THE RIGHT TO RESEARCH AND COPYRIGHT LAW IN KENYA: TEXT AND DATA MINING

AUTHOR: CHEBET KOROS
WITH: JOSHUA KITILI, CYNTHIA NZUKI, NATASHA KARANJA
EDITORS: DR. MELISSA OMINO, DR. ANGELINE WAIREGI

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Strathmore University
Centre for Intellectual Property and Information Technology Law

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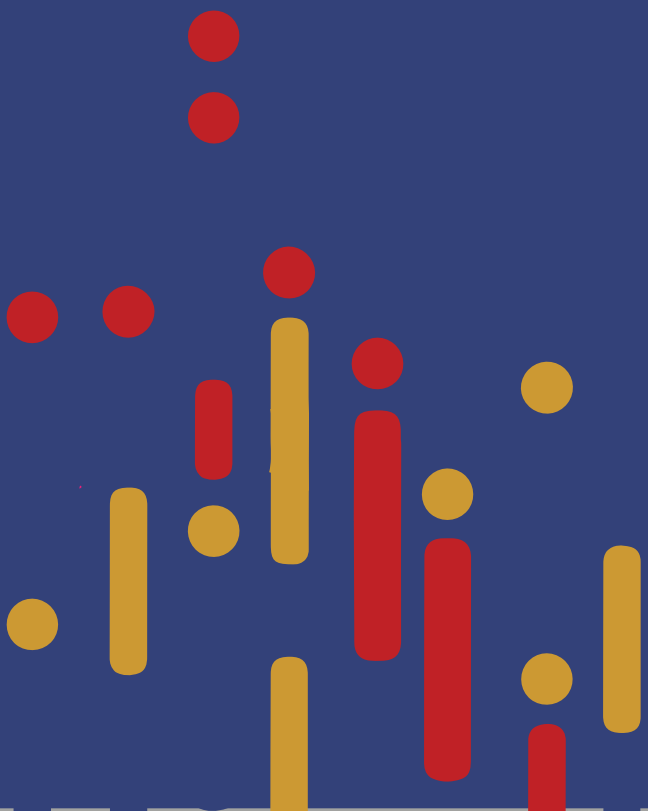
Contents



1. Introduction

Text and Data Mining (TDM) technology is applied in research to hasten the process of analysing thousands of data required for a study or for innovation to occur.[1] TDM is *"any application of a computational process to materials to derive data from or about those works".*[2] TDM research is a progressively effective research technique for expanding human knowledge.[3] For example, TDM projects such as BlueDot led to discovering the Coronavirus outbreak and advancing vaccine research.[4] TDM research involves a four-step process: identifying relevant documents, converting the documents to machine-readable format, extracting structured data, and mining the data to *"discover new knowledge, test hypotheses, and identify new relationships."*[5]

TDM is an essential research tool requiring an enabling legal environment to operate. However, there are challenges concerning access and the use of modern technology, such as TDM and Artificial Intelligence (AI), for research in Kenya. There is need for more laws that create an enabling environment for and govern modern research technology. Another significant challenge is inadequate internet connectivity and network infrastructure.[6] There is also a need for Artificial Intelligence (AI) experts to customise AI systems to apply to Kenyan problems.[7] It is argued that this scarcity limits the number of researchers and users of AI technologies in Kenya.[8] Inadequate funding from African governments also hinders relevant research in AI technologies.[9] TDM, especially, requires a significant financial investment to collect and train a large amount of data.[10] For TDM research to thrive in Kenya, the technology laws ought to provide solutions to these challenges and promote an enabling environment for TDM research. This study investigated Kenya's technology legal framework that supports research and its impact on TDM research.

[1]University of Cambridge LibGuides, 'Text & Data Mining: What is TDM?', 2019, June 28 <https://libguides.cam.ac.uk/tdm/definitions> accessed 22 May 2023

[2]Sean Flynn et al., 'Implementing User Rights for Research in the Field of Artificial Intelligence: A Call for International Action', *Joint PIJIP/TLS Research Paper Series*, no. 48 (2020); The EU defines text and data mining as "any automated analytical technique aimed at analyzing text and data in digital form in order to generate information which includes but is not limited to patterns, trends and correlations." Directive 2019/790 of the European Parliament and of the Council of 17 April 2019, Art. 2(2), on Copyright and Related Rights in the Digital Single Market and amending Directives 96/9/EC and 2001/29/EC [CDSM Directive].

[3]Sean Flynn and Lokesh Vyas, 'Examples of text and data mining research using copyrighted tools', < https://infojustice.org/archives/44948> accessed 27 March 2023

[4]Marc Prosser, 'How AI Helped Predict the Coronavirus Outbreak Before it Happened', *Singularity Hub* 5 (2020); W. Knight, *Researches Will Deploy AI to Better Understand Coronavirus* (Wired, 2020).; BlueDot: Outbreak Intelligence Platform, <https://bluedot.global/> accessed 15 September 2022

[5]League of European Research Universities, 'Text and Data Mining: Its importance and the need for change in Europe.' <https://www.leru.org/files/Text-and-Data-Mining-Factsheet.pdf> accessed 8th September 2022

[6]Paul Muga Obonyo, 'An Investigation in to the Status of Kenya's Information Communication Technology (ICT) Policy in the Education System', *European Journal of Education Studies*, 2019.

[7]Mvurya Mgala, 'The Extent and Use of Artificial Intelligence to Achieve the Big Four Agenda in Kenya', 2020.

[8]ibid.

[9]Barasa, 'Digitalization in Teaching and Education in Kenya: Digitalization, the Future of Work and the Teaching Profession Project'.

[10]ibid.

TDM research usually utilizes text or data that falls under copyright protection.[11] Copyright describes the protection and promotion of artistic, musical and literary works, such as compilations of data.[12] It provides an author or right-holder the exclusive right to control the use of their protected work, including the exclusive right to reproduction and distribution. TDM research requires researchers to reproduce copyright-protected works: from scanning copies of analogue works, formatting the texts and data, preparing them for processing, extracting useful information from the vast quantities being searched, to storing the data after mining is completed.[13] Additionally, temporary reproduction in TDM research occurs when *"a researcher makes a query on a database",* permanent reproduction occurs when a researcher constructs a database to be mined, and publication happens when the database is shared with other researchers for verification or use.[14] Thus, using TDM technology for research usually requires express consent from the copyright owners or an exception from copyright law that permits TDM research. Most copyright laws worldwide provide exceptions and limitations to copyright for specific purposes.[15] However, few countries have provided TDM research or computational analysis as one of the specific purposes exempt from copyright protection.

Researchers seeking to contribute to human knowledge require digital tools, like TDM, and access to data. The law in which these researchers operate should therefore create an enabling environment for them. Some jurisdictions, for example, the European Union, Japan and Singapore, have amended their laws to provide a specific copyright exception for text and data mining.[16] However, the TDM provisions of these countries vary. Globally, most countries still need to amend their copyright laws to provide for digital technologies related activities, including, but not limited to, research. Kenya falls under this category, where the copyright law needs to be adequately amended to support digital technologies enabled research. The Kenyan copyright law restricts the unauthorised use of copyright-protected works.[17] However, the exclusive rights in copyright do not include the right to control the use of copyright-protected work for specific purposes, such as scientific research.[18] This is the fair dealing copyright exception, which is "*a user's right in copyright law permitting the use, or "dealing" with, a copyright-protected work without permission or payment of copyright royalties."*[19] Fair dealing was codified in 1911 having first been developed by courts in England in the eighteenth century. As per UK legislation, fair dealing is an exception to copyright infringement of work for limited purposes of

[11]Geiger C , Frosio G & Bulayenko O, The Exception for Text and Data Mining (TDM) in the Proposed Directive on Copyright in the Digital Single Market – Legal Aspects [2018] CIIPS Research Paper No 2018-02,6.

[12]Kenya Copyright Board, KECOBO, 'A Guide to Copyright in Kenya', 2018 < https://copyright.go.ke/sites/default/files/downloads/A%20Guide%20to%20Copyright%20in%20Kenya%202018%202PRESS0.pdf> accessed 22 May 2023; WIPO, 'Copyright. What is Copyright': *"the rights that creators have over their literary and artistic works*" < https://www.wipo.int/copyright/en/> accessed 27 March 2023.

[13]Samuelson, 'Text and Data Mining of In-Copyright Works: Is It Legal?', 20–22.

[14]Flynn et al., 'Implementing User Rights for Research in the Field of Artificial Intelligence: A Call for International Action'.

[15]Berne Convention for the Protection of Literary and Artistic Works, A. 9

[16]European Parliament and Council Directive 2019/790 on copyright and related rights in the Digital Single Market, 2019, art. 4, O.J. (L130); Japan Copyright Act, 1970 (Act No. 48 of May 6, 1970, as amended up to Act No. 72 of July 13, 2018, Art. 30-4; and Singapore Copyright Act 2021 (Revised Edition 2020, Act No. 22 of 2021), s. 244

[17]The Copyright Act of Kenya 2001, as amended in 2022 < http://kenyalaw.org:8181/exist/kenyalex/actview.xql?actid=CAP.%20130 > accessed 27 March 2023

[18]The Copyright Act of Kenya 2001, section 26

[19]COPYRIGHT AT WATERLOO, 'What is fair dealing and how does it relate to copyright?', https://uwaterloo.ca/copyright-at-waterloo/faq-1-5

"private study, research, criticism, review, or newspaper summary."[20] This principle differs from the fair use principle, which is more flexible and open-ended, and provides four factors to determine whether the use of copyright-protected work is fair.[21] Despite the existence of a fair dealing exception in the Kenyan copyright law, there is no clarity as to whether this exception extends to the use of TDM research. It can also be argued that this provision is limited in comparison to other countries' copyright laws that incorporate the fair use exception principle, or which provide a specific exception for TDM research.

The right to receive or access information is justified under fundamental freedom rights.[22] The right to research or the *"right to conduct and receive or access research"* can primarily be warranted by the universally shared freedom of expression and the public's right to information[23], provided for under various national laws, such as Articles 33 and 35 of Kenya's Constitution. While some scholars have argued that the Limitations and Exceptions (L&Es) to copyright protection may be understood as legal privileges[24], scholars of the 'right to research' argue that L&Es amount to user "rights" which implies that they are enforceable.[25] However, it is argued that the incidental reproduction involved in TDM research is beyond the scope of exclusive rights.[26] Additionally, some scholars say that access to information, the *"mere reading"*, or *"the act of reading a work into a computer's random access memory"* does not require a copyright action.[27]

Notably, while TDM research seeks to discover and expand knowledge, it should not cause harm or loss to the copyright holder.[28] Some jurisdictions have provided for TDM research as a specific copyright exception[29],i.e., information analysis[30], or as computational analysis[31] provisions. In other countries with no specific TDM exceptions in copyright law, like Kenya[32], TDM interpretations, guidelines, or best practices to existing exceptions for research could be adopted. There is, however, no global copyright

[20]Jonathan Band and Jonathan Gerafi, 'Fair Use/Fair Dealing Handbook', *Available at SSRN 2333863*, 2013. < https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2333863> accessed 20 February 2023

[21]Copyright Law of the United States (Title 17), section 107. These factors are the purpose and character of the use, the nature of the work, the amount and substantiality of the portion used, and the effect of the use on the market or value of the copyrighted work.

[22]Universal Declaration of Human Rights of 1948, Article 19; International Covenant on Civil and Political Rights of 1966, Article 19.2

[23]Flynn, Sean and Geiger, Christophe and Quintais, João Pedro and Margoni, Thomas and Sag, Matthew and Guibault, L. and Carroll, Michael W., Implementing User Rights for Research in the Field of Artificial Intelligence: A Call for International Action (April 20, 2020). European Intellectual Property Review 2020, Vol. 42, Issue 7, 393-398., American University, WCL Research Paper No. 2020-12, Available at SSRN: https://ssrn.com/abstract=3578819 or http://dx.doi.org/10.2139/ssrn.3578819

[24]Flynn et al., 'Implementing User Rights for Research in the Field of Artificial Intelligence: A Call for International Action'.

[25]Sean Flynn and Michael Palmedo, 'The User Rights Database: Measuring the Impact of Copyright Balance', *Available at SSRN 3082371*, 2017.

[26]Christophe Geiger, Giancarlo Frosio, and Oleksandr Bulayenko, 'Text and Data Mining in the Proposed Copyright Reform: Making the EU Ready for an Age of Big Data?', *IIC-International Review of Intellectual Property and Competition Law* 49, no. 7 (2018): 814–44.

[27]B. Hugenholtz, 'Rights, Limitations and Exceptions: Striking a Proper Balance', in *IFLA/Imprimatur, Conference*, 1997, 30–31; Jessica Litman, 'The Exlusive Right to Read', *Cardozo Arts & Ent. LJ* 13 (1994): 29; Christophe Geiger, Giancarlo Frosio, and Oleksandr Bulayenko, 'Crafting a Text and Data Mining Exception for Machine Learning and Big Data in the Digital Single Market', *Intellectual Property and Digital Trade in the Age of Artificial Intelligence and Big Data*, 2018, 97–111.

[28]Flynn et al., 'Implementing User Rights for Research in the Field of Artificial Intelligence: A Call for International Action'.

[29]Directive on Copyright in the Digital Single Market, 2019, Arts. 3-4 (European Union).

[30]Japan Copyright Act, 2006, Art. 47-7 (Japan).

[31]Copyright, Designs and Patents Act, 1988, Arts. 29A (U.K.).

[32]The Copyright Act of Kenya, 2001, Part A (1)(a), Second Schedule.

policy for TDM research, and there is , consequently, a call for international leadership to develop guidelines on the application of copyright to the use of TDM technology.[33]

A classification study, 'Research Exceptions in Comparative Copyright,'[34] determined that Kenya's copyright laws have open general exceptions for several purposes including research.[35] This study, however, only reviewed copyright statutes and did not look into the application or interpretation of the laws in courts or by enforcement bodies.[36] Interpretations of the law may narrow or expand the application of L&Es. Our research, therefore, assessed the judicial decisions on fair dealing to determine how the law has been applied in Kenya. Additionally, it compares Kenya's copyright framework for the research exception to that of South Africa. South Africa's current copyright law has a similar fair dealing exception to Kenya's; however, it has a copyright amendment bill that seeks to shift to the more flexible fair use principle.

The use of copyrighted works for research can be enabled by limiting the scope of copyright protection or providing exceptions from the application of those rights for specific purposes.[37] However, African scholars have deemed the rights of copyright holders, in Africa, to be very broad in the law, and that the legal limitations and exceptions are very narrowly constructed.[38] This has been observed in the copyright laws of Kenya and South Africa.[39] Further, it is argued that the current set of copyright exceptions and limitations need to be more specific; are fragmented, and in many instances outdated.[40] In terms of global copyright rules, the question arises whether copyright-protected works used for TDM research fall under the exclusive rights of a copyright holder requiring a license, or whether they fall under copyright limitations and exceptions.[41]

[33]Flynn et al., 'Implementing User Rights for Research in the Field of Artificial Intelligence: A Call for International Action'.

[34]Flynn, Sean; Schirru, Luca; Palmedo, Michael; and Izquierdo, Andrés. "Research Exceptions in Comparative Copyright." (2022) PIJIP/TLS Research Paper Series no. 75. <https://digitalcommons.wcl.american.edu/research/75> accessed 27 March 2023

[35]ibid.,17

[36]ibid.

[37]Sean Flynn, 'Enabling the Future Of Youth Research Through Copyright'*, Cross posted on the Education International blog,* <https://infojustice.org/archives/44002>accessed 27 March 2023

[38]Chris Armstrong and Jeremy De Beer, *Access to Knowledge in Africa: The Role of Copyright* (UCT Press, 2010).

[39]ibid.,119, 268

[40]ibid.

[41]Flynn et al., 'Implementing User Rights for Research in the Field of Artificial Intelligence: A Call for International Action'.

2. Method

The key objective of this study was to determine the relationship between Kenya's technology and copyright legal framework and its effect on text and data mining (TDM) research. To attain this objective, the study sought to meet four specific targets. Firstly, to determine if Kenya's technology policy promotes technology-based research. Secondly, to evaluate the prospects and plans for enabling a legal environment for technology-based research. Thirdly, to investigate the role of copyright law in enabling TDM research. Lastly, to provide recommendations for national, regional, and international copyright policies that will allow TDM research.

This research employed three interrelated methods: legal review, comparative analysis and a survey of respondents involved in text and data mining. It utilized Kenya's official legislative databases, official reports, papers, and other documents published or commissioned by relevant government institutions, as well as pertinent bills and draft policies to determine the impact of enacted legislation on TDM. A comparative analysis of Kenya's and South Africa's copyright legal framework on limitations and exceptions (L&Es) for research was also done.

A survey on TDM developers and users was conducted to determine the applicability of Kenya's technology policy and copyright laws pertinent to TDM research. The survey utilized semi-structured questionnaires, and a validation meeting was held to verify study findings. Survey participants included data scientists, data analysts, researchers, AI engineers, software developers among other professionals in the data and technology field. The research team used purposive sampling as the selection criteria, based on the time constraints of the study. The targeted sample size was 30 - 50 participants, and 34 responses were received. The data collected included relevant background information of the respondents, development and /or consumption of TDM, AI, or ML technology, familiarity with Kenyan technology and copyright laws, the impact of copyright laws on their use of these technologies, among others. Ethical clearance was obtained from all relevant bodies prior to data collection from survey correspondents.

This research employed three interrelated methods: legal review, comparative analysis and a survey of respondents involved in text and data mining.

3. Kenya's Technology Policy: Promoting Research and Technology

For TDM research to thrive in Kenya, the laws ought to promote an enabling environment. This research analyzed several technology laws and policies to identify the objectives that support technology-based research methods, like TDM research. A summary of Kenya's technology legal framework, and its Artificial Intelligence (AI) policy, that supports technology-based research, like TDM research are outlined below:

3.1. Kenya's Technology Law and Policy Framework Supporting TDM Research

3.1.1. Constitution of Kenya 2010

Kenya's supreme law, the 2010 Constitution, supports technology-based research, like text and data mining (TDM) research, by guaranteeing the fundamental rights of freedom of expression and access to information.[42] The Constitution recognizes the freedom to seek, receive, and impart information for academic and scientific research purposes.[43] The Constitution further enables citizens to access information needed for the exercise or protection of any fundamental right.[44] The Access to Information Act 2016, establishes the legal framework for accessing information held by public and private entities. However, limitations exist to protect commercial interests, including intellectual property rights.[45] As highlighted below, these constitutional provisions form the basis for promoting technology-based research, such as TDM research, in Kenya.

3.1.2 The Science, Technology and Innovation Act 2013[46]

This legislation, mainly through the establishment of the National Commission for Science Technology and Innovation (NACOSTI), promotes technological advancement, education and research.[47] This would include technology-based research such as TDM research. NACOSTI collaborates with other agencies to allocate funds and ensure the implementation of priority research programs.[48] It also oversees the delivery of high-quality science, technology, and innovation programs by research institutes.[49] NACOSTI has the authority to determine the storage, sharing, and utilization of research

[42]Constitution of Kenya, Article 35

[43]Constitution of Kenya 2010, Article 33 (1) provides for *freedom to seek, receive or impart information or ideas; freedom of artistic creativity; and academic freedom and freedom of scientific research*.

[44]Constitution of Kenya, Article 35 (1) (b), Every citizen has the right of access to *information held by another person and required for the exercise or protection of any right or fundamental freedom.*

[45]Access to Information Act, Section 6 (e), this is *in respect of information whose disclosure is likely to substantially prejudice the commercial interests, including intellectual property rights, of that entity or third party from whom information was obtained.*

[46] This legislation facilitates the promotion, coordination and regulation of the progress of science, technology and innovation of the country.

[47]Science, Technology and Innovation Act 2013, s. 4, NACOSTI's objective is to regulate and assure quality in the science, technology and innovation sector and advice the government in related matters.

[48]The Science, Technology and Innovation Act 2013, s.6 (1) (d), Among NACOSTI's functions is to collaborate with the National Innovation Agency and the National Research Fund.

[49]The Science, Technology and Innovation Act 2013, s.6 (1) (g)

materials and data findings.[50] Through its guidelines, NACOSTI regulates researchers and defines scientific research[51], promoting its use in the digital realm. Overall, this legislation and NACOSTI's role facilitate and encourage TDM research in Kenya. However, there is room for the amendment of this law to incorporate more regulation for modern research technologies such as TDM research.

3.1.3 Data Protection Act 2019

The Data Protection Act (DPA) in Kenya supports technology-based research, like TDM research, by allowing the use of personal data for research purposes, provided it is compatible with the original purpose of collection and processed in accordance with relevant conditions.[52] The DPA ensures that further use of personal information for research is permissible, with the responsibility of compliance falling on data controllers or processors.[53] The Act emphasizes that research results should not be disclosed in a way that identifies data subjects.[54] Furthermore, the Office of the Data Protection Commissioner is tasked with preparing a code of practice that offers practical guidance for processing personal data in research.[55] This code ought to be prepared to ensure adherence to data protection regulations while facilitating TDM research.

3.1.4 The Computer Misuse and Cybercrimes Act 2018

The Kenya Information and Communications Act of 1998, initially addressed cybercrimes and protecting computer data, however it was insufficient. To fill this gap, a comprehensive cybercrimes law was enacted to tackle offenses related to computer systems, facilitate international cooperation in dealing with cybercrime matters, and safeguard data confidentiality. This law prohibits unauthorized access to computer systems and false publication, which is particularly crucial in research where accuracy is essential. By criminalizing these acts, the law promotes the secure use of technology-based research including TDM research by providing safeguards against potential cybercrimes and ensuring the integrity of research outcomes.

3.1.5 National Information Communication and Technology Policy 2006

In Kenya, efforts to develop a comprehensive technology legal framework began in the 1980s[56] and evolved over the years. In 2005, the Kenyan government recognized the importance of ICT skills for economic development and integrated ICT education and training systems accordingly.[57]

[50]The Science, Technology and Innovation Act 2013, s. 26

[51]NACOSTI, National Guidelines for Registration, Licensing, and Regulation of Researchers In Kenya 2021, https://www.nacosti.go.ke/nacosti/Docs/2021/STI/STI%20Mainstreaming%20PC%20Reporting%20Framework.pdf, scientific research is defined as, *"any investigation or research or inquiry or interview that aims to collect data or information, academic or non-academic, in areas of humanities or pure sciences or engineering or technology or for purpose of marketing survey or opinion polls that will lead to new knowledge or information".*

[52]Data Protection Act, 2019, s. 53

[53]Data Protection Act, 2019, s. 53 (2)

[54]Data Protection Act, 2019, s. 53 (3)

[55]Data Protection Act, 2019, s. 53 (4)

[56]Shem Ochuodho and M. Matuga, 'A National Orchestra? Civil Society Involvement in ICT Policy Making', *At the Crossroads: ICT Policy Making in East Africa*, 2004, 68–83. In the 1980s there was a workshop jointly organized by the National Council for Science and Technology (NCST), and the Kenya National Library Services (KNLS).

[57]Sessional Paper No.1 of 2005 On a Policy Framework for Education, Training and Research, Chapter 8 < https://www.knqa.go.ke/wp-content/uploads/2018/10/sessional-paper-sept.-2005-final.pdf> accessed 20 February 2023

The promotion of high-quality research was also emphasized through the distribution of research findings, the creation of a national research database, and increased funding for university research .[58] Additionally, the drafting of the National ICT Policy in 2006 aimed to improve the availability and accessibility of ICT services, with a specific focus on utilizing technology in educational institutions and implementing e-learning strategies to facilitate knowledge dissemination.[59] Key to research was a policy objective that aimed at promoting and strengthening research, development and innovation activities in the country.[60] Despite these initiatives, this ICT policy faced implementation challenges and failed to meet its objectives.[61] Consequently, it was revised in 2019. The government's continued focus on integrating technology in education and research, along with its commitment to improving ICT services and infrastructure, lays a foundation that can support the advancement of technology-based research, such as TDM research in the country.[62]

3.1.6 The National Information Communications and Technology (ICT) Policy 2019

The 2019 National ICT policy[63] aims to align the country's ICT sector with the 2010 constitution, Kenya's Vision 2030[64], and technological advancements for the maximum benefit of its citizens. It promotes a knowledge-based society, accessible and reliable ICT services, and positions the sector as a leader in research and development.[65] The policy emphasizes the importance of intellectual property, encourages innovation through competitions, and licenses winning inventions to indigenous Kenyan companies.[66] Notably, the policy aims at producing a self-supporting ecosystem that will make excellent research and technology products.[67] In order to promote science, technology, and innovation, the government will provide incentives, fund research, recognize and reward outstanding contributions, as well as create and fund challenges and bounties. Overall, the policy supports technology-based research such as TDM research by fostering an environment conducive to innovation, protecting intellectual property, and incentivizing technological advancements. The policy, however, is yet to be fully implemented.

3.1.7 The National Information Communications and Technology (ICT) Policy Guidelines 2020

The latest evolution of Kenya's ICT policy is the National ICT Policy Guidelines that was gazetted

[58]ibid., Chapter 9

[59]National Information and Communication Technology Policy, 2006 <https://www.ca.go.ke/wp-content/uploads/2018/02/The-ICT-Sector-Policy-Guidelines-of-March-2006.pdf> accessed August 29, 2022

[60]National Information and Communication Technology Policy, 2006, s. 5.2 (c)

[61]Obonyo, 'An Investigation in to the Status of Kenya's Information Communication Technology (ICT) Policy in the Education System'.

[62]The National ICT Masterplan (2014-2017), the National Broadband Strategy (2013) and the National Cyber Security Strategy (2014) were developed by the Government prior to the 2019 ICT Policy.

[63]National Information, Communications and Technology (ICT) Policy, 2019 <https://www.ict.go.ke/wp-content/uploads/2019/12/NATIONAL-ICT-POLICY-2019.pdf> accessed August 29, 2022

[64]Kenya Vision 2030 < https://vision2030.go.ke/wp-content/uploads/2018/05/Vision-2030-Popular-Version.pdf> accessed 14 February 2023

[65]Barasa, 'Digitalization in Teaching and Education in Kenya: Digitalization, the Future of Work and the Teaching Profession Project'.

[66]National ICT Policy 2019, section 6.2.2

[67]National ICT Policy 2019, section 4.3

in 2020.[68] These guidelines play a supportive role in advancing technology-based research such as TDM research. They aim to promote technology and research growth, with a focus on creating an enabling digital economy and transforming Kenya into a knowledge-based society. They emphasize the development of infrastructure conditions, including high-speed wireless internet and data centers, which are vital for technology-based research such as TDM research.[69] Additionally, the policy encourages the integration of science, technology, and innovation across sectors, highlighting the importance of data-driven research.[70] The establishment of research facilities and the National ICT Research Laboratory further demonstrate the government's commitment to supporting research initiatives.[71] The guidelines illustrate the desire for Kenya to transform into a knowledge-based economy by leveraging ICTs for socio-economic development. However, challenges in implementation, such as the need for legislative enactments, may affect the realization of these goals.

Overall, the guidelines provide a clear framework for TDM research in Kenya, acknowledging its significance in advancing technology and knowledge. While implementation challenges exist, the policy's emphasis on technology and research growth, infrastructure development, and mainstreaming innovation align with the principles of TDM research. With continued efforts to address implementation obstacles, Kenya has the potential to foster a thriving environment for TDM research and contribute to its advancement.

3.1.8 Kenya Digital Literacy Programme (Digischool) 2013

In another bid to promote technology in education, the Digital Literacy Programme, by the Ministry of Education, introduced the use of digital technology and communications to primary schools. The programme lays the foundation for students to engage in technology-based research such as TDM research. The integration of digital tools and technologies in the teaching and learning process facilitates data-driven analysis and research.[72] Additionally, by promoting the development and availability of digital content, the programme provides a valuable resource for TDM activities. The implementation of the Digischool project is ongoing, and while the implementation is arguably slow, this programme's focus on digital literacy and technology integration contributes to the advancement of TDM research in Kenya, fostering a culture of research and innovation in the digital realm.

3.1.9 The National Education Sector Strategic Plan 2018-2022

The government's strategic plan in the education sector in Kenya supports text and data mining research through several key initiatives. It addresses challenges in the implementation of the Digischool programme and seeks solutions, emphasizing the importance of ICT skills among teachers.[73] Part of this strategic plan promotes research and innovation in Technical and Vocational Education and

[68]National Information, Communication and Technology (ICT) Policy Guidelines, 2020 <https://www.ca.go.ke/wp-content/uploads/2020/10/National-ICT-Policy-Guidelines-2020.pdf> accessed August 29, 2022

[69]National ICT guidelines, Guidelines 4, 6.1.2, 6.1.3

[70]ICT Guidelines 2020, Guideline 6.3.1

[71]ibid.

[72] Digital Literacy Programme, Digischool < https://digischool.go.ke/> accessed 16 February 2023

[73]National Education Sector Strategic Plan for the Period 2018-2022, < https://www.globalpartnership.org/node/document/download?file=document/file/kenya-nessp-2018-2002.pdf> accessed 27 March 2023

Training (TVET) institutions recognizing the value of fostering a culture of inquiry and protecting intellectual property rights.[74] While acknowledging the need for a new strategic plan that caters to the digital world and promotes technology in research, the government demonstrates a commitment to advancing digital literacy and creating an environment conducive to TDM research in the education sector.

3.1.10 Kenya's Digital Economic Blueprint 2019

Kenya's digital economic blueprint recognizes the significance of leveraging new technologies, including text and data mining research, to unlock the potential of the digital economy. It prioritizes infrastructure development and innovation-driven entrepreneurship to promote reliable connectivity, secure data centers, and research collaborations that enhance innovation.[75] The blueprint emphasizes the importance of a fair legal framework and adaptable regulations to keep pace with emerging trends and technology.[76] By fostering a supportive ecosystem for research and development, Kenya aims to create an environment conducive to TDM research, enabling the country to fully capitalize on the opportunities offered by the digital economy.

3.1.11 Kenya Digital Economy Strategy 2020

This strategy was developed as a result of the adoption of the Kenya Digital Economic Blueprint. It provides strong support for technology-based research such as TDM research. It emphasizes the need for policy and regulatory measures to enhance broadband access, establish modern networks, and support data centers for cloud computing and big data analytics.[77] An example of infrastructure in Kenya that has impacted the digital economy is the use of cloud infrastructure to support educational players such as Kenya Institute of Curriculum Development (KICD) and Kenya Education Network Trust (KENET) who have launched cloud services to support primary education and higher education. Moreover, the strategy recognizes the importance of collaboration between industry, academia, and government in driving innovation and acknowledges the fragmented nature of current innovation governance.[78] This strategy's most significant shortcoming and a recurring theme with the laws mentioned above, is the need for more specific implementation details, such as timelines and financial requirements. Nonetheless, the strategy's focus on infrastructure, collaboration, and innovation governance underscores its commitment to supporting and advancing text and data mining research in Kenya.

3.1.12 The Intellectual Property Bill of 2020, Kenya

The IP Bill introduced in 2020 aimed to consolidate existing IP laws and merge IP institutions, but its progress and implementation status remain unknown. The bill needs more clarity on limitations

[74]ibid., 75

[75]Kenya Digital Economy Blueprint, chapters 2.1, 5 and 6 < https://www.ict.go.ke/wp-content/uploads/2019/05/Kenya-Digital-Economy-2019.pdf> accessed 20 February 2023

[76]ibid., chapter 6.5

[77]Kenya Digital Economy Strategy, chapter 4, 31 < https://ncs.go.ke/wp-content/uploads/2021/02/DRAFT-DIGITAL-ECONOMY-STRATEGY.pdf> accessed 20 February 2023

[78]ibid., chapter 5

to exclusive copyright rights[79] and the circumstances for circumventing technological protection measures.[80] This lack of clarity hinders TDM research. The bill has not sufficiently considered the need to update the law to accommodate modern technologies and their impact on intellectual property rights.

3.2 Kenya's Fourth Industrial Revolution (4IR) Supporting TDM Research

The Fourth Industrial Revolution (4IR) holds great potential to support TDM research, particularly in Sub-Saharan Africa including Kenya.[81] Its positive impact on economic growth and welfare depends on national conditions and policy choices.[82] National strategies are crucial to streamline policies and advance the development and deployment of 4IR technologies.[83] The national strategy should align with a country's economic, industrial, and innovation structures, digital infrastructure penetration, national priorities, and the ability to form public partnerships.[84] Kenya with its high ranking in ICT skills development in Africa, is actively positioning itself as a place of learning, research, and technology growth, evident in its AI policy initiative.[85] By embracing 4IR technologies and implementing tailored national strategies, Kenya can unlock the transformative potential of TDM research.

3.3 Kenya's AI Strategy Supporting TDM Research

Kenya is creating a national AI policy, which can aid in unlocking the potential of TDM technology and regulating certain areas of its use. In 2018, the Kenyan government commissioned a Blockchain and Artificial Intelligence task force. The task force published the Emerging Digital Technologies for Kenya: Exploration and Analysis Report, also known as the Blockchain and AI task force report. Below, we highlight its salient features that support TDM research.

3.3.1 The Block Chain and Artificial Intelligence Task Force Report 2019 [86]

The taskforce was commissioned to proffer strategic advice on how to create a road map for emerging technologies in Kenya. The 2019 report emphasized the transformative potential of blockchain and AI in fulfilling Kenya's developmental agenda. The report highlighted the importance of robust ICT infrastructure and cybersecurity strategies to protect digital services, including research work

[79]Intellectual Property Bill, s. 222 (3) https://www.kipi.go.ke/images/docs/IPOK%20Bill%202020.pdf

[80]IP Bill, s. 224

[81]Brookings, Inclusion, Inequality and the Fourth Industrial Revolution (4IR) in Africa [2022] < https://www.brookings.edu/blog/africa-in-focus/2022/09/23/inclusion-inequality-and-the-fourth-industrial-revolution-4ir-in-africa/#:~:text=Adoption%20of%20Fourth%2DIndustrial%2DRevolution,discussed%20in%20our%20recent%20report.> accessed 20 February 2023

[82]Fox L & Signè L, From Subsistence to disruptive innovation Africa, the Fourth Industrial Revolution and the future jobs [2022] AGI Brookings, 5.

[83]UNCTAD, Industry 4.0 for Inclusive Development [2022] UNCTAD/DTL/STICT/2022/4 < https://unctad.org/system/files/official-document/dtlstict2022d4_en.pdf> accessed 20 February 2022.

[84]UNIDO, 'You say you want a revolution: Strategic Approaches to Industry 4.0 in Middle-Income Countries' [2018] Inclusive and Sustainable Industrial Development Working Paper Series WP19, 15.

[85]The United Nations Educational Scientific and Cultural Organisation (UNESCO) & Huwaei Kenya, White Paper; ICT Talent Cultivation for Kenya's Digital Economy [2021] < https://www-file.huawei.com/-/media/corporate/local-site/ke/pdf/ict-talent-cultivation-for-kenyas-digital-economy-whitepaper.pdf> accessed 20th February 2023

[86]Block Chain and Artificial Intelligence Task Force Report, 2019. A copy can be accessed at <https://www.ict.go.ke/blockchain.pdf> accessed 15 February 2023

published and archived on digital platforms.[87] It also stressed the need for evidence-based policy-making, ensuring decisions are grounded in the best available research.[88]

Furthermore, the task force recognized the importance of creating an enabling environment for learning, research, and technology in Kenya. It emphasized the need for well-thought-out rules and regulations to protect citizens while promoting innovation in the private sector. The report provided analysis, potential use cases, and international best practices for regulating the implementation of emerging technologies. By adopting and implementing the recommendations outlined in the report, Kenya can effectively leverage AI and emerging technologies to create a supportive environment for technology-based research like TDM research and drive economic prosperity.

[87]Block Chain and Artificial Intelligence Task Force Report 2019, strategy component 6, Cyber Security
[88]ibid., strategy component 9, Public Policy Recommendations

The report provided analysis, potential use cases, and international best practices for regulating the implementation of emerging technologies.

4. Copyright Law: Creating An Enabling Legal Environment for TDM Research

Across the world, copyright law permits the unauthorised use of copyrighted work for specific purposes and under certain limitations.[89] This study analyzed Kenya's copyright exception for scientific research under section 26 of the Copyright Act, and compared it to South Africa's copyright exception for research under section 12 of its current Act and the Copyright Amendment Bill.

4.1. The Kenyan Copyright Act 2001 (as amended in 2022)

Section 26(3) of the Copyright Act provides for the limitation of the exclusive rights awarded by copyright protection as set in the Second Schedule of the Act. Additionally, section 26(A)(1) provides that *a computer program shall be subject of fair dealing for the purposes of Part A of the Second Schedule* of the Copyright Act. The Second Schedule of the Act lists the allowed general exceptions and limitations to copyright infringement. Part A (1) (a) states that *the exclusive rights awarded by copyright shall not include the right to control—the doing of any of those acts [listed under section 26] by way of fair dealing for the purposes of* ***scientific research****, private use, criticism or review, or the reporting of current events.*[90] However, these *exceptions and limitations are subject to acknowledgment of the author(s).*[91] In cases where the desired use is not covered by the Act's exceptions, licensing agreements can be obtained,[92] although some licensors may impose royalty payments even for works in the public domain, while others may restate what is already permitted by the law.[93]

Kenya's Copyright Act lacks clear definitions of terms such as 'fair' and 'scientific research', leading to uncertainty regarding the application of the law. This creates difficulties in determining whether TDM research would be exempt from copyright law. Despite multiple amendments made to the Copyright Act over time, there is an urgent requirement to amend the law further, provide clear interpretations, and establish comprehensive guidelines to ensure its relevance and effectiveness in the digital age.

4.2. Kenyan Copyright Case Law

In the context of Kenya's Copyright law, the application of the scientific research exception needs more clarity. To address this, the research study delved into the court's decision as a means to shape and interpret the law. The study focused on a significant Supreme Court case to analyze how legal principles were applied and clarified, leading to a deeper understanding of the legal framework surrounding the fair dealing principle in Kenya.

[89]Flynn, Sean; Schirru, Luca; Palmedo, Michael; and Izquierdo, Andrés. "Research Exceptions in Comparative Copyright." (2022) PIJIP/TLS Research Paper Series no. 75

[90]The Copyright Act of Kenya, 2001, Part A (1)(a), Second Schedule

[91]The Copyright Act of Kenya, 2001, Part A (2), Second Schedule

[92]The Copyright Act of Kenya, 2001, section 33

[93]Amstrong C, De Beer J, Kawooya D , Prabhala A, Schonwetter T, Access to Knowledge in Africa, The Role of Copyright (UCT Press, IDRC 2010), 93

4.2.1 Communications Commission of Kenya & 5 others v Royal Media Services Limited & 5 others [2014] eKLR[94]

While there is a dearth of case law on copyright limitations and exceptions in Kenya, this particular case holds significant importance as it involved the interpretation of the fair dealing provision within the context of the case's circumstances. The case originated from the transition of Kenya's broadcasting from analog to digital terrestrial television, which led to the implementation of the "must-carry" rule. Under the Kenya Information and Communication (Broadcasting) Regulations 2009, this rule required signal distributors to include a specific minimum number of Kenyan free-to-air broadcasting channels to retain their broadcasting licenses. In 2013, three free-to-air (FTA) broadcasters in Kenya filed a case alleging that certain digital broadcasters were unlawfully re-broadcasting their program-carrying signals under the "must-carry" rule. The High Court initially heard and dismissed the case, but the Court of Appeal reversed this decision. Ultimately, the Supreme Court overturned the Court of Appeal's ruling.

The "must-carry" rule designates transmission frequencies for radio, television broadcasting, and telecommunications as national resources serving the public interest.[95] In interpreting the exceptions and limitations of copyright, the Supreme Court faced the task of finding a suitable balance between conflicting rights. On one hand, there were the intellectual property (IP) rights of the free-to-air (FTA) broadcasters, while on the other hand, there were the rights of society to access information and the rights of consumers.[96] The court had to consider these competing rights and determine an appropriate resolution.

The court acknowledged the absence of a specific definition of 'fair' in the copyright law and referred to the six-factor test endorsed by the Supreme Court of Canada in CCH Canadian Ltd. v Law Society of Upper Canada. These were (1) the purpose of the dealing; (2) the character of the dealing; (3) the amount of the dealing; (4) alternatives to the dealing; (5) the nature of the work; and (6) the effect of the dealing on the work.[97] Applying these principles, the Supreme Court concluded that the "must-carry" rule did not contradict the requirement of fairness, and the appellants' actions fell within the scope of the "fair dealing" defense, thereby not infringing upon the respondents' copyrights.[98]

This landmark case has been studied and analyzed over time.[99] According to one IP scholar, the Supreme Court's approach implies a shift towards a fairness analysis resembling an open-ended fair use system.[100] The scholar suggests that this transition from fair dealing to fair use by the apex court would be binding on all subordinate courts in Kenya.[101] However, the scholar points out that this fair dealing approach in the present case conflicts with the wording of fair dealing in the Copyright Act and

[94]Available at Kenya Law, http://kenyalaw.org/caselaw/cases/view/101689/
[95]Victor Nzomo, 'In the Public Interest: How Kenya Quietly Shifted from Fair Dealing to Fair Use', 2016.
[96]ibid.
[97]CCH Canadian Ltd v Law Society of Upper Canada, [2004] 1 SCR 339, 2004 SCC 13
[98]ibid.
[99]See: Kenya Copyright Board, The Broadcasting Industry in Kenya (Copyright News Issue 15, 2015); Wachira Maina, 'Supreme Confusion: How Authority, Court Muddled the Copyright Law' Daily Nation (Nairobi, 23 January 2015).
[100]Nzomo, 'In the Public Interest: How Kenya Quietly Shifted from Fair Dealing to Fair Use'.
[101]ibid.

violates Kenya's international treaty obligations.[102] As a solution, the scholar proposes three options for addressing the limited fair dealing provision in Kenya: expanding the list of allowable purposes, codifying the fair use approach adopted in the CCK case, or codifying the two-step approach from the CCH case.[103] Implementing any of these options could provide more explicit guidelines and a more conducive environment for TDM research in Kenya.

In this study focusing on the impact of copyright on facilitating modern research technologies, like TDM research, this particular case holds significant relevance as it offers an interpretation of the ambiguous fair dealing provision. The court's decision introduced a fairness assessment test, which plays a crucial role in determining whether the utilization of TDM research qualifies as an exception to copyright infringement. Although there needs to be explicit clarity on whether TDM research falls under the category of scientific research, researchers can utilize the six-factor fairness test provided to assess the fairness of their usage. By employing this test, they can evaluate whether their TDM activities align with the principles of fair dealing.

4.3. Copyright Guidelines

In the absence of clear laws and judicial interpretation on the laws, one would look to the regulatory body for guidance. In Kenya, the Kenya Copyright Board is mandated to create public awareness and understanding on matters relating to copyright and related rights.[104]

4.3.1 A Guide to Copyright in Kenya - Kenya Copyright Board (KECOBO)

KECOBO published a booklet providing a simplified guide to copyright in Kenya.[105] The booklet serves as a resource for laypersons, offering basic guidelines on copyright and the rights of right-holders. It includes a simplified explanation of fair dealing including the permitted use of copyrighted work for research, subject to acknowledgment of the source.

However, the need for more detailed guidance on how the current law applies specifically to various forms of digital research, such as TDM, remains a challenge. Researchers engaged in TDM require more comprehensive and specific information on how copyright laws and exceptions apply to their activities. The existing booklet, while providing a general understanding of fair dealing, may not offer the necessary clarity and guidance needed to navigate the complexities of TDM research within the legal framework of Kenya. As a result, further guidance and clarification are required to address the specific requirements and considerations of digital research methods like TDM research.

4.4. A Comparative Analysis of Kenya's and South Africa's Copyright Laws as they Pertain to TDM

Similar to Kenya, Article 16 of the Constitution of the Republic of South Africa provides for the right to research within the context of freedom of expression. It states that "*Everyone has the right to*

[102]ibid.

[103]ibid., 11-12

[104]Copyright Act of Kenya, 2001, s. 5

[105]A Guide to Copyright in Kenya, KECOBO https://copyright.go.ke/sites/default/files/downloads/A%20Guide%20to%20Copyright%20in%20Kenya%202018%202PRESS0.pdf accessed 27 March 2023

*freedom of expression, which includes— (c) freedom of artistic creativity; and (d) academic freedom and freedom of **scientific research**."*[106] However, similar to Kenya, South Africa does not offer a specific definition for scientific research within its legal framework. The absence of a clear explanation of scientific research in South Africa's legal framework can create uncertainty for researchers engaged in TDM activities. It may be challenging for researchers to determine whether their TDM activities qualify as scientific research and fall within the protected scope of academic freedom and scientific research as guaranteed by the constitution.

The South African current copyright law, Copyright Act of the Republic of South Africa, No. 98 of 1978, also provides a general exception that exempts literary and musical works from infringement if they are used solely for the purpose of research.[107] However, when compared to Kenya's copyright law, the wording in South Africa's law offers less flexibility regarding the use of the work. Kenya's Copyright law provides more leeway for fair dealing, permitting reproduction, translation or adaptation, distribution, publication and broadcast of the work for limited purposes. However, both laws limit this fair dealing exception to the acknowledgment of the author when utilizing the fair dealing exception.

The impact on TDM research is that the South African copyright law's general exception may permit the use of literary works for research purposes, including TDM activities. However, the narrower wording of the law may impose limitations on the scope and extent of TDM practices compared to Kenya's more flexible provisions. Researchers in South Africa would need to carefully navigate the legal requirements and ensure compliance with the limitations and acknowledgment of authors when conducting TDM research.

4.4.1 South Africa Copyright Amendment Bill 2018

South Africa is currently undergoing a process of amending its copyright law to address the limitations and exceptions regarding the reproduction of copyright works, including the realm of computational analysis. The National Council of Provinces is now considering the Copyright Amendment Bill, which was passed by the National Assembly on 1 September 2022. This bill recognizes the inadequacy of the current Copyright Act and aims to introduce more flexibility through the inclusion of a broader fair use principle under section 12A.[108] Under the fair use principle, specific factors are provided to determine whether a particular use of a copyrighted work is fair or not.[109] In comparison to fair dealing, this approach allows for a more flexible and adaptable framework that is better suited to accommodate modern research practices, including TDM.

[106] South Africa Constitution, Article 16(1)(c) and 16(1)(d)

[107] The Copyright Act of South Africa, No. 98 of 1978, Section 12(1)(a) <https://www.gov.za/sites/default/files/gcis_document/201504/act-98-1978.pdf> accessed 27 March 27, 2023

[108] Republic of South Africa Copyright Amendment Bill, 2018 <https://www.gov.za/sites/default/files/gcis_document/201811/copyright-amendment-bill-b13b-2017.pdf> accessed 27 March 2023. This provision reads as follows, "*In addition to uses specifically authorised, **fair use** in respect of a work or the performance of that work, for purposes **such as** the following, does not infringe copyright in that work: … (i) **Research**, private study or personal use, including the use of a **lawful copy of the work at a different time or with a different device**…*

[109] ibid., s.12 A (b): *"In determining whether an act done in relation to a work constitutes fair use, all relevant factors shall be taken into account, including but not limited to— (i) the nature of the work in question; (ii) the amount and substantiality of the part of the work affected by the act in relation to the whole of the work; (iii) the purpose and character of the use, including whether— (aa) such use serves a purpose different from that of the work affected; and (bb) it is of a commercial nature or for non-profit research, library or educational purposes; and (iv) the substitution effect of the act upon the potential market for the work in question."*

By embracing fair use and incorporating factors to assess fairness, the Copyright Amendment Bill aims to establish a future-proof legal framework for limitations and exceptions to copyright, as is the case in the United States among other countries. In the context of this research, ensuring the future-proofing of the law means designing it in a manner that remains relevant, effective, and adaptable as the technology landscape evolves. Specifically, it involves creating a legal framework that is flexible enough to accommodate emerging technologies and changing circumstances. By doing so, the law can effectively address new challenges and developments that may arise in the future, ensuring its continued usefulness and success without need for amendment.

To date, several countries, which inherited the UK fair dealing provision, have amended their law to replace fair dealing with fair use, such as Bangladesh, to provide a non-exhaustive list, as Bahamas has done, or to incorporate the fair use determining factors, like in Australia.[110] Other countries, like Ghana, do not have a specific copyright exception for research but permit unauthorized copyright use for personal purposes, making it considerably more vague and less flexible than South Africa and Kenya. These developments highlight the global trend towards adopting more flexible copyright frameworks that support technology-based research, including TDM research, while striking a balance between the rights of copyright holders and the interests of researchers and society as a whole.

4.4.2 South African Copyright Case Law

4.4.2.1 Moneyweb (Pty) Ltd v Media 24 Ltd & another [2016] 3 All SA 193 (GJ); 2016 (4) SA 591 (GJ)

Through this case, the high court of South Africa gave its interpretation of fair dealing. Drawing upon the principles established in *Ashdown v Telegraph Group Ltd* where Lord Phillips, the judge, emphasized consideration of the public interest in freedom of expression. Similar to the Kenyan case, the court acknowledged the challenge in precisely defining fair dealing, stating that it is a matter of fact, degree and impression. In order to determine fair dealing, the court provided factors to consider. The first factor is whether the alleged fair dealing competes commercially with the copyright owner's exploitation of the copyright work. For example, if the dealing serves as a substitute for the purchase of authorized copies and commercially impacts the proprietor's interests, fair dealing would not be a viable defense.

The second factor to consider involves whether the work has already been published or otherwise exposed to the public. If the material was obtained through breach of confidence or other illicit means, the court will be reluctant to consider it fair. The third factor is the amount and significance of the work that used. While it may be permissible to use a substantial part of the work in certain circumstances the taking of an excessive amount, or even a small amount, if on a regular basis, would negate fair dealing. This judicial interpretation is essential in expanding the understanding of South Africa's copyright fair dealing law. It provides valuable guidance for researchers and practitioners in the realm of TDM research, offering insights into how fair dealing should be assessed and applied in the context of copyright-protected materials.

[110]Band and Gerafi, 'Fair Use/Fair Dealing Handbook'.

4.5. TDM Exceptions Across Different Jurisdictions

The legal landscape for TDM research varies across jurisdictions. Countries, e.g., Japan, Singapore, Estonia, Germany, and Kenya, have different provisions and exceptions in their copyright laws, highlighting varying levels of permissiveness, limitations, and ambiguity. Straightforward and adaptable copyright frameworks are needed to support TDM research in the digital age. This part highlights jurisdictions with specific and clear TDM exceptions.

In Japan the copyright law permits "exploitation for using the work in a data analysis."[111] This law is considered the most open TDM exception as it does not restrict non-commercial use or apply only to lawfully published or accessed work.[112] Singapore's 2021 Copyright law reform provides for a TDM exception for "copying or computational data analysis".[113] This exception applies to reproduction and communication rights of any use including commercial use, however, it is restricted to lawfully accessed works.[114] Countries in Europe are permitted to adopt an open exception for research.[115] Estonia, for example, allows the "processing of an object of rights for the purposes of text and data mining and provided that such use does not have a commercial objective".[116] Germany, similarly, has a specific TDM exception that is restricted to non-commercial use.[117]

The vague and somewhat ambiguous provisions of both Kenya's and South Africa's current copyright laws compound the narrow construction of fair dealing copyright exceptions in these laws.[118] This gives the rights-holder more control over the use of their works while limiting the dissemination of information without the rights-holder's authorization.[119] Another shortcoming in these Acts is the failure to clarify what constitutes fair dealing in digitized works thus hindering the efficient distribution of knowledge through modern technologies like TDM research. The ongoing copyright legal reform process in South Africa serves as a helpful case study for Kenya, to consider when amending its copyright law to enable the digital world, including TDM research. While a specific copyright exception for TDM research would address the ambiguity in the current provisions, it may not provide a future-proof solution for emerging technologies. Therefore, careful consideration should be given to developing copyright laws that can adapt to the evolving digital landscape.

[111]Copyright Act, 1970 (Act No. 48 of May 6, 1970, as amended up to Act No. 72 of July 13, 2018, Art. 30-4

[112]Flynn, Sean; Schirru, Luca; Palmedo, Michael; and Izquierdo, Andrés. "Research Exceptions in Comparative Copyright." (2022) PIJIP/TLS Research Paper Series no. 75, 29 https://digitalcommons.wcl.american.edu/research/75

[113]Singapore Copyright Act 2021 (Revised Edition 2020, Act No. 22 of 2021), 244

[114]Flynn et al., 'Research Exceptions in Comparative Copyright'., 29-30

[115]Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society, 34

[116]Estonia Copyright Act, 2017 (consolidated text of February 1, 2017), 19

[117]Germany Act on Copyright and Related Rights, 1965 (Copyright Act, as amended up to Act of September 1, 2017) *"Section 60d. Text and data mining. (1) In order to enable the automatic analysis of large numbers of works (source material) for scientific research, it shall be permissible"*

[118]Ayamunda J & Nwabachili C C, Copyright Exceptions and the Use of Educational Materials in the Universities in Kenya [2015] Journal of Law,Policy and Globalization

[119]Amstrong C, De Beer J, Kawooya D , Prabhala A, Schonwetter T, Access to Knowledge in Africa, The Role of Copyright (UCT Press, IDRC 2010), Kenya Chapter

5. Survey on TDM Developers and Users

To assess the relevance of Kenya's technology policy and copyright laws affecting TDM research, a survey was conducted among TDM developers and users. The findings from this survey are detailed below.

5.1 The Role of Copyright in TDM: A Survey of TDM Practitioners

5.1.1 Introduction

The survey was conducted through semi-structured questionnaires. Key individuals in the technology field, including data scientists, analysts, researchers, AI engineers, and software developers, were selected using purposive sampling. Although the survey received a limited response of 34 respondents, we have included the findings and analysis in this research to provide additional context to the legal analysis conducted. While the sample size may not allow for definitive conclusions, it contributes valuable insights to our overall understanding of the role of copyright in this field.

At the onset, the survey aimed to understand the characteristics of the target population and their involvement in TDM. Out of the 34 respondents, 74% indicated that they were involved in TDM, while 26% were not involved in TDM research but did utilize AI enabled tools for their research. The study also investigated whether respondents developed or used software that utilizes artificial intelligence (AI) or machine learning (ML) for TDM. 62% of the respondents confirmed their use or development, while 38% did not. Further, the study explored the purpose for the developing or using AI or ML software for TDM. It found that 54.55% of the respondents developed or used the software for non-commercial purposes, like research, while the rest used or developed the software for commercial reasons. The study noted specific software used, including ChatGPT (13.63%) and customized ML scripts for TDM. Other respondents employed proprietary software for data mining such as Oracle Data Mining, MonkeyLearn and Python libraries. Understanding respondents' demographics and their level of engagement in TDM contributes to a better understanding of the landscape and trends in TDM research among the surveyed population. The subsequent section delves into their awareness of the role of copyright in facilitating TDM.

5.1.2 Findings and Analysis

5.1.2.1 Awareness of laws that promote research

The study aimed to assess the impact of Kenya's copyright law on promoting technology, learning, and research. It was therefore imperative to gauge the respondents' awareness of laws that support these aspects in Kenya. Interestingly, the findings reveal that a majority of the respondents (32.35%) were familiar with the Data Protection Act. However, only a small percentage (17.65%) were aware of the Copyright Act as a promoter of learning, research and technology, as shown in table 1 below. This indicates a potential gap in understanding the role of copyright law in facilitating TDM among users and developers of TDM.

Table 1: Awareness of laws that promote technology, learning and research

		1. Are you involved in text and data mining?		Total
		No	Yes	
Whether any of these laws promote learning, research, and technology in Kenya	The Copyright Act		17.65%	17.65%
	Data Protection Act	2.94%	29.41%	32.35%
	Science, Technology, and Innovation Act	5.88%	11.76%	17.65%
	Kenya Information and Communications Act	2.94%		2.94%
	Access to Information Act	2.94%	2.94%	5.88%
	I don't know	11.76%	11.76%	23.53%
Total		26.47%	73.53%	100.00%

5.1.2.2 Perception of copyright law's role in enabling TDM research in Kenya.

To understand the role of Copyright law in enabling TDM research, the survey assessed the respondents' perception on how copyright law affects AI and/or ML. A majority of the respondents (56%) recognized the influence of copyright law on these fields, acknowledging that it affects TDM, AI, and ML. On the other hand, 23% of the participants did not perceive copyright law to have an impact, while 21% were unaware. Further, when asked to elaborate on how copyright law affects TDM, AI, and ML, half of the respondents (50%) emphasized that copyright law imposes limitations on the utilization of data in TDM due to copyright enforcement. Moreover, 38.89% of the respondents who said that copyright law affects TDM, AI and ML said it is because generation of work aided by AI and ML requires protection of intellectual property rights due to the source of data used. The remaining respondents inferred that copyright law should safeguard the original sources of text and data used in TDM to prevent unauthorized creation of commercial proprietary software.

Given that a significant number of respondents believed that copyright law has an impact on TDM, AI, and ML, the study aimed to explore their perceptions regarding the use of TDM for research purposes and whether it involves data that is eligible for copyright protection. Among the respondents engaged in text and data mining, 44.12% expressed the view that copyright law is capable of protecting the data used in research. On the other hand, 14.71% believed that copyright law could not safeguard the data utilized for research purposes. For participants not involved in TDM, 17.65% believed that copyright law could protect data used for research, while 5.88% held the opposite perspective. The rest of the respondents (17.65%) were unsure whether copyright law could protect data for research or not.

These findings shed light on the participants' perceptions regarding the influence of copyright law on TDM. The majority recognized the role of copyright in imposing limitations and protecting intellectual property rights in the context of TDM research. Further, the findings reflect the diverse viewpoints held

by respondents regarding the applicability of copyright law to data used in TDM for research purposes. It highlights the need for further examination and discussion on the role of copyright and its potential implications on TDM activities. Overall, these insights contribute to a better comprehension of the level of understanding of copyright law among the TDM users and developers surveyed.

5.1.2.3 Perceptions of the applicability of the fair dealing copyright exception for TDM

The study aimed to assess the participants' understanding of the fair dealing principle within TDM research. It was crucial to determine whether respondents were aware of the copyright exceptions and limitations in Kenya's Copyright Act. The findings revealed that only 18% of the respondents were aware of the fair dealing exception, with 15% of those involved in TDM demonstrating awareness. In contrast, the majority of respondents (82%), including 58.82% of those involved in TDM, were aware of this fair dealing exception. In a follow-up question, the study explored the perspectives of those who were aware of and utilized the fair dealing exception. Their support for the use of the fair dealing exception was based on these reasons: it enables research in various sectors of the economy, it exempts the use of data for knowledge advancement and education purposes from copyright protection, and it allows data usage in natural language processing. On the other hand, a respondent expressed disagreement with the fair dealing exception, claiming that it did not cover the use of TDM research. The respondent argued that data processing, in TDM, required approvals and licenses, which could potentially restrict research activities.

Regarding methods of data acquisition for TDM, the study found that among the respondents who did not utilize the fair dealing exception of copyright law (82%), 28% reported purchasing or obtaining licenses for the datasets required for their TDM activities. Additionally, the study identified respondents (21%) who neither utilized the copyright exception nor acquired licenses for datasets. These respondents employed alternative approaches to obtain the necessary data for conducting text and data mining. These methods included mining data directly from the internet as long as it was publicly accessible, utilizing public datasets available in public databases, and utilizing open-source APIs to extract data. Some respondents relied on their company's internal data resources, while others mentioned obtaining data approved by their legal teams. Notably, there were respondents who expressed uncertainty regarding whether the data they used was subject to copyright law.

The inclusion of exceptions for copyright infringement in order to facilitate TDM research was highlighted by several respondents as crucial for several reasons. Firstly, research-based activities were seen as instrumental in advancing insights and identifying knowledge gaps. Second, many respondents believed that works that contribute to the public good ought to be considered exempt from limitations. Third, obtaining funding for certain types of research can be challenging, and having these exceptions helps in acquiring the necessary data for the research. Fourth, some sectors have experienced limited development due to the bureaucratic hurdles imposed by copyright law. Lastly, respondents emphasized that non-commercial TDM research using large datasets is essential for innovation and the creation of new technologies that benefit society.

However, a few respondents disagreed with the importance of these exceptions. They held the belief that data should be widely accessible without limitations, and argued that such exceptions in copyright law could lead to unfair usage or abuse of data that the data owner has invested heavily in generating.

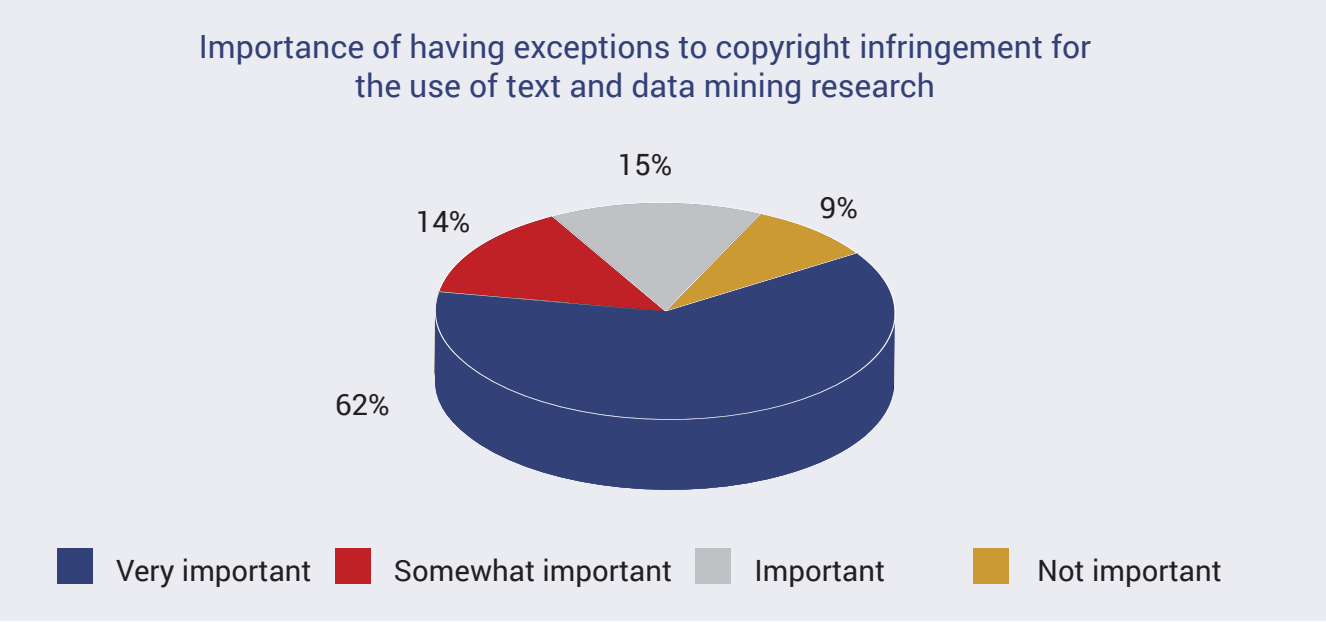


Figure 1: Importance of having exceptions to copyright infringement for TDM research

The study also sought participants' opinions on whether copyright law should permit researchers to make copies of works for text and data analysis, for non-commercial research purposes, with proper acknowledgment of the copyright owner. The majority of the respondents (85.29%) affirmed this statement, while a smaller portion (11.76%) believed researchers should not be allowed to make such copies. Respondents who supported this provision said it is necessary because the copyright owner invests research skills, time, and resources into the creation of the data, which is then utilized by others for non-commercial purposes. They emphasized the importance of acknowledgment as a means of recognizing the contribution of the copyright owner. Additionally, they expressed that copyright law can serve as a deterrent against organizations that exploit data for commercial gain or engage in unwarranted surveillance. Furthermore, respondents highlighted that non-commercial research being made available within the framework of copyright law would benefit a broader audience. They suggested that this provision should be enforced within certain limits to protect the rights of copyright owners.

On the other hand, respondents who disagreed with this provision expressed concerns about the dynamic nature of AI and its rapid changes, which they believed could lead to potential misuse and the development of supplementary products based on the copied data. Another concern raised was that acknowledgment alone might not sufficiently compensate the copyright owner for their work. One respondent suggested that instead of this provision, the data should be sold similarly to commercial research, in order to avoid limitations on its use.

The findings emphasize the need for more awareness among respondents regarding copyright exceptions specifically applicable to text and data mining (TDM) research. This highlights the importance of improving understanding and awareness of the fair dealing exception within the context of TDM research, which can inform discussions and potential reforms of copyright laws to align with the evolving TDM landscape in Kenya. The opinions highlight some considerations to be taken into account such as acknowledgment, collaboration, protection against misuse, and the balancing of interests between non-commercial research and the rights of copyright owners. The study also reveals diverse strategies respondents employ to acquire data for TDM, including proper licensing, utilisation of publicly available or company-specific data sources, and seeking legal approval for datasets. However, there is uncertainty among some respondents regarding the copyright status of their data, indicating the need for more explicit guidelines and awareness regarding copyright exceptions for TDM research.

5.1.2.4 Recommendations for the Promotion of TDM research

In the final part of the study, participants were asked to provide their perspectives on recommendations for creating an enabling environment for TDM research in Kenya. Most respondents believed that copyright law could effectively promote the right to research by granting greater protection to copyright owners. They suggested several measures to achieve this, including guidelines for collaboration with copyright owners, clear guidelines on fines related to copyright law violations, and striking a balance between the concerns of copyright owners and the needs of researchers. Furthermore, respondents emphasized the importance of raising awareness and providing education on copyright law specifically tailored to the field of text and data mining. They believe that such efforts are crucial for enabling researchers to utilize copyright law to their advantage.

Additionally, respondents recommended that copyright law should allow scientists and researchers to use data without limitations, as they perceive copyright law as a barrier to non-commercial research. Other participants suggested that copyright law should consider having a compensation clause for parties using copyrighted data to generate income. They also called for improvements in the TDM process in Kenya and the enactment of guidelines outlining the consequences of inappropriately using data for research purposes. These recommendations reflect the participants' insights on how copyright law can be optimized to support and facilitate TDM research in Kenya. They highlight the importance of striking a balance between copyright protection and the needs of researchers, as well as the significance of awareness, education, and guidelines to create an environment conducive to TDM activities.

5.1.3 Validation Meeting

The validation meeting, attended by 17 participants, primarily researchers, provided valuable insights and feedback on the study findings and recommendations. The meeting confirmed the need for more awareness among individuals regarding the role of copyright in TDM research, aligning with the research findings. Most participants agreed with the study findings that Kenya's technology laws and policies, if effectively implemented, have the potential to create an environment conducive to technology and research. Additionally, the majority of participants acknowledged the need for a specific copyright

exception for TDM research in Kenya. Regarding the awareness of the copyright exception for scientific research among TDM developers and users, majority of the participants agreed with the research findings that there needs to be more understanding. Furthermore, 70% of the participants supported the finding that the Kenyan Copyright Act lacks a clear, flexible, and operational exception for TDM research, while 14% believed the current copyright exception is suitable and 14% were unsure. The overall consensus highlighted the significance of raising awareness, building capacity, streamlining laws, and facilitating data access to establish a favorable legal environment for TDM research in Kenya.

During the discussion, participants emphasized the significance of raising awareness and conducting capacity building initiatives to educate stakeholders about the policy implications of copyright law in TDM research in Kenya. They stressed the importance of streamlining laws and ensuring effective implementation, including clear guidelines and operationalization of the legal framework. Capacity building programs and active engagement with government agencies were identified as crucial for driving legal reforms and updating laws when necessary. The participants also suggested continuous publication and circulation of copyright laws online to enhance awareness and accessibility. The challenge of data availability in TDM research was acknowledged, leading to the proposal of creating databases with properly licensed or specifically generated data for machine learning research. Easier access to data was seen as a fundamental requirement, highlighting the need for more precise laws to define the process and facilitate research activities.

During the discussion, participants emphasized the significance of raising awareness and conducting capacity building initiatives to educate stakeholders about the policy implications of copyright law in TDM research in Kenya.

6. Recommendations

6.1. Recommendations for Kenya's Technology Legal Framework

While Kenya has made significant progress in establishing a comprehensive legal framework for technology, there is more that can be done to create an enabling environment for TDM research. For example, ineffective implementation and enforcement of enacted laws and policies remains a challenge. There is need for more capacity building among relevant stakeholders, such as lawmakers and regulators, on the legal aspects related to technology-based research. The lack of knowledge on this hamper the successful implementation, enforcement, and reform of technology-related laws. Another challenge arises from the rapid pace of technological advancements, which requires Kenya's technology legal framework to keep up in order to remain relevant and effective. Failure to do so can create gaps and inconsistencies in the legal framework, which can negatively impact the development of the technology sector, including TDM research. Furthermore, effective engagement among the government, private stakeholders, civil society, and other relevant parties is crucial to ensure that the enacted technology laws address the needs of all stakeholders adequately. Limited financial resources and a shortage of skilled personnel for investing in research, development, and implementation of technology laws and policies pose a significant challenge in enabling technology-based research, such as TDM, in Kenya.

To foster an environment conducive to TDM research in Kenya, we propose the following recommendations for the government and technology industry stakeholders:

a. **The Kenyan government should prioritize the implementation of existing technology laws and policies to enable TDM research**.
   i. A crucial aspect that needs to be addressed across the analyzed tech laws and policies is the inclusion of specific timelines for implementation. This will ensure that the objectives outlined in the legislation and policies are effectively achieved within the stipulated timeframes.
   ii. The implementation of policies necessitates the enactment of legislation and the establishment of regulations to support the enforcement of these laws. For instance, the Data Protection Commissioner in Kenya should develop a code of practice that offers practical guidance on the handling of personal data for research purposes, including TDM research.
   iii. The implementation and legislative processes entail financial considerations, which the government should take into account when developing strategies to foster Kenya's technology and digital economy.
b. **The Kenyan government should revise outdated technology laws and policies to foster research and technological advancements such as TDM research.**
   i. To fully harness the benefits of the digital realm, including TDM research, Kenya should carefully consider the findings and recommendations outlined in the 2019 Report by the Distributed Ledgers Technology and Artificial Intelligence Taskforce. It is essential to adopt

the proposed policy and regulatory framework presented within the report, which can serve as a valuable blueprint for advancing research and technology in the country, including TDM research.

ii. The government should prioritize the development of a comprehensive national education sector strategic plan for 2023 and beyond that places emphasis on promoting the utilization of technology in research endeavors, enabling researchers to leverage technological tools and resource, such as TDM research, effectively.

c. **The Kenyan government should establish clear guidelines, regulations, and strategies** that facilitate access to and utilization of data for research purposes through modern research technologies such as TDM research. These measures could be incorporated within Kenya's Digital Economy Strategy and the National Education Sector Strategy.

d. **Promoting collaboration among the government, researchers, and industry stakeholders** is essential to facilitate the exchange of ideas, which in turn contributes to the development of technology-based research, like TDM research, and its subsequent benefits.

e. **The Kenyan government should allocate funding for research initiatives, prioritize the development of high-speed internet and broadband infrastructure, and ensure access to data repositories and datasets.** These measures will support and enhance Kenya's technology sector, including TDM research, enabling researchers to conduct their work effectively and contribute to its improvement.

6.2. Recommendations for Kenya's Copyright Legal Framework

6.2.1 National Recommendations

In recent years, Kenya has made notable updates to its copyright legal framework to align with international standards and address existing challenges. However, the current law provides copyright-holders with extensive rights while having narrowly defined exceptions and limitations. This restricts access to research materials, thereby impeding TDM research. To overcome this obstacle, it is essential to reform the copyright law to establish an environment conducive to the digital realm, particularly for the utilization of modern research technologies like TDM research. In light of this, we propose the following recommendations for Kenya's copyright legal framework.

a. **Kenyan legislators should consider amending the copyright law**, with the following considerations:

i. Expanding the current narrow fair dealing framework to accommodate the digital environment, specifically for digital research technologies like TDM research. This entails broadening the list of general and specific exceptions and limitations within the Copyright law.

ii. Amending the Second Schedule Part A 1 (a) of the Copyright Act by transitioning from the limited fair dealing exception to the broader fair use principle, as South Africa is currently in the process of doing. By including the phrase 'such as' in section 26, the purposes for copyright exceptions become open-ended and adaptable to future technologies[120]. This approach would accommodate modern technology usage, such as TDM research, within copyright exceptions and minimize the need for frequent amendments.

iii. Establishing a definition of 'fair' within section 26 of the copyright law by incorporating

[120] **"**The exclusive rights under section 26 shall not include the right to control— (a) the doing of any of those acts by way of fair dealing for purposes **"such as"** scientific research, private use, criticism or review, or the reporting of current events…".

the six-factor fairness test from the Canadian Ltd. v Law Society of Upper Canada case as referenced in the Communications Commission of Kenya & 5 others v Royal Media Services Limited & 5 others case, highlighted previously. By adopting this fairness test, it will enable a comprehensive assessment to determine the fairness of TDM research within the context of copyright law.

iv. Providing a clear definition of scientific research. Two options are proposed: research conducted for non-commercial purposes,[121] and adopting the definition formulated by NACOSTI, which defines scientific research as "*any investigation or research or inquiry or interview that aims to collect data or information, academic or non-academic, in areas of humanities or pure sciences or engineering or technology or for purpose of marketing survey or opinion polls that will lead to new knowledge or information*."[122] These definitions would aid in determining whether TDM research qualifies as scientific research and qualifies for exemption from copyright restrictions.

v. Incorporating a specific exception for TDM research within the copyright Act, similar to the provisions in countries like Singapore and Japan.

b. The Kenya Copyright Board (KECOBO) should offer clear guidance and clarification regarding the copyright exception for scientific research within Kenya's current copyright law. It is recommended that KECOBO develops guidelines that help interpret and implement the existing copyright exception for scientific research, particularly in relation to modern research technologies like text and data mining research.

c. The Kenyan government and KECOBO should actively promote increased awareness and education on copyright exceptions among TDM researchers and other stakeholders. This initiative would aim to ensure that individuals are knowledgeable about their rights and responsibilities when it comes to utilizing copyrighted material for research. Survey respondents highlighted the importance of striking a balance between the concerns of copyright owners and the needs of TDM researchers, but emphasized the lack of awareness of copyright law as a significant challenge. The following recommendations were made by the respondents:

i. Improving the TDM research process in Kenya by raising awareness about copyright law within the TDM field and establishing guidelines on the appropriate usage of data.

ii. Developing guidelines that outline the consequences of using data obtained inappropriately for TDM research purposes.

d. The Ministry of Education should incorporate copyright law into the education curriculum for TDM developers, scientists, researchers and judicial officers. By including copyright law in the curriculum, individuals involved in TDM research can acquire a comprehensive understanding of copyright regulations and how they apply to their respective roles.

[121] Regulation (EEC) No 1798/75 of the Council of 10 July 1975 on the importation free of Common Customs Tariff duties of educational, scientific and cultural materials, article 3 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31975R1798

[122] National Commission for Science Technology and Innovation (NACOSTI), National Guidelines for Registration, Licensing, and Regulation of Researchers In Kenya 2021, https://www.nacosti.go.ke/nacosti/Docs/2021/STI/STI%20Mainstreaming%20PC%20Reporting%20Framework.pdf

6.2.2 International Recommendations

Unlike traditional research, TDM research is relatively new, it is therefore crucial for African copyright laws to be updated to address TDM research and exclude it from infringement explicitly. African countries have a unique opportunity to collaborate and harmonize their copyright policies, fostering a favorable environment for technological growth and innovation. By pooling their resources and establishing a unified copyright policy, these countries can facilitate the development of new technologies, enhance information accessibility, promote creativity, and stimulate economic growth. This unified approach has the potential to unleash Africa's innovative potential.

Considering the increasing utilization of modern digital technologies, such as TDM, in research, education, and related activities, it is imperative for the World Intellectual Property Office (WIPO) to develop comprehensive guidelines for member states. These guidelines should clarify the applicability of copyright limitations and exceptions to TDM research, ensuring that the public can access information legally and in a manner that benefits society. They should consider existing international conventions, laws, and recent technological advancements while providing guidance on interpreting copyright limitations and exceptions within the context of modern digital technologies like TDM.

Considering the increasing utilization of modern digital technologies, such as TDM, in research, education, and related activities, it is imperative for the World Intellectual Property Office (WIPO) to develop comprehensive guidelines for member states.

7. Conclusion

Access to data and digital tools for text and data mining (TDM) research is crucial for researchers to contribute to knowledge creation. However, engaging in TDM often involves reproducing copyrighted materials, leading to potential copyright infringement. While some countries have implemented exceptions for TDM research in their copyright laws, there is currently no global copyright policy for TDM. In Kenya, the exception for unauthorized use of copyrighted works in scientific research raises questions about its applicability to TDM research. The study determined that Kenya's technology legal framework has the potential to facilitate TDM research, provided it is effectively implemented and updated. However, obstacles such as lengthy legislative processes, unclear proposals, and insufficient application of existing laws to the digital realm hinder practical implementation. Therefore, there is a need to establish new legislation that addresses the unique challenges and opportunities of the digital world.

A comparative analysis of Kenya and South Africa's copyright laws revealed fair dealing exceptions for research purposes. However, unclear provisions limit the scope of these exceptions and give rights-holders more control, hindering information dissemination without authorization. South Africa's proposed fair use principle shows progress in addressing these shortcomings. Additionally, the study found a lack of awareness among TDM practitioners on the fair dealing copyright exception, despite their recognizing its influence on TDM. Survey participants emphasized the need for exceptions to copyright infringement for TDM research, supporting non-commercial copying with attribution, while raising concerns about the dynamic nature of AI, potential data abuse, and implications for commercial research.

While progress has been made in developing a robust legal framework for technology and copyright in Kenya, further actions are necessary to support modern research technologies like TDM. Implementing current technology laws and policies, establishing clear guidelines for data access and use, promoting collaboration, providing funding, and amending copyright laws are necessary steps to take in creating an enabling environment for TDM research. Increased awareness and education about copyright exceptions, including them in the education curriculum for TDM developers, scientists, researchers, and judicial officers, are also recommended.

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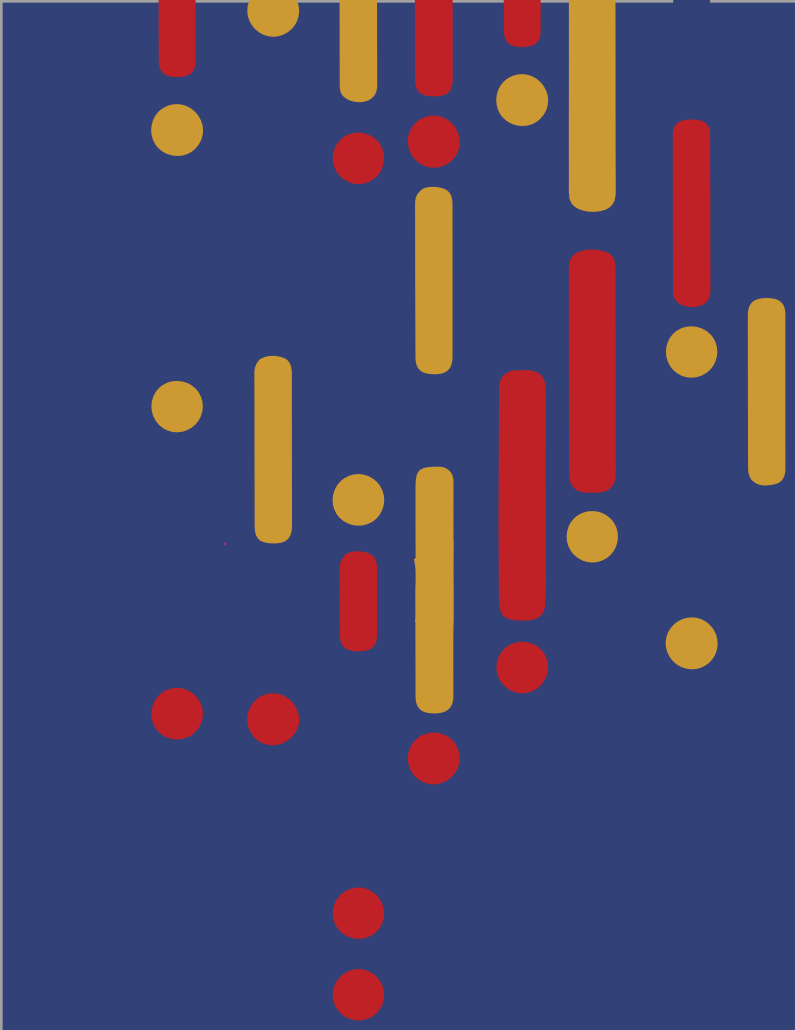

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