

Intellectual Property Rights in Digital Libraries: Status, Interventions, Challenges, and Opportunities for Academic Libraries in Kenya

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Abstract

The management of intellectual property rights in digital contexts is increasingly becoming complex. In spite of its benefits, digitisation increases the vulnerability of digital works, thereby exposing them to violation. This paper discusses the intellectual property rights regime in Kenya; examines intellectual property rights issues academic librarians encounter in the digital information universe; examines how librarians currently safeguard intellectual property rights; and analyses the challenges that hamper the librarians' efforts to manage intellectual property rights effectively in digital contexts. Data for this paper was collected using the Delphi approach in which a group of 18 purposively-selected academic librarians participated by responding to an online questionnaire. The authors, acting as facilitators, analysed the responses and identified areas for further discussion or clarification, leading to another round of responses. Three rounds were held before consensus was reached. Additional data was obtained through documentary analysis. The findings of the study indicate that there are both local and international legal frameworks for handling intellectual property rights in Kenya. In spite of these, intellectual property violations in the form of plagiarism, piracy, freebooting, and parody are experienced in digital academic library contexts in Kenya. Librarians are making efforts to safeguard intellectual property rights through plagiarism testing; sensitisation of library users on intellectual property rights through comprehensive information literacy programmes; enforcement of citation and referencing styles; and tracking the use of protected information materials. However, these efforts are hampered by versatile technologies making intellectual property infringement easy, lack of landmark convictions in Kenya, inadequate intellectual property rights policies, presence of orphaned works, limitations of anti-plagiarism checkers, as well as lack of coordination and standardisation in violation of intellectual property rights. This is an original study which may contribute to the on-going discourse on

how best to manage intellectual property rights while enhancing the access of digital content in libraries.

Keywords: Academic Libraries, Digital Libraries, Intellectual Property Rights, Kenya

Introduction

The World Intellectual Property Organization (WIPO) (2004) defines intellectual property as creations of the mind. Field (2006) concurs and explains that intellectual property consists of inventions, literary and artistic works, as well as symbols, images, names, and designs used in commerce. The key forms of intellectual property include copyright, patents, trade secrets, and trademarks. In addition, intellectual property includes geographical indicators which identify goods as originating from a locality known for good quality and reputation. Such indicators are treated as forms of trademarks and are used to prevent consumer confusion and protect the business interests of the producers. Domain names are considered as trademarks because they represent the character and reputation of their holders in cyberspace.

Intellectual property rights give originators of creative works control over their works. Boldrin and Levine (2002) explain that intellectual property is not only the right to own and sell ideas, but also the right to regulate how the ideas are used. According to Field (2006), safeguarding intellectual property rights fosters economic growth, provides incentives for technological innovation, and attracts investment that in turn creates new jobs

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and opportunities for people within a jurisdiction. Davoudi et al. (2018) explain that intellectual property rights have a significant positive relationship with open innovation. They add that property rights significantly affect organisational performance. Allen (2003) avers that intellectual property boosts the competitive advantage of organisations by guaranteeing innovation leading to new products and services.

Field (2006) asserts that intellectually or artistically gifted people have every right to prevent the unauthorised use or sale of their creations just as owners of physical property such as cars, buildings, or stores. The author explains, however, that such creators who have intangible rights over their work find it difficult to protect the same because they cannot rely on physical controls such as fences and locks to keep others from unfairly benefiting from their work. This view echoes that of Boldrin and Levine (2002) who asserted that intellectual property is expensive to protect.

According to Hefter and Litowitz (2005), intellectual property is protected on a national basis and therefore varies from nation to nation. However, intellectual property rights can be protected across territorial boundaries through international treaties and conventions to which nation states ascribe. One of these is the Berne Convention. Countries which have signed the Berne Convention, among others, protect the rights of citizens of member states in their jurisdictions. This ensures that a work protected in one member-state is also protected in other member-states.

Several actions are construed as an infringement of intellectual property rights. In general terms, any action which leads to unauthorised use, production, reproduction, sale, counterfeiting, or claiming ownership of intellectual property constitutes a breach on the rights holder. In recent times, actions that project oneself or a company to be what it is, not as a means of getting socioeconomic advantage, is considered an infringement of intellectual property rights. One such example is cybersquatting, where one registers a domain name comprising a brand or a well-known name with the hope of selling it later to the rightful owner. Kwanya (2018) explains that one platform on which most people breach intellectual property rights is social media. The author asserts that social media should be treated as any other medium of communication which

is subject to intellectual property protection. Users of social media channels should be conscious of and respect the relevant intellectual property laws.

Literature Review

A number of scholars (Kwanya 2016; Xu & Du, 2019; Zha et al. 2019; Zirra, Ibrahim & Abdulganiyyi, 2019) concur that a digital library is a library model in which collections are acquired, processed, disseminated, searched, retrieved, and used digitally. Arms (2005) avers that a digital library is a managed collection of information, with associated services, where the information is stored in digital formats and is made accessible over a network. Pomerantz and Marchionini (2007), as well as Cleveland (1998), explain that librarians consider digital libraries to be like physical libraries. Therefore, they perform the primary functions of traditional libraries. These functions include collection development and management, information organisation, provision of access, reference work, and preservation of information materials. Kavulya (2007) acknowledges that whereas digital libraries may use different technologies, they all have one common attribute, that is, they hold information which is organised on computers and made available over a network. In this regard, they use procedures to select the material in the collections as well as organise it, make it available to the users, and archive it. Li, Jiao, Zhang, and Xu (2019), Zirra, Ibrahim, and Abdulganiyyi (2019), as well as Rosenberg (2005) argue that the drivers of digital libraries are automation of library systems, increasing availability of ICT devices and infrastructure, and ubiquitous connectivity. Indeed, Li, Jiao, Zhang, and Xu (2019) assert that digital libraries are an innovative application of ICTs to deliver library services. According to Kamau (2018), a digital library is not one monolithic structure but a structure that comprises networked systems and resources integrated through a web interface. The author adds that the resources in digital libraries include, but are not limited to, bibliographic databases, electronic journals, electronic books, indexes, datasets, and multimedia.

Baohua et al. (2002), Zirra, Ibrahim, and Abdulganiyyi (2019), and Zha et al. (2019) argue that the digital library is a major transformation of the traditional library model. They explain that this transformation is evident in the transition of the traditional libraries from passive

to active use, from direct to indirect service, from providing information ‘blindly’ to selective and accurate dissemination of information, and the provision of ‘rich’ collections whose quality is enhanced through mixing and remixing by different collaborators such as librarians and users at various levels. Singh (2003) emphasises that the digital library is more about the digital service environment than the digital content. The author asserts that this environment brings together digital collections and people and services that support information processing and sharing. Beamer (2019) explains that digital libraries provide environments and infrastructure which support the realisation of open science anchored on open document repositories. Prasad (2005) describes digital libraries as organisations that provide the resources, including specialised staff to select and organise; offer intellectual access; interpret, distribute, and preserve integrity; and ensure the persistence over time, of collections of digital works so that they are readily and economically available for use by a defined community.

Digital libraries exhibit attributes which distinguish them from the other library models. According to Baohua et al. (2002), these distinguishing characteristics include 1) digitisation of information resources, making them more durable and easily sharable; 2) digital information transfer through communication technologies such as the Internet; 3) limitless potential to share information across physical boundaries; 4) focus on knowledge and not just information resources; and 5) fast speed of service delivery. Singh (2003) also adds that digital libraries 1) have a higher variety of information resources; 2) provide localised access to distributed content; 3) enable the same information resource to be shared by many people simultaneously; 4) have shifted paradigms from collection ownership to mere access; 5) emphasise quality and usefulness of collection as opposed to quantity; and 6) presuppose the absence of human intermediaries.

Institutions which embrace the digital library model experience many benefits. Some of the benefits highlighted by scholars such as Kwanya, Stilwell, and Underwood (2012), Amrelia et al. (2005), Baohua et al. (2002), Harter (1996), Lagoze et al. (2005), Leiner (1998), and Singh (2003) include the fact that there is no physical boundary, thereby opening access to library resources and services; overcoming limitations of time through round-the-clock availability of services and resources; provision

of multiple access points to services and collections; enhanced usability through user-friendly interfaces; improved longevity of documents; cost-effective use of space; and value addition to services and collection. Kavulya (2007) avers that these advantages make the creation of digital libraries strategic in enhancing access to information in developing countries, especially in the Sub-Saharan region.

Kamau (2018) explains that most libraries in Kenya are hybrid libraries comprising both the physical and the digital components. The author explains that such libraries provide the physical space as well as information resources in both physical and electronic formats. The author adds that the growing prominence of digital resources in libraries in Kenya is a result of the libraries coming together to form a consortium, called the Kenya Libraries and Information Services Consortium (KLISC), which helps them select and acquire digital resources at affordable prices. Besides digital resources acquired externally, most libraries in Kenya have developed digital institutional repositories on which locally-generated content, such as copies of published scholarly work (journal articles, book chapters, and conference papers) and unpublished grey literature like speeches, presentations, and reports are kept (Kwanya, Stilwell & Underwood, 2014). According to Otando (2011), 65 per cent of the members of KLISC had institutional repositories by 2011. According to Gichiri et al. (2017), a majority (79.45%) of libraries in Kenya had established digital institutional repositories by 2017. According to Njagi and Namande (2018), nearly all universities in Kenya have established digital institutional repositories.

Owusu-Ansah, Rodrigues, and Walt (2019) argue that digital libraries have remarkably benefited developing countries, by providing limitless access to scholarly publications at affordable prices. Zirra, Ibrahim, and Abdulganiyyi (2019) opine that digital libraries have revolutionised access to information in developing countries, especially those in Africa. In spite of the myriad opportunities brought about by digital libraries, their effective use in developing countries is hampered by several challenges (Owusu-Ansah, 2020). In Kenya, for instance, Mutula (2005) posits that these challenges are largely the consequences of the digital divide. The author identifies the challenges as inadequate infrastructure, high cost of access, inappropriate or weak regimes, inadequate

telecommunications network, language divides, and lack of locally created content. Kamau (2018) summarises the challenges: poor infrastructure, lack of technical expertise of staff and users, inadequate financial resources, and standards and copyright challenges. In terms of digital institutional repositories which are currently a cardinal point in digital libraries in Kenya, Njagi and Namande (2018) identify the reluctance of academicians in archiving or publishing materials in institutional repositories and inadequate awareness of the benefits of institutional repositories as some of the major challenges to effective realisation of digital libraries in the country.

A few studies on digital libraries have been conducted in Kenya in the recent past. Kavulya (2007) assessed the challenges associated with establishing digital libraries; Amollo (2012) documented the status of digitisation of libraries in Kenya; Makori and Mauti (2016) investigated the acceptance of digital technologies by university libraries in Kenya; Otike (2016) explored the legal considerations librarians need to keep in mind while providing digital library services to distance learners; while Kamau (2018) examined copyright challenges digital libraries in Kenya face. There are a few other studies on the establishment and use of digital institutional repositories (Otando, 2011; Chilimo, 2015; Okumu, 2015; Chilimo, 2016; Moseti, 2016; Gichiri et al., 2017; Wangai, 2017). There is a dearth of information on how digital libraries in Kenya actually deal with intellectual property issues.

3 Rationale and Methodology of Study

Digital libraries cannot exist without digital content. Therefore, Kamau (2018) explains that the creation of a digital library inevitably involves the selection of material, scanning of documents, and web hosting or providing access to the information on the Intranet or Internet. Because of the associated ease of access, use, and sharing of content, digital libraries raise more complex intellectual property issues than traditional libraries. Librarians deploying digital libraries need to be conscious of the intellectual property concerns which arise from the delivery and use of digital resources.

It is evident from the above review that literature on digital libraries in Kenya is scarce. Besides, the bulk of the existing literature is focused on the implementation of digital libraries and information services. Although two studies (Kamau, 2018; Otike, 2016) explored intellectual

property matters related to digital libraries, they merely explained the challenges without delving into how to manage them as a means of enhancing the use of digital libraries and content in Kenya. The current study explores the intellectual property concerns which emerge from the use of digital libraries as well as how to manage them. The specific objectives of the study are to discuss the intellectual property rights regime in Kenya; examine intellectual property rights issues academic librarians encounter in the digital information universe; investigate how librarians currently safeguard intellectual property rights; and analyse the challenges that hamper the librarians' efforts to manage intellectual property rights effectively in digital contexts. The authors of the current study also propose strategies which librarians can use to enhance the protection of intellectual property rights in digital library contexts in Kenya.

Data for this paper was collected using the Delphi approach between March and May 2019. A group of 20 academic librarians in Kenya were selected through information-oriented purposive sampling to participate in the study, by responding to an online questionnaire hosted on Google Forms. However, only 18 librarians fully participated in the study. The authors, acting as facilitators, analysed the responses and raised issues for further discussion and/or clarification, leading to another round of responses. Three rounds were held before the responses became homogenous. Additional data was obtained through documentary analysis. Data was analysed and presented using descriptive statistics.

Findings and Discussions

The findings of the study are presented and discussed in this section.

Intellectual Property Rights Regime in Kenya

Documentary analysis was used to collect data for this objective. According to Omolo (2018), Kenya is a member of the Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement. As a member of TRIPS, Kenya is obliged to develop a legal framework for recognising and enforcing intellectual property rights. Article 61 of the TRIPS agreement encourages the members to develop criminal procedures and penalties for violating intellectual

property rights. The members are encouraged to tailor the legal provisions to their contexts. Omolo (2018) observes that under article 61 of the TRIPS agreement, members are obligated to provide criminal procedures for wilful counterfeiting of trademarks and piracy of copyrights. The author emphasises that the legal provisions under this article focus on intentional behaviour on a commercial scale and are aimed at deterring such behaviour through remedies such as imprisonment, monetary fines, or both. The remedies may also include seizure, forfeiture, and destruction of infringing copies.

Besides TRIPS, intellectual property rights in Kenya are governed by five legal provisions. These acts include the Copyright Act (2001), Trademarks Act (CAP 506), Industrial Property Act (2001), Anti-Counterfeit Act (2008), and Trade Descriptions Act (CAP 505). The Copyright Act relates to literary, musical, and artistic works; audio-visual works; and sound recordings and broadcasts. The act prohibits production of copyrighted works for commercial or personal use; selling, hiring, distributing, importing, or otherwise handling infringing copies of copyrighted works; and public performance of literary, musical, audio-visual works, or sound recording during subsistence of copyright without authorisation from the copyright owner(s). In addition, the Copyright Act has facilitated the establishment of the Kenya Copyright Board (KECOBO) and empowers it to enforce the provisions of the act.

Trademarks Act regulates the registration and use of trademarks in Kenya. The act makes it an offence to forge, falsely apply, make or dispose of, or possess any instrument for forging a registered trademark without the consent of the proprietor; to make, import, or possess any device for applying a registered mark or a semblance; to reproduce or import any reproduction of a registered trademark; sell or import goods or perform any service to which a forged registered trademark is falsely applied; and procure, counsel, aid, abet, or be an accessory to the commission of the other two offences, outside Kenya.

The Industrial Property Act makes it an offence to intentionally infringe a patent or a registered model or industrial design through unauthorised making, importing, selling, use or stocking for sale the subject good; to process patents for use and for industrial designs, reproducing the industrial design in the manufacture

process of a product; and importing, selling, and stocking a product, reproducing the protected industrial design. The Anti-Counterfeit Act prohibits the production or trade in counterfeit goods. The act makes it an offence to make, produce, or possess counterfeit goods; sell, hire out, barter, or exchange counterfeit goods; expose or exhibit counterfeit goods; and import, distribute, or dispose of any counterfeit goods in the course of trade. This act is enforced by the Kenya Anti-Counterfeit Agency and the Office of the Director of Public Prosecutions. The Trade Descriptions Act prohibits the inaccurate description of goods, services, accommodation, and facilities provided in the course of trade. It makes it an offence for one to apply a false trade description to any goods or to supply goods to which a false trade description has been applied; and give a false indication as to the kind of goods or services supplied.

The authors conclude that intellectual property rights issues in digital libraries in Kenya are largely governed by the Copyright Act. This is because digital libraries handle both published and unpublished scholarly materials, the majority of which are covered by the Copyright Act. It is important, therefore, for librarians to be cognisant of the fact that the same copyright issues associated with the use of printed materials also apply to digital materials.

Intellectual Property Rights Issues in Academic Libraries in Kenya

Academic librarians in Kenya encounter several intellectual property issues. The participants in this study were unanimous in their belief that plagiarism is one of the most serious intellectual property rights issues that academic librarians in Kenya have to deal with. Plagiarism was understood to imply copying and using other people's works, expressions, thoughts, or ideas, and passing them as one's own. The participants pointed out that plagiarism stifles creativity and generation of new knowledge. The participants reported that plagiarism is rampant in academic library settings, where library users plagiarise theses, dissertations, term papers, presentations, and other assignments. It emerged that the participants were only aware of two plagiarism cases which have thus far been lodged in Kenyan courts. These cases are already in the public domain. The first plagiarism case was *Anne Nang'unda Kukali v Mary A Ogola &*

University of Nairobi, in which Ms Kukali accused Ms Ogola of plagiarising her thesis and submitting the same to the University of Nairobi for an award of a Master's degree in Project Planning and Management. Lady Justice Florence Muchemi found Ms Ogola guilty of plagiarism and granted Ms Kukali's plea to block the University of Nairobi from awarding Ms Ogola the postgraduate degree (Kenya Law Reports, 2010). Another case involved a prominent lawyer and professor, Patrick Lumumba, and another lawyer, Wachira Maina. Mr Maina alleged that Professor Lumumba plagiarised his article on Kenya's 2013 presidential elections and published it in the *Law Society of Kenya Journal*. It was alleged that Professor Lumumba copied about 5,000 words from Mr Maina's article, which had been published in the mass media. The matter was settled out of court after Professor Lumumba admitted that he had indeed plagiarised Mr Maina's work and agreed to take several remedial measures, including recalling the article from the publishers (*The Star*, 2016). The participants explained that academic library users generally plagiarise other people's works because they are too lazy to compile their own. They also acknowledged that plagiarism is rampant in the digital environment because information technologies make it easy to obtain and share plagiarised content easily. Ironically, it is the same technologies which make it easier to detect cases of plagiarism by providing various copies of works, thereby making their comparison possible. The librarians advised that scholars in the digital age should understand that the "Internet never forgets".

Another intellectual property rights issue academic librarians in Kenya face is piracy. According to Taylor (2006), plagiarism and piracy are close but distinct forms of copyright violation. The author contends that piracy involves unauthorised large-scale reproduction of complete works such as books or manuals. The participants observed that piracy in digital academic library settings may involve lecturers downloading books, notes, and other learning materials, which they then pass on for free or at a fee to their students. In addition, piracy may occur when institutions download documents such as policies or guidelines and use the same on an "as is" basis. Students commonly pirate software, music, movies, and games for either personal or commercial use. There are several cases of freebooting, which involves downloading protected digital content and posting the same on one's digital platforms, such as a Facebook wall or Twitter

handles. The participants were concerned that lecturers and students alike seem oblivious to the fact that this is a copyright offense aided by ubiquitous information and communication technologies.

Parody is one other intellectual property rights issue academic librarians in Kenya have to contend with. In the context of this paper, parody is perceived as the modification or imitation of original works for fun. This practice has risen in the recent past through satirical memes of original images, music, or videos. Another form of parody involves customising and sharing of jokes or cartoons created by others. With the growing ubiquity of digital design tools, many people are able to create or circulate parody through the Internet, social media, and mobile phone applications. Although it is not mentioned directly in any intellectual property laws in Kenya, parody is generally construed to be an infringement on the original works. This view is based on the understanding that parody superficially alters original works to create humour. Thus, the works do not qualify as derived works under the copyright law.

How Digital Academic Libraries in Kenya Currently Manage Intellectual Property Rights

The participants explained that digital libraries in academic settings in Kenya manage intellectual property rights by conducting plagiarism checks and tests on scholarly works using anti-plagiarism software. Turnitin is the most popularly used software for this purpose¹. They further explained that plagiarism tests are part of relevant policies, which define what constitutes plagiarism as well as how to prevent it. The policies also clarify the roles of individuals and the institution in the fight against plagiarism and other intellectual property offenses. The respondents explained that one of the most important strategies used to stem plagiarism is requiring that all academic works and assignments be subjected to anti-plagiarism tests before being submitted. For instance, some universities now require that the librarian confirms that theses and dissertations pass anti-plagiarism tests before they are accepted for defence and/or examination. This has remarkably reduced cases of plagiarism.

¹ Turnitin is popularly used because academic libraries in Kenya collectively subscribe to it through KLISC.

The respondents also explained that another way of safeguarding intellectual property rights is by sensitising the users about them through relevant information literacy programmes. Thus, they are trained about various intellectual property rights as well as how they may be infringed. Recognising the fact that in legal terms, ignorance is no defence, these programmes sensitise the library users about the legal, moral, and economic consequences of infringing intellectual property rights. The respondents observed that although many users may be innocently taking intellectual property rights lightly, they emphasised that the consequences can be grave. Therefore, helping library users to understand how infringement of intellectual property rights may affect their professional future motivates them adequately to avoid it.

Academic librarians in Kenya also encourage the use of specific referencing styles as a means of ensuring that the use of other people's works is acknowledged and cited properly. The most commonly used style in academic writing in Kenya is the American Psychological Association (APA) style. There are some cases where universities have developed their own in-house referencing styles by customising the existing international styles. The participants explained that librarians train the users on how to apply citation and referencing tools such as Mendeley and EndNote, among others, to manage their citations and references.

In addition, academic librarians in Kenya track the use of specific materials as a means of detecting their unauthorised use. However, none of the participants have come across the use of digital rights management (DRM) technologies, technical protection measures (TPM), cryptography, digital watermark technology, and steganography. As the digital academic library information universe in Kenya gets more sophisticated, it is expected that librarians will adopt more technological tools to safeguard intellectual property rights.

Challenges in Managing Intellectual Property Rights in Digital Library Settings

The greatest challenge academic digital libraries in Kenya face in their efforts to safeguard intellectual property rights is the ease with which it is now possible to infringe

protected works. The matter is further exacerbated by the fact that most of the users infringe the rights away from the library spaces. This makes it difficult for the librarians to detect infringement unless the products are brought for certification. Therefore, the role of librarians is limited to sensitisation and capacity building against violating intellectual property rights.

The rampant cases of orphaned works also frustrate the efforts of librarians in preventing the violation of intellectual property rights. Librarians and users who are unable to locate the rights owners are stuck between a rock and a hard place. If the material is critical, the users are forced to act in ways which may be construed as infringing the rights of the creators of the works. Once this happens, their sensitivity to intellectual property rights may be dimmed. Thus, they may become habitual violators of intellectual property rights. They may argue that if they have done it once, they can do again, and again.

There are several tools which can now be used to crack protected works. One of these is Sci-Hub, which enables people to access, download, and use copyright materials online. Another is b-ok.xyz, which enables users to access, download, and share books and journal articles. Crackers of software activation keys abound, making it easy to install, configure, and use any protected software free of charge. Again, these crackers may be used in situations outside the direct control of the libraries. This makes it difficult for the librarians to protect the interests of the rights owners in these circumstances.

Libraries need comprehensive policies to be able to safeguard intellectual property rights effectively. Although the participants acknowledged that a number of universities in Kenya now have plagiarism policies, they pointed out that many more do not. This implies that such libraries do not have the policy anchor to launch intellectual property rights management interventions. This exposes them to unnecessary constraints, such as vulnerability to litigation, lack of goodwill, and poor coordination.

There is limited information about intellectual property rights offenses in Kenya. For example, as explained earlier, only two cases of plagiarism seem to have been lodged in Kenyan courts in the recent past. Furthermore, in one of the cases, the matter did not proceed to a full

hearing, as it was settled out of court. Consequently, there is no landmark conviction of intellectual property rights offenders in Kenya. Thus, there are no local examples of what can happen to such offenders to discourage likely offenders. In the absence of such cases, library users seemingly take intellectual property rights violations lightly.

Another challenge emanates from the fact that anti-plagiarism software generally compares works which are available on the Internet. Therefore, infringement of offline works may not be detected easily. Similarly, non-digital works cannot be subjected to anti-plagiarism tests. Nonetheless, library users should be cautious because violations would be detected once the works are digitised, however long it takes. Another challenge related to this is the fact that anti-plagiarism software licences are expensive. Given that most university libraries in Kenya constantly face budget constraints, they may not be able to afford such software. Nonetheless, collectively negotiated subscriptions through KLISC have been helpful in this regard.

Other challenges hampering the fight against intellectual property rights violations include anonymity in digital spaces, making it difficult to identify rights owners as well as offenders. Remote access to library services, spaces, and products; lack of capacity of institutional and technical capacity of libraries to enforce intellectual property rights laws and policies; advocacy for open access frameworks, reducing or eliminating barriers to protected works; and lack of cooperation or standardisation in the campaigns against intellectual property rights violations make it difficult for academic librarians in Kenya to safeguard intellectual property rights in digital environments.

Conclusion

Safeguarding intellectual property rights in the digital information universe is a complicated task. This is because digitisation of protected works makes them vulnerable to violation. Although basic local and international legal frameworks on the protection of intellectual property rights exist, plagiarism, piracy, freebooting, and parody are experienced in digital academic library contexts in Kenya. Librarians are making efforts to safeguard intellectual property rights through plagiarism testing; sensitisation of library users on intellectual property rights through comprehensive information literacy programmes;

enforcement of citation and referencing styles; and tracking the use of protected information materials. These efforts are hampered by versatile technologies making intellectual property infringement easy; lack of landmark convictions in Kenya; inadequate intellectual property rights policies; presence of orphaned works; limitations of anti-plagiarism checkers; as well as lack of coordination and standardisation in violation of intellectual property rights.

Recommendations

As a means of harnessing existing opportunities, the authors propose the following strategies to enhance ethical and legal use of works protected by intellectual property rights:

Professional associations such as Kenya Library Association (KLA); Kenya Association of Records Managers and Archivists (KARMA); Christian Association of Librarians in Africa – Kenya (CALA); and Information Communication Technology Association of Kenya (ICTAK) should prioritise intellectual property rights in their capacity strengthening programmes. This will build the capacity of their members to design and deploy effective programmes to safeguard the intellectual property rights in their duty stations and beyond.

All academic institutions in Kenya should develop and enforce relevant intellectual property rights policies. Such policies will energise, mainstream, and facilitate mitigations against violations of intellectual property rights.

All academic librarians are encouraged to join KLISC to benefit from collaboratively procured anti-plagiarism software. This will facilitate better standardisation and coordination in the fight against violation of intellectual property rights. Similarly, they will be able to reduce the costs associated with such campaigns by pooling resources and/or negotiating discounts collectively.

Academic libraries should develop and deploy comprehensive information literacy curricula integrated to all academic programmes. The curricula should have modules on intellectual property rights and information ethics. Such courses should be compulsory for all students. The librarians should collaborate with the Commission on University Education (CUE) in this effort and set standards on the content and delivery of the curricula.

Academic institutions should invest in technological tools which can enable them to scale up efforts to stem violation of intellectual property rights in their digital and physical spaces. Of particular interest are tools which would enable them to apply cryptography, steganography, digital rights management, and digital watermarks which are currently not being used in Kenya.

References

- Allen, K. R. (2003). *Bringing new technology to market*. United Kingdom: Pearson Education.
- Amollo, B. A. (2012). Digitization of libraries in Kenya. Retrieved from <http://hdl.handle.net/10539/11485>. Accessed 23 May 2018.
- Amrelia, M., Murthy, T. A. V., & Satyabati, T. (2005). Digital library: An unavoidable need in today's world. In ReadIT 2005: Digital libraries to knowledge systems. *Proceedings of the Conference on Recent Advances in Information Technology, 14-15 July 2005, Indira Gandhi Centre for Atomic Research, Kalpakkam, India*. Kalpakkam: Madras Library Association – Kalpakkam Chapter and Indira Gandhi Centre for Atomic Research, (pp. 18-22.). Retrieved May 23, 2018, from <http://library.igcar.gov.in/readit-2005/conpro/facets/s1-4.pdf>.
- Arms, W.Y. (2005). *Digital libraries*. New Delhi: Ane Books.
- Baohua, W., Xiaoyan, M., & Fei, G. (2002, October). On the characteristics of the digital library and the influence to the work of reader service. In *Asian Agricultural Information Technology and Management: Proceedings of the Third Asian Conference for Information Technology in Agriculture* (pp. 26-28).
- Beamer, J. E. (2019). Digital libraries for open science: Using a socio-technical interaction network approach. In *Italian Research Conference on Digital Libraries* (pp. 122-129). Springer, Cham.
- Boldrin, M., & Levine, D. (2002). The case against intellectual property. *American Economic Review*, 92(2), 209-212.
- Chilimo, W. (2015). Green open access in Kenya: A review of the content, policies and usage of institutional repositories. *Mousaion*, 33(3), 25-54.
- Chilimo, W. (2016). Institutional repositories: Awareness and self-archiving practices of academic researchers in selected public Universities in Kenya. In *4th CODESRIA Conference on Electronic Publishing: Open Access Movement and the Future of African Knowledge Economy*. Dakar, Senegal March.
- Cleveland, G. (1998). *Digital libraries: Definitions, issues and challenges*. IFLA, Universal dataflow and telecommunications core programme.
- Davoudi, S. M. M., Fartash, K., Venera, G. Z., Asiya, M. B., Rashad, A. K., Anna, V. B., & Zhanna, M. S. (2018). Testing the mediating role of open innovation on the relationship between intellectual property rights and organizational performance: A case of science and technology park. *EURASIA Journal of Mathematics Science and Technology Education*, 14(4), 1359-1369.
- Field, T. G. (2006). What is intellectual property?. Focus on: Intellectual property rights, U.S. state department, 2006. Retrieved May 22, 2018, from <https://ssrn.com/abstract=1866207>. Accessed 22 May 2018.
- Gichiri, P. M., Ng'etich, F. K., Omwoha, J. N., & Maina, J. (2017). Institutional repositories in Kenya: The case of the Kenya library and information services consortium member libraries. *African Multidisciplinary Journal of Research*, 2(1).
- Harter, S. P. (1996). What is a digital library? Definitions, content, and issues. In *International conference on digital libraries and information services for the 21st century* (pp. 8-17).
- Hefter, L. R., & Litowitz, R. D. (2005). What is intellectual property. *United States Information Program*. Retrieved May 22, 2018, from http://old.apc.org/english/capacity/policy/intellectual_prop_reading_litowitz.doc.
- Kamau, G. W. (2018). Copyright challenges in digital libraries in Kenya from the lens of a librarian. In *Handbook of Research on Managing Intellectual Property in Digital Libraries* (pp. 312-336). IGI Global.
- Kavulya, J. J. (2007). Digital libraries and development in Sub-Saharan Africa: a review of challenges and strategies. *The Electronic Library*, 25(3), 299-315.
- Kenya Law Reports. (2010). *Anne Nang'unda Kukali v Mary A. Ogola & another*. Retrieved August 12, 2018, from http://kenyalaw.org/Downloads_FreeCases/81079.pdf.
- Kwanya, T. (2016). Information seeking behaviour in digital library contexts. In *Library Science and Administration: Concepts, Methodologies, Tools, and Applications* (pp. 1384-1408). IGI Global.
- Kwanya, T. (2018). Social bookmarking in digital libraries: Intellectual property rights implications.

- In *Handbook of Research on Managing Intellectual Property in Digital Libraries* (pp. 1-18). IGI Global.
- Kwanya, T., Stilwell, C., & Underwood, P. (2014). Mainstreaming grey literature in research library collections in Kenya. *Libri*, 64(2), 134-143.
- Kwanya, T., Stilwell, C., & Underwood, P. G. (2012). Library 2.0 versus other library service models: A critical analysis. *Journal of Librarianship and Information Science*, 44(3), 145-162.
- Lagoze, C., Krafft, D. B., Payette, S., & Jesuroga, S. (2005). What is a digital library anymore, anyway. *D-Lib Magazine*, 11(11), 1082-9873.
- Leiner, B. M. (1998). The scope of the digital library. *DLib Working Group on Digital Library Metrics*. Retrieved May 23, 2018, from <http://www.dlib.org/metrics/public/papers/dig-lib-scope.html>.
- Li, S., Jiao, F., Zhang, Y., & Xu, X. (2019). Problems and changes in digital libraries in the age of big data from the perspective of user services. *The Journal of Academic Librarianship*, 45(1), 22-30.
- Makori, E. O., & Mauti, N. O. (2016). Digital technology acceptance in transformation of university libraries and higher education institutions in Kenya. *Library Philosophy and Practice*, 1(2016), 1-20.
- Moseti, I. (2016). Digital preservation and institutional repositories: Case study of universities in Kenya. *Journal of the South African Society of Archivists*, 49, 137-154.
- Mutula, S. M. (2005). Peculiarities of the digital divide in sub-Saharan Africa. *Program: Electronic Library and Information Systems*, 39(2), 122-138.
- Njagi, P. R., & Namande, B. (2018). The status of the implementation of institutional repositories in selected newly established universities in Kenya. *Regional Journal of Information and Knowledge Management*, 3(1), 30-40.
- Okumu, O. D. (2015). *Adoption of institutional repositories in dissemination of scholarly information in universities in Kenya with reference to United States International University-Africa* (Master's dissertation). Department of Library and Information Science, University of Nairobi.
- Omolo, J. A. (2018). Criminal procedures and penalties for infringement of intellectual property rights in Kenya. *Journal of Intellectual Property Law & Practice*.
- Otando, R. (2011). Building institutional repositories in KLISC member institutions in Kenya: Current status and emerging challenges. In *Proceedings of the 14th International Symposium on Electronic Theses and Dissertations, Cape Town, South Africa* (pp. 13-17).
- Otike, J. (2016). Legal considerations of providing information in support of distance learning by digital libraries in universities in Kenya. *Information Seeking Behavior and Challenges in Digital Libraries*, 57-69.
- Owusu-Ansah, C. M., Rodrigues, A. D. S., & Walt, T. B. V. D. (2019). Integrating digital libraries into distance education: A review of models, roles, and strategies. *Turkish Online Journal of Distance Education*, 20(2), 89-104.
- Pomerantz, J., & Marchionini, G. (2007). The digital library as place. *Journal of Documentation*, 63(4), 505-533.
- Prasad, B. S. (2005). Swarnalatha (2005) Digital library infrastructure and architecture. In *Read IT 2005: Digital Libraries to Knowledge Systems. Proceedings of the Conference on Recent Advances in Information Technology* (pp. 14-15).
- Rosenberg, D. (2006). Towards the digital library in Africa. *The Electronic Library*, 24(3), 289-93.
- Singh, S. (2003). Digital library: definition to implementation. Retrieved May 23, 2018, from http://arizona.openrepository.com/arizona/bitstream/10150/106534/1/lecture_rcc_26jul03.pdf.
- Taylor, K. (2006). Plagiarism and piracy: A publisher's perspective. *Learned Publishing*, 19(4), 259-266.
- The Star. (2016). PLO Lumumba accused of plagiarism, intellectual theft. Retrieved August 12, 2018, from https://www.the-star.co.ke/news/2016/10/07/plo-lumumba-accused-of-plagiarism-intellectual-theft_c1434243.
- Wangai, M. W. (2017). *Perception and attitude of postgraduate students on institutional repositories: Case of St. Paul's University in Limuru Kenya* (Doctoral dissertation, Kenyatta University).
- World Intellectual Property Organization. (2004). What is intellectual property? Retrieved October 2, 2020, from https://www.wipo.int/edocs/pubdocs/en/intproperty/450/wipo_pub_450.pdf.
- Xu, F., & Du, J. T. (2019). Examining differences and similarities between graduate and undergraduate students' user satisfaction with digital libraries. *The Journal of Academic Librarianship*, 45(6).
- Zha, X., Liu, K., Yan, Y., Yan, G., Guo, J., Cao, F., & Wang, Y. (2019). Comparing digital libraries with social media from the dual route perspective. *Online Information Review*, 43(4), 617-634.