Ethical Considerations in Authorship and Postgraduate Supervision in Universities in Kenya

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Abstract
The emergence of knowledge economy has put premium on higher education. This has led to a rise in the number of postgraduate training and reforms in higher education. Research, a core mandate of institutions of higher learning, should enable states to meet development needs. Research for development will require the highest standards possible in the conduct of research. This has led to calls for research ethics to protect individuals, communities and the environment. In this study, we explore ethical considerations in authorship and postgraduate supervision in universities in Kenya using a desktop survey. The study established that in Kenya, *Universities Standards and Guidelines 2014* and *Harmonized Criteria and Guidelines for Appointment and Promotion of Academic Staff in Universities in Kenya* have apportioned the highest score on research and publication for appointment and promotion of academic staff in universities. This is likely to trigger unethical practices, increase authorship disputes and undermine collaborative research. The existing framework does not provide for a criteria on authorship listing; and the mandate of Institutional Ethics Review Committees (IERCs) is limited to approval of research proposal and treatment of human participants. Universities in Kenya have developed procedures for appointment and specified the responsibilities of supervisors of postgraduate students. However, very little has been done to train and inculcate research ethics in postgraduate students and supervisors. To mitigate these, universities should develop criterion for awarding publication credit. IERCs should expand their mandate to include ethical consideration beyond a research proposal and universities should train supervisors on supervision and research ethics before appointment. Further research is required to determine the preparedness of supervisors of postgraduate students in Kenya in the responsible conduct of research.
Keywords: research ethics, authorship, supervision, universities. Kenya

1. Introduction
Literacy rate is an indicator of the country's level of development. Thus the classification of states as developed, developing or underdevelopment is dependent on among other factors, literacy rate. The quality of human resource (derived from the type of education) does not only epitomize the state's power but also gives impetus to development. Globalization and technological revolution have moved economies away from traditional natural resources to what is now knowledge economy. Knowledge economy is recognized as a source of economic growth and competitiveness in all economic sectors (Hadad 2017). This realization has led governments to identify higher education and research as central to the knowledge economy. It is for this reason that in most states higher education training has been on the rise Cyranoski et al. (2011) and reforms in higher education undertaken (Matas 2012). These reforms have included developing standards, regulations and guidelines. For example in East Africa, the Inter-University Council of East Africa has developed the *East African Qualification Framework for Higher Education (EAQF), 2015* and the *Standards and Guidelines for Postgraduate Studies in East Africa 2018* (Botha et al. 2021).

The reforms aim at enhancing the quality of postgraduate training and research. But the reforms should also ensure postgraduate training and research instil public confidence. Society has faith in science because it is the findings that eventually feed into development. Thus, for research to continue serving humanity and enable states and society meet development needs, the highest standards possible are required in the conduct of research. Research ethics are required to protect individuals, communities and the environment (Israel and Hay 2006). Unethical research has the potential to undermine confidence among researchers, universities, journals and in science itself (Lievore et al. 2021). It is for this reason that at a global level, publishers, research institutions and scientist convene under the auspice of the World Conference on Integrity (WCRI) to discuss and strengthen research integrity (file (wcrif.org).

Regional, national and local level institutions have also put in place frameworks to ensure research integrity. There have been calls for research oversight to improve research integrity through the establishment of Research Ethics Committees (RECs) (Kombe et al. 2014; Ferraro et al. 2012). This is a recognition that

there are instances when some scientists engage in research misconduct. Indeed, Macrina (2014) and Ferraro et al. (2012) show that research misconduct has been around for quite some time. There are various forms of scientific misconduct. Research misconduct has often taken the shape of falsification of data and results, mistreatment of research participants to misuse of research grants. The concern for research ethics as led to development of guidelines and regulations for research project approval, data management and author guidelines. A plethora of research on research ethics has been undertaken. This study highlights research ethical issues that relate to authorship and postgraduate supervision.

Macrina (2014) has discussed the pressure to publish as the precursor to scientific misconduct. The study presents a case for authorship criteria and classification of authors. The study's classification of authors as senior, first author and co-author is of particular note in postgraduate supervision or collaborative research. Issues arising from Marcina (2014) discussion relate to distinction between senior author and first author, the place of a senior author when the research is funded by postgraduate students, and determination of a senior author in a multi-disciplinary research. While agreeing with Macrina (2014) that researchers are under pressure to publish, Fleming (2021) notes that the perceived lack of recognition in collaborative research is a lead deterrent factor to researchers' participation in multi-group research. Lack of a criteria to determine authorship can generate authorship disputes. Indeed, Welfare and Sacket (2011) observed that disagreements among collaborators in research about authorship recognition exist; and that both faculty and postgraduate students were unclear on how to determine authorship credit. Welfare and Sacket (2011) have further underscored power-relation in authorship arising from postgraduate research where postgraduate students were uncomfortable advocating for greater authorship recognition from their supervisors. Fleming (2021) has also underscored the rising incidences of author disputes and add that the magnitude of author disputes have been found to take the gender or discipline dimension. Other research ethical issues raised are research integrity in commissioned research (Vie, 2022), honorary authorship and guest authorship (Oberlander and Spencer 2006), faking data in authorship and publications (Bhattacharjee 2013) and their consequences on collaborative/multi-centered research and individual career progression.

These research ethical issues underscore the need for universities and other research institutions to develop a criteria for determination of authorship in the broader context of Responsible Conduct of Research (RCR). According to Macrina (2014), RCR encompasses research subjects, research integrity, environmental health and safety, and fiscal accountability. Kombe et al. (2014) has called on research institutions in Africa to institute policies, structural and governance systems that promote responsible conduct of research. It is fair to observe that the need for RCR prompted the inception of World Conference on Research Integrity (WCRI) and the subsequent Research Integrity Statements (Montreal and Singapore), Amsterdam agenda and Hong Kong Principles that have a risen from the same (https://wcrif.org). WCRI has offered principles and professional responsibilities in the conduct of research. As a step in mitigating research misconduct, Ferraro et al. (2012) underscored the role of Research Ethics Committee (RECs) in preventing harm and defending the rights of research participants. Besides policy and institutions, research integrity can as well be enhanced by recognizing the role of supervisors in postgraduate training. According to Vilkinas (2002) supervisors, besides being experts of knowledge in their areas of specialization, ought to be managers. Supervisor – managers will often be innovative, creative resource oriented, decisive and dependable. With such attributes, supervisors easily pass for mentors. In a study by Titus and Ballou (2013), supervisors who consider themselves mentors are more likely to engage postgraduate students on a variety of issues such as data reliability, collaborations on research paper and publishing, and teaching regulatory requirements. Accordingly, a supervisor has a role to play in modelling postgraduate students into responsible researchers which include a consciousness of RCR.

In Kenya, the establishment of the Commission for University Education (CUE) through the University Act No 42 of 2012; and its subsequent development of *Universities Standards and Guidelines 2014* has significantly impacted the operations of universities since 2014. In particular the *Harmonized Criteria and Guidelines for Appointment and Promotion of Academic Staff in Universities in Kenya* introduced parameters and thresholds to inform appointment and promotion of academic staff in Kenya. In this study it is postulated that these guidelines have implications on research ethics and specifically those relating to authorship. The study further takes cognizant of supervisor practices in universities in Kenya as determinants of research and publication ethics that relate to authorship. It is in view of these that this study examines (i) the potential effect of Standards and Guidelines put in place by the Commission for University Education (CUE) on authorship practices; and the role of supervisors in promoting the appropriate authorship practices. The discussions in the paper are expected to inform review of the existing guidelines by regulators of higher education and research; and institute reforms in university with authorship as the centre piece of these reforms.

In the subsequent sections of the paper, the place of authorship in the *Universities Standards and Guidelines 2014* as set out by CUE is discussed; then strategies to mitigate the effects of these standards and guidelines are suggested. The paper further discusses supervision practices in promoting responsible authorship practices; and finally a conclusion.

2. Methodology

This was a desktop survey that entailed review of literature with a focus on authorship. Articles, reports, books and book chapters were searched from the internet. Search words included 'authorship', 'research ethics', 'research misconduct'. During the search, no definite publication period   was demarcated. A total of twenty-five (25) articles, book chapters and reports were reviewed to inform the study. Key among these references are two documents; *Universities Standards and Guidelines 2014* and *Harmonized Criteria and Guidelines for Appointment and Promotion of Academic Staff in Universities in Kenya*. Although these documents present other aspects on standards and guidelines in universities in Kenya, this study focused on aspect that relate to authorship. In addition to these, the study present existing supervision practices and how these relate to authorship. Reference is made to Moi University and Egerton University – the 2nd and 4th oldest universities in Kenya. Given the stature of these universities in Kenya, the existing practices, policies and regulations (or lack of) touching on authorship and supervision are expected to give a mirror image of the situation in Kenya.

3. The influence of University Standards and Guidelines 2014 and supervision practices on authorship in Kenya

3.1 Authorship in Universities Standards and Guidelines 2014 in Kenya

In Kenya, the CUE was established to promote the objectives of university education by regulating and accrediting universities and programmes among other functions. It is instructive to note that besides the University Act of 2012, the Commission's mandate is also derived from the overarching Inter University Council of East Africa (IUCEA).

In actualizing its mandate, CUE has developed standards and guidelines among other policies and regulations. Key among these are the *Universities standards and Guidelines 2014* and *Harmonized Criteria and Guidelines for Appointment and Promotion of Academic Staff in Universities in Kenya* (Commission for University Education - View All - Standards and Guidelines (cue.or.ke). In the *Universities Standards and Guidelines 2014*, CUE has addressed itself to institutional standards (including human resource) among other thematic areas required in Universities in Kenya. While in the *Harmonized Criteria and Guidelines for Appointment and Promotion of Academic Staff in Universities in Kenya,* CUE provides required qualifications for appointment and promotion of academic staff. The guidelines on staff appointment refer to publications, teaching and instruction, professional/consultancy, administration and responsibility, and community engagement. The distribution of marks for each of these attributes is as shown in table 1. Of fundamental note is the high loading and expected contribution of research and publication score when compared to other areas. In this criteria, research and publication are evidently the lead determinant for appointment and promotion into a teaching position in a university Kenya.

Table 1: Relative weighted points in various categories for different cadres of academic staff

Area of contribution	Relative weighted points			
	Lecturer	Senior lecturer	Associate professor	Professor
Research & publication	40	50	60	65
Teaching and instruction	30	25	20	15
Professional/consulting/industry	-	10	10	10
Administration/responsibility	20	10	05	05
Community engagement/other contributions	10	05	05	05
Total score (%)	**100**	**100**	**100**	**100**

Source: *Harmonized Criteria and Guidelines for Appointment and Promotion of Academic Staff in Universities in Kenya, pg 4* (cue.or.ke)

Besides the publication points, postgraduate supervision is an important element considered for promotion, particularly at the rank of senior lecturer and above (table 2). The import of it is that academic staff will not only seek to publish, but will seek to supervise to meet the requirements for promotion. Supervision of postgraduate students has the additional benefit of providing publication points arising from postgraduate research. But it is not just supervision, the level of supervision comes into play. To be appointed associate professor and professor, one is required to have supervised doctoral students. It is therefore possible that academic staff in departments or programmes that have not launched or sustained postgraduate studies cannot be promoted irrespective of other outstanding achievements in academia. It also raises the risk of reducing the rigour of supervision to 'save on time' and fast-track completion of postgraduate studies of supervised students.

Table 2: Minimum publication and postgraduate supervisions requirements for academic staff in Kenyan universities

Rank	Minimum publication points	Postgraduate supervision of students to completion
Graduate assistant	-	-
Tutorial fellow	-	-
Lecturer	24	-
Senior lecturer	32	3
Associate professor	48	4, including at least one doctoral student
Professor	60	5, including at least two doctoral student

Source: modified from the *Harmonized Criteria and Guidelines for Appointment and Promotion of Academic Staff in Universities in Kenya* (cue.or.ke)

The publication points are derived from the type of publication (Table 3). Points for each type of publication are calculated and awarded based on the author listing using the Sequence Determines Credit (SDC) approach. Thus, single authorship earns more points than multi-authored publications. Although the allocation of points by type of publication is plausible, it left out the component of predatory journals which are readily available and willing to publish without peer review. This has meant academic staff and postgraduate students fast-tracking promotion and graduation can fall prey to predatory journals.

Overall, the criteria reinforce the phrase 'publish or perish' that is prevalent in academia. Fleming (2021) observed that researchers are judged by what they publish. Thus, the number of papers, position in author list and funding are yard sticks in the field of research.

Table 3: Distribution of weighted publication points

Sr. No.	Types of publication and other scholarly outputs	Maximum points
1	1 university level scholarly book	24
2	Patent invention or innovation	16
3	One article in referred journal	8
4	One tertiary level scholarly book	8
5	chapter in a university level scholarly books	6
6	Referred learning modules	6
7	One reviewed conference paper	4
8	One secondary school level textbook	4
9	Short communication in a referred/scholarly journal	4
10	Consultancy and project reports	4
11	Referred exhibition and performances	4
12	One non-reviewed conference paper	2
13	Any other book	2
14	Editorship of a book or conference proceedings	2
15	Scholarly presentations and conferences/workshops/seminars	2
16	Book review published in referred journal	1

Source: *Harmonized Criteria and Guidelines for Appointment and Promotion of Academic Staff in Universities in Kenya, pg 2* (cue.or.ke)

3.2 Strategies for mitigating effects of Universities Standards and Guidelines 2014 in Kenya on authorship

The *Universities Standards and Guidelines 2014* has since heightened competition for postgraduate supervision and the listing of authors in publications arising from collaborative research and postgraduate supervision. According to Kombe et al. (2014) scientific misconduct is strongly influenced by among other factors, the need for publication. The guidelines and criteria for promotion of academic staff will likely trigger authorship disputes which have been found to be on the rise (Fleming 2021). The increased importance of publications will further undermine collaborative or multi-centre research and lead to intimidation of junior researchers (Waswa, Akunga and Obonyo 2018). Although most research calls are emphasizing multi-disciplinary research themes, some scholars would respond to the calls but with publications as the least of the benefits.   Such concerns have led to calls for models such as Equal Contribution (EC) where authors obtain equal credit and Percent Contribution Indicated (PCI) (Waswa, Akunga and Obonyo 2018). The SDC model adopted by CUE remains ideal in awarding credit on publications arising from postgraduate supervision. Its preference is premised on the classification of supervisors as 1st supervisor or main supervisor and co-supervisors in universities in Kenya. It is instructive to note that IUCEA Standards and Guidelines have also made reference to main supervisor and co-supervisor (IUCEA 2018).   On the other hand, the PCI model is appropriate for publications arising from collaborative research where credit for authorship is based on contribution. The PCI model has the potential to promote teamwork and enhance responsibility for contribution made in a publication.

Whereas CUE has proposed the criteria for crediting authorship, universities should develop strategies

for determining authorship listing. Macrina (2014) and Oberlander and Spencer (2006) have articulated the need for a criteria to determine authorship. This should include development of scoring strategies in determining authorship. Graduate schools (or units responsible for postgraduate studies) and research divisions in universities should develop these guidelines. Universities in Kenya have developed policies, regulations and guidelines on research ethics, publication and postgraduate studies, but there is dearth on authorship criteria. Some examples would suffice. Moi University has developed rules and regulations governing postgraduate studies in which issues of examination of course work and thesis, and supervision are extensively prescribed (Moi University 2018). The document however makes no reference to authorship of publication arising from postgraduate research. On a related note, Egerton University has developed a publications policy in which it has made reference to authorship and dispute resolution (Egerton University Policies). In the policy, it is indicated that authors shall agree on authorship and order of names in the publication. Whereas negotiation and agreement on authorship is welcome, the Egerton University policy on publication does not go far enough to protect junior members of research teams and postgraduate students who would often lose out on the power balance. A study by Welfare et al. (2011) showed that both faculty and postgraduate students were unclear on how to determine authorship credit. This therefore points to a need for a criteria for authorship. Universities in Kenya would do well to borrow existing practices on authorship such as the ones at the University of KwaZulu-Natal in South Africa (UKZN). At the University of KwaZulu-Natal, the policy on research and ethics has provided the criteria for authorship (UKZN Research Office: Policies & Procedures). In the UKZN policy on research ethics, credit to authors is based on;

- substantial contribution to conception and design, or acquisition of data, or analysis and interpretation;
- drafting the article or commenting critically on the draft; and
- approving the final version

This criteria is similar to that of the International Committee of Medical Journal Editors (ICMJE) presented in Macrina (2014) and Oberlander and Spencer (2006). Although there are criticism against ICMJE (Curzer, 2021) its criteria remains reasonable and fair in the distribution of credit for publication arising from collaborative research and postgraduate supervision.

Universities in Kenya can also mitigate the negative effects of CUE Standards and Guidelines by expanding the mandate of the Research Ethics Committee (REC). According to Ferraro et al (2012), RECs are established to prevent harm and defend the rights of research participants. These sentiments are reinforced in the US Belmont Report of 1979 which identified three basic ethical principles in research involving human participants – respect for persons, beneficence and justice (The Belmont Report (hhs.gov)). In Kenya, most universities have established RECs with a focus on humans, animals, the processes of data collection, analysis and interpretation of results. The aim here is to protect respondents and animals from harm and prevent fabrication of results. But research ethical issues go beyond these. The term research participants should be expanded to include researchers and how they relate with each other up to the point of assigning credit to authorship and acknowledgment. Harm and violation of rights in research should include prevention of ghost and honorary authorship (Macrina 2014). Thus, the mandate of RECs in universities in Kenya should be expanded to include stipulation of the criteria for authorship listing. This will ensure that junior authors in multi-disciplinary research and postgraduate students are respected and get credit due to them in authorship.

In Kenya, the National Commission for Science, Technology and Innovation (NACOSTI) was established to regulate and assure quality in the science, technology and innovation sector and advise the government in matters related thereto (Mandate & Functions (nacosti.go.ke). It is noted that the mandate of NACOSTI include approval of all scientific research, register and accredit research institutions, and assurance of relevance and quality of science technology and innovation programmes in research institutions. It is further noted that NACOSTI has delegated the mandate of ethical clearance in research proposals and assuring quality in research to Institutional Ethics Review Committees (IERCs). NACOSTI's delegation of ethical clearance to IERCs is laudable since this allows universities to address the diverse localized issues that inform research – including the needs of collaborative research that may vary from time to time. However, NACOSTI's and IERC's focus on research proposal means other important aspects that involve the conduct of research such as authorship are left unattended to. NACOSTI and IERC ethical clearance should include a criteria on determination of authors. NACOSTI in particular should develop standards and guidelines on the conduct of research – covering the entire process. This should include guidelines on authorship and acknowledgment in collaborative research. NACOSTI can borrow a leaf from the University Grants Commission – Consortium for Academic Research and Ethics (UGC-CARE) of India which was established to promote quality research and publication ethics (Kharumnuid and Deo, 2022). NACOSTI can further incorporate Singapare (2010) and Montreal (2013) Statements on research integrity (WCRI 2010, 2013) in crafting guidelines that ensure a responsible conduct of research.

But over and above developing a criteria for authorship and expanding the mandate of IERCs, universities in Kenya should make active efforts in promoting responsible conduct of research by appealing to

the conscience of individual scientists to invoke the highest possible standard of research behaviour (Kombe et al 2014). Researchers and supervisors in universities should be made aware of the consequences of unethical practices in research. Some of these consequences range from loss of reputation as a scientist to a decline in confidence by the public (Kombe et al. 2014; Bhattacharjee 2013). The community expects scientists to be bearers of truth. Universities in Kenya through their respective graduate schools or divisions of research, should make it a practice to organize annual trainings that sensitize researchers and supervisors on the need for a responsible conduct in research which includes giving due credit to those involved in research. In fact, a university's approval of a research proposal (a grant application) or postgraduate supervision should be pegged on one having attended such a training. Such practices (e.g trainings) and structures (e.g RECs) will ensure that research conforms to the highest standards of research integrity.

3.3 Postgraduate supervision in responsible conduct of research.

Supervisors play a vital role in helping students become experts in their areas of specialization. According to Vilkinas (2002), academic supervisors need to perform the dual role of being knowledge experts and managers. This view is supported by Katz (2016) who observed that doctoral study has the ingredients of a research project, namely; a definite starting point, a definite end-point, it has an objective and limited resources. Thus, a postgraduate student automatically becomes a manager. Katz (2016) goes further to underscore the role of a supervisor in actualizing a good research project. But what constitutes good management of a research project from a supervisor point of view? According to Vilkinas (2002), supervisors need to be innovative, creative, resource oriented, work-focused, technical experts, decisive and dependable. In addition to these management skills, supervisors are required to promote responsible conduct in research during supervision. Supervisors should be able to articulate ethical issues to their students during the life of the research project under study. A study by Titus and Ballou (2013) found that postgraduate students expected supervisors, when compared to institutions, to take lead in setting standards for data collection (94%), training in data management (92%), provide policy on authorship (81%), provide financial support (73%) and monitor doctoral student progress (56%). Most of these training activities strongly relate to a responsible conduct in research. In another study, Hart et al. (2022) reported a significant difference between experienced and novice supervisors in offering expert assistance (in scientific writing, preparation in ethics applications, and research methodology), research project delays and data acquisition problems among medical students. These studies underscore the place of training and experience in postgraduate supervision. It means, a poorly equipped supervisor is unlikely to guide students through these important activities. Research is required to assess the preparedness of supervisors of postgraduate students in Kenya in responsible conduct of research

Universities in Kenya as indeed elsewhere should have mechanisms in place that ensure the manager part of the supervisor is nurtured. Universities in Kenya have procedures for appointment of supervisors. For instance, Moi University (Kenya) has rules and regulations governing postgraduate studies. These range from admission, teaching and examination of coursework, supervision and ethical considerations. On supervision, Moi University outlines the qualification and responsibilities of a supervisor; while on research ethics, the university makes reference to approval of research by Ethics Committee and plagiarism. This is in line with the standards and guidelines set out by the Inter University Council for East Africa (IUCEA 2018). Besides developing guidelines for appointment and responsibilities of supervisors, IUCEA requires universities in East Africa to train and induct supervisors on supervisory skills, regulatory, quality systems and ethics (IUCEA 2018). It however remains unclear if universities in Kenya train supervisors as required by the IUCEA standards and guidelines. In most cases, supervisors are appointed upon attainment of a PhD. Yet it is such training that can inculcate managerial and mentorship skills, and promote ethical behaviour required during supervision of postgraduate students. According to Macrina (2014), research integrity includes management of data, authorship and publication practices, mentoring and collaborative research. A study by Tella and Onyancha (2021) reveal that among the challenges to scholarly publishing among postgraduate students in Nigeria is inadequate mentorship and support. In a related study, Titus and Ballou (2013) found that faculty who considered themselves mentors were more likely than those who considered themselves advisors or supervisors to report engaging postgraduate students on data reliability, collaborations in research and publishing among others. Universities in Kenya should make deliberate efforts to build capacity of supervisors in project management and mentorship with the overarching goal of strengthening responsible conduct of research in postgraduate supervision. Such trainings are likely to improve postgraduate studies' rate of completions and reduce authorship disputes.

4.0 Conclusion

This paper used a desktop survey to critique the place of authorship in the *Universities Standards and Guidelines 2014* of the Commission for University Education (CUE) and the role of supervisors in promoting appropriate authorship practices. It is established that the *Universities Standards and Guidelines 2014* and the *Harmonized*

Criteria and Guidelines for Appointment and Promotion of Academic Staff in Universities in Kenya has laid emphasis on research and publication in the appointment and promotion of academic staff in universities. The emphasis on research and publication has the potential to trigger disputes and unethical practices relating to authorship. The study further established that although universities in Kenya have specified the appointment and responsibilities of supervisors, very little, if any, is done to prepare supervisors for supervision as required by the IUCEA. To mitigate these gaps, the study recommends; (i) universities should develop criterion for publication credit arising from collaborative research and postgraduate supervision so as to promote teamwork and fairness in the award of authorship credit; (ii) the mandate of IERCs in universities should be expanded to include the entire process of research including authorship criteria; and (iii), universities should train supervisors on supervision and research ethics before appointment. Further research is required to determine the preparedness of supervisors of postgraduate students in Kenya in the responsible conduct of research.

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