

The Fourth Industrial Revolution (4IR) And Librarians’ Core Competencies In Academic Libraries

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Abstract

This paper discusses the characteristics and the effects of the Fourth Industrial Revolution (4IR). The 4IR has brought about new requirements on the core competencies of academic librarians and the impact on higher education. The need for new knowledge, skills, and abilities to operate seamlessly. Universities have become open global market wherein competitive intelligence is needed for visibility and competitiveness. University libraries are redefining their purpose as an academic, organ with increased instructional, technological, and social roles. Societal changes directly exert upward pull on the library's people-focused services; which now require new behaviour, attitude, knowledge, skills and abilities; which this paper has enunciated. The paper stresses the importance of soft skills and appropriate leadership behaviour. The institutional role of academic libraries are changing with emphasis on access, free flow of information and knowledge sharing, moving from ownership to access.

Keywords: *Academic libraries, Core Competencies, Fourth Industrial Revolution, Librarians*

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I. Introduction.

The world is going through the Fourth Industrial Revolution(4IR); moving from the era of “ownership” to that of “access”. The term was coined in 2016 by Klaus Schwab, the Founder and Executive Chair of the World Economic Forum. Countries are taking action to promote open data policy. The essence of this endeavour is to make research data easily, and abundantly available for economic and social value benefits of the society. The Fourth Industrial Revolution (4IR) is characterized by the fusion of the digital, biological and physical worlds, as well as growing utilization of new technologies such as artificial intelligence, cloud computing, robotics, 3D printing, the internet of things, and advanced wireless technologies, among others, (Ndungu and Signe,2020). It is about information technology and cyber physical system. This data revolution presents opportunities and challenges especially in the higher education sector. Universities are meant to be the guardian of reason, inquiry and philosophical openness, preserving pure inquiry from the common dominant public opinion. The higher education sector has become an open global market, wherein the need for visibility, and competitiveness have been brought to the fore; resulting in a constantly changing and challenging funding structures which have resulted in increased pressures on higher education stakeholders. The changing supply and increased demand for higher education have resulted in the application of competitive intelligence and innovations in the higher education sector. Academic libraries have been playing important roles in the education mission of their institutions as the history of education and that of library cannot be separated. Academic libraries in this paper refers to libraries that are attached to universities, and of the myriad of higher education institutions, none can satisfactorily operate without a library, as a satisfactory library is a necessary condition for a satisfactory university.(Soyinka&Omagbemi,2005). University libraries are eminently visible in the university’s skilled creation of knowledge, teaching, learning, and studying activities; not excluding the acquisition and transfer of knowledge, to modifying its behaviour to reflect new knowledge and insight. Knowledge has been more available, shareable, and accessible than it has ever been due to new technologies. The core value of access to data is sharing, and this aligns with the 4IR. Academic libraries are also more concerned than ever with the acquisition, availability, access, and sharing of knowledge. The 4IR academic libraries have thus become institutions which facilitate adaptive and generative learning, encouraging librarians to become problem solvers. All these have put academic libraries under sustained focus, hence the university is described thus: “A university is just a group of buildings gathered around a library. The library is the university“(Foote, 1993)

The 4IR and globalization have brought about a shift in knowledge management from strategies that focus on mere dissemination to those that promote access, knowledge sharing and creative innovations. Academic libraries are expected to keep pace with the changes and demands of the clients and patrons, changes

in technologies which are often in a state of flux, and the continually changing patterns in the range of users and their demand patterns and behaviours. The issue in this new approach is not information technology per se; but organizational learning and its effectiveness, as well as economic and social benefit to society. This means librarians cannot remain as "traffickers of knowledge artifacts" Librarians must lead, inform, instruct, teach, and mentor; because the university library is not a service centre like the power generating house or the works department which is also essential to the running of the university. The library remains a central laboratory where formal teaching goes on through the teaching of information literacy, Study Skills as well as informal teaching, equipping users with lifelong education wherein students and other users become effective information users.

The library in the university remains the backbone which circulates the lifeblood through the acquisition, processing, preserving and dissemination of required knowledge and information through its resources and personnel and librarians remain the key to the library, not technology, nor the OPAC. Librarians are specifically trained to research, harness, evaluate, preserve and present information. These skills are not wholly dependent on technology, thus they are enduring. The 4IR presents greater access to a large volume of information which can only increase and enhance the quality of researching. Librarians are versed in understanding the economic, legal, and social values and issues on the use of information, as well as ethical and legal implications of access and use. Saunders (2020) believes changing trends have implications for the knowledge, skills, and abilities (KSAs) that current librarians and the emerging librarians and other information professionals must acquire and master to operate unobtrusively. This presupposes that the current information professionals must continue to learn and relearn, while the library schools will need to review their curriculum in order to equip the emerging information professionals with new knowledge, skills, and abilities.

Academic libraries are essentially an integral part higher education institutions. Academic libraries support the teaching, learning, and studying processes, as well as supporting faculty and students research endeavours, and lifelong learners. Academic librarians provide technical and academic support to faculty and students. This people-focused role of academic libraries based on access, as well as the new technologies require a significant level of expertise in specific areas. The services provided could be physical or digital and it could be within a designated building or physical space or in a virtual space or a combination of the two. Academic libraries remain as the bridge which keeps the faculty and the students off the murky waters. The university library is in a vantage position to help both the students and the faculty in ensuring improved standard of tertiary education as well as improving quality of graduates. According to Okebukola,(2007), the status and role of the library have transcended the collection of valuable scrolls of notable philosophers to the aggregation of millions of volumes of books and journals in print and electronic forms.

In view of the growing complexity in the 4IR education landscape, librarians can no longer confine their expertise and competencies to the library, nor can the library afford only a few proactive leaders

Corrall and Jolly (2019) aligning with these submissions give examples of invaluable inputs of academic librarians. These include reframing information literacy for diverse contexts, aligning institutional goals and library initiatives, strategic collaboration in disciplinary and library spaces settings, leadership and partnership in developing open educational resources, organizing and reorganizing stakeholders' engagements, professional development tools for teaching librarians and approaching educational innovations as a social process. Omagbemi; Adebowale; Towolawi; Adeyemi&Eghe-Ohemwen.(2019) are of the opinion that academic libraries as part of their social role, through mentoring can help students address many questions that may arise in students' life. These may include:

Emotional, social, and intellectual development;

Self-identification and heterosexual development;

Relationship with home and authority;

Leisure and music, Television and;

Assertive influence of ICT, and the need to utilize ICT intelligently.

In order to address these demands, academic librarians have the need to acquire specific knowledge, skills, and abilities referred to as competencies in order to remain effective and efficient.

What Are Competencies?

Competencies may be simply defined as knowledge which leads to effective use of skills and abilities in the execution or performance of a task, activity or role successfully and efficiently. It is the applied skills and knowledge that enable people to successfully perform in a profession, educational matters or other life contexts. Competency, is about what an organization does best, and how it expects its members to accomplish this.

Competencies as a framework assist in refocusing employees' behaviour on aspects that matter most in giving an organization a competitive edge. Ultimately, the benefits of competencies are to the employees, the managers, and the organization. It is therefore believed that the success of libraries is determined largely by the skills, abilities, traits, personal attitudes, motives and knowledge of their leaders, who set the standards and these

characteristics are referred to as competencies. Competencies may also be defined as skills or knowledge which lead to superior performance. Measurable skill, abilities and personality traits that identify successful employees against defined roles within an organization. Hollenbeck, McCall & Sisler (2006) submit that competency models are not ends in themselves; but an attempt to capture the experience, knowledge and lessons and developing future leaders which university libraries and their parent institutions seriously need in view of the changing dynamics of higher education.

Mech (1996) says universities being faced with technological challenges, fierce competition growing alternatives to their services and the basic tenets of higher education being challenged and questioned need librarians who can think globally without jeopardizing local peculiarities. Universities are confronted with growing number of problems and limited resources; are therefore looking for librarians who can help in solving some of the higher education challenges.

Singh (2019) argues that change is the challenge which leads to the gateway of development through humans curiosity and intelligence; leading societal transformation. He concludes that modern library serves ASA digital information hub which demands for a skillful, techno-friendly librarian to manage information explosion and satisfy the user community through consultancy services, speedy access, fast retrieval and instant dissemination of information in various formats, such as text, audio, video, image and multimedia which can be easily created, stored, organized, accessed and transmitted. The format in which information is transmitted in the 4IR is treated as marketable commodity and a valuable resource in developed countries; wherein high premium is placed on time and easy sharing of information.

Core Competencies For Effective Functioning In An Academic Library

Libraries have a critical role to play in creating a conducive climate for students, faculty, researchers and other users to pursue their career and individual personal needs.

Omagbemi (2017) asserts that leadership remains a hallmark of librarianship and higher education professionals, noting that within the library profession, most of the leadership was exercised by only a few individuals. This implies that unless more librarians lead the change in the day to day reality of how the profession is defined and practiced, the librarians' skill will be obsolete thereby marginalizing librarians' contributions to the academic enterprise.

Ammons-Stephen, Cole, Jekins-Gibbs, Richies & Weave (2009) Identify four central competencies with 17 broad competencies. These include

- i. Cognitive ability: which includes problem solving, decisions making and reflective thinking.
- ii. Vision: This includes global thinking creative and innovative thinking and forward looking.
- iii. Interpersonal effectiveness: which includes cultural competence, accountability, team work and team building; development, inspirational, motivational, communication skills and managerial effectiveness.
- iv. Change Management: Including, resource management, Strategic planning Collaboration and flexibility/adaptability.

A fifth was later added which is

- v. Personal Attributes which include principled/ethical, honest, humble gracious and teachable.

Al Ansari and Al khadler (2011) from their study Leadership Competency Model for Library and Information Professionals in Kuwait identify 42 main competencies for library and Information professionals in Kuwait. Countries like Canada, USA, and Kuwait have developed document which define the knowledge to be possessed by all to practice librarianship while they expect those in academic libraries, school libraries, special libraries, government libraries to possess some specialized knowledge beyond the obvious ones.

The competencies were further analyzed and they arrived at top 20 competencies which leaders of any type of library must possess.

These competencies are enumerated below in order of ranking:

1. High Ethical Standard
2. Achievement of organizational goals
3. Self Confidence
4. Trustworthiness
5. Active
6. Initiative and Readiness to act
7. High Motivation and Achievement/ staff
8. Effective Communication /work relationship
9. Open mindedness/ acceptance of new and (dissenting ideas)
10. Listening actively
11. Self-improvement
12. Service improvement
13. Sound/ timely decisions making

14. Self-controlling-emotions
15. Confronting/ Solving problems
16. Fair evaluation of subordinates, others and situations.
17. Optimistic view
18. Understanding others' needs and emotions
19. Knowledge of own strength/ weaknesses
20. Appreciation others' opinions/ ideas

One may deduce from this listing that attitude and behavior are predictors of a satisfactory work or job performance.

The American Library Association (ALA), codifying the core competencies of librarianship lays out specific skills, qualities and areas of knowledge needed to be acquired by librarians. Some of these include the under listed:-

- i. Foundation knowledge of the profession
- ii. Leadership and Management Skills
- iii. Research and contribution to knowledge and the profession
- iv. Information Literacy Skills
- v. Information Technology Skills
- vi. Emotional intelligence and Interpersonal Skills
- vii. Conflict Resolution Skills
- viii. Reference and users Service
- ix. Information Resource Skills
- x. Collections/Resource Development Skills
- xi. Organization of Recorded knowledge and Information. xii. Advocacy, Fund Raising and Marketing Skills
- xiii. Continuing Education and Life- long Learning skills
- xiv. Teaching and mentoring role for Library and Information Professionals in Kuwait.

1. Foundation Knowledge of the Profession

Academic librarians are expected to have a strong foundation knowledge of:

- i. The information environment within which they operate, its social, cultural, economic and political peculiarities
- ii. Librarianship and Professional Practice
 - The ethics, values, and foundational principles of library and information profession
 - The role of libraries and librarians in the promotion of intellectual freedom, democratic principles, and seeing the social role of the library as a tool.
- iii. The Library and the University
 - The structure
 - Decision making bodies/ processes
 - Committees and their mandates
 - Budget process
 - Policies and procedures
 - Resource development strengths(subject areas)
 - Key services for students
 - Campus environment
 - Institutional Mission, Vision and Goals
- iv. The history of libraries/librarianship and types of libraries
- v. The history of human communication and its impact on libraries
- vi. Legal issues related to the academic environment
 - Knowledge of copyright and how it affects the library- reserves, photocopying copy and transfer of digital contents
 - Knowledge of license models relating to service and resources provision
 - Disability Act, Freedom of Information Act (FOIA)
- vii. Certification to practice
- viii. Scholarly Communication Model and Practices – Institutional Repositories, Open Educational Resources (OER) etc.

2. Leadership and Management Skills

Academic librarians are expected to influence their environment and must develop:

- Leadership – Influence, inspire and motivate others to strive for excellence
- Financial Management
- Human resources Management
- Service and resource development
- Risk management
- Projects management
- Assessment and evaluation
- Partnership and collaboration

3. Research and contribution to the profession

• Research and publications in scholarly journals, presentations at professional conferences, books, technical reports and monographs.

- Conferences- presentations and sharing experience
- Formal study to attain faculty requirements by libraries
- Conference management- planning, organizing, professional programmes
- Professional Association – Participating actively and holding executive post.
- Engagement in community service initiatives
- Keeping informed and abreast of trends in academics and professions
- Research Models and Methods
- Grant writing- Pursuit of avenues available for grants

4. Information Technology Skills

- ICT application and Competence
- Emerging web technology- major trends in web development including on-line social networking tools – twitter, Facebook, Myspace, web 2.0 etc.
- Electronic resource management – acquisition management and access
- Institutional Repositories – structure, content and use
- Database Management- understanding how data bases are designed and structured for convenient data/ information retrieval
- Learning management system (LMS/CMS)

5. Emotional Intelligence and Interpersonal Skills

- Emotionally intelligent employees are more productive, effective and efficient. It is now regarded as a leadership tool.
- As much as the traditional skills of writing and verbal communications are important, the 4IR librarian must be able to build and maintain relationship
- Connect with Management, student leaders, close to faculty, and the ICT Centre.

Advocate for the library's central place on campus. Interpersonal skill is a necessity for academic librarians

6. Technical knowledge

- This refers to Information Resources Skills
- Organization of recorded knowledge and information
- Reference services
- Resources/collection development

7. Continuing Education and Life-long Learning

- Continuing professional development
- The role of the library in providing material to support lifelong learning to patrons
- Conversant with learning theories instructional methods, achievement measures and their application to libraries
- Teaching and learning of concepts, processes and skills used in seeking, evaluating and using recorded knowledge and information

8. Teaching and Mentoring Role

The University Library is a central academic organ and librarians are involved in formal and informal teaching. The University Library can assist students by:

- Organizing a general orientation of facilities resources and services

- Training students to exploit library resources
- Providing a general knowledge of channels of scientific and technical information communication and their importance
- Briefing on the use of indexing, abstracting computerized information retrieval systems
- Assisting in the transfer of information to the students to facilitate the development of knowledge
- Encouraging students to seek librarians assistance when needed
- Teaching use of library / study skills, Instructional activities.
- Providing a positive professional model for mentees
- Display in action and communication the realities of the professional world
- Letting them know that the goal is success
- Be able to guide them through many situations
- 9. Information Literacy Skills
 - Involves recognizing information needs
 - Identifying needs, defining questions to be answered
 - Locate and retrieve appropriate sources of information, understanding the structure, its production and dissemination. Using indexes and other search tools effectively. Using appropriate techniques to and evaluating result
 - Evaluate information and its sources critically
 - Understand different types of sources and formats and how to use them
 - Evaluate relevance and reliability of information retrieved
 - Synthesize information retrieved, integrate it into current knowledge and also apply it the original information needed.
 - Present the newly acquired knowledge for the use of others. Determining audience's need and best way to communicate
 - Properly cite sources

Saunders (2020), opines that Standards and Guidelines serve as baseline which may not fully reflect the most current and specific needs in the field. They are often supplemented with trend reports on current issues which have implications in terms of knowledge, skills, and abilities required to productively respond to current demands in the field. The Association of College and Research Librarians (ACRL) for instance in its 2016 and 2018 publications listed issues relating to data services, research data management, data science, and research data set acquisitions as trending issues. Logically, an increase in data services demand in academic libraries remains a signal for a new knowledge need with corresponding handling skills and efficiency and ability to deliver.

Hsin-liang Chen and Yin Zhang (2017) report emphasis on skills related to data management, and creation, quantitative and qualitative analysis, statistics, as well as teaching and training related to data. The emphasis on information literacy and library instruction in surveys suggest the importance of instructional skills among academic librarians. Studies by Saunders (2020; Anderson and Garcia (2020) do confirm the importance of library instruction as well as assessment of students' learning outcomes. Information literacy and fake news are also pointed out as major areas of interest to academic libraries. Saunders (2020) identifies ten skills regarded as core by a survey on academic librarians; and seven of these skills could be regarded as soft skills. This agrees with several other studies which have emphasized the importance of soft skills in librarianship; aside from the professional skills of knowledge of professional ethics, evaluation and selection of information sources, and search skills.

Goleman (2011) asserts that most leaders are alike in one crucial aspect: they all have a high degree of emotional intelligence. He believes that in spite of the relevance of intelligence quotient, and technically skills, they remain, "threshold capabilities" as entry point requirements for executive positions. Recent studies have pointed to the direction of emotional intelligence as a sine qua non for leadership. Sparrow and Knight (2006) regard emotional intelligence (EI) as changeable, develop able, and above all, it is a competence which is highly influential of personal and organizational outcomes. It is often argued that the level of EI significantly affects job performance. Changes in academic librarianship are constant and continuous, as the intellectual and technological demands and information seeking behaviours of users often exert upward pull for new knowledge, abilities, and skills on the part of librarians.. Scholars are therefore of the opinion that changes in society and environment are equally continuous, bringing about new requirements, demands, and expectations of today's and tomorrow's organizational leaders. The concept of emotional intelligence (EI) presupposes that members of a group must be nurtured, developed, motivated, and led rather than managed. Sparrow and Knight (2006) illustrating societal changes and associated new requirements.

The table below, adapted from Sparrow and Knight (2006) specifies requirements, the needs, and expected outcomes for organizations which embrace and encourage the application of emotional intelligence.

Globalization + Competence	Need for	Higher productivity(Fewer staff working better together)
Competition + Rate of Change	Need for	Creativity and Flexibility
Team working	Need for	Relationship Management
Collaborative Working	Need for	Relationship Management
Movement from things to people	Need for	Move from Management to leadership
Labour mobility + People as asset	Need for	Motivate
People as asset	Need for	Develop
Specialization (e.g. Customer Service)	Need for Engage	Engage whole of fully rounded person
Delaying + Stress	Need for	Self-Management
Removal of bureaucracy and hierarchy	Need for	Self-Relationship Management

Table: 1.0: Societal Changes and Associated New Organization Requirements: Adapted from Tim Sparrow and Amanda Knight (2006).

In conclusion, considering the important role of academic libraries in the higher education, and the changing knowledge requirement in the 4IR, the need for specified competencies cannot be over emphasized. The competencies earlier highlighted cannot go in isolation, without appropriate leadership behaviour and attitudes. Appropriate leadership style remain a secret weapon in understanding the behaviour and attitudes of members of a group, a needed skill for effective and efficient job performance. A critical mass of EI, empowering behaviour will ultimately enhance librarians' job performance and operational effectiveness, hence the emphasis on soft skills. Librarians who are already engaged must be exposed to trainings at regular intervals to keep abreast with trends in the profession and the society who are users and potential users of information resources. Emerging librarians should be equipped with trainings and professional exposures that would make them to be proactive and pragmatic, having been exposed to dynamic curriculum. These would make it possible for academic librarians to keep pace with changes in the profession, society, technology, and other innovations, as well as changes in the needs and information seeking behaviors of library users..

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The Fourth Industrial Revolution (4IR) And Librarians' Core Competencies In Academic Libraries

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