives and methodological approaches.

On the other hand, the bibliographic review process was also optimized through AI prompts, with 75% of researchers indicating that these tools streamlined the search and organization of scientific literature, significantly reducing the time spent on this task. However, the technological integration of AI prompts still faces challenges, as 40% of respondents reported difficulties, mainly due to inadequate training and the learning curve required for efficient use. The results underline the need to develop training strategies that allow researchers to maximize the use of these technologies in their academic practices.

Regarding the inferential analysis, the statistical results confirm the assumption made at the beginning of the research. It was assumed that AI prompts would improve the efficiency and accuracy of research processes, which were validated by the percentages obtained. 85% of the researchers stated that prompts significantly reduced analysis time, confirming that AI speeds up routine processes. Likewise, the assumptions that AI prompts would improve accuracy in data analysis were confirmed by the results, as 75% of the participants reported improvements in pattern identification and the reliability of their analyses.

Therefore, the inferential results strongly support the assumption that AI prompts are a valuable tool in academic research.

Despite the numerous perceived benefits, some results were inconclusive or highlighted areas of opportunity in integrating AI prompts. 40% of researchers pointed out difficulties in the technological implementation of the tools, mainly attributable to the lack of training and the learning curve required for their effective use. While this percentage is significant, the data was not precise enough to determine what types of training or specific resources would most effectively mitigate the obstacles. Likewise, there was insufficient evidence to establish whether researchers with prior experience in AI achieved greater benefits than those new to its use, suggesting the need for additional studies that delve deeper into this issue.

Among the main challenges mentioned is the lack of access to specialized software, which limits the possibility of experimenting with advanced tools and restricts their application in academic environments with insufficient technological infrastructure. There was also evidence of resistance to change on the part of some researchers, particularly those with established traditional methodologies, who expressed skepticism regarding the reliability and real impact of AI prompts on knowledge production. Another recurring obstacle was the steep learning curve and lack of specific training, making it difficult to appropriate these tools and generating dependence on AI specialists for effective implementation. In addition, technical problems were identified related to the compatibility of the prompts with scientific databases and information management systems, which restricted their fluid integration into the research workflow.

The study results confirm that AI prompts are key in improving efficiency and accuracy within research processes. Regarding efficiency, researchers reported a significant reduction in the time required for tasks such as collecting, organizing, and analyzing large volumes of data. The ability to automate routine and repetitive processes allowed academics to focus their efforts on more complex analytical and conceptual aspects. This finding is reflected in the fact that 85% of participants indicated that the use of AI considerably reduced analysis times, thus speeding up the overall development of their research.

Regarding accuracy, AI prompts proved to be effective tools for identifying patterns and relationships in data that, with traditional methods, could go unnoticed. Researchers highlighted that AI enables more detailed and accurate analysis, reducing the margin of error and improving the results' reliability. 75% of respondents emphasized that the accuracy in identifying trends and correlations improved significantly with implementing these tools. The findings show that AI speeds up research processes and ensures that the results are more robust and reliable. Furthermore, AI prompts facilitate the formulation of new hypotheses from data analysis, allowing researchers to explore previously unconsidered lines of inquiry. This aspect drives creativity and innovation within the research process, strengthening scientists' ability to make meaningful discoveries.

While the benefits of AI prompts in terms of efficiency and accuracy are evident, their widespread adoption still faces challenges that require appropriate strategies to be overcome. Based on the findings obtained, key strategies can be proposed to ensure optimal integration of AI in academic research.

1. **Technical training and ongoing education**. One of the primary obstacles found was the researchers' unfamiliarity with using AI tools. Technical training programs that teach researchers how to use AI prompts effectively must be implemented if adoption is to be successful. Programs should be easily available and customized to researchers' different levels of knowledge to ensure that both novices and specialists may fully profit from new technologies.
2. **Encourage interdisciplinary collaboration**. The results also suggest that collaboration between disciplines can facilitate faster and more effective adoption of AI. Promoting the creation of multidisciplinary teams, where researchers with experience in AI can collaborate with those specialized in other areas, would help to exchange knowledge and apply AI tools in varied contexts. Research would be enhanced, and integration would go more smoothly.
3. **Development of infrastructure and technical support**. Adequate technological infrastructure is important for the optimal use of AI prompts. The study's results revealed that researchers face technical difficulties, especially related to access to AI platforms and software. Investing in developing technological infrastructure, including robust networks, accessible platforms, and effective technical support services, will enable researchers to use AI tools smoothly without setbacks, thus maximizing their potential in the research field.
4. **Institutional policies that support the use of AI.** Academic institutions must adopt strategic policies that actively promote the integration of artificial intelligence in research processes. These policies could include incentives for researchers who incorporate AI-based tools in their projects, specific funding for acquiring and updating specialized software, and the creation of research centers dedicated to developing and applying AI

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technologies in various disciplines. In addition, institutions must foster a culture of innovation in which AI is recognized as a transformative tool in generating knowledge, promoting its use not only as a complementary resource but as a key resource for the evolution of contemporary scientific methods and approaches.

One of the study's most significant findings was the ability of AI prompts to facilitate the generation of new hypotheses in research processes. Several participants highlighted how these tools allowed them to identify relationships between variables they had not previously considered, streamlining the formulation of more innovative and complex research questions. One researcher said: "Previously, the process of formulating hypotheses involved an extensive literature review and manual exploratory analysis; however, with AI prompts, I can generate multiple theoretical approaches in a matter of minutes, which has allowed me to diversify my lines of inquiry." Another participant emphasized the impact of AI on the accuracy "of the generated hypotheses, stating: Prompts not only streamline the generation of ideas but also help structure them with greater coherence and bibliographic support, avoiding unfounded assumptions."

The testimonies reinforce the conclusion that AI optimizes the time invested in formulating hypotheses and improves the argumentative quality and analytical depth of the research process. Thus, the study shows that integrating these technologies has a transformative impact on the production of scientific knowledge.

To ensure optimal integration of AI topics in academic research, a comprehensive strategy that combines specialized technical training and interdisciplinary collaboration is necessary. Convergence will allow researchers to develop advanced skills for the efficient use of tools while promoting the exchange of knowledge between AI experts and specialists from various disciplines. Likewise, advanced technological infrastructure is required to facilitate access to AI tools and mitigate technical barriers that could hinder their adoption.

Institutional policies play a determining role in the process since their strategic implementation can provide incentives, funding, and the necessary resources to promote the widespread use of AI in producing knowledge. Overcoming current limitations will allow researchers to maximize the potential of AI advisories, optimizing their studies' quality, accuracy, and efficiency. In this sense, AI not only constitutes an innovative resource but also redefines research methodologies, consolidating itself as a transformative pillar in the generation and evolution of scientific knowledge.

Discussion

The present study answered the research question by demonstrating that AI improves the efficiency of the investigative process and provides significant value in the accuracy of data analysis. The researchers involved in the study highlighted that using the tools considerably reduced the time spent on repetitive tasks, such as the organization and classification of information, allowing them to focus on critical analysis and interpretation of results. In addition, AI prompts revealed their effectiveness in identifying complex patterns and relationships between variables that would have frequently been omitted with traditional methods. All of this translated into greater accuracy and reliability of the results obtained. Therefore, integrating these technological tools facilitated a significant advance in research, improving the depth and quality of analysis. The findings confirm that AI prompts are a valuable resource that positively transforms the investigative process, improving its efficiency and accuracy.

By examining the basic relationships between computational logic and AI applications, Nilsson's seminal work from 1991 offers a theoretical foundation for how AI might support scientific thinking and information processing. Although it is an old study, its relevance lives on in the discussion of how logical principles embedded in AI algorithms can improve the accuracy and depth of data analysis, which is paramount to understanding the contribution of AI in modern studies, such as the present one.

In studies such as Brown (2019), it was observed that the benefits of AI prompts depend largely on the user's familiarity with technology. The finding was also reflected in the results of the present study, where some researchers reported facing difficulties due to a lack of adequate training in the use of advanced AI tools. Those with less technological experience found it difficult to integrate prompts into their research, which limited the perceived benefits. According to this, when people possess the technical know-how required to utilize AI, its influence on research fully is considerably stronger. Therefore, it is essential to offer continuous training and ensure that all researchers can take advantage of the advantages offered by AI.

Similarly, Smith (2021) and Johnson (2020) showed that AI researchers significantly improve their ability to formulate assumptions. That is in line with the current study's findings, where participants emphasized how AI-enabled them to investigate new fields by encouraging the development of novel hypotheses and establishing fresh paths of investigation. The study's findings were consistent with earlier studies regarding the improvement in data accuracy and the decrease in analysis time. Another support for the findings of this

study is that 85% of researchers observed increased process efficiency. Additionally, 75% of participants in this study and the other two indicated that the accuracy of the data analysis had significantly improved.

Furthermore, Mujica-Sequera (2022) offers a critical perspective on incorporating digital technologies in academic research. In her study, the author examines how digital approaches, specifically through AI, can radically alter traditional methodological and epistemological practices in academic research. Mujica-Sequera (2022) highlights that integrating AI facilitates data processing and analysis and drives a paradigmatic shift in the understanding and application of methodological theories in various fields of knowledge. The innovative approach supports and expands the present study's findings, underlining AI's transformative capacity to enrich and diversify research perspectives.

Recent research by Agrawal et al. (2024) analyzed the impact of artificial intelligence prompts in optimizing information search and prioritization, allowing scientists to efficiently explore vast volumes of data and facilitate more relevant discoveries. The study offers valuable insight into the transformative power of AI in research processes by demonstrating how its implementation streamlines the identification of key sources and improves the categorization and structuring of critical information. The findings aligned with the results of the present study show a substantial improvement in the efficiency of data analysis using AI-based tools.

On the other hand, Ekundayo et al. (2024) delve into how AI is reconfiguring research methodologies in the academic field. Their study highlights how researchers have incorporated AI tools to overcome traditional methodological limitations and expand the frontiers of scientific knowledge, thus favoring the adoption of more dynamic and adaptive approaches in hypothesis generation and data analysis. In addition, it is emphasized that integrating AI in research improves the accuracy of findings and enhances the generative capacity of researchers, promoting innovative strategies for producing knowledge. The findings directly corroborate the results of the present study by showing that the use of AI prompts significantly expands analytical capabilities and allows for more effective optimization of cognitive and technological resources used in the development of new research. For future research, it is recommended to delve deeper into integrating AI prompts in disciplines such as social sciences and humanities, where their application is still incipient but with considerable potential to transform data analysis and interpretation methodologies. Areas traditionally relied on qualitative approaches based on subjectivity and hermeneutic analysis could significantly benefit from AI's ability to process large volumes of textual data, identify underlying patterns, and generate more accurate inferences. Furthermore, using these tools would facilitate the study of narratives, discourses, and other corpora of information that require complex interpretations, allowing for more robust data triangulation and enriching critical analysis processes.

Incorporating AI prompts in the fields of study would not only speed up processing times. However, it would also improve the reliability and consistency of the results, opening new methodological and epistemological perspectives. Likewise, its implementation would allow for broadening research horizons by partially automating the analysis of historical, philosophical, and literary texts, providing researchers with advanced tools to address research questions more rigorously and systematically.

One aspect of particular interest would be to explore how AI can contribute to formulating new hypotheses in contexts where subjectivity and interpretation play a central role, facilitating innovative approaches to studying social, cultural, and linguistic phenomena. It would also be relevant to examine the ethical and epistemological challenges that emerge with adopting AI in the disciplines, ensuring that its integration respects the complexity and interpretive richness inherent in the fields of knowledge.

Integrating AI in scientific research raises profound ethical implications that must be addressed with a critical and reflective approach. While AI automates processes, streamlining data analysis and hypothesis formulation, its extensive use could lead to an over-reliance on algorithms, displacing the researcher's critical judgment and reducing autonomy in constructing knowledge. A central aspect of the debate is the inherent bias in AI algorithms, as systems learn from pre-existing data that may reflect structural inequalities or epistemological limitations, compromising objectivity and equity in knowledge production. Furthermore, the standardization of AI-generated responses could foster a homogenization of scientific thought, limiting the diversity of approaches and perspectives in generating new theories.

In this context, the role of the researcher in the digital age is redefined as a critical mediator whose function should not be limited to interpreting the results produced by AI but to their rigorous evaluation, questioning the validity of the findings, and ensuring their theoretical foundation. It is imperative to establish ethical and regulatory frameworks that regulate the use of AI in research, promoting its integration as a complementary tool and not as a substitute for human reasoning in the construction of scientific knowledge.

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Conclusions

The present study shows how AI prompts redirect researchers' structure and develop their projects, allowing for a more efficient, precise, and systematic approach. The optimization of work hours allows academics to spend less effort on operational and repetitive tasks, such as data organization, and to focus on deeper and more creative analysis. AI prompts have also demonstrated a significant improvement in the quality of data analysis by facilitating the identification of complex patterns and underlying trends that would be difficult to detect using traditional methods. Evolution accelerates investigative processes and increases results' reliability and reproducibility, driving substantial advances in knowledge generation.

As technology continues to evolve, its integration into academia is expected to become a relevant resource in scientific research, radically transforming the way studies are conceived and executed. The progressive refinement of AI prompts will allow the automation of an even greater proportion of data collection and processing tasks, allowing researchers to delve deeper into the critical interpretation of findings and construct more robust theoretical frameworks. By delegating technical operations to advanced systems, academics can concentrate on conceptual analysis, contextualizing their results, and formulating new research questions, thus strengthening the epistemological quality of their studies. Furthermore, the continued integration of AI will foster more fluid interdisciplinary collaboration, enabling the development of innovative methodological approaches and the expansion of tools in fields that have not yet fully exploited their potential. It will be essential for future research to explore the impact of AI prompts in qualitative research, an area in which its application is still incipient but with significant possibilities for improving the analysis of textual data, the interpretation of discourses, and the structuring of complex narratives.

Furthermore, maximizing AI's benefits in research requires a commitment to ongoing research training. Specialized training in AI tools will allow their effective adoption and a deep understanding of their operating principles, ensuring that their integration is not limited to an instrumental application but translates into a substantive transformation of research paradigms. In this sense, the development of advanced training programs will be essential for researchers to use AI as an auxiliary resource and actively participate in its evolution and adaptation to the emerging challenges of scientific knowledge.

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