# Key characteristics of technical university libraries in Kenya

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## ABSTRACT

In the recent past, Kenya has created technical universities. However, their libraries continue to operate just like any other academic library. This study explored the key characteristics which technical university libraries should espouse. The specific objectives of the study were to analyse the concept of technical universities; investigate the information needs of technical university students; and propose the key characteristics that technical university libraries should espouse so as to offer effective information services and products to their users. The study was conducted as a single case study using The Technical University of Kenya library. Data on the characteristics of technical universities was collected through document review. Primary data on how well the current library staff, services and collection meet the information needs of the users was collected through structured self-administered questionnaires from students. The students were selected using simple random sampling. The data was analysed and presented using descriptive statistics. The findings indicate that technical university libraries in Kenya operate just like any other academic library. This has resulted in inadequate service delivery to their users. The libraries should be philosophically distinct from the other academic libraries. This should be manifested through unique services, collection and staff.

## KEYWORDS

Technical university libraries, library typologies, Kenya

## INTRODUCTION

A technical university is best understood in the context of technical education. According to Atchoarena and Delluc (2001), technical education enables the learners to acquire the practical skills, knowhow and understanding necessary for employment in a particular occupation, trade or group of occupations. Bennell (1999) argues that such skills are required to improve productivity, raise income levels, and improve access to employment opportunities. Nyerere (2009) explains that the need for technical education has arisen from globalisation, technological

change, and increased competition due to liberalisation of economies. Consequently, he argues that technical education is the "master key" to the alleviation of poverty, promotion of peace, conservation of the environment, and overall improvement of the quality of life. Thus, he concludes that technical education is the vehicle for socioeconomic and technological transformation.

According to Waterhouse (2002) technical education is not simply practical but is about particular types of actions taken to make and manipulate physical things. Although he avers that technical learning begins at birth, he adds that technical education emerged when techniques and technologies became complex and sophisticated. Waterhouse (2002) further distinguishes technical education from vocationalism by explaining that while the latter is a calling, the former encompasses extensive training on a wide array of skill-sets.

The role of technical education in facilitating industrialisation and development has been identified by many governments. This has led to the growth in the number of institutions offering technical education, diversity of technical curricula, and the number of students enrolled in the technical training programmes. Nyerere (2009) explains that in Europe, at least 50% of the students in upper secondary education pursue some form of technical or vocational training. He adds that in China, India and Southeast Asia, 35-40% are engaged in technical training while in Africa, it is less than 20%. Nyerere (2009) further reports that Rwanda has the highest enrolment in technical education at the post-secondary school level in sub-Saharan Africa at 35%. It is followed by Tanzania (13%) and South Africa (5.8%). This indicates a wide gap between sub-Saharan Africa and other regions. This is in spite of the fact that sub-Saharan Africa needs more technical skilled manpower to realise their visions to become middle-income and industrialised countries in the next twenty or so years.

According to the report of a committee onthe conversion of polytechnics to technical universities in Ghana released in 2014 (Government of Ghana, 2014) there are certain unique characteristics which technical universities exhibit. The report avers that technical universities provide education and training for the world of work asthe students are trained to acquire high-level employable skills for wages or self-employment; have strong links with the industry and the business sector; support the existing and emerging productive sectors of the economy with technical expertise and research for development; are focused on practical research activities, including industry and market-driven joint research projects; offer programmes that are vocationally-oriented or career-focused; provide skills training at all levels – certificate, diploma, degree, and postgraduate degree levels; offer courses and programmes covering a wide range of economic activities; place emphasis on innovation and application of new technologies, including ICTs; provide skills training from the middle level to the highest level possible; have practice-oriented with smaller classes to enhance teacher-learner interaction; and recruit teaching staff with professional and industrial experience over and above the ordinary academic qualifications.

The report (Government of Ghana, 2014) further adds that the fact that technical universities emphasise a close engagement with the world of work does not mean disengagement from the basic academic orientation of higher education institutions. Engagement with the industry means bringing the world of work into the classroom and placing practical knowledge and research results at the disposal of the industry. Blending academic pursuits with practical goals of promoting societal and economic wellbeing of the population is one of the hallmarks of universities of applied sciences. While the focus is on applied research, technicaluniversities may contribute their expertise at any point along the product development chain from basic research

to commercialisation in collaboration with traditional (research) universities.

The need to convert polytechnics to technical universities in some countries is just to further the mission of these polytechnics. The technical universities are, for that matter, established to train technicians to undertake practical skills oriented programmes with the main objective of not only teaching and learning, research and innovation, but also community service and extension. Technical universities offer technical education and training that focuses on the application of technological knowledge and skills. These universities are geared towards research on practical solutions of immediate and future community problems with innovation and knowledge transfer as the benchmark of all the technical education programmes. The graduates of such universities are trained to apply their ability to practically apply the skills acquired through training to address both the local as well as global challenges by providing solutions through innovation (Ward, 2001; Salmi, 2009).

The establishment of the technical universities is expected to lead to a more diversified higher education landscape with clear mission differentiations. The technical education is designed and structured towards the empowerment of students to become entrepreneurs, industrialists and leaders in the practical future. The technical university is therefore differentiated from the research university whose mandate is to teach, train and carry out research for theoretical purposes (Raby, 2009).

A technical university is expected to provide technical and vocational education and training. Also, it strives to embrace originality and immigration in all areas of technical operations. A technical university is concerned with technological transformation in research and innovation activities. Its main objectives are to find solutions of national and international problems and

issues in practical ways for research and development. A technical university also engages in technical knowledge and skills transfer. It does this through mentorship of lower technical institutions and technology transfer from motivation centres to the society to acquire practical experience.

A technical university ensures the provision of the necessary human capital with world-class technical skills to address the development challenges of the nation. The structure of the technical university is designed in a way that it nurtures a special and new breed of graduates with practical skills to join the competitive market as doers of things and problem solvers to employers. Table 1 presents a comparison between technical and research universities:

**Table 1: Comparison between technical and research universities**

| Technical University | Research University |
|---|---|
| Focus on training | Focus on education |
| Practice-oriented | Theory and research oriented |
| Applied or strategic research with focus on solving practical problems and providing technology solutions that make production systems more efficient | Scientific research with a greater focus on the development on theory and formulation of policies for the sake scholarship |
| Skills-driven or acquisition of employable skills | Knowledge-driven or quest for new knowledge |
| Focus on technology development, innovation and technology transfer | Focus on fundamental research and cutting-edge technology development |
| Emphasis on what must be learnt to respond to industry needs and learner interests | Emphasis mainly on disciplinary approach to learning and promotion of scholarship |

According to CUE (2014) a technical university should exhibit these characteristics: at least two thirds (2/3) of the programmes on offer in a technical university shall be in the applied/technological sciences; at least two thirds (2/3) of the students enrolled in a technical university shall be in applied/technological sciences; not more than one third (1/3) of the programmes in a technical university shall be in other disciplines; at least seventy percent (70%) of the programmes and students enrolled in applied/technological sciences in a technical university shall be in technological areas that lead to the production of technologist graduates.

From the foregoing, technical universities can be perceived as academic institutions which offer practical-oriented training in engineering, technology and applied sciences. Most of the technical universities were formerly established as vocational training institutions. In fact, Heita (2005) contends that most technical universities have emerged from an upgrading of polytechnics to become degree-awarding institutions. One of the world's first technical universities with tertiary-level education was a mining school founded in Banská Akadémia, Slovakia in 1735 to train specialists of silver and gold mining as well as metallurgy. Other prominent technical universities include Istanbul Technical University and Technical University of Berlin. Many others were established in different parts of the world to address technical knowledge gaps specific to their contexts. In East Africa, Makerere University, the first institution of higher education, was established as a technical college in 1922 to offer training in carpentry, mechanics and building construction. In Kenya, the University of Nairobi was originally established in 1956 as a royal technical training college. When these two institutions grew to become the first universities in the region, the role of providing technical education fell on the Kenya Polytechnic and Mombasa Polytechnic in Kenya. The Kenya Polytechnic was originally

established as the Kenya Technical College in 1956 to offer technical training in architecture, engineering and sciences. It became The Technical University of Kenya when it was chartered as a public university in 2013. On its part, Mombasa Polytechnic was originally established in the late 1940s as Mombasa Institute of Muslim Education and transitioned over the years through Mombasa Technical Institute and in 2013 became the Technical University of Mombasa. These are the two official technical universities in Kenya.

**RATIONALE OF STUDY**

Technical university librariesare found within their parent institutions which aretechnical universities. Just like the other academic libraries, they are established to meet the information needs of the institutional publics. They cater for the information needs of their users. Nonetheless, unlike typical academic libraries which are established to support teaching, learning, and research programmes to promote scholarship in the university, technical university librariesare established to promote research as well as the transfer of practical skills and knowledge in technical disciplines so asto facilitate innovation, research and development. Thus, technical university librariesshould provide information promptly to their users to keep up with emerging trends as well as acquaint them with technical job-related knowledge and skills to solve societal challenges practically. From the foregoing, technical university libraries can be classified as special academic libraries. They are academic libraries because they serve academic institutions; they are special because they serve not just any academic institutions but specifically technical universities.

In spite of the clear distinction in the mandates of technical university libraries and other academic libraries, they currently operate in the same way – offering similar services and information products. This way, they are unlikely to satisfy the information needs of their users.

The technical university librarians in Kenya seem oblivious of the fact that their libraries should be different. As a way of drawing the attention of the technical university librarians to this discrepancy, this study investigated the key characteristics – in terms of needs, services and collection – which technical university libraries should espouse. The specific objectives of the study were to analyse the concept of technical universities; investigate the information needs of technical university students; explore the information seeking behaviour of technical university students; and propose the key characteristics that technical university libraries should espouse so as to offer effective information services and products to their users.

**METHODOLOGY**

This study was designed as a case study. According to Hays (2004), a case study involves a close examination of people, topics, issues or programmes. She adds that these entities, known as cases, are unique in their content and character. Thus, case studies provide answers to research questions by obtaining responses in terms of in-depth descriptions and interpretations of the entities under study. According to Yin (1994), case studies are generally conducted for illumination, information and understanding of the entities. He adds that such information is useful for decision making. Although the findings of case studies are normally not generalised because of the uniqueness of the cases, Hays (2004) explains that case study researchers aim to uncover new and unique interactions, events, interpretations, explanations as well as cause-and-effect connections. Stake (1995:iv) adds that "we study a case when it itself is of very special interest. We look for the detail of the interaction with its context". He explains further that a case study is an investigation of a single case leading to its understanding within specific contexts.Yin (2013) explains that the three instances when case study may be used are when 1) the main research questions are "how" or "why"; 2) a researcher has little or no control over behavioural

events; and 3) the focus of the study is a contemporary phenomenon.Hays (2004) suggests that case studies can be conducted within short timeframes ranging from a few weeks to a year.

Technical universities in Kenya are a new phenomenon which most people do not understand. Similarly, there are only two official technical universities in Kenya. Considering these facts, the researchers argued that a case study approach is most suitable to enable them to explore and explain the unique characteristics of technical universities in Kenya as well as the model of services and products the users of their libraries expect. Due to time constraints, the researchers focused only on The Technical University of Kenya library. They suggest that further studies involving the Technical University of Mombasa are necessary to complete the story of technical university libraries in Kenya.

Data on the characteristics of technical universities was collected through document review. Primary data on how well the current library staff, services and collection meet the information needs of the users was collected through structured self-administered questionnaires from students. The students were selected using simple random sampling. According to Morse (2000), researchers can determine the sample size by considering the 1) scope of the study; 2) nature of the topic; 3) quality of data; and 4) study design. Importantly, she argues that the quality of data is inversely proportional to the number of participants in a study. She recommends that 30-60 people are adequate to generate credible data for studies using semi-structured interviews. There were 13,963 students enrolled in various undergraduate and postgraduate programmes at The Technical University of Kenya during the 2016/2017 academic year. However, at the time the data was collected, most of the students were on long recess. There were only 5,600 students in session. Using the rationale put forth by Morse (2000), the researchers interviewed 100 randomly

selected students. The data was analysed through content analysis and presented using descriptive statistics.

**FINDINGS**

The authors successfully collected data from 94 students. The respondents were distributed by year of study as shown in Table 2. The majority of the respondents were in their third year of study. This high response by third years was attributed to the fact that many third years were on campus undertaking their internal industry-based learning sessions. Of these 38 were pursuing courses in the Faculty of Social Sciences and Technology (FSST); 37 in the Faculty of Engineering Sciences and Technology (FEST); while 19 were from the Faculty of Applied Sciences and Technology (FAST).

**Table 2: Distribution of respondents by year of study (n=94)**

| Year of Study | Frequency |
|---------------|-----------|
| Year 1 | 6 |
| Year 2 | 16 |
| Year 3 | 51 |
| Year 4 | 19 |
| Year 5 | 2 |
| **Total** | **94** |

**Understanding of the concept of technical university**

The respondents were of the view that technical universities are expected to offer technical training in engineering, applied sciences and technology. They emphasised that such training should focus more on imparting practical skills thus preparing the graduates for the actual job

market. They argued that such graduates would require less training when employed. The respondents also argued that technical universities should strive to nurture talents of the learners. This explained that this is the rationale for including courses such as music and performing arts, architecture, creative design, fashion design, fine art, catering and hospitality management, among other programmes which are anchored on personal talents of the learners. The respondents also explained that technical universities employ the technical and vocational education and training approach admitting learners in non-degree programmes at the diploma and certificate levels.

**Information needs and how well they are currently met**

The respondents stated that their information needs included current awareness on the emerging tools and techniques in their areas of study; information on the university's calendar and semester programmes; examination support information such as time-tables and past-papers; specialised technical information in their areas of study; information literacy; reference services; career development information including job and internship opportunities; "how-to" information relating to their areas of study such as machine operation, production of materials or delivery of services; and emerging market trends of their services and products. The respondents reported that the library currently offers book borrowing services, reading space, reference services and resources, e-resources, newspapers and magazines, access to Internet hot-spot (WiFi), and information literacy training programmes.

Eighty students responded to a question asking them to gauge the extent to which the current library services met their information needs. Figure 1 presents their responses. The findings indicate that the users were divided into three categories. 17.5% held the view that the services meet their information well while a similar number held the opposite view. Notably, 65% said

the library scored average in meeting their information needs. From the foregoing, the authors conclude that the library does not currently meet the information needs of the users well.
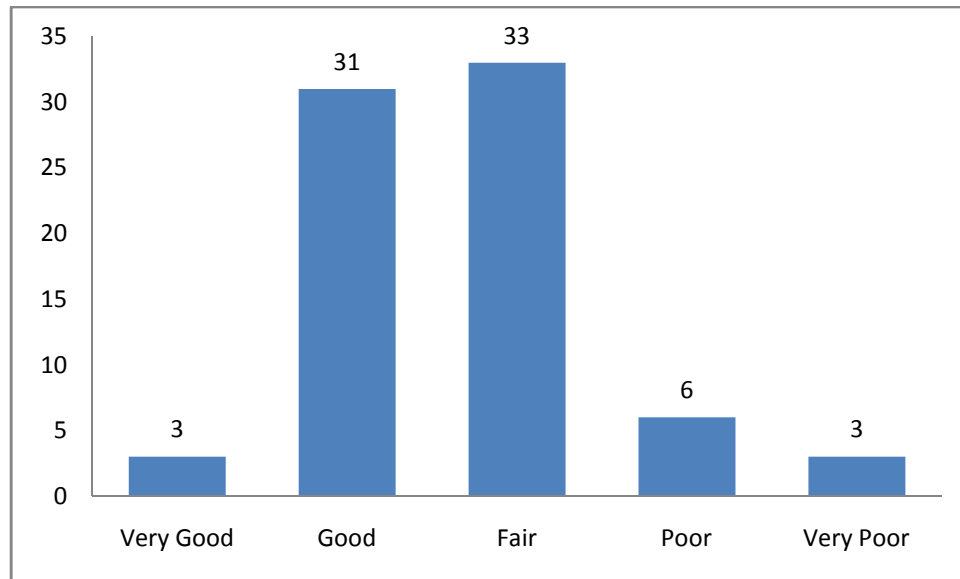


**Figure 1: Extent to which library services meet the information needs of the users**

**Characteristics of technical university libraries**

Since students are not familiar with the different library typologies, the authors relied on data from document analysis to develop the list of key characteristics of technical university libraries in Kenya.

Szebenyi-Sogmond (1959) asserts that scientific and technical libraries should operate distinctly from the other academic libraries. She added that this distinction should be manifested in the operations and collections of these libraries. In keeping with this point of view, the authors reviewed literature on the characteristics of technical university libraries using three parameters: 1) services; 2) collection; and 3) staffing.

*Services*

These are the services which should be offered by the technical university libraries to their users.

According to Kent *et al*. (1980), there are three basic services offered by technical university libraries. These are 1) acquisition (selection and collection development); 2) organisation (classification and identification of materials); and 3) dissemination (presentation of library materials to users in diverse forms). These services are further divided into the following categories:

1. **Circulation services** – these include lending and borrowing of a given number of library materials for a specified period of time. This is a major service in technical university libraries. Although the prominence of this service is on the decline due to the increasing volumes of e-resources which do not require borrowing or lending, circulation services is the hallmark of library services regardless of the form of the information materials. Given that most technical university students take slightly more courses than their research counterparts, technical university libraries should allow the students to borrow more books at a time. The students should also be allowed to keep the books for a longer period. The authors propose that the students should be allowed to borrow seven books for one month. This allocation will give the students ample time to use the information resources optimally.

2. **Reference services** – these are services involving the librarian offering expert advice on or direction to information resources. Reference librarians also offer training on how to use bibliographic tools in the library. They also provide Reference services may be offered physically from a desk in the library, through telephone or virtually using digital platforms. Due to their overloaded schedules, technical university library users strive to maximise their library times. Reference desks in technical university libraries should be located in conspicuous and accessible locations in the library. Where possible, such desks

should be offered near the shelves and reading areas. The delivery of this service can also be enhanced by developing and circulating user support information in terms of frequently asked questions. These are not just easy to access but are simplified so as to enhance usability.

3. **Current awareness** – this is a service aimed at keeping the users of a library updated and well informed of developments in their areas of interest. Current awareness services can be directed at individual or groups of users. In the context of technical university libraries, the service may involve sharing the latest information on industry trends, new methods and techniques, new tools as well as new circumstances affecting the practice of the profession such as new laws or regulations. This is a very important service in technical university libraries whose users need to keep abreast with developments in the industry. Ordinarily, current awareness services are delivered through news alerts, clippings and display boards, among other techniques. However, for technical university libraries involvement of fora facilitated by professionals may be useful. Students, for instance, will appreciate talks by their professional associations on developments in their respective disciplines. In engineering, fora facilitated by the Engineers Board of Kenya or the Institute of Engineering Technologists and Technicians in collaboration with the librarians can be of great value to the users interested in engineering. As part of library programmes, librarians can involve the various categories of users to identify the current awareness activities which are valuable to them going beyond mere broadcast information. Current awareness may also be delivered a sub-component of selective dissemination of information (SDI) to ensure that the users become aware of and access new services and information materials in the libraries. Effective current awareness

services enhance the use of library services and collection.

4. **Reading space** – although the number of users coming into the physical libraries has reduced drastically due to the ubiquity of digital library services, the case is different for technical university libraries which serve students who need to use specialised spaces such as studios. Technical university libraries should fit seamlessly into the learning environment of the students. Thus, the libraries should create specialised spaces for use by different groups of students. Studios, laboratories or mini workshops are some of the facilities technical university libraries may want to integrate in the library premises. This will ease the pressure on workshops and other learning facilities while also mainstreaming the library in the learning ecosystem of the parent institution. Students in such environments will not distinguish the library from the laboratories and will access both at the same thus enhancing their learning experience.

5. **Inter-library loan** – this is a service whereby a given library shares information resources with other libraries on mutually beneficial terms. This service has also reduced due to the emergence of consortia which pool digital resources thereby eliminating the need for loaning as they only provide access. For technical university libraries, the need for inter-library loan service is still there. It is through this service that the technical university libraries can obtain specialised collections and even equipment from special libraries in the factories and other relevant sector organisations. This service will expose the students to the real life issues in the industry thereby eliminating the need for extensive post-graduation training. Cveljo (1985) suggests that technical university libraries should identify and network with special libraries in the relevant sectors to enrich their services.

6. **Information literacy** – Behrens (1994) defines information literacy has having the capacity to understand the role and power of information as well as having the ability to locate, retrieve, evaluate and use it for decision making. It also includes the capacity to generate, package, disseminate and store information. Technical university library users are generally technically-oriented and rely more on being shown rather than being told. Tenopir and King (2004) argue that engineers, for instance, prefer interpersonal and informal than formal channels of communication. Therefore, they tend to seek information from human sources or machines than from literature. Therefore, technical university librarians should devise and deploy unique information literacy programmes which would not only enhance their users' capacity to seek and use information but also their appreciation for diverse forms of information sources. Information literacy programmes in technical university libraries can work best if the libraries also invest in rich information collections.

7. **Information repackaging** – Iwhiwhu (2008) explains that information repackaging describes how an information service provider selects appropriate materials, reprocessing and packaging the information, and arranging materials in a way that is appropriate to the user. On their part, Saracevic and Wood (1981) define information repackaging as the rearrangement of the media in which information has been presented as a means of tailoring the information to the needs of a given category of users. Technical university library users are special in terms of their information seeking behaviour. They want synthesised information which is concise and straightforward. Furthermore, they are pressed for time and appreciate readily available information. Therefore, their librarians should repackage information materials to suit their need for brevity, convenience and

promptness. The libraries should use subject librarians to synthesise and repackage information for technical university library users. This can be achieved through user-centric abstracting, indexing, translations or book reviews.

8. **Editorial services** – it is generally an accepted understanding that technically-oriented persons lack communication skills (Tenopir and King, 2004). They generally experience editorial challenges in writing technical reports (Cveljo, 1985), proposals for funding and other forms of scholarly communication. Nonetheless, Tenopirt and King (2004) clarify that engineers in universities communicate better than their counterparts in the industry. Therefore, editorial support would aid technical university library users to compile high quality articles, term papers, projects, research papers and proposals, among other academic products. The technical university libraries can establish a fully fledged editorial department to offer this service or organise writing clinics as an integral component of the other library services. Editorial support services may include copy editing, proof reading, reference and citation management and typesetting, among others.

9. **Reprographic services** – Gregory (1994) defines reprographics as imaging services utilising a wide diversity of techniques to produce or reproduce content through scanning, photography, xerography and digital printing. In ordinary libraries, reprographic services largely refer to photocopying services. The users of technical university libraries require more complex reprographic services to be able to produce or reproduce large cartographic maps, 3-dimensional prints of prototype parts, industrial drawings, plans and circuits, among others. Offering such services in the library will not only attract more users to the library but will also provide an additional revenue streams for the libraries which are currently struggling to manage budget deficits.

10. **Marketing of library services** – this service goes beyond promotion in terms of focus and approaches. While promotion is limited, marketing encompasses all techniques and tools which attract the attention of the library users to the library's services and collection (Cveljo, 1985). Technical libraries, and indeed other libraries, currently face stiff competition from alternative information sources exemplified by the Internet and social media. They cannot wait for users to come to them out of necessity. They must reach out to their actual and potential users to ensure that they patronise the service and products effectively. The need to market library services is not new. As earlyas four decades ago scholars such as Szebenyi-Sigmond (1959) were already emphasising those librarians should promote their services and collections and should not depend only on the spontaneous interest of their users. She reported that technical libraries were then promoted through bulletin boards, posters, exhibitions, loud-speakers, films and "book days". Modern technical university libraries must devise and deploy effective strategies and tactics to market their services and products to enhance their access and use.

11. **Value addition services** – these services do not fall squarely in the ambit of the traditional library services but add value to them. Such services may include providing career advice as well as job vacancy advertisements to graduating students. They may also include offering catering services through a cafeteria or a coffee shop. This may save the time of the users by providing an alternative to walking out the premise to look for food and refreshments. Another value adding service is scientometrics analysis. This encompasses the measurement of research productivity as well as the management of the performance of projects, individuals, laboratories for the purposes of promotions, funding and other awards.

*Collection*

Tenopir and King (2004) argue that engineers use internally developed content more than the externally published sources. They conclude that the use of formally published scholarly materials such as journal articles is generally lower among engineers and technologists than professionals drawn from the other disciplines. Therefore, technical university libraries need to carefully select their collections so as to enhance their relevance to their users who are largely drawn from the science, technology and engineering fields. According to Szebenyi-Sigmond (1959), technical libraries should hold more scientific, technical and commercial literature than fiction and ideological works. Kurtz (2004) suggests that collections of technical university libraries should be specific and should not consist of general reading resources. This corroborates the suggestion by Cveljo (1985) that technical university library collections should consist of non-traditional literature such as technical reports, government publications, proceedings of conference and symposia. Without sounding prescriptive, technical university library collections stand to benefit their users more if they would consist of technical information resources like technical abstracts, indexes, state-of-art reports, online databases and others which enhance research and innovation.Other materials could include handbooks, charts, encyclopaedia, trade dictionaries, almanacs, how-to-do-it manuals, field guides and directories. In general such libraries should have large collections of information materials on technology, engineering and other technical areas.

Given that technical university libraries serve innovators and budding industrialists, the libraries should have information materials relating to patents. This could include information on existing patentsas well as the patenting process. The collections should also hold materials which support entrepreneurship and innovation. The collections should also have information materials on

engineering specifications and standards; trade catalogues, pamphlets, and manufacturers' literature; information materials from specific industry players such as factories, airlines, railway corporations and research institutions, among others; professional association journals and other publications; as well as non-print materials such as videos, databases and computer software used for specific technical purposes. The users of technical university libraries may find special collections of biographies of industrialists and innovators as well asgovernment reports valuable.

The collection may be either physical or digital. However, digital formats may be more valuable due to their convenience of access, searching and retrieval. Similarly, the collection may be delivered through open access or conventional channels of communication. Whatever the model used, the technical university libraries must focus on the needs of the user. As suggested by S.R. Ranganathan in his "Five Laws of Library Science", they must ensure that they save the time of the users by increasing the findability and use of information materials.

*Staffing*

The services and collection discussed above cannot be designed and delivered effectively without equally efficient and effective human resource. Working either as professional, paraprofessional or support staff, these people should create an information universe which is not only information-rich but also exciting to work from. Apart from the technical skills required for their respective positions, the staff need superb personal and interpersonal competencies to serve their users effectively. Partridge, Lee and Munro (2010) argue that some of the personal traits may be more important to these librarians than the technical skills. Some of these personal traits include passion, enthusiasm, good grooming, "spark", resilience, curiosity, self-drive, and open-mindedness. Other attributes include independence, moral integrity, action-orientation, patience, diplomacy, sensitivity, personal commitment and customer-orientation (Myburgh 2003). The

new information ecology demands that librarians no longer offer services from behind a desk. The new role of librarians is not just offering a good service but also a good customer experience whether it is physical or virtual (Kwanya *et al*., 2012). Wittenborg (2011) also explains that the comfortable, predictable librarianship routines are gone - the only routine now is change - and adds that only the librarians who learn how to thrive in it will survive.

The other skills these librarians require include life skills such as problem solving, critical thinking, effective communication, teamwork and ethical thinking which complement their discipline-specific skills and professional knowledge (Partridge and Hallam 2004). Other skills proposed by Kwanya *et al*. (2012) include advocacy, lobbying, negotiation, diplomacy, conflict resolution, marketing, and promotion skills. They should also have good community relations. This competency would enable the librarians to demonstrate the value and impact of the library effectively; build support for the library; maintain positive public relations; and form strategic partnerships. The skills would also be useful for creating a warm, friendly, safe, and healthy physical, social and virtual library environment that encourages the members of the community to use the library (WebJunction 2009).

The authors also propose that technical university libraries can consider embracing the embedded librarian model in which they attach librarians to academic departments to enhance support to the users. Bell and Shank (2004) describe an embedded librarian as an academic librarian who combines the traditional skills of librarianship with specialist skills of the host department. Dewey (2004) explains that the concept of embedding implies a more comprehensive integration of one group with another to the extent that the group seeking to integrate is experiencing and observing, as nearly as possible, the daily life of the primary group. The embedded library model

facilitates the delivery of decentralised services to the users at a closer proximity. It involves creating desk spaces for liaison librarians among the user reading spaces or in some cases near the users' offices (Kwanya *et al.*, 2011). Freiburger and Kramer (2009) suggest that the liaison librarian should have a special understanding of the subject matter of the department or user area in which s/he is embedded. For instance, if the liaison librarian is attached to an engineering unit, then s/he needs to have had some training in engineering sciences. The idea is that the embedded librarian should be incorporated as a member of the team who participates in the team activities and is briefed adequately (Chilton, 2009; Shumaker and Talley, 2009; Talley, 2009). The higher level of bonding with the users attainable through embedding enables the liaison librarian to offer customised services to the users who consider the librarian as one of them. This model also facilitates ready and direct feedback from the users on the services and their needs. Moreover, it also makes the library more visible to the users and has the potential of enriching and increasing library usage (Chilton, 2009; Freiburger and Kramer, 2009; Kinnie, 2006).

**CONCLUSION**

From the findings of the study, it is evident that technical university libraries in Kenya operate just like any other academic library. This has resulted in inadequate service delivery to their users. The libraries should be philosophically distinct from the other academic libraries. This should be manifested through unique services, collection and staff. Recognising that they already deal with a user group who are inclined to use alternative sources of information, the use of embedded librarianship model may turn the tide of non-use. This study focused on The Technical University of Kenya only. There is need for more studies including the Technical University of Mombasa as well as the national polytechnics so as to provide a complete picture of the characterisation of technical libraries in Kenya.

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