Using Digital Tools for Information Management in Higher Education

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Abstract: In recent years, Knowledge Management (KM) has gained significant attention within the Information Systems (IS) community. The economic importance of data and information, often likened to "data as the new oil," underscores the critical role of data/information/knowledge management. KM is crucial in both educational and organizational contexts. Despite growing interest, research in KM in Higher Education (HE) remains fragmented, especially with the rapid evolution of digital tools and Artificial Intelligence (AI). This paper explores the intersection of KM and HE, emphasizing the use of digital tools and platforms for knowledge acquisition among university students. An open survey conducted in Sweden among bachelor students enrolled in a digitalisation course revealed that digital tools are used frequently for knowledge acquisition and communication. The study highlights the benefits, challenges, and suggestions about how to use digital tools in KM in HE and the need for structured educational training to facilitate KM processes. It also advocates for new research avenues emphasizing the role of digital tools in HE and provides guidance for integrating technology into KM principles in HE.

Keywords: Higher Education, Digital Tools, Knowledge Management, Information Management, Generative Artificial intelligence

1. Introduction

Knowledge Management (KM) has recently received considerable attention in the information systems community and is continuously gaining interest by industry and academia (Quarchioni, et al., 2022; De Bem Machado, 2022). The increasing importance of information/knowledge (defined differently by Zins, 2007) play a fundamental role towards the success of gathering, using and transforming information, in an organizational perspective, especially in educational settings (Metaxiotis & Psarras, 2003). Previous articles outline the basic concepts within KM (Metaxiotis & Psarras, 2003; De Bem Machado, 2022) and specifically KM in Higher Education (HE) (Quarchioni, et al., 2022; Brewer & Brewer, 2010) as a concept for an ever-changing environment (Katz et al., 2022; Laal, 2011). KM is a systematic process by which knowledge needed for an organization to succeed in creating, capturing, sharing and leveraging (Laal, 2011).

There are numerous definitions of data, information, and knowledge, with no universally agreed-upon definitions (Zins, 2007). In this study, "information" is defined as data that is communicated, contextualized, and has a purpose or effect, while "knowledge" refers to the cognitive framework that enables individuals to understand and utilize the information (Beynon-Davies, 2019; Bellinger, Castro & Mills, 2004; Davis & Olson, 1984). Since information gathering is part of the knowledge management process, the terms "information management" and "knowledge management" may be used interchangeably in this study. Furthermore, although differentiating between explicit, tacit, and implicit knowledge is important in KM, this study focuses on tools for general knowledge acquisition and communication.

The rapid evolution and emergence of digital tools like Learning Management Systems (LMS), social media, and Generative Artificial Intelligence (GAI) have revolutionized productivity in KM in education (Aljawarneh, 2020; Dhamdhere, 2015; Eloundou et al., 2023; Hamid, 2020; Kurtz et al., 2024; Ouyang et al., 2022; Ritala et al., 2023; Shawar & Al-Sadi, 2010; Thorne, 2024). The impact of these digital tools, especially GAI, on higher education and knowledge acquisition is significant and inevitable (Aljawarneh, 2020; Bahrini et al., 2023; Eloundou et al., 2023; Ritala et al., 2023). While GAI tools promise increased accuracy, efficiency, and productivity, their potential for misinformation and hallucinations underscores the need for cautious use, as Large Language Models (LLMs) struggle with comprehensive problem-solving and input uncertainty, may lead to inaccuracies (Thorne, 2024). The unclear mechanisms behind AI-generated responses affect the validation and reliability of answers, raising concerns about trustworthiness and biases (Bahrini et al., 2023).

The literature (e.g., Brewer & Brewer, 2010; De Bem Machado, 2022) covers the importance of KM, the challenges organizations face, and the key activities necessary for effective knowledge acquisition and communication. Despite growing interest in KM within higher education (HE) and its critical role in organizations and academia (Quarchioni et al., 2022; Brewer & Brewer, 2010), research on integrating new digital tools into KM in HE remains limited. There is a noticeable gap in studies addressing the structured use of digital tools in

HE, and it is unclear if universities have recognized or addressed the sources of students' acquired knowledge. Additionally, it is uncertain whether educational programs adequately facilitate access to reliable resources or teach essential soft skills such as critical thinking and problem-solving (Aghaee & Karunaratne, 2023). Therefore, higher education institutions must ensure that they prepare students for emerging job profiles and professional success by providing appropriate educational environments (Williamson, 2021).

Although many digital tools are available and their uses are extensively analysed, this study considers the tools focused by the respondents. This study examines what digital tools students use to facilitate their knowledge acquirement and communication in courses and what are their needs to make this use more structured and academic. To address the above-mentioned gap to use digital tools in KM in HE, this study seeks to answer the following research questions: *What digital tools and platforms are used for knowledge management in higher education? How can digital tools be used effectively in knowledge acquisition?*

2. Digital Tools in Educational Information Management

Digital tools and platforms are essential for knowledge management (KM) in higher education (HE), helping to compile, store, and disseminate information generated by academic institutions (Hamid, 2020; Dhamdhere, 2015). In the modern educational environment, the use of digital tools for creating, capturing, sharing and leveraging knowledge has become ubiquitous (Di Vaio et al., 2021; Aljawarneh, 2020; Laal, 2011; Brewer & Brewer, 2010). They leverage advancements in computing and Internet usage deliver knowledge and make education accessible (Shawar & Al-Sadi, 2010; Aljawarneh, 2020) as well as facilitate sharing educational materials, such as file and information sharing (Whalen, 2008). Digital and online tools for obtaining information and facilitating communication enable the exchange of knowledge and experiences, and sharing information and documents among students and faculty, thus improving teaching quality and learning outcomes (Hamid, 2020; Aljawarneh, 2020; Di Vaio et al., 2021; Whalen, 2008).

Learning Management System (LMS) (discussed by Shawar & Al-Sadi, 2010; Kung et al., 2012) and social media have been identified as effective tools for facilitating the distribution and management of knowledge in educational settings (Hamid, 2020). The effective utilization of digital tools and social media in KM ensures that valuable knowledge is accessible anytime and anywhere (Hamid, 2020; Dhamdhere, 2015; Thorne, 2024). These digital tools play an important role in KM by providing a centralized knowledge base system for knowledge acquisition, management, sharing, mapping, and collaboration (Dhamdhere, 2015; Di Vaio et al., 2021; Hamid, 2020). Platforms such as LMSs (e.g., Moodle or Canvas) develop a collaborative academic environment and support academic interactions and activities, as students increasingly rely on them for continuous access to academic information about courses (Aljawarneh, 2020; Hamid, 2020; Bahrini et al., 2023; Shawar & Al-Sadi, 2010).

In the era of KM, global impact spans various domains, including education, which has transitioned from traditional face-to-face approaches to online knowledge attainment and management. The structure and efficacy of KM in HE is enhanced by digital tools and ubiquitous learning environments that provide seamless and context-aware learning experiences (Hamid, 2020; Dhamdhere, 2015; Di Vaio et al., 2021). These digital and Web-based platforms and tools like LMSs for information sharing and communication, enhance personalized learning and facilitate the integration of both authentic and digital resources (Aljawarneh, 2020; Shawar & Al-Sadi, 2010; Kung, et al., 2012). However, studies on which digital tools and media are used as part of formal education in courses and how they are perceived to be utilized are still quite limited.

Recent advancements in Natural Language Processing (NLP) have led to the development of Large Language Models (LLMs) and Generative Artificial Intelligence (GAI) such as GPTs (Generative Pre-training Transformer), significantly enhancing KM in different areas such as education by providing extensive relevant information (Hu et al., 2023; Taticchi et al., 2009; Kurtz et al., 2024; Jin et al., 2024). Digital tools like ChatGPT, Midjourney, Copilot, and Gemini promise to revolutionize society and transform education by reshaping learning and teaching practices (Kurtz et al., 2024; Bahrini et al., 2023). While GAI and GPTs may enable students to acquire targeted knowledge, the quality of this information depends on the used methods and tools, which may vary based on students' digital skills (Bahrini et al., 2023; Jin et al., 2024; Thorne, 2024; Mohamed Hashim et al., 2022; Bergdahl et al., 2020; Katz et al., 2022). Integrating unconfirmed tools in HE settings presents challenges such as inaccuracy, bias, overreliance on technology, and unequal access to resources (Taticchi et al., 2009; Kurtz et al., 2024; Thorne, 2024). Therefore, HE institutions must ensure the quality and relevance of the acquired knowledge while addressing these challenges.

Academic library services in HE have recently been enhanced by digital tools for incorporating KM principles and to improve the use of organizational information for effective learning (Mavodza, 2010). KM practices involve capturing, retaining, organizing, disseminating, and reusing knowledge, using digital libraries and scientific databases to access resources for educational purposes. Such resources are referred to as research tools, including Google Scholar, JSTOR, and university library websites, which provide support for academic research. In addition, research tools include reference management tools, like Mendeley, EndNote, RefWorks, and Zotero, as discussed by Butros and Taylor (2010). These tools help students access academic papers, conduct literature reviews, and manage references easier and more effective (Mavodza, 2010).

Productivity tools, such as Google Workspace (Tamayo & Mosquera, 2024) and Microsoft 365 (Mahliyo, 2024), support various educational activities like writing assignments, project management, and resource sharing, while also facilitating document creation, task management, and group collaboration. Their integration into course tasks and projects makes them important for regular academic operations (Tamayo & Mosquera, 2024; Mahliyo, 2024; Zhakota et al., 2024; Aljawarneh, 2020). Despite existing studies on their functionalities, these tools are often used with minimal teacher oversight, and university authorities are typically unaware of the usage for such tools. Students often do not officially learn to use these tools as a structured academic context (Zhakota et al., 2024).

1. Methodological Approach

To achieve the objective of this study, an exploratory survey approach was utilized, measuring the frequency of using digital tool and including open-ended questions to gain deeper insights into students' perceptions and use of technology. As students' digital skills, understanding, and use of digital tools can vary among Gen Z (Katz et al., 2022), especially across different disciplines (Mohamed Hashim et al., 2022; Bergdahl et al., 2020), the selected case study focused on a digitalization bachelor course at a university in Sweden, covering students from international business, economics, and informatics programs, participating in the course. The case was conveniently chosen, and the data was collected during the course, in spring term of 2024.

A semi-structured survey was used to collect anonymous data, reducing potential respondent bias. The study examined students' general views and use of digital tools in education. To improve transferability, a representative sample was drawn based on Bryman's (2006) guidelines. Open-ended questions aimed to capture students' perspectives in their own words (Creswell, 1999), investigated students' experiences with digital tools, including benefits, challenges, and suggestions for better use of digital tools in HE. The study received a total of 72 responses (n = 72 out of N = 91), achieving an 80% response rate for most closed-ended questions. Response rates for open-ended questions however ranged from 54% to 76%, and the final two questions were excluded due to insufficient responses.

The questionnaire covered three main segments of 1) digital tools used for information gathering and knowledge acquisition, 2) digital tools for communication and information/document sharing, and 3) suggestions for facilitating effective use of tools. The structured questions assessed the frequency of using digital tools or platforms (in different categories) on a Likert scale with five levels: from 'less than once a week' (level 1) to 'several times a day' (level 5). Students were asked to honestly answer to the questions and a consent form was presented before students participate in the survey. The respondents were given the option to terminate participation or skip any questions, if they did not wish to answer or continue. In this course, the library services and even some lectures were provided by the experts to show students how to use the academic research tools and even included the reference criticism aspects and introduced the reference management systems. The questionnaire did not gather any sensitive or personal data.

Both closed- and open-ended responses were analyzed qualitatively. Digital tools categories were developed based on the available literature and the intended use of them in coursework, knowledge acquisition, and group work and communications. The themes and sub-themes from the open-ended responses, summarized in Table 1, were developed to complement the developed categories.

2. Results and Discussion

Digital tools were categorized into five different categories to cover the information acquisition, communicating information and sharing files. The categories reflect students' insights into the tools students use for academic pursuits, knowledge acquisition, communication, and information sharing.

2.1 Categories of Digital Tools Used for KM in HE

Based on the result of this study, the first identified category is Learning Management System (LMS), a Moodle-based platform, specifically Canvas that is commonly used in Swedish universities in modern education to support KM and academic communication. This digital tool facilitates knowledge sharing and communication among different students and faculty staff (as also discussed by Shawar & Al-Sadi, 2010; Kung, et al., 2012). LMS adoption has surged in most Swedish higher education institutions. As discussed by earlier studies (Shawar and Al-Sadi, 2010; Kung, et al., 2012), the result shows that students use LMS platforms primarily to access course materials, submit assignments, and participate in discussion forums. However, this platform is not rated as an often used for communications in the courses. The daily use of LMS reflects the essential role of such platform in managing coursework and staying updated with academic requirements and gaining knowledge about the course and from the available materials. It also provides students to share their knowledge through forums or ask questions or add reflections. LMS platform: average scale of daily use due to their integral role in coursework.

The second category is social media and communication tools, which have become indispensable, especially for virtual learning and knowledge acquisition and sharing (as also discussed by Hamid, 2020). The result shows that these platforms enable students to join group meetings and interact with instructors during the online sessions. The indicated frequent use of social media including Zoom, Microsoft Teams, Messenger, Google Meet, highlights the importance of such tools as a complement to the physical meetings, in maintaining knowledge management and communication. While these tools are primarily used for interactions, students seem to use these tools often for sharing knowledge and resources, following educational content, and learning in their formal learning through discussion forums such as Discord and WhatsApp. The common use of such social media and communication tools for educational purposes indicates their important role in the academic toolkit and knowledge management. Communication through social media and different tools varied much with a result from several times a day to less consistently used for educational purposes. This is in confirmation of previous studies claiming the use of digital tools may vary based on students' digital skills, understanding, generation, and disciplines (Katz et al., 2022; Mohamed Hashim et al., 2022; Bergdahl et al., 2020).

The third category is Generative AI-based tools, which are increasingly being adopted by students in HE (Bahrini et al., 2023; Jin et al., 2024; Thorne, 2024). Based on the results of this study, this category of tools has quite high frequency use for various academic purposes. The result shows that AI-based tools or GAIs such as ChatGPT and Gemini, assist students for instance in generating ideas, drafting essays, and providing explanations for complex topics. The use of ChatGPT and similar AI tools shows the growing importance of AI in supporting students' learning processes both in the closed- and open-ended questions in this study and the frequency of mentioning GAI tools in the survey was noteworthy (in line with the studies such as Bahrini et al., 2023; Jin et al., 2024; Thorne, 2024). The result shows that GAI Tools are regularly used (toward a daily use), as some respondents mentioned especially during writing-intensive tasks.

The final two categories in this study address productivity tools and research tools. Results indicate that productivity tools, such as Google Workspace (Tamayo & Mosquera, 2024) and Microsoft 365 (Mahliyo, 2024), are frequently used for document creation, task management, and group collaboration, with usage varying according to project needs and deadlines. In contrast, research tools like Google Scholar, scientific databases and university library websites (Mavodza, 2010) are used periodically for academic research, assisting in research, accessing academic papers, and managing references with tools such as Mendeley (Butros & Taylor, 2010). As confirmed by earlier studies (Mavodza, 2010; Butros & Taylor, 2010; Tamayo & Mosquera, 2024; Mahliyo, 2024; Zhakota et al., 2024; Aljawarneh, 2020), the result also confirms the importance and use of both productivity and research tools for tasks like writing research reports and accessing course materials and scientific references. However, while productivity tools are used daily (quite frequently), research tools are indicated by lower frequency use in Figure 1, compared to all other categories of tools.

Figure 1 shows the frequency of use for each category mentioned above. The name of the categories in the survey, as shown in Figure 1, were simplified to enhance student understanding and were later modified based on data analysis and the results of open-ended questions. Category 1, "Learning Management System (LMS)," was "Online learning platform (e.g., Canvas)." Category 2, "Social media and communication tools," was "Scientific search platforms like Google Scholar and library websites." Category 3, "Generative AI-based tools," was "GPT or any AI-based system to obtain information and clarifications (such as ChatGPT, MS-Copilot)." Category 4, "Productivity tools," was "Online platforms for sharing files (e.g., Google Docs)." Category 5, "Research tools," was "Online forum for peer discussion/chat (Discord, WhatsApp)". Figure 2 displays the most frequently mentioned digital tools as a word cloud, based on 156 words provided by respondents. Although the

word cloud is frequency-based, the focus is not on quantitative analysis; instead, the text size indicates the prominence of specific digital tools.

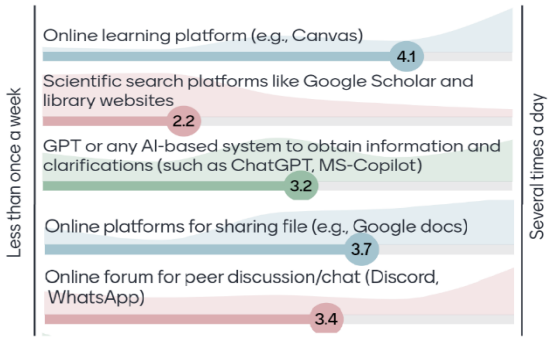

Figure 1: Frequency of the use of digital tools

Figure 2: The most frequently used digital tools

2.2 Themes and sub-themes Presenting the Purpose of Using Digital Tools

Based on the thematic analysis of qualitative data obtained from open-ended questions, the following primary themes, each with associated sub-themes, were developed. A summary of these themes and sub-themes is presented in Table 1. However, these themes and sub-themes are not mutually exclusive and may have some degree of overlap. This thematic framework provides a structured summary of students' perceptions regarding the benefits and challenges of digital tools and summarizes students' suggestions for enhancing the effective utilization of digital tools in higher education.

Table 1: Themes and subthemes to present the purpose of using digital tools

Theme	Sub-theme	Study result and respondents' reflections	Relevant literatures
Benefits of digital tools in KM in HE	Course Management	Accessing Canvas LMS for managing course information: essentially used for tracking course materials, submitting assignments, and checking grades. This tool helps students stay organized and meet academic deadlines.	Williamson, 2021; Shawar & Al-Sadi, 2010; Laal, 2011; Kung, et al., 2012
	Accessing Academic information	Research tools like Google Scholar and library databases provide access to trusted and reliable scholarly source of information and academic contents; crucial for academic learning, conducting research and gathering information for the assignments.	Quarchioni, et al., 2022; Mohamed Hashim et al., 2022; Brewer & Brewer, 2010; Mavodza,2010
	Resource use and information management	Access sources of information anywhere/anytime, both academic resources and AI-based generated information. Use of reference management and online documents enable students to share information and resources (such as reference management tools); essential for maintaining academic flexibility, integrity, and collaboration producing good quality work.	Hamid, 2020; Whalen, et al., 2008; Metaxiotis & Psarras, 2003; Dhamdhere, 2015; Thorne, 2024; Laal, 2011
	Virtual learning and real-time interactions	Social media such as Discord and even messenger facilitate live online discussion, collaboration, and getting clarifications. Other platforms such as Zoom and Microsoft Teams provides supports for real-time meetings and discussions among group members, which enhance collaborative learning and even online supervisions and getting guidelines.	Di Vaio et al., 2021; De Bem Machado, 2022; Aljawarneh, 2020; Tamayo & Mosquera, 2024; Mahliyo, 2024; Zhakota, et al., 2024;
	Project coordination	Managing group tasks and collaborating on common documents and streamlining project coordination. Tools like Google Workspace are part of the project coordination and knowledge management and sharing in group assignments.	Whalen, et al., 2008; Metaxiotis & Psarras, 2003; Dhamdhere, 2015; Butros and Taylor, 2010

Theme	Sub-theme	Study result and respondents' reflections	Relevant literatures
	AI-based information resources	Generative AI tools like ChatGPT and Gemini assist in knowledge acquisition, getting quick reply, access to responses and knowledge developed by GAI anywhere/anytime. GAI tools support brainstorming and drafting, which may increase efficiency and productivity.	Taticchi, et al., 2009; Ritala et al., 2023; Kurtz et al., 2024; Jin, et al., 2024; Hu et al., 2023
Challenges of digital tools in KM in HE	Negatively influence on students' soft skills	Influencing negatively on students' soft skills such as problem-solving and innovative thinking due to overreliance. Enabling a seamless transition to use GAI as a virtual learning environment more than using the assigned academic or scientific resources.	Kurtz et al., 2024; Eloundou et al., 2023; Bahrini et al., 2023
	Reliability of resources and unproved resources for knowledge acquisition	Digital tools which are not certified by academia or teachers may mislead students due to potential inaccuracies and the lack of reliable sources and references to the answers they provide. Assistance with complex problem-solving and the explanation of questions can negatively impact students' development of soft skills, particularly those related to knowledge management skills.	Thorne, 2024; Jin, et al., 2024; Bahrini et al., 2023; Kurtz et al., 2024; Taticchi, et al., 2009; Aghaee & Karunaratne, 2023
	Technical Issues	Students reported problems with internet connectivity and software glitches, hindering their ability to utilize digital tools fully, which is also connected to varies digital skills.	Katz et al., 2022; Laal, 2011; Zins, 2007.
	Learning Curve	Adapting to new tools and platforms without academic and clear instructions would pose difficulties for some students and create barriers to efficient usage and productivity.	Bergdahl et al., 2020; Katz et al., 2022
Suggestions for Improvement	Guidelines for Reliable Resources	Providing guidelines to use existing tools and reliable resources can lead students to formal learning channels and prevent reliance on unproven knowledge.	Hu et al., 2023; Zhakota et al., 2024
	Better Training	More training and tutorials, such as workshops or additional lectures about the use of tools to help students utilize digital tools effectively; enhancing ability to navigate and critically learn from using such tools and maximize these technologies' potential.	Aljawarneh, 2020; Bergdahl et al., 2020: Zhakota et al., 2024
	Integration of Tools	Better integration between digital tools in different categories of tools and academic courses to streamline the learning process, reduce the complexity of managing multiple tools, and improve efficiency. Integrate using tools such as ChatGPT as an educational help and explain the benefits and risks, to make students understand how to use them pedagogically in courses.	Hu et al., 2023; Bahrini et al., 2023

2.3 Benefits and Challenges of Using Digital Tools

Building on prior research (Hamid, 2020; Bahrini et al., 2023; Jin et al., 2024; Thorne, 2024; Tamayo & Mosquera, 2024; Mahliyo, 2024; Zhakota et al., 2024; Aljawarneh, 2020), the result of this study emphasizes the critical role of digital tools in knowledge acquisition and communication in higher education. As previous studies reflect on the positive impact of digital tools on education (Mohamed Hashim et al., 2022; Bergdahl et al., 2020; Williamson, 2021; Quarchioni et al., 2022), this study confirms that most students frequently use technology and digital tools, even for on-campus courses. This extensive use of digital tools underscores the importance of their integration into educational activities and the need of clarifying their role for an effective learning environment.

The results indicate that digital tools like Canvas LMS are primarily used for effective course administration and knowledge management, confirming prior research (by Williamson, 2021; Shawar & Al-Sadi, 2010; Laal, 2011; Kung et al., 2012). Canvas enhances student organization and adherence to course deadlines and tasks by facilitating access to academic resources, managing course materials, facilitating assignment submissions, and enabling grade tracking. This underscores the importance of linking LMSs to other digital productivity and research tools, such as Google Scholar and library databases, to instruct students on how to access and use scholarly resources for academic knowledge.

In line with earlier studies (Di Vaio et al., 2021; Whalen et al., 2008; Metaxiotis & Psarras, 2003; Dhamdhere, 2015; De Bem Machado, 2022; Aljawarneh, 2020), this study highlights the role of social media and communication tools in virtual learning environments and project coordination. Platforms like Zoom, Microsoft

Teams, Google Meet, and messaging apps like Discord, WhatsApp, and Messenger facilitate live discussions, collaborations, and interactions among students and instructors. Tools like Google Workspace streamline group tasks and project management, promoting knowledge sharing within group assignments and adhering real-time communication and collaborative learning

As in previous studies (e.g., Ritala et al., 2023; Kurtz et al., 2024; Jin et al., 2024; Hu et al., 2023; Zins, 2007), the results of this study indicate that GAI tools facilitate rapid information acquisition, by providing quick responses and easy information access. Tools such as ChatGPT and Gemini were frequently used by respondents, despite their relatively recent emergence. Respondents reported using these tools for brainstorming and report drafting, potentially enhancing their productivity (also noted by Taticchi et al., 2009; Ritala et al., 2023; Kurtz et al., 2024). However, the uncertainties and risks associated with the use of GAI-based tools, including the potential to diminish students' soft skills such as critical thinking and independent problem-solving, which are already underemphasized in higher education (discussed also by Aghaee & Karunaratne, 2023).

2.4 Research Contributions

The study results reveal an overreliance on social media and GAI tools, with a higher frequency of use compared to research tools (Figure 1: 3.2 vs. 2.2). Figure 2 highlights ChatGPT, Google Docs, and Google as the most frequently mentioned tools, comparable to the official LMS platform (Canvas), while fewer students mention the use of scientific resources like Google Scholar and library databases, which are crucial for higher education (as indicated by Mavodza, 2010; Butros & Taylor, 2010; Tamayo & Mosquera, 2024; Zhakota et al., 2024). This underscores a cautionary note as social media and GAI tools, which may lack academic certification and reliable references, are more frequently used for formal learning and educators need to provide guidelines on using these tools pedagogically.

Consistent with other research (Kurtz et al., 2024; Taticchi et al., 2009; Thorne, 2024; Jin et al., 2024; Bahrini et al., 2023), the integration of GAI tools must be carefully considered to avoid negative impacts on skill development and ensure information credibility. The lack of systematic integration into academic workflows is a concern. As summarized in Table 1, while GAI tools assist with complex problem-solving and question explanations, their use may hinder the development of crucial knowledge management skills (as indicated by Kurtz et al., 2024; Eloundou et al., 2023; Bahrini et al., 2023), affecting students' ability to independently manage and evaluate information.

The study's findings emphasize the need for instructional academic sessions to teach students the how to use digital tools effectively and academically. Katz et al. (2022) noted the variation of digital proficiency within Gen Z, and respondents in this study highlighted the role of digital skills in today's educational landscape. Therefore, integrating education and training on digital tools into academic curricula can streamline learning processes, simplify tool management, enhance efficiency, and bridge the gap in digital proficiency.

3. Concluding Remarks

This study has explored the landscape of digital tools for knowledge management (KM), shedding light on the use of various tools and applications in higher education (HE). To answer the first research question, the findings highlighted the important role of digital tools often used daily by students in five main categories: Learning Management Systems (LMS), social media and communication tools, generative AI-based tools, productivity tools, and research tools. These tools facilitate knowledge acquisition and sharing, interactions among students and faculty, enhancing accessibility to educational resources and developing the collaborative learning while exceeds physical boundaries.

In addition, to answer to the second research question, the study reveals the benefits and challenges associated with the integration of digital tools. The challenges include issues of knowledge reliability, overreliance on technology, and the need for comprehensive training to optimize the digital tools' pedagogical impacts. There is a clear imperative for HE institutions to strategically integrate digital tools into their curricula while addressing these challenges. This integration should be accompanied by training programs, workshops and educational sessions, to empower students to use these tools pedagogically for academic purposes.

Moreover, educators must ensure that digital tools supplement, rather than replace, traditional methods of knowledge acquisition, thereby facilitating the development of soft skills such as critical thinking and independent problem-solving as well as motivating students to use reliable scientific and peer reviewed references which are more evidence-based. By doing so, KM in HE can employ the full potential of digital tools

to prepare students for the complexities of modern workplaces and cultivate lifelong learners capable of navigating the evolving landscape of knowledge management.

This study contributes to the ongoing discourse on digital transformation in education, highlighting both the opportunities and responsibilities associated with leveraging digital tools for educational purposes. As educational settings continue to evolve, adopting digital tools in a purposeful and balanced manner will be essential for enhancing learning outcomes and preparing students for success in a knowledge-driven society. Further studies would be valuable to explore student's experiences and perception of using digital tools in-depth.

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