**INTERNATIONAL JOURNAL
OF ENTREPRENEURSHIP AND
MANAGEMENT PRACTICES
(IJEMP)**www.gaexcellence.com/ijemp**MEASURING THE LEVEL OF DIGITAL LIBRARY
FLUENCY AMONG SCHOLARS IN SAUDI ARABIA- A
DESCRIPTIVE ANALYSIS**Hussin Ali Daqal ^{1*}, Mad Khir Johari Abdullah Sani ², Ahmad Nadzri Mohamad ³¹Faculty of Information Science, Universiti Teknologi MARA (UiTM), Shah Alam, Selangor, Malaysia daqalhussin@gmail.com <https://orcid.org/0009-0008-8549-0489>²Faculty of Information Science, Universiti Teknologi MARA (UiTM), Shah Alam, Selangor, Malaysia madkhirjohari@uitm.edu.my <https://orcid.org/0000-0001-5968-5532>³Faculty of Information Science, Universiti Teknologi MARA (UiTM), Shah Alam, Selangor, Malaysia nadzri590@uitm.edu.my <https://orcid.org/0000-0002-2690-4564>

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Article Info:**Article history:**

Received date: 30.04.2026

Revised date: 17.05.2026

Accepted date: 25.06.2026

Published date: 30.06.2026

To cite this document:

Daqal, H. A., Sani, M. K. J. A., & Mohamad, A. N. (2026). Measuring The Level of Digital Library Fluency Among Scholars in Saudi Arabia- A Descriptive Analysis. *International Journal of Entrepreneurship and Management Practices*, 9(34), 621-637.

Abstract:

Following Saudi Arabia's Vision 2030, Saudi digital libraries have undergone extensive modernization supported by advanced digital infrastructure. Despite these investments, an infrastructure engagement gap has emerged because of insufficient advanced digital competencies among scholars. To examine this issue, a mixed convergent design was used with descriptive techniques, in which digital library fluency was assessed through a survey of 386 scholars (N=386, 95% confidence level) using a scale from one to seven, along with conducting nine interviews with semi-structured questions for key informants at major Saudi research universities. Survey findings revealed a clear competency hierarchy: management competencies were highest (M=6.18), followed by information retrieval and critical thinking skills (M=5.95 each). Notably, a difference of 1.27 points between scholars' ability to use collaboration tools and their collaboration behavior became apparent, as the usage was rated very high (M=6.55, SD=0.92), while peer collaboration (M=5.28, SD=1.44) and shared workspaces (M=5.35, SD=1.38) were found to be significantly lower. Qualitative analysis identified three key barriers: the lack of fluency occurs because of the complex user interface for accessing local repositories, unmodeled senior management, and the presence of reward silos. This implies that digital literacy should be redefined as socio-technical competency at an organizational level.

DOI: 10.35631/IJEMP.934037

Keyword:

Critical Thinking, Descriptive Analysis, Digital Library Fluency,
Information Literacy, Research Competencies

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Introduction

Digital transformation is highlighted as a top priority for research-based universities in Saudi Arabia, given the swift transformation taking place in this sector driven by the targets set in the Saudi Vision 2030 (Alavi & Habel, 2021; Alghamdi et al., 2023). A significant focal point in this transition is the development of Saudi Digital Library (SDL) enabling access to the highest-quality digital materials through a single platform (Al-Osaimi, 2024). But that's not the same as having high-end tech resources, and researchers having knowledge of these high-end tech resources (Al-Bishi, 2026). Way more than knowledge of the technology is needed to fluently use a digital library. Today, researchers must be very good at doing research, be critical thinkers, deal with data appropriately, and work in the online collaborative environment (Hammada & Foli, 2024). When considering all of this tech it is important to reflect on two factors: First, the right platforms and systems available; second, whether researchers are utilizing advanced skills in their work. (Alojail et al., 2023; Al-Shehri, 2023).

Here's something unusual, whereas useful tools might be available, people may not utilize them to their utmost. Researchers are reluctant to move beyond simple web searches to use the academic databases instead (Al-Osaimi, 2024). This is the case, even if numerous institutions claim that there is lots of tech support. There are no clear answers as to why. The issue could be due to stress associated with new tech usage, information overload or insufficient strong support networks, as stated by some (Saleem et al., 2024, Al-Qarni & Al-Moshaikheh, 2022).

In addition, trainers like librarians have varying levels of expertise and knowledge in newer technologies, like AI, and this affects their ability to help researchers (Khan et al., 2026). Without addressing these issues there is a risk of tech skill ups while potentially being unsuccessful. Closing the cultural and organizational gaps would then be tricky (Albushra & Innocenti, 2025). So, the attention here is on the 'infrastructure-engagement gap' – essentially the 'snootz' setups and how they get applied to real research (Albushra & Innocenti, 2025). The aim is to gain the awareness of the reality of how researcher skills are currently manifested in those four huge areas and why great tech doesn't necessarily translate to improved practice in the research setting.

Problem Statement

The growing rate of growth, the rapid process of digitalization of materials in accordance with Saudi Vision 2030 and changes in the handling methods of work nowadays have greatly exerted pressure on the Saudi research institutions. The issue, however, is that these researchers typically aren't provided with adequate training in digital library skills, on which they are not fully educated in the current course (Alghamdi et al., 2023; Alquaary et al., 2026). There is the Saudi Digital Library, which should come in handy. Others, however, have not yet overcome the obstacles involved in their research. They have what's termed an "infrastructure-engagement gap. When they are at their fingertips, they find tools and information helpful, but they can often find it stressful and feel they lack access to appropriate, concrete support from their university/research center. Because of this, they do not use existing resources effectively and efficiently (Saleem et al., 2024). There is missing baseline data on various skills. We don't know much, for instance, about the effectiveness of learning in, for example, info retrieval, critical thinking, management and digital team working (Hammoda & Foli, 2024; Wider et al., 2026). It's very difficult for leaders to work on the issues or gaps if they don't know exactly where the gaps are. So, this situation is challenging to deal with discrepancies between what people feel that they can do and what people can do. This means that programs that focus on enhancing competencies, ultimately become hodgepodge and insufficient. These also do not help to close organizational divides and cultural barriers (Albushra & Innocenti, 2025). All these factors keep getting in the way of smoothly incorporating technology into scholarly work.

Objective of the Study

The objective of this study is to measure the level of digital library fluency among scholars in Saudi Arabia

Literature Review and Conceptual Framework

The situation of the digital library in research science universities in Saudi Arabia portrays a remarkable mismatch between the availability of advanced technologies and the practical skills of the users of digital library (Alghamdi et al., 2023; Alojail et al., 2023). Ah, there's been quite the development of Digital resources, thanks to Saudi Vision 2030. Yet, this has caused the "infrastructure-engagement gap" for resources that are available, but difficult to use for many people (Al-Bishi, 2026; Alzahrani, 2022). Research shows that, while digital skills are recognized as essential, others such as lecturers and researchers, have limited practical expertise in these skills, specifically in information management and online ethics (Alghamdi et al., 2023; Al-Haman, 2023). There's also a peculiar realization paradox that happens: Though one may consider digital systems as simple and easy to use, they rarely get adopted into daily work (Saleem et al., 2024; Al-Khalifa et al., 2026).

Although digital tools are easy-to-use, evidence indicates that a low level of adoption takes place, which is also affected by the psychological phenomenon of "technostress" related to the burden and anxiety associated with registering and using a device that is simple to view or use (Saleem et al., 2024; Al-Qarni & Al-Moshaikeh, 2022). While the term "digital fluency" is now applied to a collection of multiple abilities, researchers should have several skills to help them navigate and critically contend with digital information (Hammoda & Foli, 2024; Munn & Kleine, 2022). Though these students excel in superficial research activities, they can be weak in critical analysis and appraising source reliability (Hammoda & Foli, 2024; Alquaary et al.,

2026). The people who are supposed to assist with this development (such as the library profession) are not 100% tech-savvy and need to be trained as well (Inverge Journal, 2026; Albushra & Innocenti, 2025; Alshammari, 2023).

One other obstacle is collaboration among researchers. Culture and organisation prevent collaboration, resulting in a lack of team working (Wider et al., 2026; Albushra & Innocenti, 2025; Al-Zahrani, 2024). Worse, in many institutions educational practices are stifled and poorly developed to address the needs of Arab contexts (Alquaary et al., 2026; Abid et al., 2023). There's a noticeable shift towards strengthening what's referred to as "pedagogical capacity" that emphasizes the critical role of tech-smarts for effective study habits (Aslan et al., 2025; Saleem et al., 2024; Al-Shehri, 2023). This is quite unlike the less developed methods based on the training of technology. Although the rate of technology is quick, a slow pace and bureaucratic delays hinder progress, due to some uncertainty still exists regarding the level of skills of the staff (Alojail et al., 2023). There's expert counsel to focus on areas with the lowest performance and shift out of the rut from broad training sessions; in other words, focus your training where the athlete creates the greatest opportunity for themselves to improve capacities (Inverge Journal, 2026; Hammada & Foli, 2024). Hopefully, these strategies will facilitate more effective and successful integration and use of technology in real learning environments (Albushra & Innocenti, 2025; Alghamdi et al., 2023; Wider et al., 2026; Al-Madi, 2024).

Conceptual Framework Guiding This Study

In this research, the application of STS as a reference to study the concept of digital library fluency in Saudi Arabia. It looks at how fancy tech, such as the Saudi Digital Library, fits into researchers' habits and the institutional culture (Alojail et al., 2023). This study does not hold digital skills solely as a technical piece of knowledge; digital skills are "pedagogical capacities" when the tech tool becomes an integral part of researchers' identities and practices (Aslan et al., 2025; Wider et al., 2026). The method is descriptive and aims to provide a visualisation of the state of info retrieval, critical thinking, data handling and digital collaboration today (Hammada & Foli, 2024).

Here is the "utilisation paradox", people do not always use user-friendly systems. In most cases, the problem does not stem from faulty technologies but from other factors such as having too many thoughts to carry, dishonored organizations, inadequate support (Alshammari & Alkhwalidi, 2025; Saleem et al., 2024). TPACK stresses the importance of focusing on researchers' skills—we need tech expertise along with good teaching techniques for effective digital practices (Aslan et al., 2025). The report shall reflect the significance of the gap, the required directions for achieving smart solutions in a combination of social and tech aspects (Alshammari & Alkhwalidi, 2025). Implementing a digital literacy initiative on a national scale could pave the way for Saudi Arabia's transformation into an integrated digital economy and enable it to make regular progress and tackle cultural challenges.

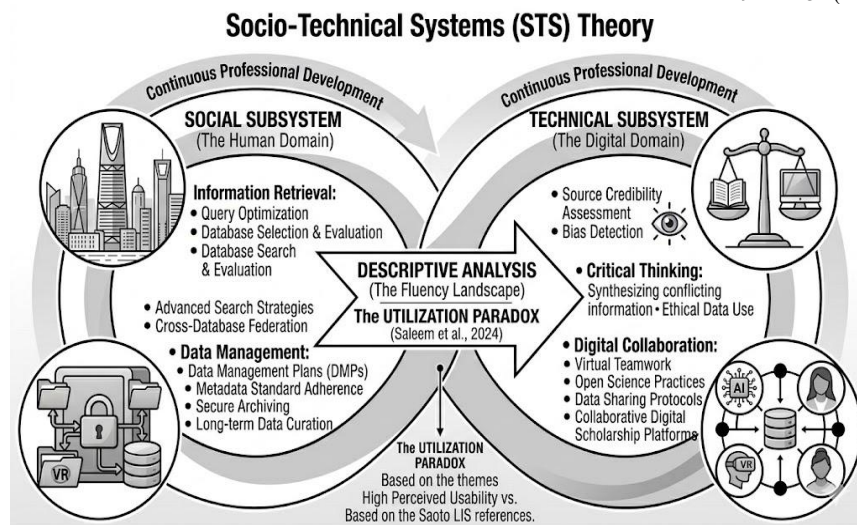


Figure 1: Socio-Technical Systems (STS) theory

Methodology

Research Design and Population

This study takes a descriptive, convergent mixed methods approach to check digital library fluency at Saudi Arabia's research-driven places. It gathers both kinds of data - quantitative and qualitative - to investigate the "utilization paradox." This helps get a fuller understanding of the issue, so we can address it better.

Research Design and Workflow

Figure 2 presents a research structure which can be divided into six main components for the purpose of testing the skills of the digital library in the major research centers in Saudi Arabia. The study is based on both types of data - numbers and stories - to seek the answer to the "utilization paradox" of digital libraries. For the number crunching bit, they used a survey on a 7-point scale handed out to 386 scholars. Because they have such several responses, they can obtain reliable statistics with a 95% confidence level. The answers to the surveys were averaged and analyzed in SPSS Stats in four locations: finding information, deep thinking, task management, and technology teamwork. During this time, they had semi-structured conversations with nine major names and group discussions. This bunch included key researchers, library directors and college professors.

The first thing they did was to look at both sets of info separately, then combine them through a technique known as triangulation. This resulted in a holistic representation of the digital library skills and highlighted potential avenues to enhance these skills in line with the Saudi Vision 2030 goals. They ensured that they were using all ethical norms throughout. Participants had to agree to participation, and no personally identifiable data was associated with the answers to the surveys. Plus, secure digital files were erased immediately following transcriptions. To sum up, they remarked on a few of the constraints of the project. This focuses on one moment in time and therefore does not reveal any relationships of cause and effect.

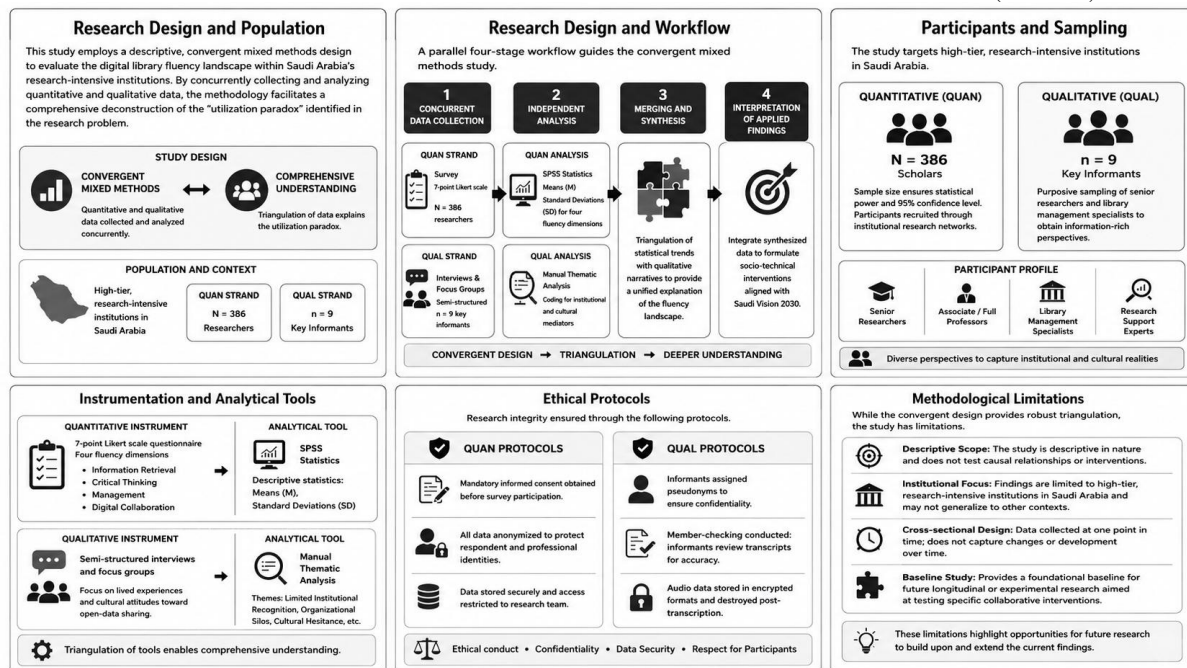


Figure :2 Research Methodology

Findings: digital library fluency descriptive profiles

Sample Characteristics

A total of 386 participants (1–32 year's experience) were surveyed with an average experience of 8.3 years. Most of them were postdoctoral researchers (31%), faculty members (41%) and research specialists (28%). There were also some minor differences on the qualitative side which consisted of nine people who had important leadership positions in the research, running of the centers or library work and project management. Five were directed research, three ran centers, and one worked in the library on additional research. These nine had between 6 and 28 years of experience, with a mean experience of 14.2 years, and were actively engaged in active projects as well as important responsibilities on campus.

Item-Level Descriptive Findings

Table 1: Item-Level Descriptive Statistics for Digital Library Skills Assessment (N=386)

Dimension/Item	M	SD	Median	Range	Freq. Mode
Information Retrieval Skills					
Advanced search technique proficiency	5.82	1.31	6	1-7	6
Multi-database utilization	6.15	1.18	6	1-7	7
Resource reliability evaluation	5.89	0.94	6	1-7	6
Online library system navigation	5.64	1.25	6	2-7	6
Critical Thinking & Evaluation Skills					

Source credibility assessment	5.72	1.47	6	1-7	6
Bias identification in resources	5.58	1.24	6	1-7	6
Information relevance evaluation	6.08	1.12	6	1-7	6
Multi-source comparison & validation	6.21	1.03	6	2-7	7
Management Competencies					
Digital resource organization	5.92	1.19	6	1-7	6
Citation & reference management	6.24	1.08	6	1-7	7
Structured folder/collection maintenance	6.31	0.98	6	2-7	7
Personal academic database updating	6.27	1.02	6	1-7	7
Digital Collaboration Skills					
Peer collaboration effectiveness	5.28	1.44	5	1-7	6
Shared digital workspace utilization	5.35	1.38	5	1-7	6
Collaborative tool ease of use	6.55	0.92	7	2-7	7
Collaboration tool productivity enhancement	6.00	1.15	6	1-7	6

The scores on the 16-item scale were uniform from 5.28 to 6.55, with people seeming to be fairly confident of their skills, ranging from moderate to high competence. However, there were some variations in attitudes to certain activities. Collaborative tools appeared to be the easiest, with everyone rating it as very user friendly, a mean rating of 6.55 and a standard deviation of 0.92. However, the lowest satisfaction was measured with "Peer collaboration effectiveness" with a mean of 5.28 and a standard deviation of 1.44 and with "Shared digital workspace utilization" with a mean of 5.35 and a standard deviation of 1.38, both under Digital Collaboration. There was a great variation in the ratings for judgment and teamwork tasks. This implies that people in some cases feel like they are good at these, and others are a lot worse. When it comes to organizing resources and addressing the technicalities, there was also less variation of opinion—with people in general agreeing on these aspects.

Dimension-Level Descriptive Findings

Table 2: Dimension-Level Summary Statistics (N=386)

Dimension	M	SD	Median	Min-Max	Interpretation
Management Competencies	6.18	1.22	6.25	1.75-7.00	Highest proficiency
Information Retrieval Skills	5.95	1.05	6.00	1.75-7.00	High proficiency

Critical Thinking & Evaluation Skills	5.95	1.12	6.00	1.25-7.00	High proficiency
Digital Collaboration Skills	5.79	1.17	6.00	1.50-7.00	Moderate-high proficiency
Overall Digital Library Fluency	5.97	1.14	6.00	1.50-7.00	High proficiency

Dimension-Level Profile:

The four dimensions display a clear performance hierarchy:

1. Management Competencies is the highest average Score with an average of 6.18. Everyone rated this higher than 6.0, so organizing personal knowledge and managing citations is an area of strength—they're good at keeping their resources tidy too. Moreover, they are able to transform a paper document into a system of organization effortlessly.
2. Information Retrieval Skills is awarded with an average of 5.95 for 2nd place. Most were fairly successful in searching and navigating databases, determining sources to trust. The scores remained generally at 6.0, with a good general level of ability among researchers with these sorts of skills.
3. The average for Critical Thinking & Evaluation Skills was 5.95, which was the same as that of the other skills. In general, everyone did very well here, but there was some variation. They did a great job of comparing information from various sources, and were less successful at identifying bias. On average, spotting bias was 5.58, while multi-source comparisons were 6.21.
4. The least scores were in Digital Collaboration Skills (5.79). It also exhibited the maximum standard deviation (1.17). There is something here: access to tech tools is considered good (average 6.55), but putting those collaboration skills into practice is low (5.28 to 5.35).

Variability and Heterogeneity Patterns

Management Competencies was the top scorer with a score of 6.18. In this section, everyone's score was above 6.0, indicating that they did an excellent job organizing knowledge, managing citations, and keeping resources in order. They also established a method for creating neat and organized systems from digital discoveries. The second place was taken by Information Retrieval Skills with an average of 5.95. Some good skills were demonstrated in searching the internet, how to use databases and how to determine if a resource is trustworthy. The scores were mostly clustered around 6.0, indicating that the researchers doing these tasks are mostly okay. Critical Thinking & Evaluation Skills averaged 5.95. The overall performance was quite good, but there were some differences within the category. Comparing information from multiple sources was the strength of the respondents' performance and the task of identifying bias was a little more challenging. They averaged 6.21 with multi-source comparisons, while the average score for spotting bias was 5.58.

The Digital Collaboration Paradox: Usability Versus Utilization

There's a noticeable pattern in Digital Collaboration Skills that stands out:

1. Technical Accessibility: $M = 6.55$ ($SD = 0.92$). This is the top rating for the sixteen items, indicating that researchers believe that collaboration tools are actually user-friendly.
2. Actual Peer Collaboration: $M = 5.28$ ($SD = 1.44$). This is one of the lowest ratings, indicating that real collaborations among peers in research are pretty mediocre.
3. Workspace Utilization: $M = 5.35$ ($SD = 1.38$). It's like the peer collaboration score, suggesting that there's not much use of those hip, sharing digital spaces.

The difference between folks' useability rating of the tools (6.55) and their actual use (5.28) is also wild. The 1.27-point spread is the widest spread of any of the skills in the group. So we've solved the technical problems now, but there is other stuff that's holding them back from using it—such as managing time, integrating workflows, and getting into the organization's culture and research practices.

Qualitative Findings: Contextual Illumination of Competency Patterns

Nine key informant interviews generated rich contextual description of factors mediating observed competency patterns. Thematic analysis identified six recurring themes:

Information Retrieval Skills

The results of the interviews reflect a slight discrepancy between desired and actual use of tech tools. People mentioned that although it's easy to get to the institution overall, there are some set-ups along the way that make things difficult.

When R4 stepped out of the fancy layers into native digital repository systems, these systems' user interfaces confused even the experts, explained R4. "Our main databases, such as Scopus and Web of Science, work without a hitch, which is why stats indicate good use, but when people hit the native digital repository systems, the user interface is confusing for them. Experts know what they need, but our library platform makes it a real pain to form that advanced query. This was echoed by R7, Librarian. Users feel comfortable with Google Scholar or with just using keywords, because it seems simple and easy, but they don't feel comfortable with more sophisticated library logic, like federated search engines and so on; "so they collect tons of information, and they miss the more specific things because it's that kind of structuring.

This helps to explain why online Lib Nav speeds were slower than all database use. The key findings when talking about the primary goal of skill profile and training needs – are that Saudi researchers excel at accessing external databases, but struggle to navigate their own repos. In short, reported convenience of searching is a sign of a lack of strength: the same are easy interfaces, not the specialized systems.

Critical Thinking and Evaluation Skills

Cross checking of citations and comparing conclusions is a normal procedure in literature reviews, according to Informant R6, Senior Postdoctoral Fellow. But spotting ideological,

methodological, or institutional biases needs a more thorough analysis. They note that researchers in those situations are often encouraged to examine the data to find “quick fixes” that can be implemented, such as looking at journal impact factors, rather than exploring the data's limitations or financial biases.

Likewise, said Informant R2, a Faculty Researcher, the level of critical examination of material is quite different, depending on the scientific field. The types of science involved differ in how they define the measure of validity: hard science fields want strict data replication, while social scientists look for contextual nuances, or any biases the author might have. The problem? These large disparities are typically not addressed during training, leading researchers to misunderstand the meaning of “critical thinking” within their field.

With these descriptions one can readily understand why the identification of resource bias proved to be the lowest scoring item. This bureaucratic drive results in shallow consideration of metrics rather than deep consideration. The evidence for understanding the goal of finding diverse competencies reveals that differences in big scores stem from incompatible educational profiles, rather than a deficiency in skills. Hence, in the future, development plans should abandon the “one size fits all” strategy and address the need of each discipline.

Management Competencies

Qualitative narratives are clear that it is from the immediate use by individuals and strict rules from the top down. Take what Faculty Researcher R5 says: *“Our advanced management skills are purely practical – for managing tons of data, our institution makes everyone use EndNote and Mendeley, these tools are mandatory during postgraduate orientation and to get research ethics approval, using them meticulously just becomes automatic, our yearly success is linked to submitting neat dossiers.”*

If there's any pushback on personal knowledge management systems, R9 notes, it's very rare, because they provide immediate benefits upfront. They save time when drafting papers. *“Good uptake is just happening naturally when digital practices are helpful and institutional support is strong, essentially.”*

That's why the overall numbers are excellent, and there are a lot of obvious individual benefits. These outcomes demonstrate that mastery of these management competencies is effective in determining what drives top performance and what factors institutions provide. The best results occur when it helps both people and when it is consistent with institutional goals. This perfect fit helps to understand why the highest score in this category and can provide insights on how other tech skills can be successfully leveraged throughout the organization.

Digital Collaboration Skills

Qualitative themes slice through one of what is known as the “Collaboration Paradox”. It proves that having tech that's easy to use is pretty much canceled out when people aren't motivated to work together and leaders don't show how it's done. Informant R3, a Director at a Research Center says: *“When you look at our processes, it all comes together, but, even if the tools are easy to use, people simply don't make a habit of collaborating.”*

We have the tools, but argues Informant R1, a STEM faculty member, "we're not used to that yet—we're still working with email attachments, and the older generation do not get that. We need to make it normal to use these more connected workspace technologies."

Hence, this is a real problem that demonstrates that nice software is not enough. The whole system remains stymied when institutions become too personalistic and leaders are not role models. This wraps up our main goal of digging into why there's a gap between easy tech and getting people to collaborate. If they want to truly make a step forward, the solutions to these problems do not lie in making people learn how to implement the tech, but in changing the rules and ensuring that policies and practices are geared toward cooperating.

Summary of Descriptive Findings

Table3: Synthesizing Quantitative Profiles and Qualitative Context:

Finding		Description	Implication
High competency	foundational	Information retrieval, resource evaluation, and management competencies cluster at 5.95-6.18	Researchers possess established baseline capabilities in fundamental digital library skills
Heterogeneous thinking	critical	Critical thinking shows lower consensus (SD=1.12) with variation across bias detection and appraisal	Differential training and disciplinary epistemologies create variable evaluative practice
Underutilized collaboration		1.27-point gap between perceived tool usability and actual collaborative practice	Infrastructure, culture, and workflow integration—not competency—constrain collaboration
Context-dependent expression		Qualitative findings highlight infrastructure, discipline norms, senior modeling, time pressure influencing practice	Competency expression is mediated by organizational and cultural context
Unequal development	professional	Substantial variation across institutions in training access and systematic competency development	Institutional investment creates differentiation in researcher capability levels

Discussion

Interpretation of Dimension-Level Profiles

The aim of this study was to find out the level of scholars' use and exploitation of digital libraries in Saudi Arabia. The results indicate that these experts are generally confident in their tech skills, although there are some discrepancies. For this reason, they excel at doing tech things but don't excel at doing larger-scale things, such as navigating institutional repositories, identifying bias and working together. When they're broken down into their skills, it seems they're in a kind of hierarchy, where management skills take the top spot. The need of

universities for the use of tools, such as EndNote or Mendeley. Oh, plus, these programs save researchers time, double win! This aligns with the literature on LIS, which indicates that providing straightforward institutional direction and the advantages of using the tools prompt and quick uptake among academics (Al-Aufi & Al-Shukri, 2023).

However, when it comes to searching for info, there's a bit of a twist. Although researchers are good at identifying and using several databases, they are not as effective when using specific online library systems. A few people commented that the problem is the over-emphasis on simply using an interface instead of a complex and less intuitive local repository system. It's as though they can perform simple Google functions, but they have difficulty performing advanced functions—this is the "superficial efficacy" that is mentioned many times in the research literature on LIS (Bhatti et al., 2024). Now, when scholars are judged on their critical thinking of the info they discover, the confusion arises again. They do a good job of checking the sources, but they do not do so very well at identifying potential biases.

To compound the issue further, a compressed publication timeline means that they are just filling in boxes instead of investigating whether the data has any tainted sponsorships. One participant pointed out that the cause is that there are different objectives in different fields, hard sciences are data (replicable), soft sciences are context and politics. So one-off approaches to critical thinking don't work. Again, this is in line with recent research conducted in LIS (El-Salahi & Rahman, 2025). But there's more, dear reader. This is a big disconnect – the "Digital Collaboration Paradox" is quite startling. While digital teamwork tools are rated as very intuitive and easy to use, practical use of these tools in teamwork and space sharing falls short of effectiveness. Experts state that cool, convenient software is not the solution to issues brought by insular academic environments, solo-based rewards, and old school routines (Asemi & Hajikano, 2024; Nicholas et al., 2026). For this reason, universities should actively promote collaborative norms, break the model of people working alone and revise the values of the reward system to give more credit to group work. To sum up: These changes require social and structural elements, not only the ease in which students employ the technology.

Contribution, Limitations, And Suggestions

The study in theory extends the definition of digital literacy from the past and introduces a thorough examination of academic fluency. It makes us rethink library and information science by illustrating that to be proficient in software does not necessarily make one an effective team player. This can help us know why individuals may be having trouble implementing their skills in the group project, from a psychological and system perspective. On the practical side, the study adds a much-needed missing piece to the puzzle. It presents a snapshot of the various levels of digital skills of individuals in a rapidly evolving research landscape in the Middle East, particularly in Saudi Arabia. It highlights the "Digital Collaboration Paradox" – which argues that despite being user-friendly, the level of collaboration, among Saudi scholars, is low – and explains the difficulties of using local databases. This is against the notion that elite academics share the same skill set.

The study, from a methods perspective, creates a sound strategy, combining both numbers and interviews. It doesn't simply take for granted that people report such differences; it uncovers the reasons for them, which it discovers are less random than they might seem because differences lie in conflicting perspectives within fields, and the publishing pressures. From a more practical perspective, there are actual lessons for universities and for those developing

DB systems. Generic IT training classes are no longer enough – schools can create pathways that are more suitable for their subject areas, make database systems easier to use and even alter the way they measure faculty success to include rewards for team research.

Limitations

The findings of this study reveal that there are several problems in the process of measuring the skills of scholars in digital libraries and proposals have been made to enhance the academic support in the country. One big problem is that self-reported data is being used to gauge tech and info-evaluation skills. The figures indicate high overall ability, but this is not the case. They believe they are good because they have a good knowledge of common tools, but they may not develop the skills to become more info-literate. This is because it appears everybody is doing fine when there are significant skill deficits present.

Only the largest research universities are included in data collection. There are other schools in Saudi Arabia that are totally different with different resources with which they have been equipped, but those schools were excluded. It's not a fair representation. In addition, the study examines the phenomena at a particular point in time and does not account for change over time. Researchers' judgment and proper use of info may be adversely affected if changes in the direction of quick fixes are made to meet intense publication deadlines throughout the school year. Finally, the grouping of various fields and funding sources obscures the differences in specific needs and practices among the fields. A one-size-fits-all approach doesn't solve the problems of all areas.

Suggestions for Future Research

To address the issues and plug the identified gaps, educational institutions need to switch from general approaches to more precise measures. First and foremost, the developers of technological products and the management of university libraries should focus on improving the interface. They need to adopt the user-friendly design which will help users navigate the database like navigation on major platforms. Second, schools should abandon a generalized approach to information literacy and introduce subject-specific classes. Thus, workshops for the students of sciences should vary from those intended for the social sciences. It will be important to teach students how to challenge potential biases and investigate broader aspects of any scientific discovery, such as its funding.

Finally, to address the "Digital Collaboration Paradox," school administration should revise promotion criteria. The accessibility of a certain technology does not guarantee its proficient application. Consequently, there should be incentives for collaboration and effective use of digital tools as part of promotion, grant distribution, and tenure. An example of the former can be senior professors leading collaborative work and thus encouraging interdepartmental collaboration. Moreover, research on the issue needs to monitor the achievement of specific tasks based on objective results, rather than on subjective perceptions. To this end, all stakeholders must keep up with increasing digital requirements following the lead of major goals defined in Saudi Vision 2030.

Conclusion

In conclusion, one can state that even though researchers affiliated with Saudi institutions have a positive attitude towards simple issues related to digital libraries, their performance regarding

advanced issues is not very high. Thus, merely having knowledge of digital library basics is far from being sufficient. Instead, one must possess excellent information literacy skills to benefit fully from using such online resources. However, many scholars face difficulties in evaluating sources and formulating quality searches. Moreover, there is often a considerable mismatch between one's assessment of his or her skills and the reality, with most researchers believing themselves to be more skilled than they truly are. To close this gap between what is perceived and reality, personal education efforts, user-friendly technologies, and proper support of a scholarly institution should be utilized. At the same time, closer cooperation among academic institutions in general is essential. Thus, cooperation between lecturers and librarians helps develop better academic environment aimed at nurturing the skills of future researchers. Therefore, one sees why an emphasis needs to be placed on proper policies, actual training, and long-term plans. The investment into developing digital skills in Saudi institutions is necessary both for daily operations and further development of the country as a major player in academic environment.

Acknowledgements: The author would like to express sincere appreciation to the Faculty of Information Science, Universiti Teknologi MARA (UiTM), Malaysia, for its academic support. Special thanks are extended to the supervisor for valuable guidance and constructive feedback throughout the research process. No external funding was received for this study.

Funding Statement: This study was not supported by any grants from funding bodies in the public, private, or not-for-profit sectors.

Conflict of Interest Statement: The author declares no conflicts of interest.

Ethics Statement: This study was conducted in accordance with ethical research standards. Ethical approval was obtained from the relevant institutional research ethics committee prior to data collection. Informed consent was obtained from all participants before completing the questionnaire. Participation was voluntary, and participants were informed of their right to withdraw at any stage. No personally identifiable information was collected, and all responses were treated confidentially and used solely for academic research purposes.

Author Contribution Statement: Hussin Ali Daqal was responsible for the conceptualization, methodology, data collection, data analysis, interpretation of results, and drafting of the manuscript. Mad Khir Johari Abdullah Sani contributed to the supervision, review, editing, and critical revision of the manuscript. Ahmad Nadzri Mohamad contributed to the supervision, review, editing, and critical revision of the manuscript. All authors read and approved the final version of the manuscript prior to submission.

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