

Benefits and challenges of using chatbots in academic library services: A scoping review

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Presented at GenISs 2025 Conference,
University of Johannesburg, 28 November 2025



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Background and Introduction

- Generative AI is reshaping higher education and library services (Adarkwah et al., 2024; Okunlaya et al., 2022).
- Academic libraries experimenting with chatbots for:
 - 24/7 assistance
 - Routine queries and wayfinding
 - Supporting staff workflows
- **Gap:** there is limited research on how chatbots affect staff roles and user experience



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Theoretical framework: TAM

Technology Acceptance Model (TAM)

- Focuses on:
 - **Perceived usefulness**
 - **Perceived ease of use**
- Helps explain why users accept or reject technologies

It also looks at the experiences of individuals about the benefits and challenges of technologies and not the technical design

(Venkatesh and Davis, 1996)



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Research questions

Primary Research Question:

What are the opportunities and challenges associated with implementing chatbots in academic library services, and how do these factors impact user experience and staff workflows?

Sub-Questions:

RQ1. What are the opportunities and challenges of implementing chatbots in academic libraries?

RQ2. What are the documented experiences of users in using chatbots services found in academic libraries?

RQ3. What are the documented experiences of librarians regarding the use of chatbots for various job functions?



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Research methods and design

- The study was a qualitative scoping review of peer-reviewed literature.
- Using the PRISMA extension for Scoping Reviews (PRISMA-ScR) for selection and reporting.

Searches were conducted in four databases:

- Scopus, ProQuest (Library and Information Science Abstracts (LISA), ERIC, Education Database, Library Science Database, and Social Science Database), Web of Science, and ScienceDirect.



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Research methods and design (cont.)

Eligibility criteria

1. literature published between 2014 and 2024
2. peer-reviewed articles, conference papers, and electronic book chapters were **included**.
3. Non-peer-reviewed articles, conference posters, workshop reports, print and electronic books, grey literature, and videos were **excluded**
4. Studies written in English were included, eliminating non-English studies.

Analysis

Thematic analysis was conducted to find key themes.



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Results: Screening and final extraction

Started with 566; extracted 40 studies

- Initial search results: **566**
- Results imported to Covidence: **253**
- Duplicates removed: **29**
- Abstract and title screening: **224** (165 studies excluded)
- Full-text screening: **59** (19 excluded)
- Reasons for exclusion: Wrong outcomes, wrong intervention and insufficient data/
unclear results
- Final included studies: **40**



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Results: demographic

Where and when are chatbots being studied?

- Studies from **both developed and developing** countries
- Different emphases:
 - Developed: design & ethics of AI tools
 - Developing: **cost-effective implementation** under resource constraints
- Although you searched **2014–2024**, included studies were from **2019–2024**
 - Suggests a **recent surge** of interest as AI tools matured

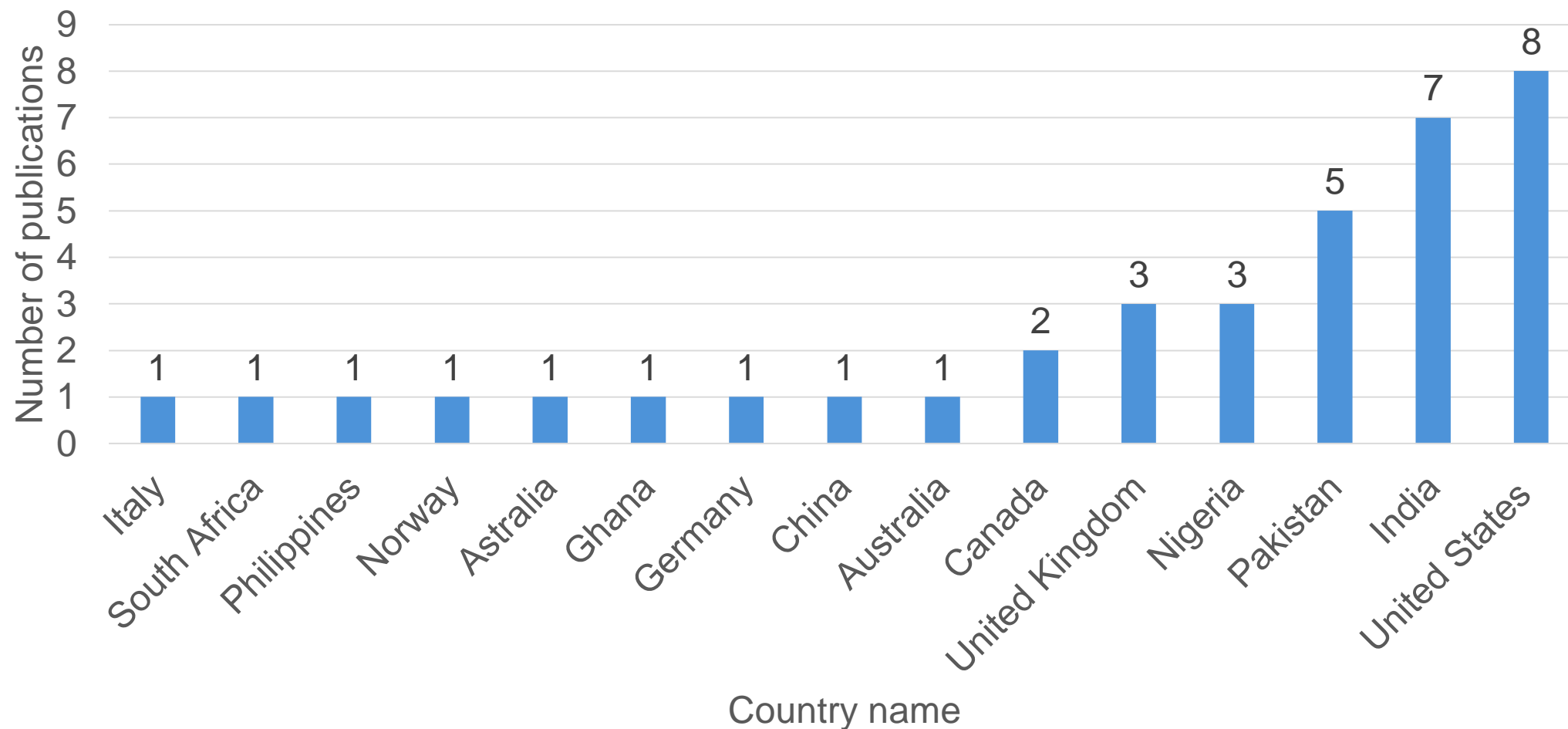


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Results: Where and when are chatbots being studied?

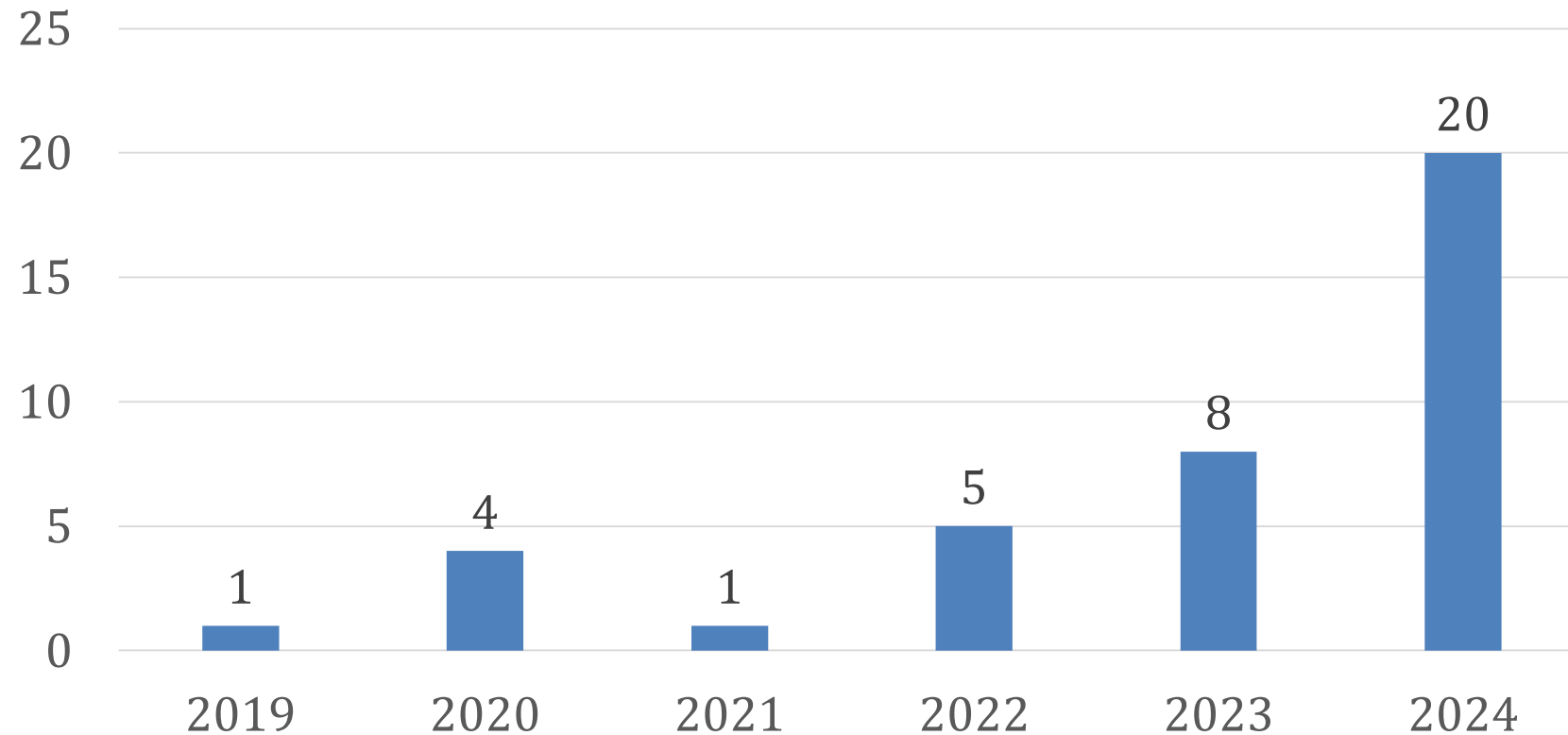


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Results: Extracted studies by publication year



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Benefits for academic libraries & users

For academic libraries

Service and workflow benefits

- **24/7 availability** and immediate responses
- Handles high-volume **FAQs**:
 - Opening hours
 - Borrowing rules
 - Directions and locations
- Reduces repetitive workload → frees staff for:
 - Advanced research support
 - Teaching & information literacy
- **Scalability**: multiple users served simultaneously
- Use of **Natural Language Processing (NLP)**:
 - More natural queries
 - Routing users to relevant resources
 - Revealing usage trends to improve services
- Potential **cost efficiencies** when routine queries are offloaded

For users

User experience gains

- **Always-on** support, including outside library hours
- Aligns with familiar tools (Siri, Alexa, Google Assistant)
- Reduces anxiety for novice users:
 - “Safe” space to ask basic or “silly” questions
- **Fewer clicks**, more conversational guidance
- Simple, concise answers to:
 - Opening hours, locations, policies
 - Accessing databases and e-resources
- **Personalisation**:
 - Due-date reminders
 - Tailored recommendations (books, databases, resources)
 - Notifications relevant to user’s interests



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Challenges for academic libraries & users

Libraries

- High costs for AI tools, especially in **developing countries**
- Weak infrastructure: unstable connectivity, power issues
- Rule-based bots: **limited answers**, struggle with context
- Advanced models (e.g. ChatGPT): risk of **hallucinations** and bias
- Chatbots collect and store user data (personal details, IPs)
- Limited transparency over **vendors' data practices**
- Algorithms can reinforce **bias** in training data
- Anxiety about **job displacement**, especially lower-rank roles
- Lack of AI skills to:
 - Train and maintain chatbots
 - Curate and update training datasets

For users

- Struggle with **complex or nuanced** enquiries
- Risk of **inaccurate or hallucinated** information
- Outputs may not fit the user's actual need
- Frustration when the bot cannot escalate or answer in depth
- **Concerns over:**
 - Intrusion into personal data and privacy
 - Misuse for plagiarism and shortcutting assignments
 - Reduced critical thinking and problem-solving skills



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Librarians' experiences and evolving roles

- Many librarians see strong potential for improved services
- Others are cautious, worried about: Job loss, ethical risks, and over-reliance of students on AI
- New and evolving roles:
 - Co-designers of chatbots
 - Curators of training data (FAQs, transcripts, guides)
 - Stewards of ethical and privacy standards
- Growing expectation for librarians to teach AI literacy and support responsible use of chatbots



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Strengths and limitations

Strengths:

- Strictly adherence to PRISMA-ScR.
- Peer-reviewed increased credibility with studies from diverse countries, making the scoping review relevant across different academic libraries.
- The discussion includes both the views of library users and librarians.

Limitations:

- Only four databases were searched, which could have resulted in the exclusion of important information.
- Only studies written in English were included, which may have relevant studies written in other languages
- This study was conducted by novice researchers with limited research experience.



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Recommendations for future research

For practice:

- Involve librarians throughout chatbot design and deployment
- Be explicit with users about:
 - What the chatbot can and cannot do
 - How their data is handled
- Use chatbots to free time for complex services

For research:

- Develop chatbots that handle more complex reference queries
- Support multilingual interactions
- Compare chatbot vs traditional help across regions and institutions
- Study long-term effects on:
 - How users seek help
 - Library usage

Workforce roles (e.g. prompt engineers, data stewards, AI educators).



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Key takeaways

- Chatbots can enhance academic library services:
 - 24/7 support, scalability, personalisation
 - Reduced repetitive workload for staff
- But they introduce serious challenges:
 - Infrastructure & cost barriers
 - Accuracy, bias, and hallucination risks
 - Privacy and job-related anxieties
- Sustainable adoption needs to have:
 - Human-in-the-loop models
 - Strong policies and governance
 - Ongoing training for both users and staff



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Thank You



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