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From Libraries to AI: A Paradigm Shift in Search for References

Dari Perpustakaan ke AI: Perubahan Paradigma dalam Mencari Referensi

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Abstract

Background of the study: The development of information technology, especially artificial intelligence (AI), has significantly changed the paradigm of searching for academic references. Students are now more likely to use AI-based tools that offer quick access and more relevant reading resource recommendations compared to traditional methods such as manual searches in libraries. For example, the use of ChatGPT to summarize literature, DeepSeek for AI-based academic search, and Elicit which helps to automatically generate literature reviews, are becoming increasingly popular among students and researchers. This shift is not only happening in the academic environment but also in the professional world, where AI is increasingly being adopted to support research and information processing. The ease offered by AI allows students to quickly access academic literature from a wide range of global sources, although this also poses risks to the validity and reliability of the information obtained.

Purpose: This study aims to explore a paradigm shift in the way students choose reading resources, with a focus on the role of AI in the process.

Method: This study uses the literature review method to analyze behavioral shifts in information search, as well as the advantages and challenges faced in the use of AI.

Findings: The results of the analysis show that AI is able to increase efficiency in searching for references, but also raises concerns about students' critical thinking skills in evaluating information. In addition, academic libraries face challenges in maintaining their relevance in the digital era

Conclusion: Therefore, the integration of AI and libraries is a potential solution to ensure quick access to quality information, while developing student information literacy.

Keywords: artificial intelligence; digital library; information literacy

Abstract in Indonesia

Latar Belakang Penelitian: Perkembangan teknologi informasi, khususnya kecerdasan buatan (AI), telah mengubah paradigma pencarian referensi akademik secara signifikan. Mahasiswa kini lebih cenderung menggunakan alat berbasis AI yang menawarkan akses cepat dan rekomendasi sumber bacaan yang lebih relevan dibandingkan dengan metode tradisional seperti pencarian manual di perpustakaan. Contohnya, penggunaan ChatGPT untuk merangkum literatur, DeepSeek untuk pencarian akademik berbasis AI, serta Elicit yang membantu menyusun tinjauan pustaka secara otomatis, menjadi semakin populer di kalangan mahasiswa dan peneliti. Pergeseran ini tidak hanya terjadi di lingkungan akademik tetapi juga di dunia profesional, di mana AI semakin diadopsi untuk mendukung penelitian dan pengolahan informasi. Kemudahan yang ditawarkan oleh AI memungkinkan mahasiswa mengakses literatur akademik dari berbagai sumber global dengan cepat,

meskipun hal ini juga memunculkan risiko terhadap validitas dan keandalan informasi yang diperoleh
Tujuan: Penelitian ini bertujuan untuk mengeksplorasi perubahan paradigma dalam cara mahasiswa memilih sumber bacaan, dengan fokus pada peran AI dalam proses tersebut.
Metode: Penelitian ini menggunakan metode tinjauan Pustaka (literature review) untuk menganalisis pergeseran perilaku dalam pencarian informasi, serta kelebihan dan tantangan yang dihadapi dalam penggunaan AI.
Temuan: Hasil analisis menunjukkan bahwa AI mampu meningkatkan efisiensi dalam pencarian referensi, namun juga menimbulkan kekhawatiran terhadap kemampuan berpikir kritis mahasiswa dalam mengevaluasi informasi. Selain itu, perpustakaan akademik menghadapi tantangan dalam menjaga relevansinya di era digital
Simpulan: Oleh karena itu, integrasi AI dan perpustakaan menjadi solusi potensial untuk memastikan akses yang cepat terhadap informasi berkualitas, sekaligus mengembangkan literasi informasi mahasiswa.

Kata Kunci: kecerdasan buatan; perpustakaan digital; literasi informasi

Introduction

The increasingly advanced digital era has driven the development of information and communication technologies, particularly artificial intelligence (AI), which has brought significant changes in the search and access to reading resources (Okunlaya et al., 2022). The shift from traditional methods to AI-based systems also supports the achievement of the 2030 Sustainable Development Goals (SDGs), specifically goal 9 on technological innovation and the development of inclusive digital infrastructure. Through AI, reference search becomes faster, more accurate, and personalized, making it easier for individuals to obtain relevant sources of knowledge (Jhajj et al., 2024). College students are one of the groups that make the most use of AI-based applications and platforms due to the ease and speed offered, compared to manual searches in physical libraries (Harisanty et al., 2024). With just a few clicks, they can access a wide range of necessary academic information. Davis (2024) emphasized that AI has improved the efficiency of information search and expanded access to learning resources, thereby accelerating the student learning process.

However, behind this convenience, there are concerns about the development of critical thinking skills. Over-reliance on AI technology is feared to weaken students' analytical abilities, which is an important aspect of higher education (Steiger, 2024). Therefore, while AI accelerates access to information, it is important to still emphasize the importance of critical evaluation skills in the learning process. This phenomenon is becoming more pronounced with the increasing use of AI-based tools such as chatbots, virtual assistants, and intelligent search applications to support academic literature searches (David, 2024).

Many students prefer to use platforms such as Google Scholar, ResearchGate, or other AI-based applications that can provide source recommendations based on their interests and needs. This creates new challenges for academic libraries, which must adapt to changing user behavior and find ways to stay relevant amidst technological advances (Setyawan et al., 2025). Furthermore, research shows that students who use AI in their information searches tend to have different learning experiences compared to those who rely on traditional methods. A study by showed that "Students who use AI to search for information report higher levels of satisfaction with their learning process, but also admit that they feel less skilled in evaluating the quality of the information they find" (K., 2023). This suggests that while AI can improve efficiency, there is a risk that students may lose important skills in evaluating and analyzing information. This study aims to explore the paradigm shift in how students select reading sources, with a focus on the role of AI in the process. Through an in-depth analysis of student behavior, challenges faced,

and the impact of AI use, it is hoped that this study can provide valuable insights for educators, librarians, and researchers interested in the interaction between technology and education. Understanding the phenomena at play can be helpful in preparing students to face the challenges of the evolving digital age. Finally, it is important to remember that while AI offers much potential to enhance the learning experience, the integration of this technology must be done with caution. Educators and librarians need to work together to ensure that students not only have quick and easy access to information, but are also equipped with the skills necessary to critically evaluate and use that information. A balanced approach can harness the potential of AI to enhance education while maintaining the integrity and quality of the learning process.

This research is important to do at least there are 3 fundamental reasons in it. First, the rapid development of technology. rapid technological development especially in the field of artificial intelligence (AI), has changed the way humans access and search for information. Second efficiency of searching for reference materials. The convenience offered by AI makes it easy and accurate for students to find the reference materials they need. So they are more likely to use AI than to search for information manually in the library. Third, the role of stakeholders in the development of AI. The progress of AI not only provides positive but also negative sides especially for students in searching for reference materials so that the role of stakeholders is needed regarding the policy of using AI and how to foster and guide students to be wise in using AI technology.

Method

The method used in this article is a systematic literature review. The literature is collected from a variety of scientific sources, such as print books, e-books, journal articles, and academic news relevant to the research topic. The inclusion criteria include publications in Indonesian and English published in the 2015–2024 period, as well as focusing on discussions related to the development of information technology, artificial intelligence (AI), and access to academic information. Literature sources are drawn from databases such as Google Scholar, ScienceDirect, and ProQuest, as well as trusted academic news platforms. The analysis was carried out using a thematic analysis approach, by identifying the main themes from various relevant sources to build the conceptual framework of this research (Aulianto, 2020). The theories selected aim to provide a strong conceptual foundation in understanding and analyzing the phenomenon that is the focus of the research.

Result and Discussion

Library Information Technology Development in The Library

The development of information technology has drastically changed the way we access and manage information. With the advent of computers and the internet in the late 20th century, information became more accessible than ever before. Information technology has revolutionized the way we search, store, and share knowledge, allowing instant access to resources that were previously hard to reach (Robinson & Bawden, 2017). In this context, modern libraries not only store physical books, but also provide access to digital databases, *e-books*, and other online resources. One of the most significant impacts of the development of information technology is the emergence of digital libraries. Digital libraries allow users to access collections of books, articles, and other resources online, without having to visit a physical library.

According to Tenopir & King, (2004), "Digital libraries provide wider and faster access to information, allowing users to find relevant sources more efficiently". Digital libraries have become an important tool in supporting research and learning in the information age. In addition, information technology has also changed the way libraries interact with users (Putra Tampi et al., 2022). Many libraries now use *online platforms* to provide borrowing services, member registration, and access to digital resources (Kurmysheva & Pshenichnaya, 2024). This not only improves operational efficiency, but also provides a better experience for users. For example, users can search for and borrow e-books through library apps, which allow them to access information anytime and anywhere.

Although information technology offers many advantages, there are also challenges that libraries must face. One of the main challenges is the need to develop information literacy skills among users. With so much information available online, it is important for users to be able to evaluate the quality and reliability of the sources they find. According to Head and Eisen (2011), "College students often have difficulty in assessing the credibility of the information they find online which can lead to the use of unreliable sources" (Head & Eisen, 2011). Therefore, libraries should play an active role in providing training and resources to help users develop these skills. The development of information technology also affects the way libraries manage their collections.

With the presence of a digital-based library management system, libraries can track and manage their collections more efficiently. This allows libraries to optimize the use of space and resources, as well as improve the accessibility of collections for users. In addition, information technology also allows libraries to collaborate with other institutions in sharing resources and information, which can expand their reach and impact (Tijani et al., 2025). Libraries must continue to adapt to the development of information technology to remain relevant and meet the needs of users. This includes developing new services, upskilling staff, and investing in the necessary technology infrastructure. This way makes the library able to continue to function as a center of knowledge and learning in the digital era.

Changes in Reading Habits

Changes in reading habits are greatly influenced by technological advances and the availability of information. The advancement of the digital age has made many people, especially college students, switch from reading physical books to digital sources, such as *online articles*, e-books, and multimedia content. The internet has changed the way we read, with many people preferring to read quickly and skim rather than diving deep into text (Carr, 2010). This creates challenges for educators and librarians in helping students develop critical and analytical reading skills. One of the driving factors for this change is the ease of access to information offered by digital technology. With just a few clicks, users can find and access a wide range of information sources from all over the world. According to the Pew Research Center (2016), "About 73% of adults in the U.S. report that they read books in digital format, indicating a significant change in the way people consume information." This suggests that reading habits have changed, with many people preferring a more practical and accessible digital format.

Not only does this ease of access offer many advantages, there are also concerns regarding its impact on reading comprehension and skills. Research shows that reading in digital formats can affect the way we process information. According to Mangen et al. (2013), "Reading on a

screen can reduce comprehension and retention of information compared to reading on paper" (Mangen et al., 2013). These circumstances raise important questions about how we can support students in developing the reading skills necessary to succeed academically and professionally. In addition, with the increasing use of *mobile* devices, students can now access information anytime and anywhere, which further accelerates changes in their reading habits. Research by Rowlands et al., (2008) shows that "College students are more likely to use *mobile* devices to access information, which changes the way they interact with reading resources". It shows that students are now relying more on technology to meet their information needs, which can affect the way they read and understand material.

It is important for educators to integrate teaching strategies that encourage critical and reflective reading. This includes teaching students how to evaluate the quality of the information they find online, as well as encouraging them to engage with the text in depth (Tarigan et al., 2025). In this way, we can help students develop the reading skills necessary for success in academia and professionally. Finally, changes in reading habits also reflect changes in the way we interact with information as a whole. The current era makes information available not only in the form of text, but also in the form of video, audio, and other multimedia content. This creates new opportunities for learning and exploration, but it also poses challenges in terms of how we manage and understand this diverse information. Therefore, it is important that we continue to explore new ways to support reading and comprehension in the digital age (Lizunova et al., 2022).

Student Preferences: AI Vs Libraries

Students have been faced with a choice between using the resources provided by traditional libraries and utilizing artificial intelligence (AI) technology to search for information. Students' preferences in choosing between the two sources are influenced by a variety of factors, including ease of access, speed, and relevance of information. One of the main advantages of using AI is its ability to provide information quickly and efficiently. By using advanced search algorithms, AI can help students find relevant sources in a short period of time. According to Luckin et al. (2016), "AI can improve the efficiency of information search by providing more precise and relevant recommendations based on user needs". This makes students more likely to choose AI as a tool in searching for information.

On the other hand, traditional libraries offer advantages in terms of credibility and quality of sources. Libraries often have collections of books and journals that have gone through a rigorous curation and evaluation process, thus providing quality assurance for users. According to Tenopir and King (2004), "Libraries provide access to sources that have been verified and recognized by the academic community, which can increase students' confidence in the information they use". While AI can provide quick access to information, students may feel more comfortable using resources from reputable libraries. Students' preferences are also influenced by their experience in using both sources.

Students who are already familiar with using libraries may be more likely to continue to rely on those resources, while those who are more familiar with AI technology may prefer to use digital tools. According to Rowlands et al. (2008), "Previous experience in using information sources can influence students' preferences in choosing between AI and libraries". Therefore, it is important for educators and librarians to understand the background and experiences of

students in order to provide appropriate support. In addition, social factors also play a role in student preferences. Recommendations from peers, lecturers, and the academic environment can influence students' decisions in choosing sources.

According to Bourdieu (1986), "The social and cultural networks that individuals have can influence their choices in accessing and using information sources". In this context, students may be more likely to use AI if they see their peers using it, or conversely, if they get a recommendation from a lecturer to use the library. Finally, the challenges in using AI can also affect student preferences. While AI offers ease and speed, students may find it difficult to evaluate the quality of the information they find online. According to Head and Eisenberg (2010), "College students often have difficulty assessing the credibility of the information they find online, which can lead to the use of unreliable sources". Therefore, it is important for educators to help students develop the information literacy skills necessary to properly evaluate sources.
To clarify the comparison between AI and traditional libraries, here is a concise table:

Table 1. Comparison of AI and Libraries

Aspects	AI	Traditional Libraries
Access Speed	Ultra-fast, real-time	Relatively slow, need manual search
Relevance of Information	Customized to user needs	General, need for deeper exploration
Credibility	Varies, additional verification required	High, has gone through an academic curation process
User Experience	Easy for digital native, intuitive	Requires special search skills
Social Influence	Peers, technology trends	Lecturers, librarians, academic culture
Challenge	Evaluation of credibility, potential algorithm bias	Limited access to specific collections

Source: Researcher's Processed Data

From the table, it can be seen that although AI provides an advantage in efficiency, libraries still maintain an important position as a trusted source provider. Therefore, information literacy education must be directed to optimize the use of these two sources in a balanced manner.

Resource Quality Comparison: AI Vs Library

The comparison of resource quality between AI and libraries becomes important to understand, especially in the context of education. One of the main advantages of libraries is the credibility and quality of the resources they offer. Libraries often have collections of books, journals, and articles that have gone through a rigorous curation and evaluation process, thus providing quality assurance for users. According to Tenopir and King (2004), traditional libraries have advantages in terms of the quality and credibility of information sources, because the available collections have generally gone through a curation process and evaluation by the academic community. This provides assurance to students that the information they use has a strong scientific basis and can be accounted for. Meanwhile, AI does offer speed and efficiency in information search, but it is not yet fully able to guarantee the validity of the sources presented, especially if the user does not have adequate information literacy skills.

AI through sophisticated search algorithms can help students find relevant sources in a

short time. According to Luckin et al. (2016), "AI can improve the efficiency of information search by providing more precise and relevant recommendations based on user needs". However, while AI can provide quick access to information, there are concerns regarding the credibility and reliability of information found through AI-based tools. Much of the information available online does not always go through a rigorous verification process, so it can pose the risk of using unreliable sources. One of the challenges in using AI is the difficulty in assessing the quality of the information found.

According to Head and Eisenberg (2010), "College students often have difficulty in assessing the credibility of the information they find online, which can lead to the use of unreliable sources". Therefore, it is important for students to develop the information literacy skills necessary to properly evaluate sources. Libraries, on the other hand, provide an environment that supports the development of information literacy skills that are essential in the academic world. Through training programs and workshops, libraries help students understand how to critically evaluate the quality of information—both when accessing library collections and when utilizing AI-based technologies. With good information literacy, students are not only able to navigate curated academic resources, but can also optimize the use of AI by making more precise requests (prompts) and assessing the reliability of the information generated. Thus, information literacy skills are an important bridge that strengthens the quality of search results from both sources.

According to Bawden and Robinson (2012), "Libraries play an important role in supporting the development of information literacy skills among students, which can improve their ability to evaluate the quality of resources". This shows that libraries not only provide access to resources, but also serve as learning hubs that help students develop the skills necessary to succeed in academia. However, while libraries have an advantage in terms of credibility and information literacy support, they also face challenges in attracting students to use their resources.

The increasing use of AI-based technologies and tools allows students to be more likely to choose faster and more accessible resources. Therefore, libraries need to adapt to these changes by integrating new technologies and offering more innovative services to attract the attention of students (Moonasar, 2024). In discussing the quality of information sources, it is important to understand that AI is not a source of information itself, but a supporting tool used to access various sources, both from library collections and from outside. Libraries provide curated and verified resources, while AI allows quick access to a wide variety of resources, including those outside the library ecosystem. However, the quality of information discovered—both through AI and from library collections—is highly dependent on the user's information literacy skills. Students who have information literacy training, such as the ability to make the right prompts and critically evaluate sources, will be better able to obtain relevant and quality information, regardless of the search medium. Therefore, a more appropriate comparison is not between AI and libraries as entities, but between search results conducted with and without adequate information literacy.

The Utilization of AI in Libraries: A Case Study of Universitas Brawijaya

Artificial intelligence (AI) is increasingly adopted in library services to improve efficiency and accessibility for users (Suparmini, 2024). One example of its application is in the

Brawijaya University Library, which has developed an e-resources optimization assistance program by utilizing AI technology. This program is designed to assist students in navigating digital resources more effectively through an intelligent search system that is able to provide academic reference recommendations based on individual needs. This mentoring not only helps students in finding references faster, but also provides insight into how to evaluate the credibility of information found online. The AI technology applied in this program involves Natural Language Processing (NLP) and machine learning.

NLP is a branch of computer science and language that researches the communication patterns between computers and humans (Hakim et al., 2023). NLP focuses on processing natural language, which is the language that is often used by a person to communicate with others (Pratama et al., 2025). So NLP is useful for understanding students' search patterns and providing more accurate results. Preliminary results show that students who take part in this program experience a significant improvement in the efficiency of their academic information search as well as their digital literacy skills. Further analysis shows that libraries that adopt AI can play a greater role in supporting technology-based research and learning. A study by Tenopir et al. (2021) states that the use of AI in libraries increases the accessibility and relevance of academic resources, while research by Head & Eisenberg (2020) emphasizes the importance of developing information literacy in the digital age. Thus, libraries that make optimal use of AI can provide a better experience for users while improving the quality of academic research.

Conclusion

Based on the results of the analysis, it can be concluded that artificial intelligence (AI) has an increasingly significant role in the academic world, especially in the search for references and access to digital resources. AI offers high efficiency, search personalization, and wider access to academic information. However, emerging challenges, such as algorithmic bias and students' lack of skills in evaluating the credibility of sources, still need to be addressed. Academic libraries must adapt to these developments by integrating AI technology in their services. The e-resource optimization assistance carried out at the Brawijaya University Library is an example of how libraries can use AI to improve the user experience. Therefore, libraries need to play an active role in ensuring that students not only get quick access to information, but also have adequate information literacy skills to navigate the academic world in the digital age. Practically, this requires librarians and universities to design AI-based information literacy training programs and strengthen collaboration between information technology units and libraries to create an adaptive and inclusive learning ecosystem.

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