

Chapter 8

Inhibitors and Promoters of Quality Research Outputs for Women in the Library and Information Science (LIS) Profession in Africa

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ABSTRACT

This chapter aims to explore inhibitors and promoters of quality research output for women in general and with specific reference to the library and information science (LIS) discipline and profession in Africa. It is envisaged that findings might help influence established, novice and potential women researchers in Africa to engage in collaborative production of quality research outputs, particularly women in the LIS profession. The chapter is organized into sections. First, the introduction and background, in which the uneven global bibliometrics about women in the research profession is highlighted. Then problem statement, research aims, and research methodology are described. After which, a theoretical framework, a literature review including inhibitors and promoters, are discussed. The chapter recommends women to work towards positioning themselves on the global scholarly landscape.

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INTRODUCTION AND BACKGROUND

Gender equality is goal number five (5) of the 2030 Agenda for Sustainable Development Goals (SDGs). The 2030 Agenda for SDGs is more ambitious, envisaging the eradication of poverty, the systematic tackling of climate change and building peaceful, resilient, equitable and inclusive societies (United Nation Women Eastern & Southern Africa, n.d.). It is apparent that gender issue is a global concern and a topical issue in the development discourse. It has affected women in almost all aspects of life such as social, economic, health, political, education and research. The Global Research Council (GRC) and UK Research and Innovation (2019) opine that research excellence must be conducted within the context of inclusivity. Combined commitment to research is crucial in promoting research excellence that is critical for academic, economic and societal development. Cooperation and collaboration can enhance the quality of science, the diversity of talent, avoid unnecessary duplication, provide economies of scale and address issues that can only be solved by working together (Global Research Council (GRC) and UK Research and Innovation, 2019).

However, literature indicates that the fruits of collaborative research excellence are yet to be reaped, as women still constitute only 30% of global researchers (Global Research Council (GRC) & UK Research and Innovation, 2019). Franco-Orozco and Franco-Orozco (2018) assert that women constitute only 28.8% of global researchers. Elsevier Gender Report (2017); WHO (2015) assert that in 2015, UNESCO reported that women constituted only 28% of global researchers. Furthermore, Elsevier Gender Report (2017) avers that women are better represented in the Life and Health Sciences. A disproportionate gender representation in Sciences, Engineering, Technology and Mathematics (STEM) has been noted (Elsevier Gender Report, 2017). For example, Bolivia and Venezuela reflects representation of 63% and 56% respectively; while Korea and Japan have 18% and 15% respectively. In France, Germany and the Netherlands, only 25% of women work as researchers (Elsevier Gender Report, 2017).

Furthermore, Elsevier Gender Report (2017) posits that gender balance occurs when women make up 40-60% of any group. Franco-Orozco and Franco-Orozco (2018) argues that gender equality in science is reflected in cases whereby men and women's work is made of the same rules and when they are both able to develop their knowledge and research under the same,

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conditions and when they have the same opportunities to access high level job positions. These authors view the attainment of gender equality in research as elusive due to many socio-economic barriers facing women (Franco-Orozco & Franco-Orozco, 2018). The uneven statistical reporting indicates that gender gap is gradually narrowing depending on each country's context and policies. For example, WHO (2015), reports that women researchers who were employed in Research and Development programmes in 2013, exceeded the global average in Central Asia (47%); Latin America and the Caribbean (44%); Central and Eastern Europe (40%). However, some countries are lagging, such as Arab State (37%); North America and Western Europe (32%) and Sub-Saharan Africa (30%); South and West Asia (19%) and East Asia and the Pacific (23%).

Franco-Orozco and Franco-Orozco (2018) encourage women to continuously strive to overcome the status quo. Furthermore, these authors explain how Colombia was affected by violent armed conflicts that affected the general community of the country. Although peace processes have tried to bring hope to the country, but social problems persist. Gender inequality remains a challenge that hinders women from contributing effectively to the development of the country. Science is not isolated from these experiences as women are under-represented and not visible as men in scientific research careers. Women scientists from diverse disciplines are encouraged to collaborate and build a better country in the areas of science, education, technology and innovation (Franco-Orozco & Franco-Orozco, 2018). Many studies have reiterated the need for women to collaborate among themselves; with men and with national and international authors and researchers (Jappelli, Nappi, & Torrini, 2017; Elsevier Gender report, 2017).

In Africa, the importance of maximizing women scientists cannot be over-emphasized because of varied socio-economic challenges facing the continent, such as poverty, unemployment, inequality, civil wars, illiteracy, mis-governance, diseases and drought. According to Owusu, Kalipeni, Awortwi and Kiiru (2015), Africa and its institutions need to build strong research capacity. Robust social science and policy research, both basic and applied, is crucial for providing solutions to the region's development challenges. Building a strong research capacity does not only entail the creation of supportive institutional environments, but also the development of a cadre or team of competent researchers and experienced research leaders including women. The topic at hand resonates well with the foregoing arguments as it aims to gain

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insight about factors hindering women from producing quality research output, with specific focus on women in the library and information science (LIS) profession. It is anticipated that the findings might help women, particularly in the LIS profession to optimize the production of quality research output.

PROBLEM STATEMENT

Notwithstanding good international and national research policies, the gender gap in the research profession remains a global challenge (Global Research Council (GRC) and UK Research and Innovation, 2019; National Research Foundation (NRF), South Africa, 2018; Elsevier Gender Report, 2017; Owusu et al., 2015; Case & Richley, 2013). For Jappelli, Nappi and Torrini (2017) the gap is gradually narrowing, however the glass ceiling is a concern for many scholars.

Therefore, this study aims to:

- Gain insight about inhibitors and promoters for quality research output for women in Africa
- Make recommendations in accord with quality research output for women in Africa

RESEARCH METHODOLOGY

To address this study, literature was reviewed using various sources of information such as related documents, seminar presentations, and Elsevier reports on global gender research issues; United Nations (UN) SDGs and UN Women gender-related reports and GRC & UK Research and Innovation report. An analysis of documents is viewed as a qualitative research method that allows a researcher to use documents to gain insight, elicit and develop empirical meaning (Bowen, 2009; Mnkeni-Saurombe & Zimu, 2015). Leedy and Ormrod (2010); Mnkeni-Saurombe and Zimu (2015) asserts that the review of documents can help researchers to determine patterns, themes or biases within the documents.

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Theoretical Review

This article draws on social constructivist learning theories of John Dewey, Jerome Bruner, Lev Vygotsky, and others who have written extensively about collaboration (Montiel-Overall, 2005). A social constructivist view of education envisions collaboration as a new way of learning, and a new way of planning and teaching for the educators and academics. In this context, inhibitors of quality research output for women in the LIS profession are viewed as dependent variables that inform the need for collaboration among men and women scientists and to optimize quality research production (Montiel-Overall, 2005).

To strengthen the social constructivist learning theories of collaboration, the model for understanding the experiences of emerging women scientists' transition from their personal or different career life experiences to becoming women scientists or researchers was deemed important for this study. The transition model illuminates the challenges or inhibitors experienced during the transition period. The model is adapted from Case and Richley's (2013) study of postdoctoral women students. They examined perceptions of post-doctoral women scientists from fourteen United States (US) research universities. The aim was to establish how individual and institutional experiences influenced their desired career direction (Case & Richley, 2013). They called the model: 'a model of the postdoctoral experience transition zone'. In this context, the model is called the 'emerging women scientists' experience transition model'. It appears below as Figure 1.

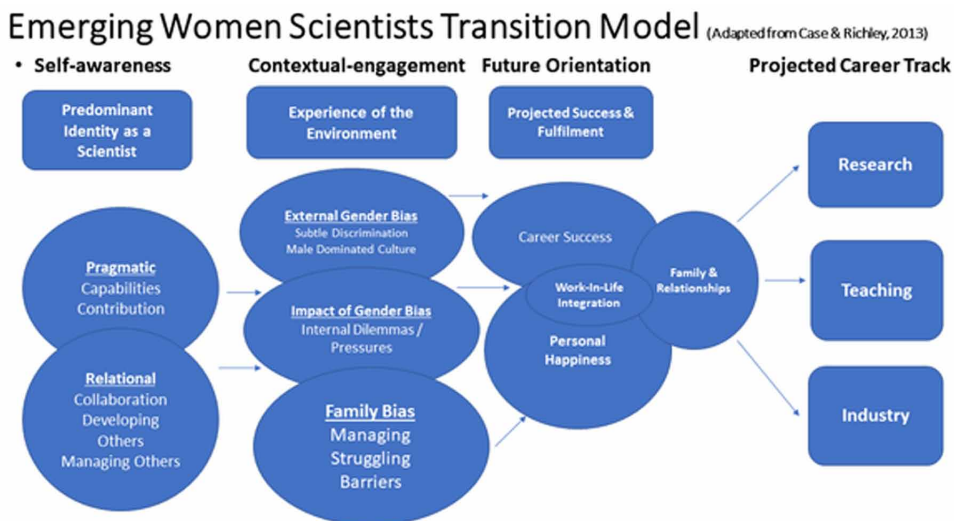
As indicated in Figure 1, findings for Case and Richley's (2013) study revealed that the postdoctoral experience comprised of three interconnected areas namely: self-awareness or identity as a scientist; contextual engagement or experience of the environment and the projected success and fulfilment. The next section will discuss these areas.

Self-Awareness and Predominant Identity as a Scientist

Self-awareness and predominant identity entail the ability to interpret aspects of personality, behaviour, emotions, motivation and thought processes. It is characterised by conscious attention to institutional environment and lived experiences that give meaning to the women's identity as scientists. Participants articulated how certain skills, roles and experiences became more salient than others. This ongoing self-awareness served as a compass regarding the

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Figure 1. Emerging Women Scientists' Model (Adapted from Case and Richley, 2013)



dominant career track whether it was research, teaching or industry-inclined as articulated under Projected Career Track. Participants' responses reflected individual preferences which are called 'pragmatic' or relational orientation that fit personal notions of success as a scientist (See Figure 1). A pragmatic orientated researcher is explained as someone committed to contributing to the field by publishing in peer-reviewed accredited journals, presenting at conferences, and gaining respect of peers. The profile resembles traditional markers of academic success. It is supported by two themes: Capabilities and Contribution. Relational orientated researcher demonstrates a desire to collaborate with others. This orientation is supported by three themes: collaboration; developing others and managing others. Collaboration is explained as the team approach or ability to work with others. Developing others entails the appetite on teaching, mentoring and provision of supportive and nurturing environment to others especially students. Managing others involves the ability to supervise and direct others as in the case of post-doctoral students (Case & Richley, 2013).

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Contextual Engagement and Experience of the Environment

This stage describes the participants' direct and indirect experience and how they make sense of their environment as women in science. Findings reveal, the impact of external gender biases and family-related issues, in their career journey (See Figure 1). These experiences include intentional and unintentional acts of discrimination against an individual and family responsibilities such as child rearing that may implicate lack of commitment to science. Further, Case and Richley (2013) indicate, that, when participants were asked to indicate environmental barriers to their career path, three themes emerged: external gender bias; impact of gender bias and family bias (Case & Richley, 2013). According to Case and Richley (2013) the challenges for work-life balance are not only women's issues. Research has discovered that 40% of men relative to 50% women, were unhappy with the way, work life interfered with their personal lives. Even though both genders have shown appetite for career success, but there has been high attrition rate among women than men (Case & Richley, 2013).

Projected Success and Fulfilment

To distil information from the participants, they were asked to define what they considered as success in this career path. Findings indicate that work-in-life integral emerged as the dominant theme. They viewed strong personal feelings versus external biases as important for their career success. The participants highlighted the key related themes that inform success as career success; family relationships and personal happiness (Case & Richley, 2013).

Transition Zone

The three stages described above, particularly the contextual engagement confirm that, the cross-border transition is challenging. Therefore, strong support systems are very crucial during this process. This resonates with Ocholla (2007) and Ngulube's (2005) view that strong support systems are crucial for the post-graduate students. Findings for Case and Richley's (2013) study reveal that before the post-doctoral students could adjust to their organizations' systems, they experienced barriers similar to those of experienced women scientists, as indicated under contextual engagement in

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Figure 1. In addition, these students encountered pressures of having to balance career life and family life. Results indicate that they did this poorly as they had to sacrifice much of their private and family life. They spent most of their time engaging in collegial interactions and other collaborative activities at the expense of family life. While these activities were crucial for their future career growth but also had painful experiences and palatable results (Case & Richley, 2013). It is apparent that the transition zone involves persistent and ongoing struggles, as well as joy and fulfilment for the emerging women scientists and researchers.

LITERATURE REVIEW

Many studies agree that cross-border transition barriers experienced by women scientists (Case and Richley, 2013), contribute to many limiting factors in the production of quality research by women (GRC & UK Research and Innovation, 2019; Franco-Orozco & Franco-Orozco, 2018; NRF, South Africa, 2018; Jappelli, Nappi & Torrini, 2017; WHO, 2015; Murray, 2014). Notwithstanding all the initiatives made, including heightening women's participation in higher education, women are still under-represented in the research discipline (NRF, South Africa, 2018). Literature has reiterated that this is a global challenge. For example, Elsevier Gender Report (2017) conducted a study to examine gender issues in the global research landscape over 20 years, using large scale datasets of 12 countries and 27 subjects. Countries included: Australia, Brazil, Canada, Chile, France, Denmark, European Union, Japan, Mexico, Portugal, United Kingdom and United States. To identify scholarly publishing trends among men and women, they targeted authors who have published articles, reviews and conference proceedings that are indexed in Scopus, Elsevier's indexing and abstracting databases. Findings reveal that women tend to have a lower scholarly output on average, but women and men tend to have similar citation and download impacts. The proportion of women among researchers and inventors has increased over time in all twelve compared countries. Among researchers, women tend to specialise in the biomedical fields and men in the physical science. A larger proportion of women researchers publish in the Health, Life and Social Sciences than in the Physical Sciences. Women are less likely to collaborate internationally and across the academic and corporate sectors on research papers (Elsevier Gender Report, 2017).

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Despite all the initiatives that aim to improve the situation, gender inequalities and challenges of limited collaborative research studies persist (GRC & UK Research and Innovation, 2019; Elsevier Gender Report, 2017). There has been a consensus that women's career path is non-linear because of frequent career breaks caused by family commitments such as maternity leaves and other responsibilities including work, family and community responsibilities (GRC & UK Research and Innovation, 2019; Elsevier Gender Report, 2017). According to Franco-Orozco and Franco-Orozco (2018), there are many contributory factors to the under-representation of women in the research profession. Although not limited, they include political, social, educational and academic factors. In this article, these barriers are called inhibitors and are discussed in the next section.

Political Factors / Policies

Many countries have instituted policy frameworks with an aim of addressing gender gap in many sectors including underrepresentation of women in the research profession and quality research output. Despite that, the problem persists. For example, findings of the case studies that were conducted with a group of Colombian female scientists and researchers working in a variety of research fields of high-level research institutes indicate that women were still experiencing gender inequality in their careers (Franco-Orozco & Franco-Orozco, 2018). This confirms the views of Case and Richley (2013) that emerging women scientists and experienced scientists experience similar challenges. One scientist pointed out that lack of public policies that favour the performance of women in academic sectors and failure of authorities and state institutions to comply with the constitutional mandates and the national regulations on gender equality issues was a drawback in the country's progress of narrowing gender gap (Franco-Orozco & Franco-Orozco, 2018). Furthermore, another scientist indicated that institutional policies need to take into cognisance childbearing issues and consequently the teaching responsibilities for women with new-born babies (Franco-Orozco & Franco-Orozco, 2018). Case and Richley (2013) underscore the importance of instituting family-friendly policies within the workplace structures. Women are encouraged to use family-friendly policies responsibly because any misuse will be viewed as sign of lack of commitment to work.

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Social Factors

Franco-Orozco and Franco-Orozco (2018); Owusu et al. (2015) agree that gender stereotypes begin at home and extend to the education sector. Socialisation has inherently informed gender biasness that exists in most spaces whether formal or informal. These stereotypes have influenced men's and women's way of thinking hence the deeply entrenched gender biasness and inequalities of today. It is therefore the responsibility of all men and women to collaborate and strive in narrowing the gender gaps that permeate in various sectors of life including the research profession. Many studies agree that family responsibilities are some of the integral limiting factors in women's academic progress including the production of quality research output (GRC and UK Research and Innovation, 2019; Jappelli, Nappi & Torrini, 2017; Elsevier Gender Report, 2017; Owusu et al., 2015; Case & Richley, 2013). Furthermore, Jappelli, Nappi and Torrini (2017) argue that, there is no consensus regarding the impact of family constraints, particularly child care on women's performance in their academic careers. However, these authors opine that, given the family responsibilities attached to women in their country, Italy, a strong correlation between maternity leave, childcare and women's production of quality research has been noted (Jappelli, Nappi & Torrini, 2017). Owusu et al. (2015) reiterate that, the rigor and time-consuming nature of research work vis-à-vis the demands of family life especially for the married women with children are some critical impediments that cannot be ignored.

As already highlighted, Case and Richley (2013) conducted a study to determine perceptions of post-doctoral women scientists across fourteen major US research universities, regarding the correlation between family responsibilities and career progress. Findings reveal that participants opined that post-doctoral journey crowded with gender and family responsibilities has a crippling effect on the career paths. One participant in a Colombia case study indicated that the involvement of women in childcare, family responsibilities and other responsibilities in various social spaces reduce their time of excelling in academic performance (Franco-Orozco & Franco-Orozco, 2018). Heilman, Wallen, Fuchs and Tamkins (2004) as cited in Franco-Orozco and Franco-Orozco (2018) posit that, the other side of the coin is that sometimes gender gaps at home and at work are perpetuated by gender stereotypes, as some men tend to dislike challenging women who are highly competent and successful in their jobs. Given that, women are encouraged

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to be continuously effective, highly competent and committed to their work (Franco-Orozco & Franco-Orozco, 2018). As the involvement in family responsibilities is crucial in balancing life responsibilities, principle number eight of the ten principles for the GRC and UK Research and Innovation (2019) underscores that promoting family friendly policies and practices in relation to caregiving obligations is critical. Consequently, it must be taken into consideration when designing programmes that focus on gender parity. According to Case and Richley's (2013) model, work-in-life integration is viewed as one component of work success and fulfilment.

Education and Academic Factors

Schools (formal education) and parents (informal education) are viewed as critical factors in inculcating the culture of gender equality. They need to promote the interest of girls and boys in all different subjects to ensure that their future career decisions are based on their interests and preferences but not on gender (Franco-Orozco & Franco-Orozco, 2018). For example, several studies have demonstrated that the gender gap observed in mathematics is associated to the teachers having lower expectations for girls when compared to boys even when both have shown to be equally proficient in the subject. These unjustified lower expectations can lower some girls' confidence especially those not doing very well in the subject and ultimately influence their future career choices. Teachers and parents are encouraged to inculcate positive reinforcement to both girls and boys as they are the primary motivators (Franco-Orozco & Franco-Orozco, 2018).

Furthermore, one of the empirical studies conducted by these authors in Columbia reveal that, women graduates outnumbered men in undergraduate studies. In addition, they surpassed men in many areas including mathematics and natural sciences. But they were still underrepresented in stereotypically defined areas such as agronomy, veterinary science, engineering, architecture and urbanism (Franco-Orozco & Franco-Orozco, 2018). In South Africa, similar findings were discovered by Ocholla and Ocholla (2007), in their study on the analysis of research output for post-graduate students (masters and doctoral). Findings indicate that there was a greatest proportion of women who graduated for the library and information science degree.

According to Owusu et al. (2015), there is paucity of female research leaders in Africa. Women are under-represented in research leadership

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positions such as principal research investigators and professors. There are various contributing factors to this, some of which are:

1. Women do not have the higher qualifications and experience that are required to become a researcher or a principal investigator;
2. In selected cases, men refuse to mentor women and tend to be patriarchal in their approach and treat women as students in research projects;
3. Women working in a male-dominated department may find it difficult to lead a team of men, some of whom find it difficult working under the supervision of women;
4. Limited research mentorship programs targeting young women including student researchers; difficult conditions in the field can also be discouraging to promising women researchers who have the potential of becoming principal investigators;
5. the challenges of writing a good proposal that attracts grants or funding and it is even more demotivating if one has failed repeatedly.

Women's demeanour suggests that they do not have confidence to lead, belittling of women researchers, women's frequent inability to consider research themes or activities in the context of wider strategic goals and men's lack of support. Many academics especially females, tend to slow down once they reach the senior positions like that of being a senior lecturer, researcher or professor. In addition, some hindrances may be institutional such as the difficulty of keeping up with developments in quantitative techniques and the lack of access or time to access online journals and databases, to attend research meetings, workshops, colloquiums and seminars. Some women may see these obstacles as insurmountable and get despondent and demotivated (Owusu et al., 2015). Because the focus of this article is on inhibitors for quality research output for women particularly in the LIS sector in Africa, it was deemed important to examine how women are scoring academically in that discipline.

Discipline-Specific View (Micro-Level Approach)

According to Onyancha (2007) the usefulness of a discipline can be measured using the amount and quality of research completed in the said discipline. For the LIS discipline, there has been no comprehensive study carried out to determine both the quantity and quality of LIS research in Africa. However, several studies have used various variables such as the status of the authors,

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gender, country of origin, types of research, types of journals and other variables to analyse LIS research in Africa. Onyancha (2007) conducted a study to analyse LIS quality research output of 53 countries in Africa between 1986 and 2006. Findings indicate that the patterns showed that LIS authors were not consistent in terms of their research activities, i.e. productivity or publication. It was not clear whether this was due to financial, time constraints, lack of or limited publishing skills or lack of resources. His findings also reveal that LIS research has generally remained low in Africa except for South Africa and Nigeria (Onyancha, 2007). South Africa's dominance in terms of research output in Africa is linked to its research policy (Masango, 2014; Ocholla, 2007; Onyancha, 2007).

To gain insight regarding gender-sensitive studies on quality research output in Africa case studies that included the variables of gender, population groups and other variables were used. For example, in case one, Ocholla and Ocholla (2007) did an analysis of research output of post-graduate students (masters and doctoral) dissertations and theses of South African universities from 1993 to 2000. Findings reveal that there was a preponderance of theses produced at master's level in English language by women. The three historically advantaged universities, the University of KwaZulu-Natal, the University of Pretoria and the University of Johannesburg led the production. In another case study, Ocholla (2007) analysed the publishing trends (2002-2005) in the local journal called South African Journal of Libraries and Information Science (SAJLIS). Findings indicate that between 2002 (vol. 68) to 2005 (vol.75), SAJLIS published 93 articles of which 64 (68.8%) were single-authored and 29 (31.2%) were co-authored. Secondly, the leading number of articles were published by the South Africans from South Africa followed by 15-20% of those produced by non-South Africans from South Africa. Articles by non-South Africans from other (foreign) countries ranged from 10% for single-authored papers to 38% for co-authored. Furthermore, South Africans from South Africa initially authored 65.5% (19) of the co-authored articles (29). Thirdly, it was noted that SAJLIS publishes an average of seven research articles in each issue, and half of the authors were between 41-50 years. The population group of the authors were mostly white (54%); followed by black/African (37%), Indian (6%) and Coloured (3%) (Ocholla, 2007). Similar results were reported by Murray (2014) in his / her study entitled: 'Predicting scientific research output at the University of KwaZulu-Natal, South Africa.' In this study, data was collected between 2004 to 2008. It consisted of 1236 year-on-year productivity unity counts. Data set was broken down according to age, race, gender, qualifications and job positions. Findings

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indicate that men were more productive than women. Staff who were older were less productive than younger staff. African and Indian researchers were not productive as their white counterparts.

What this means for this study, in case one, studies indicate that there is a preponderance of students at the master's level in South Africa. For example, it is apparent that after completing their studies; students do not join the academic ranks hence the uncertainties regarding bibliometrics quality research output for women. This confirms the views of Azcona and Valero (2019); GRC & UK Research and Innovation (2019) that gaps in gender data and the dearth of trend data, make it difficult to monitor progress for women in research. The other side of the coin regarding findings for case one, is to engage in further research to gain insight about ethnicity and countries of origin for the greatest proportion of women post-graduate students produced by the identified South African universities. Case number two, confirms that the greatest proportion of the contributors to the LIS quality research output in South Africa are the whites (Ocholla, 2007). In addition, Ocholla and Ocholla (2007) confirmed that LIS authors from other countries were highly productive and visible than the South African authors. Authors indicated that, that might be due to the fact that, South African authors publish most of their articles in the local journals, most of which are not indexed by the ISI Web of Science (Ocholla & Ocholla, 2007). South Africa is known to have instituted good research policies with salient incentives, however it is concerning that few academics from the historically disadvantaged background are enjoying these benefits. It is apparent, more work needs to be done to motivate youth to engage in STEM and research projects, particularly young women. The forthcoming section focuses on some of the promoters of quality research output that can be used to mitigate inhibitors and thus balance gender gaps, particularly in Africa.

Promoters

Dictionary.com explains a promoter as a person or thing that promotes, furthers or encourages someone or something. It must be noted that inhibitors and promoters as discussed in this paper are not exhaustive. The few selected ones were deemed as relevant for this article and are discussed in the following section

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Political Factors / Policies

This study opines that policies are critical as they serve as a guiding framework for projects that aim to bridge the gender gap in research, but they need to be rigorously implemented. The GRC and UK Research and Innovation (2019) underscores that the importance of engaging in national discussions about policy frameworks regarding equality, diversity and the status of women cannot be over emphasized. Given that, the issues of policy frameworks, action plans and awareness raising activities are listed as principle number one of the ten principles developed by the GRC and UK Research and Innovation (2019). Furthermore, GRC and UK Research and Innovation (2019) indicate that many countries have policy frameworks at the level of research funding organisations or at the ministerial level depending on each country's history and priorities. For example, in South Africa, in 1996, the White Paper published by the Department of Science and Technology (DST) identified that historically disadvantaged higher education institutions had limited capacity for science and technology research. This was due to a disproportionate emphasis on teaching, rather than research and development. As part of its Research Capacity and Development strategy, the South African Government committed to addressing the situation using targeted interventions, including targeting women and black people for research support (GRC and UK Research and Innovation, 2019).

One of the intervention strategies used, was to put in place salient policies to motivate academics to produce and publish quality research in peer-reviewed accredited journals such as Thompson Scientific, Institute of Scientific Information (ISI) Web of Science including Arts and Humanities Citation Index (A&HCI); Science Citation Index (SCI) Expanded; and Social Sciences Citation Index (SSCI). Masango (2014), Ocholla (2007), and Onyancha (2007) are all in consensus that in South Africa, the Department of Higher Education and Training has put in place a policy that motivates scholars to produce high quality research output. Masango (2014) opines that academics have a duty to publish in peer-reviewed subsidy-generating journals to generate income and good publishing reputation called H-index of the institution. For him/her this is important in upholding one's indirect economic rights as they do not directly acquire monetary benefits from their natural property right (research outputs) but are encouraged by the institution to continue publishing and sustain the revenue stream (Masango, 2014). Publishing in scholarly and peer-reviewed journals is critical in measuring the usefulness of a discipline

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(Onyancha, 2007). However, many women are deprived from enjoying such privileges because of many barriers that limit them from doing so (GRC & UK Innovation and Research, 2019; Franco-Orozco & Franco-Orozco, 2018; Elsevier Gender Report 2017; Case & Richley, 2013).

Scholarly publishing is important for the dissemination of research findings (Ocholla, 2011). It encourages both the experienced and inexperienced cohorts of scholars to claim moral rights of an academic against false attribution of authorship (Masango, 2014). Acquiring scholarly publishing skills can help academics to cascade good skills to students (Ocholla, 2011; Ngulube, 2005). Scholarly publishing skills including active publishing can also contribute to career progression, tenure and salary increases (Masango, 2014; Ocholla, 2011). Further Masango (2014) indicates that sometimes scholars engage in scholarly publishing to qualify for grants and good ratings such as the NRF ratings in the case of South Africa (Masango, 2014). As literature has indicated that library and information science (LIS) has remained low (Onyancha, 2007) because most librarians, particularly women are not research oriented (Ocholla, Ocholla and Onyancha, 2013).

Collaboration and Mentoring in Research

Many studies indicate that women are less likely to network and collaborate nationally and internationally and across disciplines on research papers (GRC & UK Innovation and Research, 2019; Franco-Orozco & Franco-Orozco, 2018; Elsevier Gender Report, 2017). Jacob's (2007) reveals that in South Africa, quality research output production has posed problems in some institutions because of limited or lack of collaborative research. For Maluleka, Onyancha and Ajiferuke (2016) factors that are likely to hinder effective collaboration in LIS research in South Africa include bureaucracy, lack of funding, lack of time, as well as physical distance between researchers. In addition, factors that can promote it, include networking, sharing of resources, enhancing productivity, educating students, overcoming intellectual isolation and accomplishment of projects in a short time as well as learning from peers. Many scholars reiterate the importance of knowledge sharing and collaboration (Ofulue, 2019; Dube & Ngulube, 2012; Jacobs, 2007; Ngulube, 2005). They are of the view that, it can help improve quality research output production for the LIS professionals particularly women. According to Case and Richley's post-doctoral transition model, relational orientation or function is one critical

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component that defines success in the research career path. Therefore, women are encouraged to strive for it.

Ocholla (2007) and Ngulube (2005) agree that the preparation phase of quality research outputs must commence at the postgraduate level when students are engaged with their theses and dissertations. The adopted Case and Richley's (2013) model of post-doctoral transition zone, of providing strong research support during this phase, resonate well with these views. Murray (2014) reiterates that having a doctoral degree and working in a large school are associated with a significant impact on improving the research output of a publishing academic. He/she warns academic institutions that if they want to become research-focused universities, non-publishing academics need to be encouraged to obtain their doctoral degrees. Knowledgeable and experienced supervisors are likely to give appropriate academic support which might have positive impact on the students' research output. In addition, they can share their expertise with the inexperienced researchers, including women (Ngulube, 2005). Ocholla (2011) posits that mentoring of novice researchers is imperative and demands a great deal of collaboration. Findings of a study that was conducted by Franco-Orozco and Franco-Orozco (2018) also highlight that some of the women academics that were interviewed in Colombia underlined the importance of the mentorship support as crucial for the women in research's career success.

Other Programmes for the Women in Research

Varied programmes are imperative to curb the challenges of women under-representation in research and STEM. Although not limited they include programmes such as anti-gender stereotypes educational programmes; national and international research networking and collaboration programmes; mentoring and counselling programmes; strategic leadership, ability to write winning proposals, work-in-life integration, self-management, interpersonal relations, communication and time management programmes are all imperative (Owusu et al. 2015). Given the global importance attached to gender equality in research, GRC and UK Research and Innovation (2019) has put in place ten statement of principles and actions that aim to promote the equality and status of women in research namely:

1. Policy frameworks, action plans, and awareness raising activities
2. Gender-related data collection, analysis and reporting
3. Progress towards gender-based goals

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4. The issue of considering research opportunity instead of track-record only
5. Equality and diversity training
6. Addressing systemic and institutional barriers
7. Strategic programmes encouraging gender equality
8. Promoting family friendly policies and practices in relation to caregiving obligations
9. Periodic review of the ten-principles and actions document
10. Recognise the advantages of considering the gender dimension in research and encourage the development of this

Franco-Orozco and Franco-Orozco (2018) underscore the need for the funding grants programmes that can be allocated to different activities that aim to promote gender equality in research. The grants can be used to train women in peer reviewing; editing; publishing research papers; scientific communication; conflict management and how to become effective cross-discipline, national and international co-authors, research leaders and editorial board members. For example, in Columbia, women have formed their network known as ‘Colombian Network of Female Scientists’. They support each other, including young girls in research. Women are encouraged to support national and international gender awareness campaigns such as the International Day of Women and Girls in Science that was initiated by the United Nations General Assembly (Franco-Orozco & Franco-Orozco, 2018). South Africa has also put in place good policies and support systems such as the introduction of more research grants through the office of the National Research Foundation (NRF). It works in partnership with the institutions of higher learning. For example, during the International Day of Women and Girls in Science, NRF (2018) indicated that R237 million has been allocated for the emerging women researcher initiatives, such as the expanded Thuthuka Funding Framework. This is one of the many opportunities that have been put in place to help mitigate challenges of gender inequality in research. This article argues that, the intensification of such projects and programmes is imperative.

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RECOMMENDATIONS

To redress global challenge of gender gap in STEM and research careers, this article recommends:

1. The strengthening of gender-sensitive or gender-friendly policies
2. Building of more research training academies is viewed as critical. For example, in Nigeria the National Open University has established Research Training Academy (Ofulue, 2019). They must prioritise the training and mentoring of women especially for the leadership positions in science and research (Owusu et al., 2015).
3. National and international research networks and collaborations for women need to be rigorously promoted, as recommended by the social constructivist learning theories of collaboration of John Dewey, Jerome Bruner, Lev Vygotsky, that was adopted for this study (Montiel-Overall, 2005). Many scholars have underlined the importance of knowledge sharing and collaboration between experienced and inexperienced scholars (Ofulue, 2019; Maluleka, Onyancha & Ajiferuke, 2016; Ocholla, Ocholla and Onyancha, 2013; Dube & Ngulube 2012; Jacobs, 2007).
4. More research projects that can use engendered approach in data monitoring and tracking are imperative. This is important for the monitoring women's progress in the research career and in the production of quality research output (GRC & UK Research and Innovation, 2019; Elsevier Gender Report, 2018; Jacobs, 2007).
5. LIS journals in Africa should be indexed in the accredited lists such as Thompson Scientific, Institute of Scientific Information (ISI) Web of Science including Arts and Humanities Citation Index (A&HCI); Science Citation Index (SCI) Expanded; and Social Sciences Citation Index (SSCI). Other accredited lists include the approved South African journals and the International Bibliography of the Social Sciences (IBSS). Publishing in these journals is important in increasing international visibility of African women scholars. Such initiatives are also important for the fulfilment of the mandate of the GRC Statement Principles and Goal five (5) for the 2030 Agenda of the SDGs of gender equality

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6. Most importantly, women are encouraged to acquire skills of balancing their work-in-life integrated skills (Franco-Orozco & Franco-Orozco, 2018; Owusu et al., 2015). According to Case and Richley's (2013) model for the post-doctoral women transition career path, work-in-life integration capability is viewed as one critical component for women's success in research.

CONCLUSION

This article reiterates that there is a need for more support systems to boost research skills and scientific publishing initiatives for women, as articulated by the ten statement principles of the GRC (2019). It is notable that Universities continue to hold Research and Innovation seminars to promote knowledge sharing. Highly reputable international speakers are invited to address the experienced and inexperienced scholars on topical issues in scientific research. Women need to be pro-active in taking the forefront in all these initiatives. The commitment of women, especially young emerging women scientists or researchers cannot be over emphasized.

REFERENCES

- Allagnat, L., Berghmans, S., Falk-Kresinski, H.J., Hanafi, S., Herbert, R., Huggett, S., & Tobin, S. (2017). *Gender in the global research landscape*. Elsevier. Retrieved from https://www.elsevier.com/__data/assets/pdf_file/0008/265661/ElsevierGenderReport_final_for-web.pdf
- Anderson, T., & Zawacki-Richter, O. (2019). Major topics of research in Open and Distance Education: past and future. In *Proceedings of the 8th UNISA Research and Innovation Week*, South Africa, March 4-8. Academic Press.
- Azcona, G., & Valero, S. D. (2019). Making women and girls visible: gender data gaps and why they matter. In *Turning Promises into Action: Gender Equality and the 2030 Agenda for Sustainable Development*. United Nations. Retrieved from <http://www.unwomen.org/en/digital-library/sdg-report>

Inhibitors and Promoters of Quality Research Outputs for Women

- Bowen, G. (2009). Document Analysis as a Qualitative Research Method. *Qualitative Research Journal*, 9(2), 27–40. doi:10.3316/QRJ0902027
- Case, S. S., & Richley, B. A. (2013). Gendered institutional research cultures in science: The post-doc transition for women scientists. *Community Work & Family*, 16(3), 327–349. doi:10.1080/13668803.2013.820097
- Dictionary.com. (n.d.). Retrieved from <https://www.dictionary.com>
- Dube, L., & Ngulube, P. (2012). Knowledge sharing in a multicultural environment: Challenges and opportunities. *South African Journal of Library and Information Science*, 78(1), 68–77. doi:10.7553/78-1-48
- Franco-Orozco, C. M., & Franco-Orozco, B. (2018). Women in Academia and Research: An overview of the challenges toward gender equality in Colombia and how to move forward. *Frontiers in Astronomy and Space Sciences*, 5(24), 1–11.
- Global Research Council & UK Research and Innovation. (2019). Supporting women in research: policies, programs and initiatives undertaken by Public Research Funding Agencies. Retrieved from www.globalresearchcouncil.org
- Jacobs, D. (2007). An informetric analysis of publication and research collaboration patterns in natural and applied sciences in South Africa. *South African Journal of Library and Information Science*, 74(1), 41–48.
- Jappelli, T., Nappi, C. A., & Torrini, R. (2017). Gender effects in research evaluation. *Research Policy*, 46(5), 911–924. doi:10.1016/j.respol.2017.03.002
- Leedy, P. D., & Ormrod, J. E. (2010). *Practical Research: Planning and Design*. Boston: Pearson.
- Maluleka, J. R., Onyancha, O. B., & Ajiferuke, I. (2016). Factors influencing research collaboration in LIS schools in South Africa. *Scientometrics*, 107(2), 337–355. doi:10.1007/11192-016-1846-0
- Masango, C. A. (2014). Combating inhibitors of quality research outputs at the University of Cape Town. *The Journal of Research Administration*, 46(1), 11–24.
- Mnkeni-Saurombe, N., & Zimu, N. (2015). Towards tackling inequalities in South Africa: The role of community libraries. *Information Development*, 31(1), 40–52. doi:10.1177/02666666913501681

Inhibitors and Promoters of Quality Research Outputs for Women

Montiel-Overall, P. (2005). Toward a theory of collaboration for teachers and librarians. *School Library Media Research. Research Journal of the American Association of School Libraries*, 8, 1–31.

Murray, M. (2014). Predicting scientific research output at the University of KwaZulu-Natal. *South African Journal of Science*, 110(3/4), 1–4. doi:10.1590ajs.2014/20130321

National Research Foundation (NRF), South Africa. (2018). The NRF commits to supporting women and girls in Science and Technology. Press release for the NRF News. Retrieved from, www.nrf.ac.za

Ngulube, P. (2005). Improving the quality of research outputs in higher education through knowledge sharing and collaboration: A case study. *Mousaion*, 23(1), 39–61.

Ocholla, D. N. (2007). Common errors and challenges in publishing in a peer refereed Library and Information Journal. *South African Journal of Library and Information Science*, 73(1), 1–13.

Ocholla, D. N. (2011). An overview of issues, challenges and opportunities of scholarly publishing in Information Studies in Africa. *African Journal of Library Archives and Information Science*, 21(1), 1–16.

Ocholla, D. N., & Ocholla, L. (2007). Research in Library and Information Science in South Africa: An analysis of journal research output from 1993-2006. *South African Journal of Library and Information Science*, 73(2), 109–118.

Ocholla, D. N., Ocholla, L., & Onyancha, B. O. (2013). Insight into research publication output of academic librarians in southern African Public Universities from 2002-2011. *African Journal of Library Archives and Information Science*, 23(1), 5–22.

Ofulue, C. (2019). Growing capacity for Open Distance e-Learning (ODEL) research: the Nigerian experience. In *Proceedings of the 8th UNISA Research and Innovation Week*, South Africa, March 4-8. Academic Press.

Owusu, F., Kalipeni, E., Awortwi, N., & Kiiru, J.M.M. (2015). Building research capacity for African institutions: confronting the research leadership gap and lessons from African research leaders. *International Journal of Leadership: theory and Practice*, 20(2), 220-245.

Inhibitors and Promoters of Quality Research Outputs for Women

United Nations Eastern and Southern Africa Regional Office. (n.d.). United Nations (UN) Women: United Nations Entity for Gender Equality and the Empowerment of Women. Retrieved from <http://africa.unwomen.org>

World Health Organization (WHO). (2015). Africa's women in Science. Research Brief researched and written as part of a 2015 TDR grant scheme to identify barriers to careers for women scientists and develop and implement solutions. Retrieved from <https://www.who.int/tdr/research/gender/women-overview-piece.pdf>