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Integrating Internet of Things (IoT) into Library and Information Science (LIS) School's Curriculum in Selected Universities in Nigeria

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Keywords: LIS curriculum; Technologies; Internet of Things (IoT); LIS schools; Nigeria

Abstract: This study examined incorporating the Internet of Things (IoT) into the LIS curriculum in selected LIS schools in Southwest Nigeria. The study population comprised final-year students from the LIS Degree programme in Southwest Nigeria's Library and Information Science Department. A total enumeration of respondents was used for the research. Data generated were analysed using descriptive statistics. Findings revealed that the significant technology-related courses in the curriculum of LIS are basic computer operations, web publishing, document management and computer in libraries. Undergraduates positively perceived LIS curriculum preparedness for the Internet of Things (IoT). The major problems affecting the full implementation of technology-based courses of the LIS curriculum in selected LIS schools are shortage of funds, lack of infrastructure, unreliable power supply, inadequate learning resources and library support. The paper recommended an intervention by the Nigerian government to provide financial help to integrate the Internet of Things (IoT) into LIS schools and develop essential infrastructures that will enhance the hands-on experience for students.

Introduction

The Internet of Things (IoT) is a new cycle based on the Internet and green energy, which allows easy access to information (e.g. open data initiatives, open access and open science). It is also referred to as an approaching thunderstorm with a sweeping pattern of change visible at a distance, approaching at a speed that leaves little time to prepare. Integrating the IoT into the LIS school curriculum provides an invaluable opportunity to prepare future information professionals for the ever-evolving technology landscape. By incorporating IoT principles, applications and implications into the curriculum, library schools can provide students

with the knowledge and skills necessary to harness the transformative power of IoT in the library and information profession (Makori, 2017; Mahdi, Ahmad, Qasim, Natiq, Subhi & Mahmoud, 2021). Therefore, library and information science undergraduates need to be exposed to the requisite skills in the curriculum that will enable them to function in the industrial age. There is also a demand for professionals with a mix of traditional and digital subject expertise. The curriculum and practices of LIS education have been developed to match these new expectations (Hashim & Mokhtar 2012).

The technology infrastructure in LIS schools varies from country to country due to low funding (Rosing, Kemp, Hove & Ross, 2015). Saka (2015) stated that there is no uniform or harmonised curriculum for Nigeria's library and information science schools. Each operated their own curriculum. According to Rosing, Kemp, Hove and Ross (2015), the most pressing current issues in LIS education are preparing LIS students for a new role in rapidly changing job responsibilities, increasing student-centred learning opportunities through well-crafted service learning, practicum, internship, skill acquisition and alternative break opportunities; developing concepts surrounding information technology that not only motivate students to learn today's technology but also enable them to assess, adapt and use it; and developing concepts surrounding information technology that not only help students understand today's technology but also enable them to assess, adapt and use whatever develops in the future.

Curricula in library schools and departments are frequently revised or redesigned to meet job demands and industrial revolutions because the information industry is known to be an early adopter of information technology (Chu, 2016). A curriculum for LIS education often reflects what is available to train librarians and information professionals who will gain the necessary knowledge and abilities to become qualified employees in the field and handle the problems that an ever-changing information society provides. As a result, some library schools have examined the concerns of diverse communities and how LIS education and library training must embrace technological abilities, knowledge and practices (Peters, 2012).

The curriculum and methodologies of LIS education are continually being developed to meet new demands (Hashim and Mokhtar, 2012). The curriculum was at the heart of the reform. Because the information sector is an early adopter of information technology, many library schools and departments have changed or redesigned their courses to match job demands and industrial revolutions. A curriculum for LIS education usually mirrors what is offered to train librarians and information professionals who will acquire the essential knowledge and skills to become qualified personnel in the field and meet the challenges of the ever-changing information society. Challenges include the use of artificial intelligence, robotics, and nanotechnology in the information industry. As a result, some library schools have reassessed the issues of diverse populations and how

LIS education and library training must embrace digital competencies, knowledge and practices (Kumar & Sharma, 2010; Peter, 2012). For instance, between 2014-2016, the University of Pretoria, South Africa, won a Carnegie Grant to train young information professionals in selected African countries on various technological trends shaping the library and information industries.

Additionally, Sivathanu and Pillai (2018) enumerated challenges confronting LIS education variations of the program, which tends to confuse students and presents a challenge to prospective employers, such as a shortage of teaching staff in LIS schools as well as curricula that do not align with the job market reality. The study also lists other challenges such as a lack of relevant information resources, low funding for teaching/learning facilities in LIS schools and departments, and low completion rates and wastage. They recommended a curriculum review to realign it with job markets and collaboration among stakeholders to identify ongoing challenges. While reviewing the curriculum to reflect the changing market requirements, some traditional courses had to give way to new and emerging issues and trends in librarianship. In line with modern trends, LIS education has been re-conceptualised and repositioned to equip graduates with the appropriate attributes to develop and maintain high-quality professional practice in a rapidly changing society (Tumuhairwe, 2013).

However, the effective integration of IoT into the educational system is a complex, multifaceted process that involves not only technology, but also the deliberate effort of all stakeholders in its deployment. The IoT concept has sparsely occurred in the literature on academic libraries since its conception in 2016. However, its components such as the internet of things (IoT), embedded systems, cyber-physical systems, cloud computing, information management, big data, data acquisition/handling and network security, among others, are already accessed and variably applied in academic libraries (Ocholla & Ocholla 2020) and ultimately being taught sparingly in the library schools. In today's context, LIS spells out what information is entailed in interactions with communication technologies and a relationship with cognitive and affective knowledge (Dervin & Nilan 2016). Today's world needs culturally competent institutions that can provide cultural competence guidelines within the library and information science/studies (LIS) profession to promote and develop collections for users, irrespective of their background. Therefore, LIS schools should include technology-based course units in their curricula to fulfil this need. This is because things are changing, and the changes are due to the development of advanced technology that replaces the human workforce with automation, artificial intelligence (AI) and robotics (Tella, 2020). Library and information science undergraduates need to be exposed to the requisite skills to function in the 4th industrial age of the curriculum. Additionally, there is a demand for professionals with traditional and digital subject-knowledge skills in the present era, hence the need to find out if IOT has been infused into the curriculum of library schools in Nigeria. The choice of the

geographical location of the study, South-West, Nigeria, according to the National Universities Commission has the highest number of LIS graduates annually, hence the result can be generalised.

Statement of the Problem

Diversity in LIS education is a crucial concern in the LIS curriculum. This must be sufficient to enable LIS students to design and offer inclusive services to various people in the information age (Edogbo, 2018). It is unarguable that technological and other societal changes have substantially impacted Library and Information Science (LIS) education worldwide. Of all the developments in LIS education, LIS curricula are the most prominent and observable (Peter, 2017). LIS curricula strive to prepare students for leadership in the new age, and are often reviewed so that the graduates are equipped with what they need to succeed and thrive after obtaining their degrees in LIS (Itani, Jaramillo & Chonko, 2019). The rapid development of technology in all countries has also changed individual and social life. Consequently, the integration of IOT into the LIS curriculum will provide a collaborative and content-creating environment for both the teachers and the students, thus providing a collaborative approach to learning. However, in reality, can we say that the library schools have actually incorporated IOT into their curriculum? Hence, there is a need to examine the integration of internet of things (IoT) into library and information science (LIS) School's Curriculum in Selected Universities in Nigeria.

Objectives of the Study

The following objectives guided this study:

1. To identify the various technology-related courses in the curriculum of the selected LIS schools in Nigeria that reflects IoT;
2. To examine undergraduates' perception of LIS curriculum preparedness for the LoT industrial revolution in selected LIS schools in Nigeria;
3. To find the problems affecting the full implementation of the Internet of Things (IoT) -based courses in selected LIS schools in Nigeria.

Research Questions

1. What are the various technology-related courses in the curriculum of the selected LIS schools in Nigeria that reflect the Internet of Things (IoT)?
2. What is the undergraduates' perception of LIS curriculum preparedness for the IoT in selected LIS schools in Southwest Nigeria?

3. What problems hamper the incorporation of IoT into the LIS curriculum in the selected LIS schools in Southwest Nigeria?

Literature Review

It is unarguable that technological and other societal changes have substantially impacted Library and Information Science (LIS) education worldwide. Literature has revealed that the most evident and measurable changes in LIS education are traceable to curricula and academic library services (Chu, 2016). For instance, Ocholla and Ocholla's (2020) study of a content analysis of websites of 26 public universities' libraries in South Africa found out that some academic libraries are already responding to the 4th industrial revolution by providing services such as availability of WiFi, 24/7 study areas, research commons, group study areas, maker spaces, borrowing ICTs (e.g. laptops), e-Resources (e.g. eBooks, databases, etc.), e-Catalogue, digital scholarship (including institutional repositories), research data services (e.g. RDS, RDM), open scholarship, information literacy, research information services, reference management tools (e.g., Endnote), libguides, tutorials (video) and Ask-a-librarian.

The relevance and sustenance of library and information science education today will depend largely on the quality of faculty and students and their ability to use exponential technologies such as robotics, nanotechnology, artificial intelligence and quantum computers, all of which are products of the IoT that meet users' information needs. The argument was corroborated in a study on curriculum development of LIS study programme in the 4th industrial age; the findings revealed that students should have the knowledge creation, information literacy, information ethics, information business, visual information design, IT-Based Entrepreneurship, digitalisation, Information Retrieval, web design, collection management, database management, library automation, graphic and electronic publishing management, knowledge management, Organizational Communication, Library Public Relations, Writing Scientific Papers, Multimedia Communication and Visual Information Design (Marlini, 2020).

According to Oparah (2016), newer LIS schools appear to follow older schools' modified curricula. Examining these schools' curricula, some emphasise library science courses, while others struggle to balance library science and information communication technology. Ocholla, Dorner and Britz (2013) succinctly defined the curriculum as a fundamental part of any educational or training program to provide not only a list of the courses or modules offered in each educational program but also meaningful information on the content, objectives, learning outcomes, method and duration of the course. According to Lukeman and Njoku (2014), library and information science (LIS) education can only be meaningfully considered in general education and its cultural milieu.

Peretomode (2004), cited in Ossai and Nwabuwe (2023), observed that Nigeria, like other countries, recognised education as the major instrument affecting national development. According to Singh & Chander (2014), the allure of modern communication technology has persuaded many librarian educators to focus on it and disregard elements of librarianship that do not fit within these technological constraints. The "lure on modern communication technologies" has performed a significant role in LIS education. According to Majanja (2020), most LIS schools have built relevant ICT modules and combined ICT knowledge into standard courses, indicating significant progress in infusing ICT expertise. Singh & Chander (2014) found that the gap between what is taught in many library and information science schools (LIS) and what is practiced in most libraries is significant and widening. When evaluating the study's findings, Johnson (2011) found a misalignment between job expectations and the aims of library schools. When looking at the findings of surveys of library schools in the Caribbean and Latin America, Johnson (2011) observed some misalignment between employer expectations and library school priorities, even though library schools appeared to be achieving employers' major needs. According to Kim, Lee, Chun & Benbasat (2014), the primary areas for librarians are knowledge organisation and retrieval, promotion of culture and knowledge, knowledge of literature, library organisation and management and information technology. Similarly, Mortezaie and Naghshineh (2012) undertook a comparative study of LIS graduate courses in the UK, the USA, India and Iran. They discovered that the efficiency of the courses offered is related to the state of the information sector in each country and that the gap between LIS education in industrialised and developing nations is expanding. Many factors are at play in the LIS curriculum (Sivathanu & Pillai, 2018). While it is possible to anticipate that professional body accreditation will lead to some consistency in fundamental educational areas that match employers' requirements at an international level, this is not always the case. According to Singh & Chander (2014), the ALA accreditation process is not based on national criteria.

According to Abiola (2022), some of the challenges inhibiting the full exploitation of IoT in academic libraries in Nigeria are security/privacy issues, technical know-how, lack of standardisation, erratic power supply as a result of high cost of maintaining alternate power supply. Similarly, in the LIS curricula, challenges such as inadequate infrastructure for teaching and learning, outdated/changing curricula, insufficient human and financial resources, inadequate ICT oriented practical work, lack of access to critical information resources for learning and poor information communication among key participants in library schools have debarred the full implantation of IoT in the curriculum in Nigerian library schools.

Methodology

This study is a survey of an ex-post facto design. The study population was final-year undergraduates in the Department of Library and Information Science at Tai Solarin University of Education, Adeleke University, University of Ibadan and Lead City University. These schools were selected in southwest Nigeria, because they had been established for at least ten years or more. The population consisted of three hundred and fifty (350) undergraduates. The total enumeration technique was adopted to capture all the final-year undergraduates. Out of the 350 copies of the questionnaire administered to the students, only three hundred and thirty-eight (338) were retrieved. A total of 338 copies of a questionnaire were used for the study. The instrument had four sections: A – D. Section A focused on respondents' biodata, that is Age, Institution, and Gender. Sections B, C and D had items that gathered responses on information technology courses in the curriculum, undergraduates' perceptions of the curriculum and the challenges, and the research questions were analysed using frequency count and percentages.

Results

Research Question 1: What are the various technology-related courses in the curriculum of the selected LIS schools in Nigeria that reflect Internet of Things (IoT)?

Table 1: Various technology-related courses in the curriculum of LIS

Technology-related courses in the LIS curriculum	Frequency	Percentage(%)
Basic computer operations	212	62.7
Publishing	195	57.7
Web document management	193	57.1
Computer in libraries	174	51.5
Introduction to a database management system	164	48.5
Computer and data processing	159	47.0
Multimedia resource	156	46.2
Information network	155	45.9
Internet Information Resources	150	44.4
Computer application to library process	140	41.4
Information and development with technology	140	41.4
Information technology	140	41.4
Automation and Information centre	126	37.3

Computer system and Data processing	125	37.0
Introduction to Computer	121	35.8
Information structure and system	121	35.8
Information science and modern technology	120	35.5
Website design	113	33.4
Management of electronic resources	112	33.1
Digital libraries and preservation	112	33.1
Multimedia application in libraries and information services	112	33.1
Contemporary technology libraries	97	28.7
Introduction to information science	92	27.2
Database management	89	26.3
Information retrieval technologies	89	26.3
Multimedia librarianship	84	24.9
Information systems and networks	80	23.7
ICT in libraries and information centres	80	23.7
Multimedia information resources	79	23.4

The results in Table 1 revealed that the prominent technology-related courses in the curriculum as affirmed by the majority of the respondents are Basic computer operations 212(62.7%), Web publishing 195(57.7%), Web document management 193(57.1%) and computer in libraries 174(51.5%), Hence, the major technology-related courses in the curriculum of the selected LIS schools are basic computer operations, web publishing, web document management and computer in libraries.

Research Question Two: What is the undergraduates' perception of LIS curriculum preparedness for the IoT in selected LIS schools in South-west Nigeria?

Table 2: Undergraduates' perception of LIS curriculum Preparedness

Perception	SA	A	D	SD
Experience gained in the information technology-related course will prepare me for employment in the library and information science field in future	170(50.3%)	142(42.0%)	5(1.5%)	21(6.2%)

Perception	SA	A	D	SD
Generally, my ICT skills have improved greatly after taking information technology-related courses	155(45.9%)	158(46.7%)	10(3.0%)	15(4.4%)
I believe I have a competitive advantage over people not exposed to technology-based courses	153(45.3%)	133(39.35)	31(9.2%)	21(6.2%)
My exposure to LIS schools has adequately prepared me for the 21st-century library	149(44.1%)	174(51.5%)	15(4.4%)	-
I can now assist library users in locating electronic information resources after being exposed to information technology-related course	147(43.5%)	156(46.2%)	30(8.9%)	5(1.5%)
I can now assist library users in locating relevant materials in the OPAC	134(39.6%)	189(55.9%)	-	15(4.4%)
Before taking the technology-based courses, I couldn't use software, but now I can work with library software	134(39.6%)	172(50.9%)	21(6.2%)	11(3.3%)
I can work in an automated library as a result of my exposure to technology-based courses	124(36.7%)	199(58.9%)	5(1.5%)	10(3.0%)

Perception	SA	A	D	SD
I can now design a website to a great extent after taking information technology-related courses	123(36.4%)	179(53.0%)	20(5.9%)	16(4.7%)
I can now use library software to manage the collection of a library	119(35.2%)	183(54.1%)	25(7.4%)	11(3.3%)
I can effectively digitised library collections if such opportunities present itself in the future	99(29.3%)	156(46.2%)	51(15.1%)	32(9.5%)
I don't have a flair for IT based courses	74(21.9%)	126(37.3%)	92(27.2%)	46(13.6%)
I strongly feel the curriculum has not prepared me to function effectively as a librarian in the nearest future	68(20.1%)	114(33.7%)	86(25.4%)	70(20.7%)
I believe LIS schools are wasting their time introducing IT courses	38(11.2%)	65(19.2%)	114(33.7%)	121(35.8%)

Results in Table 2 reveal that the majority, 170(50.3%), of the respondents affirmed that the experience gained in the information technology-related course would prepare them for employment in the library and information science fields. In comparison, 21(6.2%) respondents had a contrasting view. The majority, 155(45.9%), of the respondents affirmed that, generally, ICT skills improved greatly after taking information technology-related courses, while 15(4.4%) of the respondents had a contrary view. The majority, 153(45.3%), of the respondents believed they had a competitive advantage over people not exposed to technology-based courses, while 21(6.2%) had a contrary view. Hence, the major perception of undergraduates towards the LIS curriculum showed that the experience gained in the information technology-related course would prepare them for employment in the library and information science field in the future. Thus, the undergraduates displayed a positive perception of the LIS curriculum.

Research Question 3: What problems hamper incorporating IoT into the LIS curriculum in the selected LIS schools in Southwest Nigeria?

Table 3: Problems affecting the integration of IoT into the LIS curriculum

Challenges	SA	A	D	SD
Shortage of funds	222(65.7%)	91(26.9%)	25(7.4%)	-
Lack of infrastructural facilities	180(53.3%)	126(37.3%)	27(8.0%)	5(1.5%)
Unreliable power supply	175(51.8%)	138(40.8%)	25(7.4%)	-
Inadequate learning resources and library support	140(41.4%)	173(51.2%)	20(5.9%)	5(1.5%)
Inadequate staff and expertise	140(41.4%)	157(46.4%)	41(12.1%)	-
Inadequate time allocated	139(41.1%)	158(46.7%)	31(9.2%)	10(3.0%)
Lack of LIS policy	131(38.8%)	176(52.1%)	21(6.2%)	10(3.0%)
Acute shortage of experienced and capable faculty members	131(38.8%)	155(45.9%)	52(15.4%)	-
Inadequate funding	128(37.9%)	174(51.5%)	30(8.9%)	6(1.8%)
Uniformity in nomenclature	125(37.0%)	147(43.5%)	56(16.6%)	10(3.0%)
Over-enrolment	124(36.7%)	120(35.5%)	82(24.3%)	12(3.6%)
Medium of instruction and employability of LIS students	121(35.8%)	142(42.0%)	70(20.7%)	5(1.5%)
Inadequate teaching techniques and internships	119(35.2%)	166(49.1%)	53(15.7%)	-
Changing the nature of ICT	114(33.7%)	154(45.6%)	47(13.9%)	23(6.8%)
Irrelevant texts on information technology	113(33.4%)	182(53.8%)	26(7.7%)	17(5.0%)
LIS departments lack consensus on the duration of courses	95(28.1%)	172(50.9%)	61(18.0%)	10(3.0%)
Inadequate teaching method	93(27.5%)	187(55.3%)	41(12.1%)	17(5.0%)

The results in Table 3 reveal that the majority, 222(65.7%), of the respondents agreed that the shortage of funds affects the incorporation of IoT into the LIS curriculum. In addition, 180(53.3%) of the respondents agreed that a lack of infrastructure performs a significant role in it. While 93(27.5%) respondents agreed that inadequate teaching methods affected the LIS curriculum's IoT integration, 17(5.0%) respondents had a contrary view. Hence, the major problems affecting the incorporation of IoT into the LIS curriculum in selected LIS schools are a shortage of funds, lack of infrastructure, unreliable power supply, inadequate learning resources and library support.

Discussion of Findings

The study revealed that the significant technology-related courses in the curriculum of the selected LIS schools are basic computer operations, web publishing, web document management and computers in libraries. This finding is consistent with Oparah's (2016) research, which found no uniform or harmonised curriculum for Nigerian university libraries and information science schools until 2018. According to Oparah (2016), the newer LIS schools appear to follow the older schools' modified curricula. Examining these schools' curricula, some emphasise library science courses, while others struggle to balance library science and information communication technology. This finding is worrisome because less emphasis is being placed on other technology-based courses expected to prepare students for 4IR. The study further showed that the significant perception of undergraduates towards the LIS curriculum is that the experience gained in the information technology-related course prepares them for employment in the library and information science fields in the future (Hashim & Mokhtar, 2012). Thus, undergraduates displayed a positive perception of the LIS curriculum. This position is consistent with Kundak's (2017) study investigating final-year LIS students' motivations for enrolling in the LIS program and their perceptions of the LIS profession and program. The study revealed that employment opportunities and the influence of individuals (mentors, faculty members, family, and friends) were the major factors behind their choice of LIS as a profession.

Similarly, according to Larivière, Sugimoto and Cronin (2012), there is a trend in today's Library and Information Science (LIS) education towards a greater emphasis on information technology (an unavoidable byproduct of huge technical breakthroughs), users' views and multidisciplinary. Cherry, Duff, Singh & Freund (2011) further opined that LIS graduates have new career opportunities as new positions open up in knowledge management information construction (research data management and digital humanities). While LIS education is evolving, arguments over it are becoming more heated. Changes in the structure, breadth and concentration of specific LIS schools/programs necessitate a thorough assessment of the literature on the state of the field and the

data gathered from connected stakeholders (such as employers, LIS students, graduates and professors).

The study showed that the major problems affecting the status of the LIS curriculum in selected schools are a shortage of funds, lack of infrastructure, unreliable power supply, inadequate learning resources and library support. This finding is comparable to that of David-West (2021), who asserted that new trends, as a result of the fourth Industrial Revolution era worldwide, have created significant challenges for library and information science curriculum in Nigeria. Some of the major issues facing library schools in Nigeria include inadequate infrastructure, outdated/changing curricula, insufficient human and financial resources, a lack of access to necessary information resources for learning and poor information communication among key players in library schools.

Conclusion

Based on the findings of this study, it was concluded that the significant technology-related courses in the curriculum of LIS are basic computer operations, web publishing, web document management and computers in libraries. Undergraduates displayed a positive perception of the LIS curriculum; that is they believed that experience gained in the information technology-related course would prepare them for employment in the library and information science fields. Additionally, their ICT skills significantly improved after taking information technology-related courses. Moreover, the major problems affecting the status of the LIS curriculum in selected schools are a shortage of funds, lack of infrastructure, unreliable power supply, inadequate learning resources and library support.

Recommendations

Based on the findings of this study the following recommendations were suggested

1. LIS curricula must be overhauled to reflect more of Internet of Things in a rapidly changing information society.
2. The existing faculty members should be trained to cope with the new requirements of LIS schools. Nigerian government should come forward through its agents to provide financial help to LIS schools to develop essential infrastructure to offer hands-on experiences to students.
3. The National University Commission and Librarians Registration Council of Nigeria should harmonise LIS curriculum benchmarks in line with global practices to prepare LIS graduates for best practices in the 21st century.

4. Highly skilful technology-related information science courses can run through two semesters in each session to enable all aspects of the course to be treated sufficiently and should be made compulsory for the undergraduate in the LIS curriculum.
5. LIS schools should share a uniform curriculum with the same information science components that will serve as a guide to students

References

- Cherry, J. M., Duff, W. M., Singh, N., & Freund, L. (2011). Student perceptions of the information professions and their master's program in information studies. *Library & Information Science Research*, 33(2), 120-131. <https://doi.org/10.1016/j.lisr.2010.09.004>
- Chu, H. (2016). Curricula of LIS programme in the USA: A content analysis. In: Khoo, Ch., Singh, K. D., & Chaudhry, A. S. (Eds.) *Proceedings of the Asia-Pacific Conference on Library and Information Science Education and Practice 2006 (A LIEP 2006): preparing information professionals for leadership in the new age: Singapore, 3-6 April 2006* (pp. 328-337). Singapore: School of Communication Information, Nanyang Technological University.
- Dervin, B., & Nilan, M. (2016). Libraries and information services in a time of change: Exploring information behavior. *Library Trends*, 64(2), 215-228.
- Edogbo, E. O. (2018). Diversity and social justice as curricular initiatives in LIS education. *Journal of Education for Library and Information Science*, 59(2), 121-131.
- Hashim, C., & Mokhtar, O. (2012). Designing library and information science curriculum for local and global job market: A case study of the university of Ilorin, *Nigerian Libraries*, 47, 115.
- Itani, O. S., Jaramillo, F., & Chonko, L. (2019). Achieving top performance while building collegiality in sales: It all starts with ethics. *Journal of Business Ethics*, 156(2), 417-438. <https://doi.org/10.1007/s10551-017-3598-z>
- Johnson, D. (2011). Persistent issues in library and information science education in Africa. *Education for Information*, 12, 429-436. <https://doi.org/10.3233/EFI-1994-12403>
- Kim, T. H., Lee, J.-N., Chun, J. U., & Benbasat, I. (2014). Understanding the effect of knowledge management strategies on knowledge management performance: A contingency perspective. *Information & Management*, 51(4), 398-416. <https://doi.org/10.1016/j.im.2014.03.001>
- Kumar, K., & Sharma, J. (2010). Library and information science education in India: A historical perspective. *DESIDOC Journal of Library & Information Technology*, 30(5), 3-8.
- Kundak, N. F. (2017). *LIS final year students' opinions about their profession* [Unpublished master thesis]. Ankara, Hacettepe University.

- Larivière, V., Sugimoto, C. R., & Cronin, B. (2012). A bibliometric chronicling of library and information science's first hundred years. *Journal of the American Society for Information Science and Technology*, 63(5), 997-1016. <https://doi.org/10.1002/asi.22645>
- Mahdi, M. N., Ahmad, A. R., Qassim, Q. S., Natiq, H., Subhi, M. A., & Mahmoud, M. (2021). From 5G to 6G technology: Meets energy, Internet-of-Things and machine learning: a survey. *Applied Sciences*, 11(17), 8117. <https://doi.org/10.3390/app11178117>
- Majanja, M. K. (2020). The status of electronic teaching within South African LIS Education. *Library Management*, 41(6/7), 317-337. <https://doi.org/10.1108/LM-05-2020-0084>
- Makori, E. O. (2017). Promoting innovation and application of internet of things in academic and research information organizations. *Library Review*, 66(8/9), 655-678.
- Marlini, S. (2020). Zoom for BIPA Online Learning during COVID-19 Pandemic. *International Conference on the Teaching English and Literature*, 1(1), 46-50. <https://ejournal.karinosseff.org/index.php/icotel/article/view/64>
- Mortezaie, S., & Naghshineh, C. (2012). A comparative case of graduate courses in library and information studies in the UK, USA, India and Iran: Lessons for Iranian LIS professionals. *Library Review*, 51(1/2), 14-23. <https://doi.org/10.1108/00242530210413904>
- Njoku, E. G. (Ed.). (2014). *Encyclopedia of remote sensing*. Springer New York p. 344-348.
- Ocholla, D., Dorner, D., & Britz, J. (2013). Assessment and evaluation of LIS education: global commonalities and regional differences—South Africa, New Zealand, and USA. *Libri*, 63(2), 135-148.
- Ocholla, D. N., & Ocholla, L. (2020). Readiness of academic libraries in South Africa to research, teaching and learning support in the Fourth Industrial Revolution. *Library Management*, 41(6/7), 355-368. <https://doi.org/10.1108/LM-04-2020-0067>
- Oparah, U.N. (2016). Integration of ICT in the reference services curricula of Nigerian library and information science schools. *The Information Technologist*, 3(1), 27-35. <https://doi.org/10.4314/ict.v3i1.31968>
- Ossai, A. G. & Nwabuwe, S. N. (2023). Education Law and Management Teacher's Professional Ethics in Secondary Schools Delta State Nigeria. *Al-Hayat: Journal of Islamic Education*, 7(1) 87-97. <https://alhayat.or.id/index.php/alhayat/article/view/371>
- Peters, J. (2012). Including multiculturalism in the curriculum of library and information science programs. *Multicultural Perspectives*, 14(2), 82-86.
- Peters, M. A. (2017). Technological Unemployment: Educating for the Fourth Industrial Revolution. *Journal of Self-Governance and Management Economics*, 5(1), 25-33. <https://doi.org/10.22381/JSME5120172>

- Peter, J. F. (2019). Library and information science education and changes in the library and information science professional field. *International Journal of Library and Information Science*, 51(4), 292-303.
- Rosing, M., Kemp, N., Hove, M., & Ross, J. W. (2015). Process Tagging-A Process Classification and Categorization Concept. In M. von Rosing, A. W. Scheer, H. von Scheel (eds.). *The Complete Business Process Handbook*, 123-171.
- Saka, K. A. (2015). Trends in Library and Information Science Education in Nigeria in the 21st Century. Being a paper presented at the international conference on 21st century Education at HCT Dubai Men's College, UAE, November 7(1) 209-224.
- Singh, K. P., & Chander, H. (2014). Professional inclination of library and information science (LIS) students of India: A Study of socioeconomic background and career choice factors. *International Journal of Knowledge Content Development & Technology*, 3(2), 5-27. <https://doi.org/10.5865/IJKCT.2013.3.2.005>
- Sivathanu, B., & Pillai, R. (2018) Smart HR 4.0 – how industry 4.0 is disrupting HR. *Human Resource Management International Digest*, 26(4), 7-11. <https://doi.org/10.1108/HRMID-04-2018-0059>
- Tella, A. (2020) Repackaging LIS professionals and libraries for the fourth industrial revolution. *Library Hi Tech News*, 37(8), 1-6. <https://doi.org/10.1108/LHTN-02-2020-0016>
- Tumuhairwe, J. N. (2013). Review of library and information science education in Africa: Case studies of Uganda and South Africa. *African Journal of Library, Archives and Information Science*, 23(2), 253-264.

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Włączenie Internetu rzeczy (Internet of Things – IoT) do curriculum w nauczaniu Bibliotekoznawstwa i Informatyki Naukowej w wybranych Uniwersytetach w Nigerii

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Anuoluwa Awodoyin jest starszym wykładowcą i pełniącą obowiązki kierownika wydziału w Departamencie Bibliotekoznawstwa i Informatyki Naukowej, Tai Solarin University of Education, Ijagun, Nigeria. Dr Awodoyin posiada tytuł licencjata w dziedzinie zarządzania zasobami informacyjnymi (Uniwersytet Babcock, Nigeria), magistra bibliotekoznawstwa i informacji (Uniwersytet Ibadan, Nigeria) oraz doktora bibliotekoznawstwa i informacji naukowej (Uniwersytet Ilorin, Nigeria). Dr Awodoyin uczy zarówno studentów studiów licencjackich, jak i podyplomowych i publikowała zarówno w lokalnych, jak i międzynarodowych placówkach badawczych na temat współczesnych problemów w bibliotekoznawstwie i informatyce. Jest również dwukrotną laureatką grantu University of Pretoria, Department of Information Science South-Africa Carnegie Funded dla młodych specjalistów w dziedzinie bibliotekoznawstwa i informatyki w Afryce w 2014 i 2019 roku. Jest również laureatką stypendium CODATA-RDA School of Research Data Science, RPA w 2021 r. Dr Awodoyin jest certyfikowaną bibliotekarką w Nigerii, członkinią National Association of Library and Information Science Educators (NALISE) oraz Association for Information Science and Technology (ASIST). Jej zainteresowania badawcze to eduka-

cja odnośnie do. bibliotekarstwa i technologii informacyjnych, technologie informacyjne oraz usługi użytkowe i referencyjne.

Olatokunbo Okiki jest bibliotekarzem na Uniwersytecie w Lagos w Nigerii. Obecnie jest kierownikiem Działu Automatyki w Bibliotece Uniwersytetu w Lagos; jednostki koordynującej infrastrukturę ICT i elektroniczne zasoby informacyjne. Pełni również funkcję koordynatora Repozytorium Instytucjonalnego (IR). Dr Okiki uzyskał tytuł licencjata (Hon), MLS i doktora na prestiżowym Uniwersytecie w Ibadanie w Nigerii. Jego zainteresowania badawcze obejmują między innymi umiejętności korzystania z informacji, struktury usług informacyjnych, procesy digitalizacji, zastosowanie/wdrażanie ICT w bibliotece i zarządzanie wiedzą. Jest aktywnym członkiem Nigerian Library Association (NLA) Lagos State Chapter oraz członkiem komitetu uniwersyteckiego ds. webometrii, Servicom, Environmental Evidence Synthesis, Knowledge Translation (EESKT) i Open Educational Resources. Jest autorem kilku artykułów w renomowanych czasopismach lokalnych i międzynarodowych. Prezentował również ustnie swoje badania na konferencjach zarówno lokalnych, jak i międzynarodowych.

Słowa kluczowe: program nauczania odnośnie do bibliotekarstwa i technologii informacyjnych; technologie; Internet rzeczy (IoT); szkoły bibliotekarstwa i technologii informacyjnych; Nigeria

Streszczenie: W badaniu tym zbadano włączenie Internetu rzeczy (IoT) do programu nauczania LIS w wybranych szkołach bibliotekarstwa i technologii informacyjnych w południowo-zachodniej Nigerii. Populacja badana składała się ze studentów ostatniego roku z programu bibliotekarstwa i technologii informacyjnych w Departamencie Bibliotek i Informacji Naukowej w południowo-zachodniej Nigerii. Do badania wykorzystano całkowite wyczerpanie respondentów. Wygenerowane dane analizowano za pomocą statystyk opisowych. Wyniki ujawniły, że znaczące kursy związane z technologią w programie nauczania bibliotekarstwa i technologii informacyjnych to podstawowe operacje komputerowe, publikowanie w Internecie, zarządzanie dokumentami i komputer w bibliotekach. Studenci pozytywnie postrzegali przygotowanie programu nauczania bibliotekarstwa i technologii informacyjnych do Internetu rzeczy (IoT). Główne problemy wpływające na pełne wdrożenie opartych na technologii kursów programu nauczania bibliotekarstwa i technologii informacyjnych w wybranych szkołach bibliotekarstwa i technologii informacyjnych to brak funduszy, brak infrastruktury, zawodne zasilanie, niewystarczające zasoby edukacyjne i wsparcie biblioteczne. W dokumencie zalecono interwencję nigeryjskiego rządu w celu zapewnienia pomocy finansowej w celu zintegrowania Internetu rzeczy (IoT) ze szkołami bibliotekarstwa i technologii informacyjnych i opracowania niezbędnej infrastruktury, która zwiększy praktyczne doświadczenie uczniów.

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Die Integration des Internet of Things (IoT) in das Lehrprogramm für Bibliotheks- und Informationswissenschaft an ausgewählten Universitäten in Nigeria

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Anuoluwa Awodoyin ist eine erfahrene Dozentin mit einem Doktorgrad. Sie ist Leiterin des Lehrstuhls für Bibliotheks- und Informationswissenschaft an der Tai Solarin Pädagogischen Universität in Ijagun, Nigeria. Dr. Awodoyin hat einen Bachelorabschluss in Informationsressourcenmanagement von der Babcock Universität in Nigeria, einen Masterabschluss in Bibliotheks- und Informationswissenschaft von der Universität Ibadan in Nigeria sowie einen Dokortitel in Bibliotheks- und Informationswissenschaft von der Universität Ilorin in Nigeria. Dr. Awodoyin unterrichtet sowohl Bachelor- als auch Postgraduiertenstudierende und veröffentlicht in lokalen und internationalen Forschungseinrichtungen zu zeitgenössischen Themen im Bereich Bibliotheks- und Informationswissenschaft. Sie wurde zweimal vom South-Africa Carnegie Funded mit Stipendien ausgezeichnet und war in den Jahren 2014 und 2019 im Rahmen von Stipendien für junge Fachleute im Bereich Bibliotheks- und Informationswissenschaft am Lehrstuhl für Bibliotheks- und Informationswissenschaft der Pretoria Universität in Südafrika tätig. Dr. Awodoyin ist auch Stipendiatin der CODATA-RDA School of Research Data Science in Südafrika im Jahr 2021. Sie ist eine zertifizierte Bibliothekarin in Nigeria und Mitglied des Nationalverbands der Bibliotheks-

und Informationswissenschaftler (National Association of Library and Information Science Educators, NALISE) sowie des Verbands für Wissenschaftliche und Technische Information (Association for Information Science and Technology, ASIST). Ihre Forschungsinteressen umfassen Bibliotheks- und Informationswissenschaft, Informationstechnologie und -nutzung sowie bibliografische Dienste.

Olatokunbo Okiki ist Bibliothekar an der Universität Lagos in Nigeria. Derzeit ist er der Leiter der Abteilung für Bibliotheksautomatisierung an der Universitätsbibliothek in Lagos, einer Einheit, die die Telekommunikationsinfrastruktur und elektronische Informationsressourcen koordiniert. Er fungiert auch als Koordinator des Institutionellen Repositoriums (Institutional Repository – IR). Dr. Okiki hat seinen Bachelorabschluss mit Auszeichnung, einen Masterabschluss in Bibliotheks- und Informationswissenschaft sowie einen Dokortitel an der renommierten Universität Ibadan in Nigeria erworben. Seine Forschungsinteressen umfassen nicht nur Informationskompetenz, Strukturen von Informationsdiensten, Digitalisierungsprozesse, Anwendungen von Informations- und Kommunikationstechnologie (ICT) in Bibliotheken und Wissensmanagement. Er ist aktives Mitglied der Niederlassung des Nigerianischen Bibliotheksverbands (Nigerian Library Association, NLA) in Lagos und Mitglied des Universitätsausschusses für Webometrie, der Initiative Service Compact with All Nigerians (Sevikom), Environmental Evidence Synthesis Knowledge Translation (EESKT) und Open Educational Resources. Dr. Okiki hat auch mehrere Artikel in angesehenen nationalen und internationalen Fachzeitschriften veröffentlicht und präsentierte seine Forschungsergebnisse auf nationalen und internationalen Tagungen.

Schlüsselworte: Lehrprogramm für Bibliotheks- und Informationswissenschaft; Technologien; Internet der Dinge (Internet of Things – IoT); Schulen für Bibliotheks- und Informationswissenschaft; Nigeria

Zusammenfassung: In dieser Studie wurde die Integration des Internets der Dinge (Internet of Things – IoT) in den Lehrplan für Bibliotheks- und Informationswissenschaft (BIN) an ausgewählten BIN-Schulen im Südwesten Nigerias untersucht. Die Befragtengruppe umfasste Absolventen des letzten Studienjahres im Fach BIN an den Instituten für Bibliotheks- und Informationswissenschaft im Südwesten Nigerias. Die Gesamtzahl der Befragten wurde in die Untersuchung einbezogen. Die generierten Daten wurden mithilfe deskriptiver Statistiken analysiert. Die Ergebnisse zeigten, dass wichtige technologiebezogene Kurse im Lehrplan für BIN grundlegende Computernutzung, Online-Publishing, Dokumentenmanagement und Computeranwendungen in Bibliotheken umfassten. Die Studierenden bewerteten die Vorbereitung des BIN-Lehrplans auf das Internet der Dinge positiv. Die Hauptprobleme, die die vollständige Umsetzung der technologiebezogenen Kurse im Lehrplan für BIN an den ausgewählten BIN-Schulen beeinflussen, sind finanzielle Engpässe, fehlende Infrastruktur, unzuverlässige Stromversorgung, unzureichende Lehrmittel und bibliothekarische Unterstützung. In dem Artikel wurde empfohlen, dass die Regierung Nigerias eingreifen sollte, um finanzielle Unterstützung für die Integration des Internets der Dinge an BIN-Schulen bereitzustellen und die notwendige Infrastruktur zu entwickeln, um die praktischen Erfahrungen der Schüler zu verbessern.