Plagiarism under a Magnifying-Glass

Diana Starovoytova
School of Engineering, Moi University P. O. Box 3900, Eldoret, Kenya

Abstract
This paper embodies the findings from a small part of a larger study on plagiarism, at the School of Engineering (SOE). The study is a cross-sectional survey, conducted in an institutional setting. 15 senior academic members of staff (N = 15), from SOE were invited to complete a questionnaire. The questionnaire was pre-tested, to ensure its validity and reliability. A trial-survey (pre-testing) was conducted, according to ISO 20252:2006 (E). The Statistical Package for Social Sciences (SPSS 17, version 22) computer software program was used, to compute the Cronbach’s alpha coefficient, which demonstrated high inter-item consistency, and, therefore, reliability (Cronbach’s $a = 0.803$). Descriptive statistics was used, to analyze, both, qualitative and quantitative data. The main findings of the study, revealed that the majority (60%) of the respondents alleged that plagiarism was never mentioned or explained, to them, at any level; Overwhelming majority, (90%) agreed that plagiarism is unfair to the original author and the colleagues; The vast majority, (90%) also claimed that they never plagiarized, while 10% confessed that they did it one or two times in the past; majority (70%) also agreed, that plagiarism is unfair to oneself; and 60% agreed, it is unfair to the university. The analysis of the plagiarism, from the faculty perspective, was balanced, by the rigorous coverage, of the following issues: Historical background; Plagiarism’ extent; Quantification for plagiarism; Consequences of plagiarism; Retraction of publications, with selected global illustrative examples; Publishing process: main-actors and their roles, in dealing with plagiarism; Combating plagiarism, including detection and punishment; and Plagiarism, as just a tiny fraction of scientific misconduct; among others. This study also provides few recommendations, on how to improve the current situation, in the absence of official institutional Plagiarism-Policy. The findings, alongside with the theoretical coverage, will, expectantly, make a contribution (in its small way), toward the body of knowledge, on the subject.

Keywords: retraction of publication, scientific, academic, faculty, quantification for plagiarism, questionnaire.

1. Introduction
1.1. Plagiarism concept
Plagiarism is a complex issue; hence, there is no universally accepted definition. To illustrate this, following are the selected examples, on how plagiarism definition defer, among universities and institutions of higher learning: (1) Stanford sees plagiarism as the ‘use, without giving reasonable and appropriate credit to or acknowledging the author or the source, of another person’s original work, whether such work is made up of: code, formulas, ideas, language, research, strategies, writing or other form’ (Begovic, 2014) (2) Yale views plagiarism as the ‘... use of another's work, words, or ideas, without attribution,” which includes ‘... using a source's language, without quoting, using information from a source, without attribution, and paraphrasing a source, in a form, that stays too close to the original’ (Editage Insights, 2012); (3) Princeton perceives plagiarism as the 'deliberate' use of 'someone else's language, ideas, or other original (not common knowledge) material, without acknowledging its source' (SIAM Journals, 2011); (4) Oxford College of Emory University characterizes plagiarism as the use of 'a writer's ideas or phraseology, without giving due credit' (Katavić, 2006), and (5) Wake Forest University describes plagiarism, as a human-rights issue, stating that, as a result of plagiarism 'a person loses not material possession, but something that characterized him or her, as an individual. Plagiarism is a serious violation of another person's rights, whether the material stolen is great or small; it is not a matter of degree or intent.' Regardless of the specifics, attribution (or lack of it), however, remains the general concern for all the above definitions (Ebert, 2010).

Incidents of plagiarism are viewed along a wide range; with some incidents regarded, as more serious, than others (Jones, 2011; Kwong et al., 2010, Blum, 2009; Hudd et al., 2009, Salmons, 2007). Plagiarism range, according to the Committee on Publication Ethics (COPE), is defined as follows: 'Plagiarism ranges from the unreferenced-use of others’ published and unpublished ideas, including research grant-applications, to submission under ‘new’ authorship of a complete-paper, sometimes in a different language. It applies to print and electronic versions.' Moreover, it includes abuse of the unique methods and or results, obtained by privileged communications, such as project proposals or manuscripts, for publication in scientific journals, master-thesis and doctoral dissertations, among others (COPE, 2012).

Plagiarism is one of the most common unethical forms of scientific fraud (Ferris, 2007; Mojon-Azzi & Mojon, 2004), resulted from both; subjective and objective factors. Subjective causes are attitudinal and individual: the circumstances, ambitions, competitive academic drive, and simple ignorance, of the relevant rules and conventions. Objective causes include the pressures, directed at individuals, by society and family;
Donev (2015), on the other-hand, has described plagiarism as a-criminal-act, against the-scientist and against science, itself; he also-emphases that, as-such, it-is punishable. According to Bahadori et al. (2012), the-unprecedented-growth of IT, stiff-competition between-countries, rapid-growth of knowledge, unstoppable-multiplication of scientific-journals, lack of good-explication of plagiarism and different-understandings of it, lack of awareness, mismanagement of time, and low-ethical values, among-others, have all-contributed, to the-prevalence of plagiarism, in the-scientific-community. According to Goodstein (2002), career-pressure and ease of fabrication, are the-primary-motivators, for scientists, to-commit-misconduct. Plagiarism, in-academic and professional-activity, has-become more-common, as the-demand for faculty-productivity has-grown and the-volume of publication has-increased.

Plagiarism is divided into four-categories (Maurer, 2006): (1) ‘casual-plagiarism’, due to-lack of awareness of plagiarism, or insufficient-understanding of referencing or citation; (2) ‘unintentional-plagiarism’, where, due-to-the-wide-amount of knowledge, in-the-scientific-area, a-person may unknowingly-present ideas, similar-to-those, of others; (3) ‘intentional-plagiarism’, where a-person, deliberately and knowingly, copies, part or all, of somebody else’s work, without giving credit, to-them; and (4) ‘self-plagiarism’, which consists of reusing one’s own-published-work, in-a-different-form, without acknowledging it.

Self-plagiarism, is rather-common, for-example, in-one-study, five out of nine-papers showed significant-usage of sentences, from papers previously-published, by the-same-author, on-the-same-subject (Rog, 2005). Furthermore, according to Hayes & Introna (2005), self-plagiarism can-be-defined in three-following-ways: (1) publishing a-paper, which, basically, overlaps another-paper, without due-acknowledgement; (2) breaking a-large-paper into a-few-smaller-papers and publishing them, separately, called ‘salami-slicing’; and (3) republishing the-same-work, in-a-different-journal(s).

1.1.1. Precise-quantification for plagiarism.
The other-important-issue to-be-aware-of, is how-much-change, exactly, in-the-original-material, can-make for plagiarism (Park, 2003). To-be-pronounced ‘plagiarism’, it needs to-be a-rather-serious-deviation, from normally-accepted-behavior, of the-relevant-scientific-community, which is done-deliberately and must-be proved, with solid-evidence. However, the-seriousness of the-offense depends on-the-extent, of the-text, plagiarized.

According to World Association of Science and Communication (WASC), plagiarism is specifically-defined as: when six-consecutive-words are copied, seven to-eleven-words are overlapping of thirty-letters (Masic, 2012; McCabe & Feghali, 2008). A more-liberal and more-lenient-definition of Sanjeev (2008), is that plagiarism on-a-smaller-scale, or ‘micro-plagiarism’, means copying unchanged-sentences, of less-than-100-words, while ‘big-plagiarism’ involves copying unchanged-sentences, with more-than-100-words. Replication and publishing of whole-articles, a-bigger-part of a-text or a-chapter, without adequate-attribute, is the-most-severe-form of plagiarism, considered as a ‘theft’ of intellectual-property, also called shameless, aggressive or blatant-plagiarism.

On-the-other-hand, Croatian Medical Journal considers plagiarism, if more than 10% text-similarity is noted, while other-journals consider 25% or 30%. How-much of plagiarism is acceptable is determined, by-the-editors, of the-journal. Manual-verification is mandatory, the-guidelines for which are available on COPE official-website. Plagiarism, in-the-results and discussion-section of the-work, is not accepted, whatsoever. However, minor-amount, in-methodology, can-be accepted, with proper-citation and paraphrasing (Sanjeev, 2008). If there is an-instance of substantive-plagiarism (copying more than 25% of the-published source), the-redundant-manuscript should-be withdrawn, from the-publication-process, and actions taken, to-inform respective-institution(s). If plagiarism is surfaced, after the-publication, editors should-retract the-paper and inform the-readership, on-misconduct (Masic, 2012).

Another-perspective was-suggested by Prof. Wiser, Tulane University, as five-criteria, to-evaluate the-seriousness of plagiarism-allegations (Nathan, 2012): (1) What was the-extent of the-plagiarism?; (2) Was the-intent malicious?; (3) Has the-author previously-engaged, in-plagiarism?; (4) What is the-position and training of the-author?; and (5) Was the-source-material original or did the-plagiarism occur from-notes?

Furthermore, the-border-line of self-plagiarism is difficult to set-up, because some-journal-editors consider self-plagiarism as a-milder-form, of scientific-dishonesty, and enable up-to 30% of the-text, in-the introduction-to-be-taken, from a-previously-published-scientific-paper, by the-same-author (Baždaric, 2009). Most-often, editors retracting an-article, from the-journal, based on-the-final-decision of the-competent-body, for scientific-integrity (Masic & Kujundzic, 2013).

1.2. Historical-background
In-ancient-times, the-idea of intellectual-property did not exist. Ideas were the-common-property, of the
educated-privileged-elite, who knew and, generally, trusted-each-other. This-system continued through the European-Middle-Ages, where education was in-Latin and in-Greek-language. Some-scholars were monks, who-used much of their-time copying-manuscripts. Most of the-religious-texts were-authorless and were unreservedly-copied and incorporated, into-later-works. Even the-word ‘scholarship’ meant demonstrating mastery of-the-ancient-greats. These-behaviors tend to-change, during the-Renaissance, when originality became more-respected and individual-accomplishment was-recognized, in-many-more-fields that it-had been, previously. This-started, when painters began signing their-works. By the-mid 1600s, accusations, of plagiarism and stealing-ideas, were-common, in every-creative-field, including the-sciences (Wikipedia: Academic-misconduct).

In the 1st Century, the-use of-the-Latin word ‘plagiarus’ (literally kidnapper), to-denote stealing someone else’s work, was-used, by the-Roman-poet Martial, who-complained that another-poet had ‘kidnapped his-verses’. ‘Plagiarism’, a-derivative of ‘plagiarus’ was introduced into-English, in-1601, by dramatist Ben Jonson, to-describe someone-guilty of literary-theft (Katavić, 2008). The-derived-form plagiarism was introduced, into-English, around 1620 (Office of Research Integrity, 2010).

Thomas Mallon (2001), one of the-oldest-authors, on-plagiarism, notes that ancient and medieval Europe had many-authorized-genres, and good-writing, then, meant imitations of-a-small-number of-respected-authors. Only in 18th century, in Europe, an-ideal of authorship, particular with the-Romantic movement, has-emerged; while in-the-previous-centuries, authors and artists, were-encouraged to ‘copy the masters, as closely as possible’ and avoid ‘unnecessary-invention’ (Editage Insights, 2012).

On the-other-hand, people, are not, generally, associate fraud and misconduct, in-connection with education, and academic and scientific-research. Actually, traditionally, educators and the-education-system, have-been highly-regarded, as major-transmitter of truth, honesty, and similar-positive-values, and consequently, are considered, as somehow ‘above-it-all’. Nevertheless, ‘from time to time, teachers, professors, and educational-administrators abuse the trust, placed in them, and researchers fabricate or ‘massage’ their-data, plagiarize and falsify their-reports’ (Noah & Eckstein, 2001).

1.3. Plagiarism ‘extent


The National Science Foundation (NSF) in 2013, declared, that they handle more than 100 cases, of suspected-plagiarism, in a-year. Regrettably, NSF is not an-isolated-body; there are other-academic institutions, as-well-as other-spheres of interest, which is often-revealed, to-the-public, only when scandals break-out. For-example, in-Germany, two-well-known-members of the-Cabinet had to-withdraw, from the office, in-the-middle of accusation of alleged-plagiarism, in their-dissertations. Analogous-scandals stunned Canada, the-Philippines, Romania and Russia (Masic, 2014).

The-issue of scientific-misconduct, in the-USA, attained public-awareness in-the-1980s, with the emergence of several-episodes of scientific-improprieties (Giles, 2004; Stewart & Feder, 1987). Out of the 3,475 research-institutions, 3% report to-the US Department of Health and Human Services’ Office of Research Integrity, indicating some-form of scientific-misconduct (WiredMagazine.com). US, examining funded-research-projects, suggested that the-incidence of misconduct, maybe as-much-as 3 cases, per 100 scientists per-year, with plagiarism accounting for 36% of these-cases of misconduct (Titus et al., 2008). According to the US Office of Research Integrity, on-average, 130-200 allegations of misconduct, per-year, are made, in-medical and bio-medical-research, and about one-third, have-been-confirmed (Decoo, 2002). Other-accusations of plagiarism and academic-misconduct involved well-known-authors, such-as respected-historians Goodwin and Ambrose, and a New York State University; and Classics Professor and a- Vice-Chancellor of Monash University, Australia (Anderson, 2002; Baty, 2002).

According to-Schulz (2008), ‘A chemist in India has been found guilty of plagiarism and/or falsifying more than 70 research-papers, published in a-wide-variety of Western-Scientific-journals, between 2004 and 2007’.

Moreover, Martin (2007) reported a-case, in-which an-author’s 1993 article had plagiarized another-article, published in 1980. According to-Martin, ‘The allegation was investigated, and it was agreed that it was a serious-case of plagiarism’. While investigating this-author, who-has-published over 100-articles, two-more-articles of his, were-found to-be-plagiarized. Moreover, during the-process of investigation, they found the-plagiarist’s article, itself, was plagiarized!

Plagiarism is indeed, a global-phenomenon, with absolutely-no-professional, institutional, regional or
international-boundaries. The consequences of scientific-misconduct can be damaging, for both; perpetrators (Redman & Berz, 2010; Xie, 2008), and any individuals, who exposes it (Research Triangle Institute, 1995). Fanelli & Tregonza (2009) pointed out that, it is relatively-easy, to cheat, although difficult, to know-exactly, how many-scientists plagiarize and fabricate-data.

To tackle the problem of plagiarism, COPE recommended cooperation with research-institutions and retraction, of untrustworthy-material (COPE, 2016).

1.4. Consequences of plagiarism: Retraction of publications

One of the possible and direct consequences of plagiarism, is a retraction of a plagiarized-paper. Retraction is ‘a mechanism for correcting the literature and alerting readers to publications, that contain such seriously-flawed or erroneous-data, that their-findings and conclusions cannot be relied upon’ (COPE, 2009). Basically, a work can be retracted, if it has been considered to-be-based, on serious-errors, plagiarism or fraud; the two last ones named scientific-misconduct (Kleiner, 2009). Unreliable information may result, from truth-mistake, or from research-misconduct. Retraction is also used, in case of redundant-publication (i.e., when writer presents the similar-data, in several-publications), plagiarism, and failure to disclose a major competing-interest, likely to influence interpretations or recommendations. The main purpose of retractions, however, is to correct the writing and to ensure its integrity, rather than, to punish authors (COPE, 2009).

Retractions, in academic-publishing, have reached an enormous apex, increasing tenfold, in the last three decades, and the biggest reason for this, is plagiarism and duplications (self-plagiarism) (Masic, 2014). The numbers of retracted-papers vary, from database to database; for example ScienceDirect database shows over 700 papers have been retracted, from scientific-journals, mostly from medical journals, between December, 1985 and November, 2012. Databases of Medline and PubMed, of the National Library of Medicine, in the USA, identified more than 670 published-papers have been declared and designated, as plagiarized, from 1990 to 2009 (Pupovac, 2008). On the other hand, a survey on 42 largest bibliographic databases, for major scholarly-fields and publisher-websites, identified 4,449 scholarly publications retracted from 1928–2011. The number of articles retracted, per year, increased, by a factor of 19.06, from 2001 to 2010, while excluding repeat-offenders and adjusting, for growth of the published-literature, decreases it, to a factor of 11.36. The USA and EU-27 clearly accounted for most retraction, prior to 2005. Thereafter, the numbers, from the Asian-countries, particularly China, began to increase dramatically. Data were based on Web of Science Categories for 1,522 of the 1,796 journals, with at least one retraction. For engineering, in particular, 20% of articles were retracted, among 2010 Web of Science records, which also represents 12% of the total number of articles, retracted from Journals (Ferric et al., 2012).

The following section will exemplify the consequences of plagiarism, by giving few selected most illustrative-examples, and hence, demonstrates just ‘a tip of the iceberg’ of the menace.

1.4.1. Selected illustrative examples

The perception of scientists, as objective seekers of truth, is periodically jeopardized, by the discovery of a major scientific-fraud (Saunders & Savulescu, 2008). According to Massey & Webster (1997), in the past, faculty spoke little of plagiarism; it was just not something that the vast majority of scholarly-researchers would consider doing. But, the pressure to publish, among other factors, has pushed some academics, to plagiarize words and ideas, from others. Even such well-respected scholars, have been found, to have liberally ‘borrowed’ from others’ work. Moreover, many of the allegations arise in the well-funded and highly competitive science disciplines.

It would be logical, to start this sub-topic, with so-called ‘father’ of scientific-misconduct, Gregor Mendel; his published work ignited, more than a century of controversy, about the validity of his data; interested readers can refer for more details to Fairbanks & Rytting (2001). Next section will present some examples, country-wise:

Singapore: A professor of immunology, Menendez, Alirio was found guilty, of misconduct, on an ‘unprecedented’ scale, by a committee, at the National University of Singapore (NUS), by having fabricated, falsified or plagiarized, at least 21 research-papers, published in international academic journals. Menendez originally worked at NUS, but moved to the UK, in 2007, where he first worked at the University of Glasgow, and next, at the University of Liverpool (Yung & Sharma, 2013).

Israel: Dr. Spivak, Alexander a well-published author and a tenured senior lecturer, at the Holon Institute of Technology (HIT), plagiarized a paper, written in 2001, by his former postdoctoral adviser and two other researchers, from Tel Aviv University (Nadler et al., 2014). Two chapters of their original paper were copied and pasted and published, as two separate articles, in the International Journal of Pure and Applied Mathematics (IJPAM), seven years later. After the plagiarism was discovered, in 2014, both papers: Spivak (2008a) and Spivak (2008b) were retracted by the IJPAM Managing Editor. The HIT administration’s handling of the plagiarism affair, received harsh criticism, in Israel (Heruti-Sover, 2014), and abroad (Ferguson, md.), after the plagiarist was given a sabbatical leave, as a form of ‘punishment’. In May 2015, yet another paper, by
More recently, Bell Labs has exposed the work of one of their nano-scientists, Jan Hendrik Schön, as largely-fabricated (see Kennedy, 2002). Schön was widely-regarded as brilliant; publishing, on-average, one-paper every 8-days, for more-than two-years, 15 of those, in Science and Nature. Evidently, many-reviewers liked his-work. While he had some-supporters, there was also a lot of gossip, about the validity of his-findings. In 2001, his co-workers, finally-investigated, and found out that 16 of 25 papers, contained fraudulent-data, and another-six, were suspicious. Bell Labs fired Schön, immediately, the-U.S.A. revoked his-work-permit, and the-University of Konstanz invalidated the-PhD, that they awarded him, in 1997 (Anonymous, 2004).

**Romania:** (1) Marcu, Dănuţ, a Romanian mathematician and a computer-scientist, was banned, from several-journals, due to plagiarism. He had submitted a manuscript, which was more-or-less ‘word for word’ the-same, as a-paper, written by-another-author; (2) Ioan Mang, another computer-scientist, at the University of Oradea, plagiarized a paper, by cryptographer Eli Biham, Dean of the-Computer-Science Department of Technion, Haifa, Israel. He was accused, of extensive-plagiarism, in at-least-eight of his-academic-papers (Abbott, 2012; Pappas, 2012).

**Saudi Arabia:** Ali Attia, Hazem, an Egyptian professor, in the-Department of Mathematics, of Al-Qassem University, had a 2007 paper, retracted, from the Mathematical methods in the applied sciences journal, for being a near-identical-copy, of an earlier-paper, published in the International Journal of Thermal Science (Ali-Attia, 2007).

**Spain:** (1) Two-papers, by Juan Carlos Mejuto and Gonzalo Astray (chemical-physics), in the Journal of Chemical and Engineering Data, were withdrawn, by the editor (Astray, 2010), because of plagiarism; (2) The same happened, with José Román-Gómez, University of Córdoba (Spain), for appropriation of gel-images, in-claimed work, on signaling and DNA-methylation, in-leukemia, in Román-Gómez (2004).

**China and India,** collectively, accounted for more-cases of plagiarism, than the-U.S.A. (Ferric et al., 2012). Thirty-eight research-groups, with-greater, or equal to-five-retractions, accounted for 43.9% (n = 390) of retractions, for fraud or suspected-fraud (Ferric et al., 2012).

From the above-examples, it is evident, and supported by Parmley (2000), that: ‘It appears that plagiarism is far-more-common, than many of us suspect. We probably catch only the tip of the iceberg’. Overall, many cases of falsified-research are due-to: conflict of interest, self-interest, and bias. Researchers are motivated, by the prestige, which comes from being first, with a-scientific-discovery, or the financial rewards, of marketing a new-drug. For example, many-reports of fraud, in scientific-research (particularly medical and bio-medical) are towards satisfying the-interests, of their-sponsors (UNESCO, 2003).

### 1.5. Research purpose

According to Comunicar Journal (2016), the following-practices, such as: misleading, misrepresenting, defrauding, lying, betrayal, concealing, and confusing, among-others, are incompatible-with the transmission of scientific-knowledge, and academic-activities. The-reality, however, is very different: there is abundant-evidence showing, that dishonest and fraudulent-activities are-still-present, in both-processes. The issue of academic-integrity affects all-areas of scientific-knowledge, and all-levels of education systems: their-study, description, comprehension, and analysis will enable, to understand more and, hence, making an-informed-proposals, for solving the problems of dishonesty, in the scientific and academic-communication.

Honig & Bedi (2012), pointed out that there are increased-incidences of plagiarism, by scholars, are due-to ever-increasing-pressure, for them to publish, so as to climb the academic-ladder; academic promotion relies largely, on the number of publications and citations, of scientific-papers. Moreover, in addition to easy-access, to the massive-amount, of downloadable-documents, thousands of new-publishers and open-access, online or e-Journals, have emerged, in last-few-years, as a-money-spinning big-business, and an-easier-way, for desperate-author, to publish.

A considerable-number of empirical-studies, on plagiarism and dishonesty, among Academicians and researchers, was reported (see Honig & Bedi, 2012; Lacetera & Zirulia, 2011; Clarke, 2006; Enders & Hoover, 2006; Gill, 2006; Collberg & Kobourov, 2005). However, according to UNESCO (2003), research-coverage on academic dishonesty, is limited and uneven, especially, in developing-countries, like Kenya.

Cases of plagiarism have risen, in the last-years, due to improvement in communication infrastructure, and internet-access, and as Auer & Krunar (2001), rightfully refer to a new revolution in plagiarism, to as ‘mouse-click’ plagiarism. Moreover, in the local-context it is occasioned by, the arrival of the first fiber-optic, in Kenya, in the year 2009. According to Muchu (2011), academic plagiarism, in Kenyan Universities had increased, mainly due to: (1) Ignorance, negligence and lack of scholarly writing skills; (2) Lack and
inadequacy of Policy, on-plagiarism and academic-honesty; (3) The-spread of computers and the-Internet; (4) Reluctance, to-punish plagiarism; (5) Laziness, and lack of proficiency, in-English; (6) Social-benefits, that come-with-plagiarism; (7) Limited-time or poor-time-management; (8) Temptation and opportunity; and (9) Lack of awareness on the-consequences of plagiarism.

A-recent-study by Starovoytova & Namango (2016a): “Viewpoint of Undergraduate Engineering Students on Plagiarism” identified, overall and widespread-deficiency, in students’ understanding of plagiarism; also more-than-half, of the-students, in-the-subject-sample, were not adequately-informed about plagiarism, in-academic-writing; 76% of the-respondents agreed, that those who say, they-have-never plagiarized, are dishonest; and also that everyone-else, around are plagiarizing (e.g., students, researchers, and academic-staff); 48% of the-respondents agreed, that they keep-on-plagiarizing, because they have not been-caught-yet, while 33% stated, that they are tempted-to-plagiarize because, even if caught, the punishment (if any) will-be-light (the-reward outweighs the-risk).

Consequently, to-get a-better-picture, at-the-SOE, research on-student-perceptions was complemented, by research on-faculty-perceptions, in-the-subsequent-study, by Starovoytova & Namango (2016b): “Awareness of Engineering-Faculty on Plagiarism”, which revealed a-worrying-lack of understanding, among-engineering-faculty, on-basic-elements of scientific-writing, including plagiarism. The-study also exposed complete-lack of legal-framework, to-deal with-plagiarism, its-prevention, and punishment, at-the-institutional-level.

The-above-two-studies, have established apparent, widespread-deficiency, in-both; students’ and faculty’ understanding of plagiarism. This-study, therefore, focused on-providing much-closer and deeper-look at-plagiarism; as-such, the-following-issues (not covered, in-the-previous-two-papers) will be highlighted, such-as: Precise-quantification, for plagiarism; Consequences of plagiarism: Retraction of publications; Publishing-process: main-actors and their-roles, in-dealing with-plagiarism; and Plagiarism as a mere-fraction of academic and scientific-misconduct, among-others. This-coverage, will-be balanced, by-the-analysis of perceptions, on-plagiarism, from-thefaculty-perspective.

2.1. Model and steps applied
This-study used a-document-analysis and a-questioner, as its-main-research-instruments.

Flint et al. (2006), identified four-models, that faculty conceptualized, when discussing plagiarism. Model A- positioned cheating and plagiarism, as being identical; Model B- identified cheating, as being completely-different, from plagiarism; Model C- incorporated some-overlap, but with differences, in-the thought-process, between-the-two. Model D- treated plagiarism, as a-subset, of the-larger-category, of cheating. This-study followed Model D, consequently, most of the-literature reviewed, either deals with plagiarism, individually, or it-includes plagiarism, as-a-category, of cheating.

The-research implemented an-explanatory-approach, of descriptive-survey research-design. The study followed 3 sequential-steps, which shown, in-self-explanatory Figure 1, according to Starovoytova & Namango (2016 c).

![Figure 2: Sequential parts of the study (Starovoytova & Namango, 2016 c).](image-url)

2.2 Sample-size and rationale for its selection
15 senior-academic-members of staff (N=15), from the-SOE, Moi University, were invited, to-complete a questionnaire (developed for the-purpose of this-study). The-choice of senior-academic-staff was-based on the-assumption, that all of them, should-have-been publishing, at-their-area, of expertise, and therefore, are
considered to be knowledgeable enough on the subject matter—plagiarism. The other criterion included seeking-out both; faculty, who had gone through their graduate studies, in Kenya, and these, who had studied elsewhere. This was important to accommodate wide-spectrum of participants. The categories were analyzed, within the single-unit of a case-study, as all of the participants are faculty at a single school, of a single university, and therefore, the common-culture provided a solid-basis for discussion and comparison.

On the other-hand, Kezar & Lester (2009) argue that faculty exists, within a multiplicity of sub-cultures. They live both; in their academic disciplines, and within institutional cultures, and values between these subcultures, can vary. To this-end, the sample was drawn from all the 5 departments, of the SOE; moreover, no preference, to any of the 42 Kenyan tribes was given, to obtain wide-ranging sub-cultural views.

Furthermore, interested readers, could refer to Starovoytova et al. (2015), to find informative synopsis on Kenya, and its educational system. In addition, information of the university and the school, where the study was conducted, can be accessed via Starovoytova & Cherotich (2016).

2.3. Questionnaire and its administration
A projective technique was used, in this study, by asking questionnaire-respondents questions, about plagiarism, at the SOE. The subject sensitivity, relative position of questions, the minimization of excess length, the visual impact and ease of comprehension and completion, were all considered, when designing the questionnaire, according to Starovoytova & Namango (2016 c).

The questioner was pre-tested, to ensure its validity and reliability. A trial survey (pre-testing), was conducted, according to ISO 20252:2006 (E) Market, Opinion and Social Research Standard, by administering an initial version of the questionnaire, to one faculty member, selected at random, from the outside of the subject sample. Subsequent discussions, with this member, resulted in the fine-tuning of wording and ‘polishing’ of the final version of the questionnaire, used for the survey.

The questionnaires were administered by ‘drop & pick’ method. Consenting members were given an appropriate amount of time, to complete the questionnaire, and were informed, on the confidentiality, of the process.

The answers, to the open-ended questions, provided by the faculty, were analyzed, by using a content analysis technique, for qualitative data; the data were unitized, coded, and grouped, into themes, according to Denzin & Lincoln (2000) and Lincoln & Guba (1985). To ensure credibility, a principle of qualitative inquiry, for ascertaining, that the analysis and findings, are legitimate, was used, according to Lincoln & Guba (1985).

Cronbach’s alpha was chosen, as the most common method, of estimating reliability, of an instrument (Hardy & Bryman, 2009). The Statistical Package for Social Sciences (SPSS-17, version 22) computer software program, was used, to compute the Cronbach’s alpha coefficient. Descriptive statistics was used to analyze both qualitative and quantitative data.

3. Results, Analysis of the results, and Discussion.
3.1. Results
3.1.1. Validation of the instrument
Upon validation process, it was established, that the instrument had sufficient information; the length of the entire instrument was found suitable, and the content was logically organized. Overall, the instrument was satisfactory, with very minor editing.

The final version of the self-report questionnaire consisted of 2 main parts: demographics and a research inquiry, consisting of 9 questions.

Questionnaire data were coded, entered into SPSS and checked for errors. Data were analyzed, list wise, in SPSS, so that missing values were disregarded. Cronbach’s alpha test, of internal consistency, was performed, for perceptions and self-reports on plagiarism, and demonstrated relatively high inter-item consistency (Cronbach’s $\alpha=0.803$).

3.1.2. Questioner’s responses
Out of the total number of questioners, administered (N=15), 10 were collected back within a specified time period, giving a response rate (RR) of 67%.

3.1.2.1. Results part 1: Demographic Characteristics
The population of this study, includes a purposeful sampling of 15 faculty, from various academic disciplines. The sample demographics were the same, as in the previous study, by Starovoytova & Namango (2016 b), in particular: 95% of the respondents were male, while 5% were female; confirming that SOE, as any other engineering school is male-dominated. Out of the 5 engineering departments, of the SOE, responses were received, from only 4 departments: (1) MIT-Manufacturing, Industrial & Textile Engineering contributed 30% of the respondents; (2) ECE-Electrical & Communication Engineering, 30%; and 20% for each of MPE (Mechanical & Production Engineering) and CPE (Chemical & Process Engineering) departments. The highest share (40%) of the participants was Associate Professors; Senior lecturers and Lecturers contributed equally, at
30%, each; however, no-response was received, from full-Professors. The-vast-majority, of the-faculty, (40%) have-been-teaching, at-university-level, for 15 to 20 years; followed by 30% of these, taught for 5 to 10years; equal-share (10%) were teaching from 3 to 5 years, and from 10 to 15 years; and the-smallest-representation (10%) taught for-over 20 years.

3.1.2.2. Results part 2: Research-questions.
Here, the-questions are presented, the-same-way, they-appear, in-the-questioner.

Q1. Where did you study for your Masters and PhD?
The vast-majority (70%) indicated that they studied ‘Only outside Kenya’, while the-remaining 30% said that they studied, in-Kenya and also outside.

Q2. How many-years (in total) you have spent for your graduate-education?
The-maximum was 12, the-minimum 5, while the-mean was 8.3 years.

Q3. Before you came to the University, was plagiarism ever mentioned or explained to you at any-level?
Majority, (60%) of the-respondents said, that plagiarism was never mentioned, or explained, to-them, at-any-level; while the-remaining (40%) confirmed that it was.

Q4. How often did any of your teachers/supervisors in the past academic-experiences (while a student at Masters or PhD-level) ever tell you that you have plagiarized in your own-written-work?
The vast-majority, (90%) claimed that they never plagiarized, while 10% confessed that they did it 1 or 2 times, in the-past.

Q5. In your-own-opinion, to what extent do you feel, you yourself copied the words or ideas of other writers, without indicating the source in your writing-assignments/reports/thesis?
Similarity to Question 4, the-vast-majority, (90%) claimed that they never did it, while 10% confessed that they did it a-little-bit, in-the-past.

The-following-section, of the-questioner, asked the-faculty, to-provide their-opinion, by indicating ‘Agree’, ‘Disagree’ or ‘No opinion’ to the-following-questions:

Q6. When one plagiarizes, he/she is unfair to himself/herself because he/she is not being himself/herself. Rather, he/she is pretending to be better than he/she is.
Majority (70%) agreed with the-statement, while 30% disagreed.

Q7. When one plagiarizes, he/she is unfair to the university because it runs counter to the university-educational goals which can never be achieved if one just copy information.
Here, majority, (60%) disagreed with the-statement, while remaining 40% agreed.

Q8. When one plagiarizes, he/she is unfair to the writer of the original-passage, because he/she is taking the credit that the writer deserves for the words and ideas.
Overwhelming-majority (90%) agreed, while 10% disagreed.

Q9. When one plagiarizes, he/she is unfair to colleagues as everybody is expressing themselves in his/her own language/style, whereas by plagiarizing sometimes one may get a better-manuscript.
The-answer, to this-question, was identical, to the-answers, to-Question 8.

3.2. Analysis of the responses.
The-study established that, faculty did their-post-graduate-studies for about 8.3 years, on-average. Vast-majority, (70%) of the-SOE’ faculty (under-consideration) studied only abroad, while remaining-part studied in-both; Kenya, and outside Kenya. This-statistics show that Kenyan Graduate Education-sector, is yet, to-attain a-satisfactory-compatible-level with such-countries, as UK, USA, Germany, Israel, etc., where many of the-faculty have-studied, as for numerous-areas of specialization, post-graduate programs, are yet to-be-established, in-Kenya. In-addition, it can-be-concluded, that Kenya spends substantial-funds, for academic-training, as-according to-governing-policy, faculty, on-study-leave, receives 80% of their-salary, regardless of the-number of years, a-study-takes.

Vis-à-vis plagiarism: Majority, (60%) of the-respondents said, that plagiarism was never mentioned, or explained to-them, at any-level; Overwhelming-majority (90%) agreed that plagiarism is unfair, to the-original-author, and to-the-colleagues; The-vast-majority, (90%) also-claimed that they never plagiarized, while 10% confessed, that they did it one or 2 times, in-the-past; and majority, (70%) agreed that plagiarism is-unfair to-oneself; while 60% agreed, it-is-unfair to-the-university.

The-country spent substantial-amount of money for post-graduate-training, for every-member, of the faculty, therefore, the-absolute-minimum, that the-faculty can-do, is to-produce ethical-publications, trying their-very-best, to-avoid retraction, and its-consequences, which-can-lead to-damage or loss, of the reputation, for a-plagiarist, or even, worse, removal from the-post, meaning that all-the-money and efforts, spend by the-country, went in-vain.

To-this-end, the-following-section, on-how to-combat plagiarism, would be valuable.
3.3. Discussion

3.3.1. Combating plagiarism

Plagiarism, as any-other-type of cheating, ought to-be-controlled, and, preferably, not by a-single-approach, but via 3D-approach, incorporating: Prevention, Detection and Punishment. These, will-be the-focus, of the-subsequent-sections.

3.3.1.1. Prevention

For-potential-authors, there-are numerous-means, to-avoid, and therefore, prevent plagiarism, from happening, such-as: (1) Paraphrasing; (2) Quoting, if more-than six-consecutive-words are copied; (3) Indenting, if more-than several-consecutive-sentences are copied; (4) Citing own-previously published-material; and (5) Properly-referencing.

Plagiarism is, generally, a-rather-debatable-matter, and a-number of organizations provided guidance, to-authors and researchers; guidance is also-available, for journal-editors, dealing-with-cases, of possible-misconduct. Institutions also-publish their-own-guidelines and advice, to-researchers. For-example: the-University of Alaska Fairbanks, the-Office of Research and Integrity-Research-Ethics documentation includes sections on publication, peer-review, redundant-publication and plagiarism (http://www.uaf.edu/ori/responsible-conduct/peer-review/).

Rules and policies, however, are no-more-than, guiding-documents, and it-is, largely, up-to an-individual, either to-follow them, or not. On the-other-hand, the-occurrence of misconduct, in-itself, is apparently, not the main-problem; the-lack of prompt-reaction, to-it, is. In-the-expression of Dunne et al. (2008), ‘neutrality is political too’, he pointed-out, that inaction, is a-link, between silence and a-complete lack of response.

On the-other-hand, some-academics believe, that colleagues should-always-report, if they happen to suspect or came-across a-scientific-misconduct (Koocher & Speigel, 2010). The-issue, however, complicated, as many-academicians afraid of vengeance, and therefore, generally, avoid reporting.

Dr. Steinschneider, for-instance, published a-pediatrics-paper, in 1972, claiming an-association between infant-sleep-apnea (ISA), which Dr. Steinschneider said he-had-observed and recorded, in his-laboratory, and the-sudden-infant-death-syndrome (SIDS). In-1994, when Waneta Hoyt, the-mother of the patients, in the-paper, was arrested, indicted and convicted on 5 counts of second-degree-murder, for the- smothering-deaths, of her-five-children (Talan & Firstman, 1997), the-truth, on-scientific-misconduct came-out, and, as a-result, tens of millions of research-dollars were-lost, reputation of the-scientist was damaged, and academic and scientific-community was-shocked, with disbelieve.

Personnel, exposing such and similar-cases, usually called ‘whistleblowers’, can find themselves, as victims of retaliation, by a-number of different-means (Lock, 1995). Dealing with academic-misconduct, in a world, grossly-manifested by widespread-misconduct, in-absolutely-all-sectors of life, for-some, perceived as ‘complete-waste of time and energy’, bringing associations with the King Canute, in his-efforts ‘trying to stop the tide’. However, this-view is rather-skeptical.

To-assist researches, faced with a-dilemma 'report or not report', a ‘User-friendly Guide’, alongside with the-establishment of a-confidential-organizational-structure, in-their-institution, may help people, who are undecided about what-to-do, or afraid of bad-consequences, for their-speaking-up (Rowe, 2004). In addition, several-writers, also-provide summaries of practical, but principled-recommendations, for the ‘whistle-blower’, for protecting the-accused, and for-institutional-action (Decoo, 2000; Cizek 1999; Whitley, 1998). A-timely and significant-model, for-such an-activity, is the-work of the-non-governmental-agency, Transparency International, which suggests possible-ways, of studying and exposing-academic-scam, on a-world-wide-scale.

By bringing-together, site-by-site, two-famous-quotes, one, is-by Martin Luther King: ‘Our-lives begin to end, the day we become silent, about things that matter’ and second-one, by Albert Einstein: ‘Many-people say, that it is the intellect, which makes a great-scientist. They are wrong: it is character!’ the-authors, would-like to-encourage faculty not to-disregard, cover-up, or deny the-menace, but boldly take a-stand of ‘zero-tolerance’, when faced, with suspicion of or the-plagiarism-act, itself.

3.3.2. Detection

With the-global-expansion of the-internet, numerous-tools are, now, available and easily-accessible, to-detect plagiarism. Maxymuck (2006), for-example, registers websites of eight-universities, guiding faculty, on how-to-detect plagiarism; and websites of four-universities, helping students and faculty, to-learn, how to avoid plagiarism. He-also lists the-websites, of eleven-universities, which-provide online-tutorials, to-test one’ knowledge, of plagiarism.

There-are 3-main-approaches, in-detection of plagiarism: (1) The most-common-approach is by comparing-the-document, against a-number of other-documents, on a ‘word by word’-basis; (2) The-second-approach is by-taking a-characteristic-paragraph and just doing a-search, with a good-search-engine, like Google; and (3) The-third-approach is by-style-analysis, which is usually-called ‘stylometry’.

Academic-plagiarism is more-easily detected by the-software, such-as TurnItIn and SafeAssign, while
more-technical and complex, scientific-plagiarism— with CrossCheck of iThenticate, and eTBlas- software. Any-
such-software consists of algorithms, to-detect-similarities, with associated-databases. Publishers (editors) are-
also regularly-using plagiarism-detection-software, to-verify the-originality of papers, submitted, to-their-
journals. Major-publishers are also members of CrossCheck, which uses the iThenticate-software, to-scan-papers,
for plagiarism (http://www.crosoref.ithenticate.com/). Documents are compared against a-database (http://
www.research.ithenticate.com/index.html), containing web-pages, as well-as published-material, including
journals and books (Wager, 2014).

In-biomedical-literature, for-example, Déjà vu, is commonly-used, which is an-OA-database (Errami et al.,
2007), developed, in-2006, and based on text-data-mining-algorithm eTBLAST, containing several-thousand
instances of duplicate-publication. Studies on this-database have been published in Nature, Science and other-
reputable-journals (Long et al., 2009; Errami & Garner, 2008).

Software, to-detect plagiarism, was also-applied to-about 75,000 abstracts, in Medline (White, 2008),
where in-a-majority of the-cases-detected, the-software detected > 85% correspondence in-the-words, in-papers,
written by different-authors, suggesting that where plagiarism was used, it was done blatantly, with authors
copying ‘word-for-word’ whole-sections, of the-previosuly-published-material.

In-addition, Retraction Watch (http://www.retractionwatch.com/) is a-blog, which documents
plagiarism, fabrication and retractions, in the-scientific-community. Another-example is Inspec-database, which
covers a-wide-range of engineering-journals, but does not index retraction-notices or retroactively-mark
retracted-article-records, in any-perceptible-way. There are many-more anti-plagiarism soft-ware are now
offered; however, Kohler & Weber-Wulff, carried-out a-study, in-2010, on 47 systems of direct-plagiarism-
detection, currently-available, and concluded that only 5 of them were, to-some-extent, useful (Sheard & Dick,
2012). Anti-plagiarism soft-ware can-detect only ‘word-to-word’ plagiarism; detection of data-manipulation,
change in-references, adoption of ideas of others, etc. are sometimes-difficult, to-spot (Rao, 2008). Besides,
these-services can-be used only for the English language (Austin & Brown, 1999). The-next-section, thus, will-
be limited-to one of the most-popular anti-plagiarism-tools.

3.3.2.1. TurnItIn

TurnItIn cloud-based-service Turnitin® (iParadigms, Oakland, CA, U.S.A.) claims to-be-one of the most-
distributed and most-reliable, in-the-world, as it-is-used, by more-than 10,000-institutions, in 126-countries. TurnItIn
allows a-variety of file-formats, mainly common-word-processors, these include: (1) Microsoft Word™
(doc, docx), (2) Corel WordPerfect® (wp, wpd, wri, doc), (3) HTML (htm, html), (4) Adobe PostScript®, (5)
Text-file (txt), (6) Rich-Text-Format (rtf), and (7) Portable-Document-Format (pdf). Maximum-size allowed,
for-submission, is 20MB. Besides, this-software is soundly-tested, widely available, economically-affordable,
and rather-easy, to-use (http://www.turnitin.com).

When document is submitted, it-is originality checked against 24+ billion web-pages, 300+ million
papers, and leading-library-databases and publications, across-the-world. TurnItIn allows the-user, to-engage in
a-structured and anonymous-peer-review system, fostering a-culture of cooperation and support. Table 1 shows
the-general-range of text-overlap-percentage, provided by TurnItIn’-report.

Table 1: TurnItIn report-indicators

<table>
<thead>
<tr>
<th>Color</th>
<th>Color-code</th>
<th>Overlap/Matching-text, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Green</td>
<td></td>
<td>1-24</td>
</tr>
<tr>
<td>Yellow</td>
<td></td>
<td>25-49</td>
</tr>
<tr>
<td>Orange</td>
<td></td>
<td>50-74</td>
</tr>
<tr>
<td>Red</td>
<td></td>
<td>75-100</td>
</tr>
</tbody>
</table>

However, according to Steen (2011), the-ranges, indicated in-the-table, were determined to-be an
unreasonable-standard, due-to a-common-language, typical in-academic-papers, conventional-phrases, formal-
nouns, and other-sentence-structures, restricted to-English-language. In-the-same-spirit, Blackboard (2007), also
proposed a-more-liberal-range, with less than 15% being considered as- legitimate-research; 15% to 40%, is in-
need of further-review, and those over 40% - most-likely, to-contain-plagiarism.

It-is-important-to note, however, that these-percentages show the-similarity of text and not a measure
to-plagiarism; hence, further-careful-investigations and, sometimes, specialist-interpretation, are required, to-
ascertain, if plagiarism is, indeed, occurred, and if so, to-what-extent.

In-Kenya, several-universities, for-example, Africa Nazarene University, have partnered with
CloudHop, a-subsidiary of the-Copy. Ltd., to-launch the-anti-plagiarism-software, known-as TurnItIn, but it-is-yet,
to-come, to-the-MU.

3.3.1.3. Punishment

Punishment is a-necessary-instrument, to-deal with any-misconduct. Punishment-type can be: legal, institutional
and individual. There is, however a-predicament: who, on-what-basis (criteria, standards, rules), when and how,
should-declare-someone a-plagiarist. Other-questions arise, such-as: which institutions, or which-scientific-body,
particularly, in-bio-medicine. Based on the U.S.A. model, many national bodies, for ethics, in science, were established, globally. As a result, science editors became familiar, with multiple cases, of scientific dishonesty (Masic, 2012).

Another major step forward was the establishment of the UK-based Committee on Publication Ethics (COPE; 1997). COPE introduced scientific principles of fairness, and developed a set of flowcharts, specifically dealing with misconduct.

Yet, there is no general regulation, to control scientific research, and intellectual honesty, of researchers, which would be applicable, in absolutely all situations, and in all research institutions (Masic, 2012). In most of the countries, committing research misconduct, including plagiarism, even on a large scale, is not a legal or criminal offense; however in some countries, like U.S.A. and few others, the law, governing the plagiarism, is in place, and is fully operational.

Another example of legal punishment is that, under the Criminal Law of the Republic of Macedonia, Article 157, plagiarism is a crime, which is prosecuted, by financial penalties and imprisonment (Ministry of Justice of Republic of Macedonia, 1996).

On the other hand, plagiarism, in Kenya, is not only evident, in the academic world, but can also be traced, in other areas, like journalism, art, and music industry. According to the Kenya Copyrights Act (CAP 130), reproduction of musical, artistic work, audio works and broadcasting, is illegal. The first ever, and so far, the only, scientific plagiarism suit, in a Kenyan court, was filed, in 2010, against Mary Ogola of the University of Nairobi, who had allegedly plagiarized work, on her Master’s thesis. The applicant, Anne Kukali, wanted the court, to nullify Ms Ogola’s degree, on grounds of plagiarism. It was a winning case, as the comparative analysis of both documents, left the court with no doubt, that the applicant’s intellectual rights had been violated, by the respondent (Civil Suit 94, 2010).

On an institutional and personal level, for example, the Office of Research Integrity, at Virginia Tech University, U.S.A. emphasized, in compliance, with federal regulations, on research misconduct, that (Virginia Tech, 2011):

- The consequences of research misconduct are variable and may include: Withdrawal or correction of all pending and published papers and abstracts, affected by the misconduct, restitution of funds to the granting agency, and monitoring of grant applications or ineligibility to apply for federal grants/contracts or serve on review panels for a number of years or permanently. At the institutional level, research misconduct may result in reprimand, removal from the project, rank and salary reduction, or dismissal from the institution.

In the same accord, Editage Insights (2012), pointed out, that researchers and professors, usually, were punished, for plagiarisms, by sanctions ranging from suspension, to termination, with losing their credibility and perceived integrity. In cases, where plagiarism has been repeatedly demonstrated, the consequences may include: banning the guilty researcher, from grant applications, and even suspension, or dismissal from a post.

On the other hand, the current practice is that, when a manuscript is retracted it is not removed, from the scientific databases, but it will, always, be flagged, as being unreliable. In the authors’ humble opinion, editors and publishers, should consider the removal, of the full text, of all the retracted articles, leaving only an abstract, and the retraction notice, to alert the potential readers.

Beside the withdrawal of the article, and the public (written) apology, by the plagiarist, some editors advocate radical solutions, such as reporting, to the competent institutions, (e.g., the relevant committee/ commission, within the related faculty and university and/or ministry), as well as a ban, on publication, for some period, especially for authors, who are repeated offenders, or that they did it, with evident intent, to deceive (Wager, 2014).

On the other hand, according to Editage Insights (2012) ‘Plagiarism is not a crime, per se, but is disapproved more on the grounds of moral-offence’. Honesty, in science, is the very basis, of its existence. Even a shadow of dishonesty, may devalue the work, and lead to the loss of respect (Shamin, 2012; Hansen, 2002). Besides, Spender (2004) pointed out that, plagiarism is not only a legal issue, but also a pedagogical one, and rests in the hands of academics and academic institutions.

At an institutional level, for example, MU Examination Rules and Regulation explain academic integrity, purely, by listing prohibited behaviors, during an exam, with corresponding punishments, rather than by identifying core values and manner of conduct, to be promoted. Specific policy on Plagiarism, on the other hand, is yet to be established, by the university.

In-a-publication-process, of a-scientific or academic-paper, the-key-parities, responsible, for publication-integrity and reliability, are: Author(s); Peer-Reviewer(s); and Publisher (editor(s)). The-following-sections will draw a-close-attention, to the-parties.

3.3.2.1. Authors

Scientific-writing, for most-researches, is a-rather-complex, time-consuming process, demanding an-adequate-writing-skills. A-faculty, who is a-beginner-writer, probably, has difficulté defining their-own-ideas and differentiating, between common-knowledge and information, which needed to-be, referenced (Carroll, 2004). In-addition, they may not understand, the-value of developing a-unique-idea, in a-field of study, and also they are not well-versed, with ethics. Therefore, they plagiarize-unintentionally, due to-genuine-lack of understanding, being not familiar, with proper-ways of quoting, paraphrasing, referencing and citing, or when they-are unsure, about the-meaning of ‘common-knowledge’ and the-phrase ‘in-your-own-words’. Due-to-massive-lack, of understanding, of ‘the-rules of-the-game’, the-beginner-writers, trying to-imitate; trying-to-be like the ‘seasoned’ and experienced-authors. T. Eliot rightfully-pointed-out, that: ‘Immature […] imitate; mature […] steal…’

Moreover, some-faculty-members, especially those, who are-published-authors and experts, in their-field, may-believe that plagiarism, of an-original-idea, or data, is more-severe, than the-plagiarism of a-text. The-author is strongly-supports this-notion; as-phraseology, can only make a-real-big-difference, in-English-Literature and Poetry, or some-argumentative-arts-specialties, where more-emphasis is given-to-the-eloquence of expressions. In-science and engineering, however, researchers, do, rely on proven-tests, and solid-facts; phraseology is secondary.

Besides, all-writers, regardless of the-area of their-specialization, generally, do, habitually-exploit the-ideas or words of other-writers, during an-absolutely-necessary-process of review of literature. One of the-purposes of literature-review is, simply, to-avoid ‘reinventing the-wheel’, and hence it is a-pre-requisite to any-solid-research. Nevertheless, even in-engineering, a-comprehensive-introduction and so-called ‘state of the art’-sections (based on a-strong-literature-review) is always a-big-plus; otherwise the-end-result would-be, not an-interesting-scientific-paper, but a-boring-technical-report.

In-addition, scholars, try-to-convince others, of the-validity, of their-opinions, or findings, by suggesting, that their-theories or findings, compare with the-established-work, of the-scholarly-authorities, on the-subject-matter. In-other-words, one’s-work becomes more-convincing, when one can directly indicate the-authorities, whose-studies it expands (Ten-Golden-Rules to Avoid Plagiarism). Moreover, some-authors, believed that it-was-acceptable to ‘borrow’ text, from different-sources and connect the extractions, to-make a-paragraph; so-called ‘mosaic plagiarism’, as-referred-to, by-Iverson et al (1998). This-believe is also, in-accord with Wilson Mizner, who-states that ‘when we steal an idea from one-author, it will be called plagiarism, but when we do it from a-few-authors, it is called research!’ (Bartlett, 1994). On-the-other-hand, according to-Mason (2009), plagiarizing a-text may be an-indication, that data are also-falsified, which, in-the-eyes, of some-researches, constitutes a-much-more-serious-misconduct.

Avoiding plagiarism, during such-activities, however, is not, always, straightforward or easy, as it is unavoidable that, some of a writer’s-own-thoughts and ideas, will-correlate, very-closely, with those, expressed, by-others. Furthermore, according to Girard (2004): ‘What we perceive to be original-thoughts, really may be opinions and ideas, written down by others, and subconsciously-ingrained in us, through thing we have read or seen. This is a dilemma of most-writers’, meaning that authors’-intelligence subconsciously re-package the-ideas, after reading numerous-background-literature, for a-particular research. The-situation is expressed, suitably to this-context, by Trent Reznor in the-song ‘Copy of a…’: “I am just a copy of a copy of a copy; everything I say has came before…” (Myška, 2015).

From the-other-perspective, Clarke (2006) has-suggested that, while there are strong-arguments for plagiarism, ‘copying without attribute can also be valuable’. He-has-stated, that ‘avoiding plagiarism requires a great-deal of effort’. He-has-also noted that, there is a-large-amount of written and published material, people has-access-to. Therefore, according to-Clarke, it-is:

- Impractical to avoid repetition, uneconomic for every author to deliver originality in every element of everything he or she writes, and a waste of time and energy that could be applied to more constructive activities. Moreover, much writing within a discipline is intentionally-cumulative, and hence, the incorporation of prior-content is an-intrinsic-feature of almost-all scholarly-writing.

On-the-other-hand, publishers, usually, ask the-authors, to-sign a-statement of originality, and even this-option does not prevent, from instances of misconduct (Masic, 2012; ICMJE, 2008; COPE, 1999). ‘Up-to the-point’ brutally-honest and sharp-slogans, such as ‘Publication at Any-Cost’ and ‘Publish or Perish’, undeniably, negatively-influence the-whole-research-environment and cultivate recycled-writing (Wager & Kleinert, 2012; Masic, 2012). Amstrong (1993) for-example, pointed-out, on the-example of a reviewer’ comment, addressed to-an-author: ‘Your-work is both; good and original. Unfortunately the parts that are good are not original, and the parts that are original are not good’. To-avoid similar-comments, authors should diligently-strive to-produce
original high-quality intellectual-contributions.

In this-spirit, Kleinert & Wager (2011) and Wager & Kleinert (2011), for-example, summarized the responsibilities, for authors, as follows:

Authors: (1) should-submit papers, only on-work, that has-been-conducted, in-an-ethical and responsible-manner, and that complies, with all-relevant-legislation; (2) should-present their-results clearly, honestly, and without fabrication, falsification, or inappropriate-data-manipulation; (3) should-attempt to describe their-methods, clearly and unambiguously, so that their-findings can-be-confirmed, by-others; (4) should-adhere to-publication-requirements, that submitted-work is original, is not plagiarized, and has not been published, elsewhere; (5) should-take collective-responsibility, for-submitted and published-work; (6) should-ensure, that the-authorship, accurately-reflects individuals’ contributions, to-the-work and its-reporting; and (7) should-disclose, relevant-funding-sources and any-existing, or potential-conflicts of interest.

From the-other-perspective, they say, ‘to-publish, is to-share’, and in-many-instances, an-author, willingly, have-to-share-information, even before the-actual-publication. In the-modern-day, collaborative and multidisciplinary-research, honesty, of each and every-author, is becoming a-pillar of trustworthy science. For multiple-authors-paper, corresponding (first-author) most of the-times, relies and believes in their-co-authors’ integrity. It is imperative, however, that they-take a-personal-responsibility, for the-reliability, of the-final-manuscript, by cross-checking it, via anti-plagiarism-software, before submitting for a-review, to a-journal. In the-future, such-issues as gathering-data, cooperation, between-scientists, and in-publications will, most-probably, get more-complicated and more-difficult, to-deal-with. In this-regard, trust, and absolute-trust, is paramount, for a-faculty, to-comfortably-collaborate-with other-individuals, openly and entirely sharing-ideas, information and plans; without fear, that their-work will-be-stolen, their-reputation questioned, and their-career, ruined. At a-very-minimum, individuals should-take personal-responsibility, for their-own-honesty, and integrity, and should-strive, to-discourage and prevent-misconduct, by other-colleagues, by providing a ‘shining-example’ and by increasing their-awareness, on-academic-integrity.

On-the-other-hand, according to Nature (2006), some-countries ‘offer scientists cash-prizes for publications in top-level International-journals’ and hence ‘a researcher measuring science in terms of dollars might be more tempted to plagiarize or fabricate data’, (the-same, however, is true, of someone measuring-science, in-terms of publication, in Nature or Science). In fact, greed and vanity, are-used to control-researchers, through promotion and awards: someone absolutely-free, from such-vice, would-be absolutely-unmanageable. Russian-mathematician Grigori Perelman, for-example, declined a Fields-medal (the ‘Nobel prize for math’) in 2006, saying that it ‘was completely irrelevant for [him]. Everybody understood that, if the proof is correct, then no-other-recognition is needed’. Strangely, he was not praised for his-complete-absence, of vanity, and his-unselfish-search, for knowledge; some-colleagues perceived his-behavior as ‘strange’ (Titus et al., 2008).

3.3.2.2. Reviewers and editors

Journals are responsible, for safeguarding the-research-record, and hence, have-a-critical-role, in-dealing with suspected-misconduct. This is recognized, by the-Committee on Publication Ethics (COPE), which has issued clear-guidelines (COPE, 2009), including on the-form of retractions.

The peer-reviewing-process is the-principal-mechanism, to-ensure the-high-quality of publications. However, recent-studies have-shown, that lack of appropriate-standards, can result in-duplicate-publication, as well-as publication of papers, which include plagiarism (Long et al., 2009).

Some-authors, for-example, when planning to-submit their-manuscript, for-review, assume that no-one is going-to-check, for-plagiarism. Most of the-peer-reviewers, might-believe that it is-the-responsibility, of the-editor. And editors, sometimes, rationalize, that the-process of checking, for plagiarism, is time-consuming; and especially, in-the-cases, of rapid-publication-journals, they are stretched, both; physically and time-wise; and, hence, unable, to-check-through, every-single-paper. Instead of shifting-responsibility, from one-party to the other, clear-rules should-guide, the-entire-process. Editors of scientific-journals, also-have a-responsibility, to-discourage-plagiarism, as-well-as other-forms of misconduct, and to-be-aware, of the-effects, that such-misconduct may-have, on-the-validity, of articles, they-publish (Gollogly & Momen, 2006), and therefore, on-credibility, and reputation of a-journal, itself.

Kleinert & Wager (2011) and Wager & Kleinert (2011) summarized the responsibilities, for editors as follows:

Editors: (1) are accountable and should-take-responsibility, for everything, they-publish; (2) should make fair and unbiased-decisions, independent of commercial-considerations, and should-ensure, a-fair and appropriate-peer-review-process; (3) should-adopt editorial-policies, that encourage maximum-transparency and complete, honest-reporting; (4) should-guard the-integrity of the-published-record, by issuing corrections and retractions, when-needed, and pursuing suspected, or alleged-research, and publication-misconduct; (5) should-pursue reviewer and editorial-misconduct; (6) should-make it clear, to-peer-reviewers and authors, what is expected of them; and (7) should-have appropriate-policies, in-place, for handling editorial-conflicts of interest.

Moreover, several-studies have-been-conducted, pointing-out on-lack of understanding on plagiarism,
among potential-writers (faculty) and, surprisingly, also among journal-editors. For example, an assessment of editors of economics-journals, by Enders & Hoover (2004) revealed, that: (1) the-editors considered plagiarism to-include: using unattributed-sentences (34%); unattributed-proof, from working-paper (58.3%); unattributed-proof, from published-paper (66.1%); unattributed-ideas (16.5%); and using privately-collected-data (47.7%). Despite these-concerns, the-majority of editors (81%) did not have a formal-policy; to-deal-with these-issues; (2) Only one-editor (1.8%) responded that, the-presence of one unattributed-sentence was not plagiarism, whereas 34% of respondents considered it definitely to-be a plagiarism. This suggests confusion, in-defining plagiarism; and (3) In-case plagiarism-is-detected, the researchers found that 71% said they would definitely notify the-author; 23% would definitely notify the author’s-chair, dean, and provost; 42% would definitely ban future-submissions, from the-author; and 13% would definitely publicize-the-incident.

Grossberg (2004), on the-other-hand, states, that plagiarism has no-simple-solution, and that ‘It can never be addressed-effectively, by simply turning journal-editors and, book and manuscript-reviews, into a disciplinary-police-force’. During journal-publishing-process, there is no, so-called, ‘police-force’, specifically-trained and dedicated, to-fight scientific-misconduct; all-investigations are made by journal-editors and by experts, in-particular-areas (for example, STE). He suggests that all the-stakeholders should ‘make a commitment to the basic-standards of ethical-conduct, which includes preventing the misappropriation of other people’s words and ideas’.

Beheshti (2011), on the-other-hand, has painted a gloomy-scenario on what can happen, if plagiarism will-go-unrestrained.

If plagiarism turns into an ordinary and usual-activity, it will affect the security of scientific-knowledge and destroy all-social-realms. In such a situation, nobody will bother doing research; rather, everybody will make use of ready-made-knowledge, produced by the past-researchers and will destroy all knowledge. Such-unreasonable-behavior will devastate the foundations of scientific-progress and everything-else. And if a country loses its firm-scientific-foundations, it will remain in past-achievements and will not experience progress.

3.3.3. Plagiarism as a mere-fraction of academic and scientific-misconduct

The rising-frequency of retractions has recently elicited a lot-of concern (Van Noorden, 2011). Lewis et al. (2011), for example, highlight increasing-rates, of retractions, from-journals, often, without proper-explanation, of the-reasons, behind such-a-drastic-measure.

Studies of selected-retracted-articles have suggested, that error is more-common, than fraud, as a cause of retraction (Nath et al., 2006) and that, rates of retraction, directly-correlate with journal-impact factor (Fang & Casadevall, 2011). A detailed-review of 2,047 biomedical and life-science research-articles, indexed by PubMed, as retracted on May 3, 2012 revealed that only 21.3% of retractions were attributable-to error. In contrast, 67.4% of retractions were attributable-to misconduct, including fraud or suspected fraud (43.4%), duplicate-publication (14.2%), and plagiarism (9.8%). Incomplete, uninformative, or misleading-retraction-announcements, have led, to a previous-underestimation, of the role, of fraud, in the ongoing-retraction-epidemic. According to Ferric et al. (2012), the percentage of scientific-articles retracted, because of fraud, has increased ~10-fold, since 1975.

Previous-investigators have also found that many-retracted-articles continue to-be cited, as if still valid-work, but others have documented an immediate-effect of retraction, on citation-frequency (Furman et al., 2012; Trajkovski, 2011; Baždarić et al., 2009). Most-articles retracted, for fraud, have originated in countries with long-standing research-traditions (e.g., United States, Germany, and Japan) and are particularly problematic, for high-impact-journals (Ferric et al., 2012).

On-the-other-hand, according to a study by Benos (2005), plagiarism contributes a smaller-percentage (7%), (see Figure 2) in comparison with the findings of Ferric et al. (2012), where its contribution was 9.8%.
Some authors, for example, argue that, since articles can be retracted, for a variety of reasons, the recent rise in retractions may not actually reflect a 'crisis of scientific-integrity' which may be superficially suggested, by the raw numbers. For example, past surveys found that despite an increasing number of retractions, due to misconduct (Katavić, 2008; The Office of Research Integrity, 2010), more articles had been retracted, due to unintentional errors (Sanjeev, 2008). For this reason, some have argued that article retraction should, generally, be disengaged from the stigma of 'misconduct' (Masic, 2012). They argue that, if retractions are to be used, as a proxy for measuring misconduct, then retraction or 'un-publication', should be a last resort, reserved for only the most-severe and proven offences (Donev, 2014; Bilić-Zulle et al., 2005).

From the above Figure, it is clear that the impact of plagiarism, in comparison, with other types of misconduct, is rather limited; nevertheless the overall implications of plagiarism should be taken into consideration, such as: damage or even, loss of reputation, to the: (1) researcher; (2) affiliated to plagiarist institution, and (3) journal itself, including reviewer(s) and editor(s). However, for some, 'Even the threat of a damaged reputation is not a sufficient deterrent to such behavior', says Hoover (2006). Therefore, these persistent practices, are to be strongly discouraged, at every stage, of a publishing process.

Besides, basic causes of academic misconduct, are deeply embedded, in human imperfections, greed, and ambition; for example, generally, academics and researchers, are considered to be very ambitious, driven by the ever-increasing pressure, to succeed, and to succeed, fast. The credentials and the time, one taught, at a university level, are not, apparently, enough; there is a pressing need to produce an evidence of research, in a form of high-level scientific and academic publications. Notwithstanding the ultimate responsibilities, to avoid plagiarism, by authors, editors of scientific journals should be diligent custodians of scientific and publishing integrity, by timely recognizing, and preventing plagiarism.

According to a CAI publication: 'Honesty is the foundation of teaching, learning, research, and service and the prerequisite for full realization of trust, fairness, respect, and responsibility' (CAI, 1999); collectively, they are regarded as the five fundamental values, of academic integrity. In the same spirit, authors, reviewers and editors of scientific journals, should fight, together, against unethical research, that contradicts five fundamental values, of academic integrity, and which is harmful, to the scientific community, and overall is harmful, to the society, at large, by clearly violating public trust. According to Starovoytova & Namango (2016b) 'If plagiarism, however, continues, being undetected, uncorrected and unpunished; research becomes an effortless photocopy or duplication of earlier studies, and suffers from lack of imagination, innovation, uniqueness and, therefore, resulting in research of no scientific value, whatsoever'.

Marusic (2012), pointed out that, ethical aspect of publishing, is particularly important, for small and developing economies; hence, active and ethical participation, of Kenyan scientists, in the global scientific communication, should be practiced, according, to international standards.

4. Conclusion and recommendations.
4.1 Conclusion
Majority, (60%) of the respondents alleged, that plagiarism was never mentioned or explained, to them, at any level. The other main finding was that plagiarism policy is, yet to be established, at the institutional level.
Jointly, these-findings suggest, a-possible-lack of understanding on-plagiarism, due to inadequate-awareness; as-well-as, a growing-and timely-need of clear-institutional-policy on Plagiarism, pointing, probably, on currently-misplaced-institutional-priorities, alongside with financial-constrains, presently, obstructing design, implementation and enforcement, of such-a-policy.

On-the-other-hand, the-number of quality-publications, in peer-reviewed-reputed-journals, their-citations and usefulness of patents, are commonly-used, as a-measure of a university-reputation, so called ‘ranking’; the-higher the-number of quality-research-publications, citations and patents, the-higher is the-academic-reputation, of the-institution. Hence, it-is only logical, and, beneficial, for any-university, to strive to-provide, an-internal-quality-control and ethical-environment, leading to-a-cherished-tradition of prevention scientific and publishing-dishonesty, including plagiarism. Raising awareness, proper-instruction and guidance, on-plagiarism, at all-the-levels; from undergraduate all-the-way-through, to-doctorate-studies, and also faculty, is therefore, required. Secondly, to-ensure quality and integrity of scientific (and academic-publications, there-should-be a-collective, as-well-as, an-individual-responsibility and united, rigorous and dedicated-efforts, by all-the-parties, involved, such-as: authors, particularly a-corresponding (first) author; reviewers, and editors.

Furthermore, so-far, no-records are-available, showing that African-scientists were accused of some-research and publishing-misconduct, including plagiarism. Nevertheless, plagiarism should-be-taken very-very-seriously, in order to, not only, avoid the-sanctions (in-the-form of retraction and possible-damage to a-reputation of an-author), but to-avoid, even, being suspected of a ‘dirty’-misconduct. To-achieve this, all the-potential-authors should make their-best-effort, to comprehend-well, the very-essence of plagiarism, and most-importantly, how to-avoid it, hence, producing an ethical-publication of high-scientific-value, proudly and spotlessly representing the-intellectual-input of academic and scientific-community. The-author trusts, that this-publication is rather-informative and, hence, useful, for any-actor, involved in publishing-process.

To-conclude, the-generalizations of this-study are limited, to the-faculty, who-agreed, to participate, however, it will-be naive, to-presume, that the-situations described are specific, to-a-particular engineering-school or university.

4.2. Recommendations

Several-recommendations, highlighted, in this-section, are presented level-wise.

(1) At an-international-level, a-database of all-cases of plagiarism, should-be launched, with disclosure of all-the-names of blacklisted-plagiarists, and affiliated-institutions, and journals.

(2) At a national-level, all scientific-institutions and all-universities (public and private) should have a Center for surveillance, security, promotion and development of quality-ethical-research and publication.

(3) At the university, a-Policy on-plagiarism, should-be-established, which to-be disseminated among-students and staff; and preferably, published on the-university’ web-site, in-libraries, in Dean’ and HoD’ offices, and in-hostels, as-well.

(4) Subsequently, researchers should-be-educated on correct-citation-usage and intellectual property law.

(5) In-order to-promote and nurture academic-integrity, the author’ advice, to our-colleagues and to the-administrative-staff, in the-university, is to-read this-paper and to-discuss, reflect on, as-well as, pursue its-recommendations, for institutional-action.

(6) To researchers is recommended to-use anti-plagiarism-software, to-identify plagiarism or self-plagiarism, which, possibly, they themselves are not aware of, in-order to-preserve public-confidence and spotless-professional-reputation.

(7) Further-research, to-compare the-prevalence of retracted-articles (due to-plagiarism) between ‘seasoned’ and ‘greenhorn’-writers should-be-conducted, to-ascertain, who plagiarize more and why.

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