OMANARP INTERNATIONAL JOURNAL OF LIBRARY AND INFORMATION SCIENCE.

https://acadrespub.com/index.php/oijlis

Vol. 1, Issue II, Pp. 39-48; March, 2025

KNOWLEDGE MANAGEMENT IN THE FIFTH INDUSTRAL REVOLUTION: THE ROLE OF LIBRARIES

[1]Adebola Aderemi Olatoye and [2]Agbenu David Ogbe

[1]The Nigerian Baptist Theological Seminary, Ogbomoso, Oyo State.
adebolaadeyemo0108@gmail.com +2348038853216, [2]Forestry Research Institute of Nigeria, Jericho, Ibadan, Oyo State. topdavee@yaoo.com +2348033823087

ARTICLE INFO

Received Date: 20th Jan. 2025
Date Revised Received: 25th Jan 2025
Accepted Date: 27th Feb, 2025
Published Date: 6th March. 2025

Citation: Olatoye el at 2025, Knoledge Management in the Fifth Industral Revolution: The Role of Libraries: OMANARP INTER. J. Lib & Info Science. Vol.1, Issues II Pp.39-48 March.2025.

ABSTRACT

The study focused on the role of libraries in knowledge management in the fifth industrial revolution (5IR); particularly, it investigated the knowledge management (KM) practices in the 5IR, the role of KM in driving innovation and competitiveness in the 5IR, and identified the challenges to KM practices in the 5IR. The research population comprised of all 106 librarians in Polytechnics and Colleges of Education in Oyo State. The study adopted the total enumeration technique, and had a total of 87 respondents, which made a return rate of 82%. The descriptive survey research was adopted for the study, and the research instrument was questionnaire, and the data analyses uses tables, frequency, and Mean values. Findings from the study showed that IoT-enabled devices and AI-powered tools are used for knowledge creation and capture, social networks, and collaborative platforms are used for knowledge sharing and collaboration, AI-powered search engines are used for knowledge sharing and retrieval, and they moderately use AI-powered decision support systems for knowledge application and utilisation. Further findings revealed that KM ensures the security of intellectual property, KM promotes innovation, aids informed decision-making, and effective problem-solving. Findings showed that the major challenges to KM practices are technical challenges, and information and data challenges. The research recommended that information managers should take advantage of KM techniques for promoting innovation; and librarians should be trained on how to protect knowledge from Cybersecurity challenges.

Keywords: 5IR, Knowledge Management, Libraries, Technological Advancement, Transformations in society, Information

Introduction

From the end of the 17th century till date, humans have been undergoing revolutions of some sorts, as they go through radical transformations in the society, resulting from the replacement of manual labour with mechanical or automated works. Little wonder Ali, et. al (2022) noted that the first industrial revolution was characterised by the invention of the steam engine in the late 18th century, the second industrial revolution witnessed the discovery of electricity, oil, telephone, radio, and television in the late 19th century, the third industrial revolution was the digital revolution in the mid-20th century, the fourth industrial revolution was the technological revolution in the late 20th century, and the fifth industrial revolution is the advancement of technological advancement. The 5th industrial revolution (5IR) focuses on how we live, work, and interact with advanced technologies, as it builds upon the fourth industrial revolution. The 5IR deals with creating human-centric collaborations, fostering a harmonious relationship between humans and technologies. In the knowledge economy, where data is analysed for decision making, the place of technologies cannot be overemphasised. In the knowledge economy, knowledge management (KM) is paramount for the success of any organisation, regardless of the industries they belong to. Knowledge management is systematic process of identifying, acquiring, organising, storing, retrieving, sharing, and utilising knowledge to achieve organisational goals. Achieving KM in the 5IR would need the expert touch of information professions. Libraries provide support systems by allowing access to emerging technologies needed for managing knowledge; libraries also foster digital literacy, thus enabling individuals to effectively use KM principles.

Research Objectives

1. Identify the knowledge management practices in the 5th industrial revolution
2. Identify the role of knowledge management in driving innovation and competitiveness in the 5th industrial revolution
3. Identify the challenges to knowledge management practices in the 5th industrial revolution

Literature Review

Knowledge management entails all the processes involved from when knowledge is created till when it is utilised. Chandratreya (2025) defined knowledge management in broad terms as the systematic process of capturing, organising, sharing, and effectively utilising knowledge within an organisation to achieve strategic objectives. In present day librarianship, knowledge management is facilitated by the adoption and utilisation of advanced digital technologies like AI, cloud computing, robotics, virtual realities, augmented realities, Internet of Things, bockchain, and metaverse (Adigun, Ajani and Enakrire, 2024; Mashilo and Shekgola, 2024). Tacho, Namande and Awuor (2025) noted that as records play a fundamental role in maintaining the identity of any institution, and these records help the institutions achieve the mission and vision they wish to realize. Hence, it becomes important to manage these records and the resultant knowledge with the state-of-the-art technologies.

Every aspect of librarianship, from the functions of the library to the services, everything are undergoing changes, as a result of the advances in technology. However, as noted by Adigun, et. al (2024), the current revolution era is witnessing a new level of transformation; this is caused by a change that is marked by rapid technological advancement and proliferation of digital contents (Enakrire, et. al, 2024). This rapid technological advancement and development, which characterises the 5th industrial revolution, are, in the opinion of Ali, Ayad and Rubaie (2022), leading us to the question of what tomorrow will be. This is because the rapid technological advancements are somewhat disruptive in nature, even when the technologies build upon those of the fourth industrial revolution (Enakrire, et.al, 2022).

For libraries to remain relevant in the 5th industrial revolution, Enakrire, et.al (2022) noted that they must integrate advance technologies and digital platforms within the library systems, while Adigun, et. al (2024) averred that libraries have come to recognise and accept the importance of aligning library services with the lifestyles and preferences of their user communities. By implication, if libraries do not move with the technological advancement of the 5th industrial

revolutions, they will no longer be suited to render services to their clientele who would want to be served with the aid of highly sophisticated digital technologies, in line with their present day realities.

KM are generally of two types: tacit knowledge, which resides in the skills and experiences of individual within the organisation; and explicit knowledge, which are documented procedures and policies (Chandratreya, 2025). The researcher further posited that the integration of people, processes, and technologies, KM will aid organisations to create value for the organisation, and make the organisation gain a competitive advantage over other businesses within the dynamic business industry. This competitive advantage can be gained by the higher education sector in general (Hagos, et. al, 2025) and the library in particular (Louafi, Nessah and Mahalaine, 2024). A major event that rapidly enhanced the adoption and use of disruptive technologies in library processes in many African countries is the COVID-19 pandemic, as it stopped the regular routine of firms and industries, including the library (Louafi, et. al, 2024).

Methodology

The research is empirical in nature, adopting the descriptive survey research method. The study population consists of the 106 libraries in the Polytechnic libraries and Colleges of Education libraries in Oyo State. The study sample is total enumeration, as the population of the study is manageable. The instrument used to elicit for responses from the respondents was the self-structured questionnaire. The instrument went through face and content validation from expert librarians and information professionals before it was sent to the respondents. Analysis of data was done using statistical tools of tables, frequency, and means. The four (4) point Likert scale of measurement was adopted for the statements on the questionnaire. And the Criterion Mean was 2.5.

Table 1: Study Population

Polytechnics and Colleges of Education in Oyo State	***Ownership***	***Number of Librarians***
Polytechnics & Colleges of Education in Oyo State	**Ownership**	**Number of Librarians**
Adeseun Ogundoyin Polytechnic, Eruwa	State	2
Federal College of Education (Special), Oyo	Federal	37
Federal Polytechnic Ayede, Ogbomoso	Federal	4
Oyo State College of Agriculture and Technology, Igboora	State	10
Oyo State College of Education, Lanlate	State	4
The Oke-Ogun Polytechnic, Saki	State	9
The Polytechnic Ibadan	State	40
Total		104

Presentation of Results

The questionnaire was hosted online on Goodge Form and the link was sent to respondents. 87 of the population responded to the questionnaire, making it a response rate of 82%. These responses are collected and analysed below, using Tables, Frequency, and Means.

Table 2: KM practices in the 5IR

5IR KM in your libraries	***SA***	***A***	***D***	***SD***	***Mean***
Knowledge Creation and Capture					
My library engages with stakeholders in crowdsourcing and co-creation of knowledge and solutions	12	14	27	34	2.05
My library leverage IoT-enabled devices for data collection and capture from different sources	45	24	11	7	3.23
My library utilises AI-powered tools to generate new knowledge, insight, and ideas	42	23	14	8	3.14
Grand Mean					2.81
Knowledge Sharing and Collaboration					
My library uses blockchain technology to ensure secure, transparent, and temper-proof knowledge sharing	9	11	6	61	1.69
My library uses immersive technologies like virtual and augmented reality-based training to facilitate knowledge sharing and training	13	11	18	45	1.91
My library utilises social networks and collaboration platforms to facilitate knowledge sharing and collaboration	47	32	6	2	3.43
Grand Mean					2.34
Knowledge Sharing and Retrieval					
My library leverage on AI-powered search engines to retrieve relevant knowledge assets	51	23	13	0	3.44
My library utilises cloud-based knowledge repositories to store and retrieve knowledge assets	19	12	32	24	2.3
My library utilises digital assets management systems to store, manage, and retrieve digital knowledge assets	54	12	12	9	3.28
Grand Mean					3.01
Knowledge Application and Utilisation					
My library applies virtual assistants and chatbots for knowledge management to patron service and support	8	3	32	44	1.71
My library leverage on data analytics and visualisation tools to apply knowledge and insight to problems	4	23	27	33	1.98
My library utilises AI-powered decision support systems to apply knowledge for decision-making	24	27	21	15	2.69
Grand Mean					2.13

Table 2 showed the major categorisation of KM practices in the 5th industrial revolution. For knowledge creation and capture, the libraries leverage on IoT-enabled devices for data collection and capture from different sources (Mean = 3.23); and also utilise AI-powered tools to generate new knowledge, insight, and ideas (Mean = 3.14); but they do not engage with stakeholders in crowdsourcing and co-creation of knowledge and solutions (Mean = 2.05). However, the sub category had a Grand Mean of 2.81; thus asserting that knowledge creation and capture is among the KM practices in the 5th industrial revolution for librarians in Polytechnics and Colleges of Education in Oyo State.

For knowledge sharing and collaboration, the libraries utilise social networks and collaboration platforms to facilitate knowledge sharing and collaboration (Mean = 3.43); but they scarcely use immersive technologies like virtual and augmented reality-based training to facilitate knowledge sharing and training (Mean = 1.91); and they do not use blockchain technology to ensure secure, transparent, and temper-proof knowledge sharing (Mean = 1.69). The sub category had a Grand Mean of 2.34; thus asserting that knowledge sharing and

collaboration is not among the KM practices in the 5th industrial revolution, for librarians in Polytechnics and Colleges of Education in Oyo State. For knowledge sharing and retrieval, Polytechnics and Colleges of Education libraries in Oyo State leverage on AI-powered search engines to retrieve relevant knowledge assets (Mean = 3.44); as well as utilise digital assets management systems to store, manage, and retrieve digital knowledge assets (Mean = 3.28), but they barely utilise cloud-based knowledge repositories to store and retrieve knowledge assets (Mean = 2.3). Nonetheless, the sub category had a Grand Mean of 3.01; thus asserting that knowledge sharing and retrieval is among the KM practices in the 5th industrial revolution, for librarians in Polytechnics and Colleges of Education in Oyo State.

For knowledge application and utilisation, the libraries do not apply virtual assistants and chatbots for knowledge management to patron service and support (Mean = 1.71); they also do not leverage on data analytics and visualisation tools to apply knowledge and insight to problems (Mean = 1.98); and they scarcely utilise AI-powered decision support systems to apply knowledge for decision-making (Mean 2.69). Also, the sub category had a Grand Mean of 2.13; thus

asserting that knowledge sharing and retrieval is not among the KM practices in the 5th industrial revolution, for librarians in Polytechnics and Colleges of Education in Oyo State.

Table 3: Role of KM in driving innovation and competitiveness in the 5IR

KM as driver of innovation and competitiveness in 5IR	***SA***	***A***	***D***	***SD***	***Mean***
KM enables collaboration among stakeholders, fostering co-creation of new ideas, products, and services	13	12	34	28	2.11
KM ensures the security and protection of intellectual property, safeguarding competitive advantage	56	25	0	6	3.51
KM facilitates rapid knowledge sharing and transfer across organisations, industries, and geographical boundaries	37	29	15	6	3.11
KM helps develop and leverage intellectual capacity	41	18	17	11	3.02
KM leverages collective intelligence capturing, sharing, and utilising knowledge from diverse sources, promoting innovative solutions	9	21	32	25	2.16
KM promotes a culture of innovation through experimentation	43	41	3	0	3.46
KM provides timely and relevant information for informed decision-making and effective problem-solving	38	34	11	4	3.22
Grand Mean					**2.94**

Table 3 showed the roles of KM in driving innovation and competitiveness in the 5th industrial revolution. These roles are KM ensures the security and protection of intellectual property, safeguarding competitive advantage ((Mean = 3.51); KM promotes a culture of innovation through experimentation (Mean = 3.46); KM provides timely and relevant information for informed decision-making and effective problem-solving (Mean = 3.22); KM facilitates rapid knowledge sharing and transfer across organisations, industries, and geographical boundaries (Mean = 3.11); KM helps develop and leverage intellectual capacity (Mean = 3.02).

But KM does not leverages collective intelligence capturing, sharing, and utilising knowledge from diverse sources, promoting innovative solutions (Mean = 2.16); also, KM does not enables collaboration among stakeholders, fostering co-creation of new ideas, products, and services (Mean = 2.11). However, for the roles of KM in driving innovation and competitiveness in the 5th industrial revolution, the Grand Mean of 2.94 showed that KM plays some vital roles in diving innovation and competitiveness in the 5IR.

Table 4: Challenges to KM practices in the 5IR

Challenges to KM practices in the 5IR	***SA***	***A***	***D***	***SD***	***Mean***
Technical challenges					
Cybersecurity threats	59	23	2	3	3.59
Data overload and information overload	54	27	4	2	3.53
Difficulty in keeping up with rapid technological change	43	17	15	12	3.05
Grand Mean					3.39
Human capital challenges					
Difficulty in ensuring diversity, equity, and inclusion	11	12	25	39	1.94
Skills gap (shortage in technical know-how)	19	13	27	28	2.26
Grand Mean					2.1
Information and Data challenge					
Challenge of intellectual property protection	46	35	2	4	3.41
Difficulty in ascertaining data quality and integrity	22	12	23	30	2.3
Information overload and filtering	38	32	11	6	3.17
Grand Mean					2.96

Table 4 showed the challenges that inhibit KM practices in the 5th industrial revolution. For the technical challenges, there are Cybersecurity threats (Mean = 3.59); there is data overload and information overload (Mean = 3.53) also posing as a challenge to KM practice in the 5IR where there is a large volume of data available to the public domain; difficulty in keeping up with rapid technological change (Mean = 3.05) also poses as a technical challenge. The sub category of technical challenges had a Grand Mean of 3.39, signally that the technical challenges are a force to reckon with, in trying to enforce KM practices in the 5IR.

The human capital challenges presented showed that these are challenges that have already been handled by the libraries. Difficulty in ensuring diversity, equity, and inclusion (Mean = 1.94); and skills gap (shortage in technical know-how) (Mean = 2.26); with a Grand Mean for the sub category being 2.1 revealed that the libraries of Polytechnics and Colleges of Education in Oyo State have been able to surmount the human capital challenges, as

they ensure diversity, equity, and inclusion; and they also have capable technical man-power to handle KM in the 5IR.

For the information and data challenges, there is the challenge of intellectual property protection (Mean = 3.41); and there is also the challenge of information overload and filtering (Mean = 3.17) posing as challenge. But these libraries do not experience difficulty in ascertaining data quality and integrity (Mean = 2.3), showing that they have experts and appropriate technologies to ascertain data quality and data integrity. However, the sub category of information and data challenges had a Grand Mean of 2.96, showing that information and data challenges are affecting KM practices in the 5IR.

Discussion of Findings

Research findings showed that for knowledge creation and capture as KM practices, the libraries use IoT-enabled devices for data collection and capture; and they also utilise AI-powered tools to generate new knowledge, insight, and ideas. But these libraries do not engage with stakeholders in crowdsourcing and co-creation of knowledge and solutions. These findings agree with those of Tacho, et. al (2025) who reported in their findings that knowledge creations and capture are enhanced by technology devices, and the collection of information influences service delivery to information seekers.

Research findings showed that for knowledge sharing and collaboration as KM practices, the libraries use social media platforms for knowledge sharing and collaboration; but they do not use technologies like virtual realities or augmented realities, either do they apply blockchain technologies for knowledge sharing and collaboration. These findings agree with those of Chandratreya (2025) who noted that when employees have the right information at the right time, they will perform tasks more effectively, as KM systems enables better collaboration by connecting individuals with complementary expertise and creating a shared knowledge base, while utilising collaborative technologies and knowledge sharing platforms.

Research findings revealed that in knowledge sharing and retrieval as KM practices, the libraries adopt AI-powered search engines, and use digital assets management systems for retrieving and storing digital knowledge; but they do not yet use cloud-based knowledge repositories to store and retrieve knowledge. These findings agree with those of Louafi, et. al (2024) that there has been an exponential growth in knowledge arising from the content-based platforms like blogs and media, as traditional knowledge management methods typically involve knowledge sharing within an organisation, while the advert of these platforms made it possible for organisations who can now trace the employee footprint across the internet using artificial intelligence-based knowledge mapping systems.

Research findings from knowledge application and utilisation as KM practices showed that the libraries utilise AI-powered decision support systems for decision-making; but they do not use virtual assistants and chabots for managing knowledge; and they do not use data analytics and visualisation tools for problem solving. These findings disagree with those of Mashilo and Shekgola (2024)

who reported that chatbots in the 5th industrial revolution are used by students to provide educational support services for their programmes, as well as utilised for communication purposes with students, and provision of information, for learning, and for conducting research.

The research findings for the roles that KM played in driving innovation and competitiveness in the 5IR revealed that through KM practices, there is the security and protection of intellectual property, thus safeguarding competitive advantage; there is the promotion of a culture of innovation through experimentation; KM practices ensure timely and relevant information for informed decision-making and effective problem-solving; it also facilitates rapid knowledge sharing and transfer; as well as helps develop and leverage intellectual capacity. These findings agree with those of Enakrire, et. al (2024) who reported that through adept use of advanced digital resources, digital libraries are able to bridge gaps, facilitate interdisciplinary exploration, and play a vital role in shaping a more interconnected and knowledgeable society within the context of the 5IR. These imply the benefits of knowledge sharing and transfer, and the importance of developing intellectual capacity.

The findings on the technical challenges to KM practices revealed that there are Cybersecurity threats; data overload and information overload; and there is difficulty in keeping up with rapid technological change. These findings agree with those of Adigun, et. al (2024) who noted that data security and privacy constitute a persistent challenge in the context of intelligent libraries; as libraries accumulate and store vast quantities of patron data, they make them potential target for cyber-attacks.

The findings on the human capital challenges to KM practices showed that there are no difficulties in ensuring diversity, equity, and inclusion; and there are no gaps in skills (no shortage in technical know-how), as they have been able to surmount the human capital challenges, as they ensure diversity, equity, and inclusion; and they also have capable technical man-power o handle KM in the 5IR. These findings agree with those of Enakrire, et. al (2024) that paperless libraries in the 5IR ensures inclusivity and access to information for all individuals, by offering adaptive technologies for people with disabilities, ensuring information is accessible through assistive tools like screens readers and magnification software. But the research findings also disagree with those of Adigun, et. al (2024) who reported that libraries are struggling to ensuring equitable access and inclusivity in an increasingly digitized library landscape, and opined that libraries must be cautious not to inadvertently marginalize individuals who lack the necessary digital literacy skills or access to technology.

The findings on information and data challenges to KM practices revealed that there is the challenge of intellectual property protection; and the challenge of information overload and filtering. These findings agree with those of Hagos, et. al (2025) that the ethical challenges to AI-based knowledge management in higher education are data privacy, security, and the potential for bias in AI systems. These challenges are posing great ethical concerns to stakeholders on the consideration of the suitability of setback that these challenges can cause to KM processes.

Conclusion

Knowledge management is essential in the 5th industrial revolution, where emphasis is placed on the advancement of technological innovations; as the 5IR focuses on how technology can fully permeate how humans live, how they work, and how they interact with these advanced technologies. In the 5IR, basic KM practices are broadly categorised into knowledge creation and capture, knowledge sharing and collaboration, knowledge sharing and retrieval, and knowledge application and utilisation. These give a comprehensive idea of how knowledge is managed from when it is created till when it is used for decision-making processes.

The many roles that KM practices play in driving innovation and competitiveness in the 5IR cannot be wished away; as they range from security and protection of intellectual properties, to safeguarding competitive advantages, from innovation through experimentation to informed decision-making. In all, these innovative practices are bedeviled with several challenges, which professional stakeholders must overcome to ensure free flow of KM practices and the benefits in terms of enhancement of innovation and competitiveness.

Recommendations

Based on the research findings, discussions, and conclusions, the following recommendations are made.
All information managers should strive to explore the advantages leveraging KM techniques from diverse sources for promoting innovative solutions.

1. Information managers should collaborate within themselves so as to foster co-creation of new ideas, products, and services.
2. Libraries in Polytechnics and Colleges of Education in Oyo State should be trained as to protect knowledge from technical challenges like Cybersecurity threats, and data and information overloads.
3. Librarians in Polytechnic and Colleges of Education libraries should work with the government to ensure that all challenges related to information and data challenges are addressed.

References

Adigun, G. O., Ajani, Y. A. and Enakrire, R. T. (2024). The intelligent libraries: Innovation for a sustainable knowledge system in the fifth (5th) industrial revolution. *Libri*, 74(3), 211 – 223. https://doi.org/10.1515/libri-2023-0111

Ali, S.H., Ayad, H. and Al Rubaie, M. T. (2022). Fifth Industrial Revolution (New Perspectives). *International Journal of Business, Management, and Economics, 3*(3). 196 - 212. https://doi.org/10.47747/ijbme.v3i3.694

Chandratreya, A. (2025). Revolutionizing knowledge management for competitive advantage. *International Journal of Scientific Research in Engineering and Management (IJSREM)*, 9(1), 1 – 7. https://doi.org/10.55041/IJSREM41234

Enakrire, R. T., Oladokun, B. D., Nsirim, O. and Gaitanuo, P. (2024). Paperless libraries: The trending way

to go in the fifth industrial revolution. *Business Information Review*, 0(0) 1–10. https://doi.org/10.1177/02663821241289793

Hagos, H. G., Lesjak, D., Flogi, A. and Babu, R. B. (2024). Artificial intelligence in knowledge management for higher education: Transformative impact, challenges, and future directions Post-COVID-19. *Journal of Information Systems Engineering and Management*, 10(3s), 344 – 359.

Louafi, B. Nessah, D. and Mahalaine, R. (2024). AI based knowledge management systems: A review of AI techniques, applications and challenges. *Journal of Electrical Systems*, 20(3), 6063 – 6070.

Mashilo, M. and Shekgola, M. (2025). Utilising artificial intelligence chatbots for student support at comprehensive open distance e-learning higher learning institutions in the fifth industrial revolution. *Journal of Education, Society & Multiculturalism*. https://doi.10.2478/jesm-2024-0003

Tacho, M., Namande, B. ., & Awuor, M. (2025). Influence of Records Creation and Capture Policy on Service Delivery at the County Government of Isiolo. *Journal of Applied Humanities and Social Sciences*- ISSN 2791-1594, 4(1), 13–28. https://doi.org/10.35942/jahss.v4i1.25