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PAPER

Framework for knowledge management curricula in Africa: an analysis of existing programmes and recommendations for the future

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Abstract
This paper is based on a study that assessed information and knowledge management curricula in selected universities in Africa with a view to identifying convergence and possible gaps. The study assessed the justification of the programmes, their rationale and purpose, curriculum outcomes, and career opportunities. Further, the paper analysed the content structure and delivery mode, and identified a cluster of courses with emphasis on professional interest and occupational linkages. A review of relevant literature informed the study on the trends in implementation of the knowledge management curriculum. A review of universities websites was done to identify universities that offer information and knowledge management courses. Through a phenomenological research design, a structured online questionnaire was designed and distributed to 15 universities in Africa. The findings indicate that knowledge management programmes were developed in the context of national goals, global Sustainable Development Goals, development plans and the occupational needs of the information and knowledge industry. There were major similarities in the curriculum offered in the respective universities. For example, the occupational professional skills and competencies exhibited by the curricula prepared the learners to work as knowledge managers and practitioners in the industry. It was observed that the knowledge management curricula emphasises professional discourse as a substantial body of theoretical knowledge that forms the intellectual foundation of the discipline. The study has proposed a framework to guide in the development and implementation of knowledge management curricula in Africa.

Keywords: knowledge management; frameworks; curriculum; review parameters; learning theories; learning outcomes; universities; Africa

1 Introduction

Knowledge generated within the universities and research institutes is expected to be applied in sectors such as health, agriculture, transport, information and communication technology (ICT), among others. Adoption of emerging technologies in the 4th Industrial Revolution (IR) has enhanced the deployment of information and knowledge management systems (Anshari and Hamdan, 2022) . The 4th and 5th Industrial Revolution (4IR/5IR) are characterized by fusion of technologies and integration of robotics, knowledge oriented systems and artificial intelligence (AI), big data, nanotechnology, quantum computing, Internet of Things, 3D printing, among others (Hönigsberg, Dinter & Wache, 2020; Wilson, 2002). As new technologies emerge, new ways and techniques of managing information are required to support development needs. Thus, the capacity to train, conduct research and use knowledge across societies fosters industrial and socio-economic development of knowledge societies (see, for example, Nyhan, 2002).

The two broad objectives of knowledge societies are: social transformation and wealth generation. Social transformation is addressed through education, health care, agriculture and governance create opportunities of employment generation, high industrial growth, transparent

society, and rural prosperity (UNESCO, 2005, 2020 and 2021). These objectives are influenced by several forces such as economic, social, political, global, and technological developments. On the other hand, wealth generation pillars such as energy, conventional ecology, mineral resources, telemedicine, native knowledge products and the services sector create opportunities for knowledge-based products, technologies, values, and processes (Rowley and Hartley, 2008) needed for transformation of the society. To transformation of society requires knowledge systems that enable ease of retrieval of knowledge, tools for sharing knowledge to ensure its application and use to solve society problems and enhance innovativeness across countries and continents.

The African Agenda 2063 (African Union Commission, 2015), for instance, aims at providing internal coherence and coordination to continental, regional and national frameworks and plans adopted by the African Union, regional economic integrations, member states' plans and institutional strategies. Thus, increasing recognition of the value of knowledge and information to individuals, organizations and communities requires proper identification, location, interpretation, and use of information and knowledge. In particular, many universities have developed and implemented knowledge management programmes in addressing the global SDGs, national development plans and professional and occupational needs of the information and knowledge industry. In Africa, several universities have launched knowledge management programmes, including:

- International Management University, Namibia;
- Stellenbosch University, South Africa;
- University of South Africa;
- KCA University Kenya; and
- The Technical University of Kenya.

In addition, most of the universities offering information science programmes offer knowledge management course, either as an option or as a core course. As Africa is moving towards globalization to cope with the dynamic world, it is important to assess how best the universities are adopting knowledge management curriculum. It is noted that disruptive technologies may positively affect deployment of ICT to support strategies of knowledge sharing.

As universities and colleges prepare for the future interactive learning, they must incorporate knowledge management, and new technologies such as virtual and augmented reality, AI, and big data analytics, into their curricula and teaching methods. Deployment of 4IR/5IR technologies enhances student experience by providing access to personalized and tailored educational services, such as online tutoring, virtual internships, and career guidance through AI. This will enable universities to create more immersive and engaging learning experiences for their students. .

1.1 Statement of the Problem

Many universities globally have instituted programmes based on the needs of the societies where some organizations recognize the value of knowledge management and the relevance of knowledge capture in their businesses. However, the key obstacles associated with knowledge management in organizations and societies are lack of effective knowledge sharing tools, lack of a conducive environment for knowledge sharing, and difficulty in sharing knowledge across disciplines and domains . The challenge emanates from the training being offered and how content is structured. Knowledge management acquisition, sharing and utilization may benefit the society if universities adopt knowledge management learning models such as experimental, adoptive, assimilation, Bloom's (Bloom, 1956), and the Japanese models . Further, professional practice, interests and goals and KM content that provide a substantial body of theoretical and practical knowledge should be considered. The learning outcomes, objectives, and occupational opportunities should be clearly stated. The challenge for universities in Africa is the ability to contextualize their knowledge management programmes to address the needs of organizations and institutions. The key challenge is that knowledge management is not yet well understood, profiled and publicly recognized, which makes it hard to argue for knowledge management. A stronger community of African Universities, which follow a common, well argued and scientifically well proven argument, will help all universities in promoting knowledge management curricula. This study proposes a framework to guide in the development and implementation of curriculum review for knowledge management in Africa.

1.2 Purpose and objectives

The purpose of this paper was to assess information and knowledge management curricula in selected universities in

Africa with a view to identifying convergence and gaps. The specific objectives that guided this study were to:

- Explore the kind of curriculum being implemented in universities in Africa and assess the occupation professional skills and competencies exhibited by the curricula.
- Examine the parameters of the programmes, the rationale and purpose of the programmes, the proposed curriculum outcomes, and the career opportunities.
- Analyse the structure content and identify a cluster of courses in view of professional interest and occupational linkages, and identify areas of convergence and gaps in the curricula.
- Propose a framework and recommendations to guide in the development of the knowledge management curriculum in Africa.

2 Knowledge management learning theories

Curriculum review and development should integrate aspects of academic discipline of the study and a professional field of practice, which creates a need to rely on theoretical or conceptual models of knowledge management (Rubin 2004; Dalkir, 2005). In Trait theory, professions are accepted or rejected based on whether they possess certain traits (Rubin, 2004) including body of knowledge, training and practice. Dalkir summarizes knowledge management as strategies, tools, and techniques, including storytelling, peer-to-peer mentoring, and learning from mistake (all have precedents in education, training, and artificial intelligence practices). The multidisciplinary nature of KM draws upon a vast number of diverse fields such as organizational science, cognitive science, linguistics and computational linguistics, information technologies such as knowledge-based systems, document and information management, electronic performance support systems, and database technologies, information and library science, technical writing and journalism, anthropology and sociology, education and training, and storytelling and communication studies.

Various efforts have been made to guide conceptual development of KM systems. Rademacher (2011) applies the Bloom's Taxonomy of Cognitive and the Greenwood's Six C's of the Knowledge Supply Chain to elaborate on knowledge management. Whereas the Bloom's model uses six cognitive levels (knowledge, comprehension, application, analysis, synthesis, and evaluation), Greenwood's model uses six supply chain criteria (create, clarify classify, communicate, comprehend and group create). For example, in knowledge socialization (tacit to explicit), besides creating capabilities through document management systems, there is ability to convert the tacit issues underlying the creation into explicit form. Leavitt (2011) provides a guided three organizational learning theories: 1) the experiential learning theory from the cognitive school; 2) adaptive and generative learning theory, also from the cognitive school; and 3) assimilation theory from the behavioural school. Whereas the experiential learning theory (ELT) is based in psychology, philosophy, and physiology, it has significantly influenced leadership and organization development and contributed to principles of learning organizations. Its basic premise is that learning occurs through the combination of grasping and transforming experience. The above theories indicate three key features provide a primary criterion for curriculum development: the learning process, target and context.

To design a learning process, the most important consideration is the knowledge source, and product-process focus. How learning occurs is motivated by a wheel of learning through the four-step process: reflecting, connecting, thinking, and acting and the three-step process of knowledge acquisition, sharing and utilization. To integrate the knowledge management as a practice in the wheel, models such as the resource model, Japanese model and process model come into play. For example, the Japanese model, created by Nonaka and Takeuchi in the early 1990s, indicates two kinds of knowledge: silent (hidden) and formal (available) (Spahic et al., 2014). This knowledge goes through a value chain, through a number of processes: knowledge acquisition, storage, dissemination, and application. To develop those skills, the curriculum is needed to handle the technological management of information and construction of information management systems. This can only be achieved by managing people that are primarily involved in assessing, changing, and improving human individual's skills and/or behaviour.

Stacey Young (2019: 60) asks, 'why invest in organizational learning and adaptive management? Is a learning organization a better development organization?' To her, collaboration improves performance by leveraging resources for collective benefit, which requires a strategic and a targeted framework. The objective of a framework in any environment is to determine what can be learned from existing models and how they can be adapted to organizations in the development sector (Afable, Boom and

Talisayon, 2020). For instance, to work towards achieving the UN SDGs and implementing Agenda 2030 (UN, 2015), the Knowledge for Development Partnership, located in Austria, developed an Agenda Knowledge for Development (Brandner & Cummings, 2018) to provide an integrated approach and a universal framework which offers, among other things, guiding principles to improve knowledge and competence and knowledge work. Accordingly, the Knowledge for Development Goal 11 on knowledge management in educational context aims to localize and implement the global agenda of knowledge for development (Brander and Cummings, 2018). In addition, the Knowledge Management for Agricultural Development Challenge (Brander, 2022), developed with the Forum for Agricultural Research in Africa (FARA), Ghana, and partners, aims to improve the capture and dissemination of knowledge materials and to strength collaboration and commitments to SDGs targets related to agriculture and rural development, building and generating content.

3 Research methodology

This study adopted a phenomenological research design to enable understanding of the epistemological concerns in determining the nature of knowledge management at African International University (AIU), located in Nairobi, Kenya. The priori knowledge to this study was needed on the kind of universities that offer KM programmes, curriculum expectations, and certain fundamental principles of curriculum reason and logic. The study started with a conception of the need to develop a programme that suits higher education in African universities. A consultation by of the authors of this paper with the Registrar Graduate School at AIU to obtain a summary of programmes offered at the university. A further consultation with the University library was done to obtain information and literature on the state of Knowledge Management in Africa and Beyond, that provides a basis for this paper.

A review of status of KM curriculum outside Africa was done to provide insight on trends in KM curricula. Based on the previous knowledge, a review of three universities was done (Nanyang Technological University Singapore; Kent State University and University of Maryland). These universities were purposively identified as they offer Knowledge management programmes.

A reconnaissance of universities in Africa that offer knowledge management programmes were identified to inform the instrument of the study. These include International University of Management, Namibia, Stellenbosch University, University of South Africa, KCA University, Kenya, and the Technical University of Kenya. The identification of the universities was based on previous knowledge on the programmes and available respondents. The information obtained from this orientation formed the basis for the design of a survey instrument. Three main areas included in the instrument were: what kind of curriculum is being offered? What is the content of curricula? What is the proposed strategic direction of the programme? The instrument was distributed to 15 universities in Africa that offer knowledge management as a programme and as a course unit. For some of the universities that did not respond, their websites were used to acquire basic information on the programmes offered.

4 Findings and discussions

Like any other discipline, a knowledge management curriculum is designed based on criteria set by the global agenda, regional commitment and national curriculum development guidelines in meeting society, professional and academic needs. The African Union has set the year 2024 as a year of education with a focus on balancing skills produced by universities and those required in their regional economies (Sawahel, 2024). As the Inter-University Council for East Africa (2010) advises, the challenge of any higher education is to achieve the goals, objectives, and outcomes in an effective and efficient way to reflect the requirements of stakeholders. A review of the national bodies responsible for quality assurance in higher education in Africa indicates some common parameters of what is expected of a programme in a university. At a macro level, the programme developed is influenced by the learning process, the target and context. Thus, the curriculum should be able to facilitate a balanced learning process and ensure that students are able to acquire such cognitive, effective, and psychomotor skills consistent with educational goals and aspirations defined by the national body. For example, the Uganda National Council for Higher Education (NCHE) specifies that the curriculum should ensure that the programme is broad-based or integrated, practical-oriented, diversified, and does not compromise standards, and contributes to overall national objectives. The goal, learning outcome, target requirements and the level of significance justifies the

running of the programme. A key attention to substantial body of theoretical, practical, and diversified knowledge is paramount. The first specific objective of the survey was to explore the kind of curriculum being implemented in respective universities in Africa. To assess this, the parameters considered include the objective and outcomes, justification, content, the prospective career growth, and employment opportunities.

4.1 Knowledge management curricula

4.1.1 Programme name

Most of the programmes offered in knowledge management are at master's level. The names vary depending on the university. At the International University of Management (IUM), Namibia, there is a Postgraduate Diploma in Knowledge Management (Level 8) that grants admission to Master of Science in Knowledge Management (Level 9) or any other related qualification at National Qualifications Framework (NQF) Level 9. The Postgraduate Diploma in Knowledge Management Sciences takes a minimum of one-year full-time or a maximum of three years to complete.

At Stellenbosch University, a Master of Philosophy in Information and Knowledge Management is offered by at the Faculty of Arts and Social Sciences, a one-year programme which comprises a research project in the field of management, leadership and strategic development of knowledge intensive organizations. It is taken by holders of a Postgraduate Diploma in Knowledge and Information Systems Management with at least 65%. At Stellenbosch University, a thesis is assessed according to the regulations of Stellenbosch University.

At the Technical University of Kenya, the programme is Master of Information and Knowledge Management. Jomo Kenyatta University of Agriculture and Technology offers MSc in Information and Knowledge Management. The KCA University offers a Master of Science in Knowledge Management and Innovation. At the KCA University, Kenya, for instance, the knowledge management programme is open for professionals in all disciplines who seek to effectively manage organizational knowledge within their specialized field and drive strategic innovation and collaboration.

Some of the other universities who offered knowledge management offered it as information management and information science. Those who did not offer knowledge management as a programme offered it as core course unit, especially in programmes of MPhil Information Management, PhD in Information Management (University of Johannesburg 2024), Master of Science in Library and Information Studies, and Master of Science in Records and Archives Management (Makerere University). Even those who offered complete programmes in knowledge management offered other courses in other programmes in records management and library and information science. For example, Makerere University offers a course on Knowledge Management and Organization, and Organization of Knowledge that constitute the core courses of knowledge management content. In particular, at the University of Johannesburg (2024), the knowledge management training is offered specific courses in competence intelligence (tools and analysis), contemporary knowledge management and knowledge economy in the 4IR.

The issue of name of the programme is defined by orientation of the said discipline as an art, a science or general programme. To take examples from beyond Africa, the Nanyang Technological University (NTU), Singapore, and Kent State University (KSU), USA, offer an MSc in Knowledge Management, while at University of Maryland, USA, there is a Master of Information Management (MIM). As a discipline, KM promotes an integrated approach to identifying, capturing, evaluating, retrieving, and sharing organizational knowledge. NTU promotes an integrated approach to identifying, capturing, evaluating, retrieving, and sharing all of an enterprise's information assets. At KSU, the core is the art of transforming information and intellectual assets into enduring value for an organization's clients and its people. It is the programme's goal that guides what is to be achieved with these programmes. Whenever the content and purpose prioritize knowledge management the title of the programme should reflect Knowledge Management. Whereas the title Information Management hides the true substance in KM component, the need to Knowledge Sciences as the overarching discipline, which should be subdivided into Knowledge Management for organizational levels and Knowledge Society for the social aspects.

Table 1: Expected Learning Outcomes

Cognitive levels	Example of the Learning Outcomes
Knowledge	Explain the concepts, components, and principles of information management and knowledge management. Identifying, collecting, and processing knowledge for use
Comprehension	Explore how knowledge and information resources can be leveraged in information and knowledge organization to have a competitive advantage
Application	Apply ethics in information management and apply various methods and strategies for the acquisition, capture, organization. Share, use and reuse of knowledge. Develop and apply information and communication technologies in knowledge management and demonstrate leadership in decision making that will ensure competitive advantage for institutional success. Provide leadership in the digitalization of information flows and knowledge processes; drive the national transformation process into inclusive knowledge societies and contribute to sustainable development.
Analysis	Enable learners to use information and communication technologies (ICTs) to manage organizational information and knowledge. Audit organizational information and knowledge and prepare information professionals to have a client-centred perspective. Design and adapt information products and services that are responsive to user needs
Synthesis	Create customer value based on knowledge leadership, access the right knowledge available at the right time, and facilitate the creation of knowledge networks. Develop ability to create, preserve, retain, and organize knowledge for organizational success. Develop ability to provide professional education for a wide variety of service and management careers in libraries, information agencies, the information industry, and in business environments, Equipped with the requisite skills and competencies to contribute to the social and economic growth of the society. Develop industrial-based learning in sharpening the skills and creating the competencies the graduate shall require for optimal discharge of duties.
Evaluation	Select entrepreneurial, management and critical thinking skills for innovation, job creation and sustainability of projects explain the implementation of knowledge management systems. Develop ability to use knowledge management as a means of creating knowledge channels such as intranets and portals and conduct cutting edge research to address institutional problems emanating from poor management of knowledge-based assets. Demonstrate understanding of how to select appropriate knowledge management solution. Demonstrate mastery in the field of knowledge management practices, tools application, key theories of KM and policy and strategy formulation for a KM system.

Source: Authors

4.1.2 Goals and purpose

The goals of curriculum vary depending on the orientations and national priorities, justification and significance. From the universities studied, the major goals were, first, equipping learners with knowledge and skills to manage knowledge in different formats and, second, preparing students to effectively manage the intellectual and knowledge-based assets of organizations. Most curricula were based on the premise that learners should be able to identify, create, store, share and deploy knowledge in an institution to maximize its competitive advantage from its intellectual assets. To address the global consensus that knowledge is a key driver of socio-economic development and that most countries had not actively embraced this, the IUM has set objectives to produce well-qualified individuals with knowledge balanced between science, management, and policy, while providing a scientific understanding of knowledge management, applicable to sustainable development and policy making context. In Kenya, the Technical University of Kenya specifies that the purpose of its knowledge management programmes is to prepare trainees to establish and manage information and knowledge centres; discover and manage tacit, explicit (recorded) and embedded knowledge through information and knowledge audits, appraisals and mapping; apply information and communication technologies in information and knowledge management; develop and implement information and knowledge management strategies; design, develop and market information and knowledge products; and formulate and implement information and knowledge policies.

From the above, we see that the goal addresses issues of knowledge, skills to manage knowledge management in different formats, information management to identify, create, store, share and deploy and balancing between science, management and policy and observing variety of knowledge assets. According to the Trait theory, curricula are designed to address objectives that possess a substantial body of theoretical knowledge, organized body of knowledge with substantial autonomy and monopoly over the practice, and ability for substantial authority to control into the profession identity and enforcing the standards (Rubin, 2004). One major trait of interest that requires a guide is the possession of a substantial body of theoretical and practical knowledge that forms the intellectual foundation of the profession through an organized body of knowledge. This trend is not far from the rest of the world. Production of well-qualified individuals, fostering the reuse of intellectual capital, enabling better decision making and creating the conditions for innovation and preparing learners to become strategic leaders in the use of information and technology in any organization are core components of a curriculum goal. In both KST and Maryland, the master's programme provides people, processes, and technology to help knowledge flow to the right people, at the right time to act more efficiently, effectively, and creatively, thus providing learners with the skills and knowledge to meet users' information needs. It requires development of information management capacities, ability to deploy emerging technologies and develop expertise in data analytics, visualization, information strategy and governance, and cybersecurity and cyber-threat intelligence are core. Such programmes require developing of learners in sharing, innovating, reusing, collaborating, and learning, expected to use a holistic approach in curriculum design.

4.1.3 Learning outcomes

The curriculum designed for any programme and institution can only meet its intended objectives if it clearly articulates the learning outcomes. Below, we map observed outcomes from different universities with the six cognitive levels of Bloom's Taxonomy to the target (learners): knowledge, comprehension, application, analysis, synthesis, and evaluation (Bloom, 1956). Table 1 gives details.

Generally, many of the above learning outcomes are exhibited in the higher level of brooms taxonomy, at the application, analysis, synthesis, and evaluation, including analytical skills, narrative, emotional, and social intelligence, demonstrate ability to provide leadership and mastery in the field of knowledge management practices, tools and applications. Most of the KM programmes reviewed outside Africa exhibit the ability to create customer value and impact-bearing provision of knowledge products and services, facilitate the creation of knowledge networks; unleash the knowledge, experiences and enable creativity of intercultural and international and environmental consciousness. In addition, learners from such KM programmes should demonstrate the ability to assist organizations in the formation of information policies, development and application of information systems and services, and the use of information management technologies and methods. For instance, in Maryland, the expectation of the programme is to develop learners' information management capabilities to deploy and manage emerging technologies and develop

application of information systems and services, and the use of information management technologies and methods.

4.1.4 Key attributes and entry requirements

Most of the master's degree require a minimum of bachelor's degree as entry requirement, with some significance difference in specific knowledge and skills competencies. At IUM, Namibia, for instance, specific disciplines are accepted, including social sciences and humanities, science, media and library and information studies, and human resources among others. At Jomo Kenyatta University of Agriculture and Technology, the MSc in Information and Knowledge Management requires a minimum of honours plus three years relevant experience or bachelor's degree with a pass plus at least five years relevant postgraduate experience. The Technical University of Kenya requires at least a Second Class Honours (Upper Division) degree of TU-K in the relevant field or equivalent from a university recognized by the Senate of TU-K or a holder of a Second Class Honours (Lower Division) in the relevant field, or equivalent from another university recognized by Senate with either at least two (2) years of relevant experience or a relevant postgraduate diploma/certificate and one (1) year of relevant work experience.

Relevant experience with additional qualification of the minimum requirements seems to be key entry requirements to a Masters in Knowledge management. In the knowledge socialization (tacit to explicit), Leavitt (2011) contends that in adopting organizational learning theories: Experiential -- "cognitive, adaptive and generative or assimilation -- "behavioural", consideration of the learning target (who experiences the learning – individuals, groups, and/or organizations become a major consideration in the design. This is the trend elsewhere in the world.

4.1.4 Mode of delivery

Most of the KM programmes implemented were based on hybrid (physical and online) with only one institution that offered online programme only. The programme structure was mostly by course work with research (dissertation/project on which the student must submit a dissertation). At the KCA University, Kenya, for instance, the duration of the programme is two (2) years, and the mode of study is full time plus weekend and part time to take advantage of intellectual capital and knowledge assets for organizational success, where it builds the capacity of the organization for survival and profitability by developing, organizing, retaining, and utilizing human and knowledge resources. The mode of delivery is a key feature, which directs the learning process, the learning target and learning context (conditions that promote organizational learning) as recommended by Leavitt (2011), who guided three organizational learning theories: 1) the experiential learning theory from the "cognitive" school; 2) adaptive and generative learning theory, also from the "cognitive" school; and 3) assimilation theory from the "behavioural" school. A multi-disciplinary approach is applied in the delivery of this programme, with the focus being on management, technology, and innovation. This includes lectures, online tutorials, advanced simulations, video, and audio-conferencing technologies and real-time practical experiential learning, e.g. case studies, national and international conferences, etc. Students must have access to a computer and the Internet.

The methods adapted for the programme are student-centred. Emphasis is put on the need for students to read and research extensively in each of the courses. In most of the programmes, individual courses teaching mode includes lectures, laboratory tasks, extensive use of case studies, tutorials, self-study, and field attachment. The items of assessment include a variety of methods such as examinations, course work, laboratory work and group projects.

4.1.6 Nature of the programme

The nature of the KM programme designed depends on the overall curriculum framework of the country and the guidelines of the university. In general, there are three plans: Course Work and Research (Dissertation), Research Only (Thesis), Extended Course Work and Project, a Masters Philosophy programme. At Stellenbosch University, for example, a one-year Master of Philosophy in Information and knowledge Management programme may be pursued by those who have passed the Postgraduate Diploma in Knowledge and Information Systems Management with at least 65% . The master is based on a project on which the student must submit a dissertation. To pursue dissertation, students require a cumulative grade point average (CGPA) of 4.00 and above, in which case students may require additional semesters for completion of their project, 2 core courses, at least 4 Group A electives, 3 Group B electives and Critical Inquiry (group project). At IUM, Namibia, a candidate may apply either for full-time or part-time programme. To be

awarded a degree, students will need to complete their programme requirement within their candidature period.
A minimum Cumulative Grade Point Average of 2.50 is required to successfully complete the programme. In other universities such as Makerere University, programmes are described in terms of Plans (Pathways), i.e. Coursework and Dissertation (Plan A) or Research only (thesis - Plan B). In Plan A, a student accumulates 23 credit units worth of coursework during the first two semesters and must submit a dissertation as a partial fulfilment that shall carry 10 credit units, and it appears on the transcript. In Plan B, a student devotes on developing and defending the research proposal and then takes a period of three academic years comprising of six semesters. The remaining two years will be for field work/data collection, thesis writing and defence. The University hosts central courses known as Audited Courses, taken by candidates on the advice of the supervisors to audit certain courses to strengthen their capacity for research in Information Science. Credits are not awarded for such courses.

4.1.7 Justification

An attempt was made to assess the key issues that justify the need for the programme in the institutions studied. These issues include international/global agenda in knowledge management, vision and national development plan of the country, professional gaps and/or development, and knowledge transfer and/or linkage with the industry. Generally, the KM curriculum is justified based on international, national, professional and knowledge transfer needs. The new trends in information management address knowledge management needs.

Addressing the global need of growing demand for the management of intellectual and knowledge-based assets of modern institutions, requires effectively managed knowledge to help organizations to make informed decisions. For instance, at IUM, Namibia, the programme addresses the global need that recognizes a "strong consensuses that knowledge is the key driver of socio-economic development".

To contribute to the Vision and National Development Plan of the Country there is a need to contribute to the social and economic growth of respective national agenda is important that requires curriculum support. In Uganda, Kenya and Namibia and South Africa, reference to national vision and national development plans was a key factor of a curriculum support. In Uganda, for instance, the Vision 2040 and National Development Plan III (NDP3), and Kenya Vision 2030 and Namibia Vision 2030, indicated a component of knowledge management framework. For instance, Kenya's National Development Programme and Vision 2030 address the need to embrace the knowledge management for sustainable development, which requires trained scientists in managing information. The Namibia's Vision 2030 specifies a need "to transform Namibia into a Knowledge-Based Economy (KBE)" which demands for intensifying knowledge management utilization to accelerate national development.

Professional Gaps that exist in Knowledge management among library and information science professionals. Whereas librarians, archivists, records, managers, and publishers undergo a curriculum in information management, some aspects of knowledge management possess a gap. Different aspects of KM seems to be too general to address the needs of KM skills and competencies, a justification for KM. The knowledge management programme at IUM, Namibia attempts to addresses the global strong consensus that knowledge is the key driver of socio-economic development.

Knowledge transfer is currently limited synergies between library and information science, and industry. There is also limited collaboration and cooperation in teaching and learning within the same university and across universities in Africa. Developing a collaborative programme to integrate field trips/visits, industrial attachments, talking by alumni, and opportunities to address by the captains of the industry are a priority and inter-faculty collaboration would contribute immensely to an appropriate curriculum in Africa. The emerging nature of the knowledge management profession dictates that designing a curriculum requires ability to determine the optimal mix of subjects from the various disciplines, as well as the requisite professional competencies of knowledge professional. Participation in inclusive knowledge management education allows a wide range of citizens to benefit various groups in educational process, e.g. as educators and practice partners. This strategy that requires a framework.

4.2 Knowledge management content

The second objective of the paper was to assess occupation professional skills and competencies exhibited by the curricula.

Table 2: Content distribution

Knowledge Area (KA)	Content distributed by KA
KA1: Understanding of Concepts, Principles and Theories	Knowledge economy, knowledge management systems, forms of knowledge, knowledge transfer, challenges in knowledge management, fundamentals of knowledge management, knowledge management systems, database management systems, organization leadership and knowledge management, principles of knowledge organization and classification Types and characteristics of knowledge, systems ICTs and digital networks and the globalization of the economy, knowledge-based economy and knowledge society, information management, information science, computer science, ICTs, and digital networks
KA2: Proficiency in Research Methodology and Data Analysis and Management	Knowledge engineering, academic writing, research methodology, research project (case study), design problem solving, visual storytelling, artificial intelligence, information systems analysis, information processing, computer programming
KA3: KM Systems and Practices	Organizational knowledge management, development of Knowledge content, knowledge management practices, tools and strategies, knowledge management technologies Communication and knowledge sharing, approaches to knowledge management, selection of knowledge management systems, ethical issues, and practices in knowledge management
KA4: KM Models, Standards and Policy	Knowledge auditing and mapping, Knowledge sharing platforms, canons, and facets of knowledge in managing information and records. Information innovation through design thinking digital media and society, information professionals, and information ethics
KA5: KM Applications	Indigenous knowledge systems and decolonization, intellectual property management for knowledge management Management of innovations and digital transformation, knowledge management systems implementation, knowledge for sustainable development and records management

Source: Authors

4.2.1 Content by knowledge areas

This identified the core/broad areas, the competencies, cross cutting courses and proposed career growth projection are demonstrated in the tables. The expressed content expected of a knowledge management programme is consistent with the expectation elsewhere. However, the multidisciplinary nature of the curriculum also demands a vast number of diverse fields such as organizational science, document and information management, electronic performance support systems, technical writing and journalism, anthropology and sociology, and communication studies (Dalkir, 2011). Indeed, referring to some authorities such as Shearer (2002), White (2004), and Jain and Nfila (2006) contend that KM focuses on sharing of knowledge that has been created, acquired, and capture to achieve organizational goals and objectives.

In most of the universities, there are distinct core and elective courses. There are clear courses such as foundations of knowledge management and knowledge management practices and implementation, knowledge assessment and evaluation, the information economy, organizational learning, and knowledge organization structures, systems, and services, most of which relate with what is outlined in the table above. In NTU, for instance, the electives are in two groups: Group A Electives include: Information and knowledge assets, Knowledge management strategies and

Table 3: Intellectual and practical transferable skills

Transferable Skills	Examples
Intellectual and Knowledge	Ability to identify knowledge, collect it, a sound understanding of the key issues in information and knowledge management in a variety of contexts, records management practices and principles
Practical Skills	Process knowledge acquisition, apply knowledge acquired on the canons and facets underlying knowledge organization, records, and information management, cataloguing and classification, disseminate information, knowledge systems management, knowledge, and digital content management
Competencies	Relate knowledge and content management and information management, knowledge and digital content management, ability to analyze subject content of information materials for effective storage and retrieval, the capacity to interpret, evaluate, judge and apply the concepts, principles and techniques of knowledge and information management, demonstrate understanding of how to select appropriate knowledge management solutions
Attitudes	Ability to create an environment for safely discovering and using information and knowledge for competitive advantage; ability to think critically and epistemologically when dealing with real-life challenges in the information society and the new knowledge economy

Source: Authors

policies, Knowledge management technologies, and Organizational theory and practice. Group B Electives include: Business intelligence, Intellectual capital management, Storytelling for organizations, Information mining and analysis, Information entrepreneurship, Organizational leadership. In Maryland, the elective courses provide flexibility to the programme and allow students to pursue their own educational and professional interests in greater depth, cyber threat intelligence, data science and analytics, game and entertainment analytics, information risk management and smart cities and connected communities. In order to assess the level of coverage of KM by those universities that offer it as a course unit knowledge organisation and management offered by Makerere University for a Master of Science in Information Science was reviewed to get the extent of the coverage on the KM. The program introduces learners to the principles of intellectual organization of information for storage and retrieval. The aim is to acquaint learners with different knowledge management tools and systems and help them apply these to the management of information and knowledge. Some of the content taught in the course unit are summarised as:

> *Concepts, principles and practices of knowledge management, the universe of knowledge, the structure of knowledge classification, facet analysis, knowledge organization systems (e.g. subject heading lists, classification systems, , ontologies), knowledge representation, taxonomies, knowledge organization structures: post-coordinate systems, internet era (hierarchical, citation references, search engines and indexes), semantic web, development of knowledge management systems e.g. Thesaurus construction, automatic KOS-based indexing and classification, and knowledge management practices in organizations (tacit knowledge capture, validation, processing, storage, sharing)* (Makerere University, 2010).

This gives us an insight of what is expected in KM at a programme level.

4.2.2 Transferable skills and competencies

When asked what kind of competencies are expected of the curriculum, majority of the respondents indicated the following transferable skills as intellectual (knowledge), practical, competencies and attitudes.

To comprehend the transferable skills, knowledge and competence in KM would only be helpful when we consider KM as a technology management philosophy and practice, a social and enterprise movement and as a discipline. For example, as a practice, it promotes an integrated approach

Table 4: Career growth and employment prospects

Area of Prospects	Examples
Academic and Professional Practice	Knowledge managers, lecturers in information and knowledge management, information broker, data analysists, librarians, records managers and archivists, researchers, editors and publishers, media information managers, information analysts, knowledge management specialists, information consultants, public information officers, documentarists, information media analysts, librarians, archivists and records managers, knowledge managers, information architects, children's librarians, competitive research strategists, law librarians, health informatics experts, digital preservationists, usability analysts, museum collection specialists
Knowledge and Technological Transfer and Technology Innovation	Multipronged industrial set up, info-entrepreneurship and business management consult, technology and technical innovation information management. Technological information management such as search engine optimization, social media manager, online digital marketing, KM experts, professionals for leadership positions that bridge the gap between technology-oriented staff, functional personnel, and management. Professionals that address the growing need for skilled information professionals who can strategically manage information and technology assets to fulfil critical information needs in organizations. Many prospects of entrepreneurship and job-creation, and Business intelligent Analysts.
Policy, Strategy and Governance	Governance and social policy sector, and civil society. Policy experts and strategy in information knowledge management, technical innovators expert. Leadership experience from corporations including, among others, leadership in the information management field. Professionals to address the ethical, political, social, and technical issues related to information management in modern society and information network consultants and more

Source: Authors

to identifying, capturing, evaluating, retrieving, and sharing an enterprise's information assets. As a discipline, KM covers the areas of information management, records management, digital libraries, indigenous knowledge, information policy, publishing, archives management, preservation, and conservation, among others. The theoretical perspectives are concerned with knowledge-related phenomena, underlying mechanisms and processes that affect knowledge management. KM promotes an integrated approach to identifying and sharing all of an enterprise's information assets.

4.2.4 Career growth and employment prospects

Career growth and employment prospects generally fall into three categories: academia, professional practice in community, national and international organizations and institutions and knowledge transfer partnership, and for policy, strategy and governance as summaries in the table below.

In general, the career prospects are broad, determined by the design of the programme and depending on the involvement of the industry sector where the graduate is likely to work. Based on different units taught, the programme itself does not lead to a specific career path on its own, but candidates are trained to fit into the field for which knowledge and skills are needed. The knowledge and technological transfer and innovation wing seems to bring new approaches and perspectives in knowledge management, most of which are not acquired in other programmes such as information science and information management. This is why the KM wheel, models such as the resource model, Japanese model and process model come into play ((Spahic, Grabar and Grd, 2014), indicates that knowledge (silent (hidden) and formal (available) that require value of knowledge is created as it is transformed through four different modes of interaction between tacit and explicit knowledge (socialization, externalization, combination, and internalization). Therefore, a curriculum to handle the technological, management of information and construction of information management systems can only be achieved by changing, and improving human individual's skills and/or behaviour, through curriculum design.

Table 5: Attributes

Attributes	%
Core courses in knowledge and information management provide a firm foundation for graduates	67
Specialized and elective courses prepare the student for research and future career	56
Practicum courses allow students to blend with theory and elective courses and enable students to pursue educational and professional interests in greater depth	33
Innovative curriculum with industry professionals prepares our graduates to apply their skills directly and immediately in their careers	44
Our students work on projects with industry partners and have opportunities for hands-on learning at the university	22
The blended learning approach enables students to read and research extensively in each of the courses	33
Our curriculum captures cross-cutting, emerging issues and trends such as climate change, gender, data management that open student opportunities in working in a dynamic world	11

Source: Authors

4.3 Strategic directions

4.3.1 Introduction

The third objective was to establish the opinions on the strategies for guiding curriculum review and development of knowledge management in Africa. Participants were given attributes and were required to select what they think would best describe a KM programme. The selection from the respondents was tallied to find out the best favoured (Figure 5). Responding universities considered that core courses in knowledge and information management provides a firm foundation to graduates. This is in addition to having a specialized and elective course to prepare the student for research and future career.

4.3.2 Strategies for curricula in Africa

The major challenges facing knowledge management curricula are efficiency, competitiveness, and local context relevance. The curriculum does not often adequately address the unique local contexts and challenges faced by African organizations, leading to a lack of practical solutions. There is also a paradigm shift in knowledge management with advancement in new technology. Indeed, as noted by Spliker (2023), the challenge with the curriculum originates from the discipline of knowledge management itself. The most significant is resistance to change, compliance, and inadequate user training and adoption to take ownership and responsibility. Consequently, to address the African curriculum education challenges, the paper assessed strategies for addressing the KM curriculum in Africa.

a) Curriculum review and update

There is a need to regularly review and update the curriculum to ensure it aligns with industry needs, incorporates emerging technologies, and addresses contemporary challenges faced by organizations in Africa. There is therefore a need to incorporate indigenous approaches to knowledge management in the practical units of curricula. In addition, universities should tailor their curriculum to address the unique socio-economic, cultural, and organizational contexts of African countries to ensure relevance and applicability. The content covered in the knowledge management curriculum should reflect this, in addition to foundational, more generic content.

b) Industry-academia collaboration

Collaboration with industry should be established, together with the infrastructure necessary to support knowledge management. Partnerships should be fostered between educational institutions and industry to understand real-time challenges, co-create curricula, offer internships, and provide practical experiences to students.

c) Faculty and professional development

This should involve: investment in training and development programmes for faculty members to equip them with the latest knowledge management practices, tools, and teaching methodologies; participation in industry projects should be encouraged to gain practical insights; strengthen professional associations and organizations; and establish specialized areas of training that commence from first year university entrance, and that link the student and industry. Lecturers need to be retrained in new trends in knowledge management.

d) Interdisciplinary and experiential learning

There is a need for promotion of interdisciplinary learning by incorporating diverse perspectives from business, technology, social sciences, and humanities to provide a holistic understanding of KM Universities should ensure that they integrate practical experiences, case studies, internships, and hands-on projects into the curriculum to allow students to apply KM principles in real-world scenarios.

e) Promotion, awareness and continuous feedback mechanisms

Establish a feedback loop involving students, alumni, industry partners, and faculty to continuously assess and improve the curriculum's effectiveness and relevance. This requires universities to launch programmes to sensitize practitioners and academics on the place of KM through conferences, workshops, and seminars. Further, a need for aggressive marketing of the programmes is needed to increase their visibility.

f) Research integration and technological innovation

There is a need to encourage research in knowledge management to foster innovation, develop best practices, and contribute to the global body of knowledge on knowledge management. African Universities generally emphasize the role of technology in knowledge management by including training on relevant software, data analysis, AI, and other tools to manage and extract value from organizational knowledge. As proposed by Fallah, and Addai (2017), utilizing communities of practice and networks can promote learning and innovation that can be sustained in engaging development partners, an area that requires exploitation by universities in curriculum sustainability.

5 Conclusions

This paper is meant to developing a framework to guide in the development of knowledge management curriculum in Africa. It was set to assess the kind of curriculum being implemented in respective universities in Africa, assess the occupation professional skills and competencies exhibited by the curricula, and develop strategies for guiding curriculum review and development of knowledge management in Africa. The parameters and justification of the KM programme follow the Trait theory (Rubin, 2004) professional discourse as substantial body of theoretical knowledge that forms the intellectual foundation of the KM discipline using the primary criteria for curriculum development: the learning process, the learning target and learning context. Linking the industry and the theory as guided by four knowledge conversion processes—the transformation of hidden knowledge to formal knowledge is a necessary integral part of the curriculum design.

In Africa, titles of knowledge management programmes differ, ranging from Master of Philosophy, Master of Science in information and knowledge management, and Master's in information management. Most of them aim at equipping learners with knowledge and skills to harness knowledge in different formats to effectively manage knowledge-based assets in society, and particularly in organizations. The skills in identifying, collecting, and processing knowledge for use, apply ethics, methods and strategies for the acquisition, capture organization, sharing, use and reuse of knowledge is critical to address all levels of Broom's taxonomy.

The minimum entry requirements to the Master degree is a Bachelor degree with some consideration of special courses in IT and working experience. The mode of delivery ranged from hybrid, face to face, and online. The programme structure comprises course work with research (dissertation/project on which the student must submit a dissertation for examination. The knowledge management content and career growth does not significantly differ from each other and even those of the other universities outside Africa. The approach of industry and KM society and environment determines the level of intensity of teaching and learning. There is, however, the challenge of local context and relevance, leading to lack of practical and industry compliance. With a paradigm shift in knowledge management with advancement of technology, there is need for curriculum to be relevant, up to date to address industry-academia collaboration within and inter-institutional and regional (Africa for integrated faculty and professional development. This will enable development of experiential learning, and integrating local context with interdisciplinary approach. This requires a continuous feedback mechanism with integral research and innovation, and standardized approach to guide curriculum review and development in Africa.

6 Recommendations for knowledge management curricula in Africa

6.1 Naming the programmes

Universities should be guided by the context in naming the programmes, whether knowledge management or information management, or knowledge organisation and management, or knowledge and information management.

In any case, the contents of information management is critical to addressing organization of knowledge component of knowledge management. Universities need to enhance their research and stakeholders' involvement in curriculum review to ensure integration of knowledge management content in the curriculum. Efforts should be done to ensure that the content in the programme does, indeed reflect the title of knowledge management.

6.2 Curriculum orientation

The design of the curriculum should be precise as either a science, an art, practice, or a discipline. Balancing professionalism practice and academia should be well reflected in the programme objectives, learning outcome and the content. Professionalism, popularity of the programme, practical orientation and training for local needs, and ability to address vocational indigenous/local and international needs is critical. In addition, balancing theory, practical skills, internship, well-structured curriculum, technical and industry transfer needs is necessary. Universities in Africa should embrace the Knowledge Management Sciences Strategy to address the multi disciplinary and balancing theory and practice in the process of curriculum review and implementation. Universities should subscribe to the partnership provision of building certified knowledge management programme to support academic centres of excellence and developing knowledge scientists.

6.3 Entry requirements

Entry requirements or expectations should reflect the university policy and goals of the programme but take into account competencies in basic computing skills and experience as may seem necessary by the hosting university. In addition, understanding knowledge assets of tacit and explicit knowledge is necessary as competences and requirements to be addressed in curriculum design and implementation.

6.4 Information management in curriculum

The curriculum developed for knowledge management should be appropriate for both information and knowledge management professionals. This requires a guide to address the knowledge, skills and competencies expected of a graduate of knowledge management.

6.5 Joint seminars and continuing education

The design of a Master programme could apply the modular form in such a way that there would be collaborative seminar series/summer schools, hosted by participating institutions. This is in addition to increased involvement of private public partnerships and industry mentorship as added value in the curriculum design.

6.6 An African joint collaborative curriculum

A team of experts from universities in Africa could be constituted to develop a collaborative curriculum that can be hosted by respective universities. Such a programme may be customized by respective universities. This would promote joint running of the curriculum. A collaborative approach by key universities would support them in advancing and promoting their knowledge management courses. Consequently, universities could utilize the initiative of K4DP to establish School of Knowledge Sciences to foster a collaborative approach of educators and researchers, such has been done at IUM, Namibia. This could be enhanced with the joint forces for more visibility and exchange, such as an African continental conference. This would encourage actors to collaborate instead of hindering mutual recognition due to (unnecessary) considerations of competition.

6.7 Curriculum collaboration and management

Institutional, or multi-institutional and multinational collaboration in hosting, managing, and running of a KM curriculum is required. This includes exchange of visiting faculty, staff, and students between and among the various cooperating academic units, supervision and external examination and mutual exchange of information such as scientific and technological literature.

6.8 Developing learning communities

There is need to tap into already existing communities of practice (CoPs), such the continental Knowledge Management for Agricultural Development (KM4AgD) community supported by FARA and partners, and the global Knowledge Management for Development (KM4Dev) community. This would support students, alumni and staff to share information in various areas, challenges or problems that need discussion and help others get connected nationally and internationally. Participating institutions could also develop their own COP programme.

6.9 Recommendations for further research

6.9.1 The professionalism of knowledge management

Professions are accepted or rejected based on substantial body of knowledge, going through education, substantial autonomy and controlled by canons of professional ethics. This study did not go beyond content and, therefore, a deeper study to map the professional practice into professionalization is required.

6.9.2 Choice of content

While we mapped curriculum content according to knowledge areas, there is need for each institution that would like to do a thorough analysis of which course unit fits to be included when designing curriculum. This is true for learning objectives, outcomes, and competencies.

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