

Institutional Policies, Practices and Initiatives Impacting Research Productivity: The Strengthening of Collaboration, Leadership and Professionalism in Research Management in the Southern African Development Community (SADC) and European Union (EU) Higher Education Institutions (StoRM)

J. M. Frantz

University of the Western Cape

A. George

University of the Western Cape

M. Hunter-Hüsselmann

Stellenbosch University

H. Kapenda

University of Namibia

Z. Yassin

University of the Western Cape

Abstract: *Research productivity and research excellence are elements essential to the creation of a conducive research environment, in which research publications, research dissemination, and research utilization, are key in fostering the sustainability of higher education institutions. In this study, the current institutional policies, practices, and initiatives that encourage research productivity were explored. A mixed-method methodology, embodying a sequential exploratory approach, was adopted for the study. Non-probability, convenient sampling was used to select Higher Education Institutions (HEIs). A survey questionnaire comprising closed and open-ended questions was used for data collection. The data collection tool was piloted and refined. An integrative analysis consisting of descriptive statistical analysis and thematic analysis was used to analyze the collected data. The findings of this study highlight the instrumental role of university staff and students for research productivity. Building an institutional research culture was seen to boost research productivity. Increasing research capacity and visibility, the implementation of appropriate management infrastructure and the adoption of research policies were found to be effective strategies to support research productivity within Higher Education settings. Support for research publication and publication performance management was similarly identified to improve research productivity. It is recommended that the policies, practices, and initiatives set by HEIs should focus on research productivity, creating an institutional research culture,*

supporting research publications, and research performance management, in order to drive research productivity and contribute towards sustainability.

Keywords: Higher Education Institutions, research productivity, research excellence, research management, research policies and practices

Introduction

Higher Education Institutions (HEIs) have been recognized as institutions of learning and knowledge creation. By means of research and education, HEIs can create change agents for sustainability, through staff and students. However, Wright (2010) identified the sustainability of HEIs as a concern, because several issues and challenges arise regarding global sustainability, which has disproportionately affected HEIs, especially in Africa. Considering the higher education sector from the aspect of academia, administration, research, and social responsiveness, this highly complex phenomenon of sustainable development may overwhelm higher education institution administrators, academics, and leaders. A study conducted by Wright and Horst (2013) highlighted the paucity of empirical evidence that focused on the sustainability of HEIs and suggested that the concept of sustainability needed to be explored within, as well as across universities. While underexplored, education, research, and daily operations have been identified as domains that affect the sustainability of HEIs (Wright & Horst, 2013). Research is one such domain that enables sustainable development within and beyond HEIs. The findings of a review conducted by Findler et al. (2019) suggested that research played a pivotal role in the sustainability of HEIs, while promoting engaged scholarship, and impacting non-academic stakeholders. Therefore, research excellence could increase the sustainability efforts of HEIs through traditional academic impacts such as scholarly influence and non-academic impacts geared towards civil society and public policies, such as societal well-being (Aguinis et al., 2014; Thomas & Ormerod, 2017).

The best way that HEIs could create a momentum for sustainable development and research excellence is through collaboration and sharing of good practice on sustainability in education and research (Minguillo & Thelwall, 2015). This idea is twofold; firstly, in the endeavor to develop universities with research excellence, an enabling research environment must be present. Creating a conducive environment is required for growth and the effective utilization of research. For this environment to be present several factors need to be considered, including, but not limited to, adequate infrastructure, current technology, skilled and trained workforce, institutional capacity, an international standard, and adequate financial support. While HEIs may differ in their context and needs, the issues around sustainability may be addressed through the sharing of ideas, in an inter-professional, inter-university, and inter-country approach (Minguillo & Thelwall, 2015). This approach allows for the cross-population of ideas, leading to the enhancement of the sustainability of HEIs across the continent. Secondly, although this approach would allow for knowledge transfer and increased research productivity, developing best practice guidelines, considering the diversity across HEIs, remains a challenge.

There has been a call for scientifically warranted best practices within HEIs to address the productivity, efficiency, and quality of higher education, as well as the manner in which academic and institutional researchers determine research excellence within their institutions (Dowd & Tong, 2007). The scholarship of best practice should focus on professional development and learning among higher education practitioners, while the view of academic researchers as facilitators of learning, should be maintained (Dowd & Tong, 2007). Consequently, a continuous search is being conducted for best practices to be identified across HEIs to increase productivity and excellence. Aithal (2016) suggested that best practices for research productivity should include organizational objectives and policies, administrative support for research, faculty motivation for researchers and student participation in research, as well as supporting structures from the central university. Pratt et al. (1999) identified some factors related to high performance research environments, which include, but are not limited to, leadership commitment to research, programs on research management, integrating research into teaching and learning, as well as investments in research capacity. Quimbo and Sulabo (2014) highlighted that, while attempting to understand research productivity and research excellence, research capability, research outputs, research dissemination, and research utilization need to be considered to create a conducive research culture. Evidently, best practices surrounding research excellence and productivity are essential in fostering the sustainability of HEIs; therefore, this current study was aimed at exploring and describing the current institutional policies, practices, and initiatives that encourage research productivity.

Methodology

Study Design

A mixed-method methodology embodying a sequential exploratory approach was adopted to evaluate the current institutional policies, practices, and initiatives that encourage research productivity at HEIs. A mixed-method design uses both quantitative and qualitative methods, combined to satisfy the main objective of the study, and allows for a more comprehensive exploration of a problem than could be achieved with any singular method (Morse & Niehaus, 2016). In this current study, a sequential explanatory approach (QUAN-qual) was used, where the qualitative data assisted in clarifying some of the quantitative data.

Research Setting

Within an increasingly complex and competitive global research environment, effective and strategic research management is critical in ensuring the success and sustainability of HEIs. The Strengthening of Collaboration, Leadership and Professionalism in Research Management in the Southern African Development Community (SADC) and European Union (EU) Higher Education Institutions (StoRM) is a three-year project, funded by the European Union (EU)'s Erasmus+ Program, directed at supporting effective research management (StoRM Project, 2015/6). The overall goal of the project is to promote research outcomes, innovation, and impacts, through capacity building and professionalization of a skilled group of research

managers and administrators within HEIs in Africa, as well as Europe. Additionally, the aim is to promote collaboration and foster a mutual understanding between HEIs within the EU and SADC regions.

To reach these goals, the architects of the StoRM project have set out to, (1) establish a research management certificate course for early career research management professionals; (2) develop an executive Master's degree curriculum for mid-career research management professionals; (3) develop a Recognition Mechanism for research management professionals who have already produced a portfolio of work; and (4) implement a staff exchange program, aimed at sharing good practice and developing research management capacities across the various regions. As part of these outlined deliverables of the StoRM project, the strategy was to benchmark and develop best practice guidelines for institutional research policies, practices, and initiatives, which may impact research productivity at HEI's. In line with this deliverable, this study was conducted to evaluate current institutional policies, practices, and initiatives that encourage research productivity with a specific focus on research publications across the EU and SADC region.

Population and Sampling

Non-probability, convenient sampling was used to recruit Higher Education Institutions (HEIs) to participate in this current study. The HEIs targeted were partners in a European consortium and some of their networks. A total of 36 HEIs were invited to participate in this current study, of which twelve (12) HEIs agreed to participate, indicating a 33 percent participation rate.

Data Collection

Data were collected from participating institutions using a survey questionnaire, as suggested by Jones et al. (2013). All partnering institutions were invited to participate in the study via electronic communication. Through such communication, the purpose and aim of the current study was conveyed to the respondents in the form of an information sheet. Informed consent was gathered from the participating institutions prior to the commencement of the study. The respondents were instructed to complete the questionnaire electronically, to the best of their ability. An instruction guide was provided to respondents on the first page of the questionnaire, explicitly outlining the format, the preferred method of completion, a brief overview of the questionnaire, and contact details for response. Ethical clearance to conduct the study was received from Stellenbosch University Research Ethics Committee: Humanities under project no. 1714.

Data Collection Tool

An initial questionnaire survey was developed based on literature and circulated among StoRM partner institutions for content validity. The survey questionnaire consisted of closed as well as open-ended questions, to allow for the collection of quantitative and qualitative data simultaneously. The preliminary survey questionnaire was developed and distributed to the developing partners for feedback. The feedback was delivered during a consortium meeting and integrated into the questionnaire. These changes included reducing the length and changing the

format of the questionnaire from an e-survey to an electronic MS word version.

The final questionnaire included an information sheet, instruction questionnaire, and covered ten sections: (1) institutional background; (2) research management and infrastructure; (3) building and institutional research culture; (4) support for research publications; (5) open access; (6) research data management; (7) predatory publishing; (8) research capacity building; (9) research published performance management; (10) and research information management.

Data Analysis

An integrative analysis approach, consisting of descriptive quantitative analysis, as well as a thematic qualitative analysis was used (Caracelli & Greene, 1993). Descriptive statistics were calculated for the quantitative data, which included the frequency, range, mean, mode, and medium. The data set was captured, coded and cleaned then entered into the Statistical Package of the Social Sciences (SPSS) version 1.0.0.1406. A thematic analysis (Clarke & Braun, 2014) was conducted for the analysis of the qualitative data. The qualitative data were entered into Atlas.ti, a data analysis program, and coded. Initial codes were generated based on interesting elements present in the raw data regarding the phenomenon. Extracts supporting initial codes were inclusively selected including surrounding data. Initial codes were reviewed for similarity and merged to form themes and sub-themes representing the overarching ideas within the dataset. Themes were reviewed for accuracy by reviewing the entire dataset and coded data extracts supporting each theme thus ensuring that each theme displayed a coherent pattern and had sufficient supporting evidence.

Results

The results are presented below in five overarching themes, as emerging from the findings of this evaluative study. These include: (1) demographic details, (2) research productivity, (3) building an intuitional research culture, (4) supporting research publications, and (5) research publication performance.

Theme 1: Demographic Details

Twelve universities from the SADC and European regions participated in this current evaluative study. The majority of these universities were located in South Africa (n=7), followed by Namibia (n=2), Botswana (n=1), and Zimbabwe (n=1). The remaining university is in Lithuania, part of Eastern Europe.

Theme 2: Research Productivity

Several key components have been identified as pertinent for the support of research productivity within participating universities. These components included university staff and postgraduate students, who had either enrolled or graduated at participating universities. The findings supporting these two key components are discussed below.

University Staff Component

The participating universities provided the staff components within their institutions for the period 2017-2020. The university staff, including academic and non-academic staff members, have been observed to support research productivity at the participating institutions. The majority of the participating universities (n=7) employed a larger proportion of permanent non-academic staff (n=15 665), with a mean of 1305, followed by permanent academic staff (n=6269), with a mean of 522. The number of permanent non-academic and academic staff ranged from 0 to 6131, and 0 to 2122, respectively. However, the majority of the participating universities (n=7) reported employing non-permanent staff to support research productivity within their institutions. The findings indicated that the majority of non-permanent staff were employed as non-permanent/atypical academic staff (n=14078), ranging from 0 to 9855, with a mean score of 1173.

From these findings, most participating universities (n=7) disclosed the percentage of permanent staff members who had attained a doctoral degree, which varied across institutions, ranging from 20% to 72%. Of the staff components across universities within the SADC region, one South African university maintained the highest component of staff members who have obtained a PhD (n=64).

Postgraduate Students' Component

The majority of the participating universities (n=8) reported on the postgraduate students' enrolment and completion of masters and doctoral programs, as presented in Table 1.

Table 1. Master's and Doctoral Students (2017-2020)

Variable	Frequency (n)	Range	Mean
Postgraduate master's students			
Enrolled master's students	15757	194-5336	1969
Graduated master's students	4520	40-1668	565
Postgraduate doctoral students			
Enrolled doctoral students	5458	23-2287	682
Graduated doctoral students	132	0-311	16.5

Postgraduate students are identified as the key contributors towards research productivity at participating institutions. From this current study's findings, master's enrolments (n=15757) ranged from 194 to 5336 across participating institutions. The postgraduate students (n=4520), who had obtained a master's degree from participating institutions, ranged from 40 to 1668. In addition, the findings revealed that doctoral enrolments (n=5458) ranged from 23 to 2287. The postgraduate students, who had obtained a doctoral degree (n=132), ranged from 0 to 311. Interestingly, one participating university reported no doctoral graduates for the reporting period.

The findings revealed that postgraduate students supported research productivity at participating institutions, as depicted in Table 2.

Table 2. Electronic Repository and Encouragement to Publish

Variable	Frequency (n=12)	Percentage (%)
A dedicated electronic repository for archiving Master's theses and doctoral dissertations	9	75%
Encouragement of postgraduate students to publish from theses and dissertations	7	58.3%

Most participating institutions (9, 75%) indicated that an electronic data repository was dedicated to the archiving of theses and dissertations produced by postgraduate students. Unanimously, the participating universities (12, 100%) reported that their institutional libraries were responsible for the management of these repositories. Most of the participating universities (7, 58.3%) reported the encouragement of postgraduate students to publish from their theses and dissertations. Additionally, various methods were utilized to encourage publications among postgraduate students, including (1) financial incentives, (2) publications as a requirement for enrolment in doctoral programs, (3) as a requirement for dissertation submission, and (4) outcomes for staff development programs. These methods are further clarified in the excerpts presented below:

"In some faculties, it is compulsory/part of the completion requirements. We have a program which encourages publication from PhD." (University 1)

"Modest financial incentive in some faculties." (University 4)

"Many of the PhD students are staff members and it is part of their staff development program to publish." (University 6)

"Indirectly by giving points to student's supervisor for publishing articles together, as well if master's student wants to gain PhD he/she needs publications for enrolment completion." (University 11)

Theme 3: Building an Institutional Research Culture

The majority of participating universities (11, 91.6%) indicated that several initiatives geared towards promoting a culture of research have been implemented within their institutions. By building an institutional research culture, several initiatives have been implemented to enhance research capacity, increase research visibility, and support research productivity, as depicted in Table 3.

Table 3. Promoting an Institutional Research Culture

Variable	Frequency (n=12)	Percentage (%)
Presence of specific initiatives to build a research culture	11	91.6%
Strategies in place to create visibility of research-related activities	9	75%

Building Research Capacity

Most of the participating institutions (11, 91.6%) indicated that several programs aimed at building the capacity of researchers were being offered at their institutions, as depicted in Table 3. Various departments and offices were responsible for the implementation of such programs, namely, (1) institutional divisions for research development; (2) research office/directorate; (3) directors of research capacity development; (4) Deans of faculties and Heads of Departments; and (5) centers for research and publication.

Research Management Infrastructure

The majority of participating universities (11, 91.6%) had implemented research management infrastructure to oversee and govern research strategies, activities, and outputs, as depicted in Table 4.

Table 4. Research Management Infrastructure

Variable	Frequency (n=12)	Percentage (%)
Presence of research infrastructure	11	91.6%
A dedicated Vice Chancellor or deputy vice chancellor for research	9	75%
A dedicated research director	11	91.6%
A dedicated research office	10	83.3%

Research management and infrastructure focuses on the research management managers and directors within HEIs. The participating HEIs reported that research at their institutions was managed by either a deputy vice chancellor (9, 75%) or a research director (11, 91.6%), while most (10, 83.3%) had a research office. The remaining participating institution (n=1) disclosed the absence of such research management infrastructure. The institutions reported that the number of staff members in their current research offices ranged from 2 to 50 members.

Research Visibility

The majority of the participating universities (n=9) indicated that strategies had been implemented at their respective institutions to increase research visibility. These strategies

included: (1) research reports; (2) media; (3) institutional websites; (4) newsletters; (5) social media handles; (6) national and international conferences; (7) research weeks; and (8) strategic research areas. The following excerpts elaborate on these specific strategies, aimed at increasing the institutional research visibility:

“Division for Research Development has an annual Research Report that creates visibility for research activities; we nominate our researchers for awards and prizes, etc.” (University 1)

“Faculty research days, research week.” (University 6)

“The university website has a dedicated page for the Research Office where all research activities are posted... [s]ending academic members of staff to international conferences where they share their research activities.” (University 9)

Open Access Publishing

The strategy to support open access publishing is closely linked to increasing the research visibility of an institution, as depicted in Table 5.

Table 5. Open Access Publishing

Variable	Frequency (n=12)	Percentage (%)
My institution has an institutional policy and/or guidelines on open access	7	58.3%
My institution is in the process of developing an open access policy	3	25%
My institution is not planning to develop an open access policy	-	-
I am not sure	2	16.7%
Specific strategies are set in place to support open access publishing	5	41.7%

Seven of the participating institutions disclosed an existing open access policy (58.3%), while three other institutions (25%) were expected to implement an open access policy within months of this current study. The majority of the participating institutions indicated that the libraries and designated research offices of institutions were responsible for the promotion of the open access policy on campus. At five of the institutions (41.7%), specific strategies had been implemented to encourage open access publishing, namely, funding, training, advocacy, and engagement. The remaining seven participating universities (58.3%) failed to identify specific strategies that were implemented for the support of open access publishing. Two participating universities (16.7%) indicated that they were unsure about any institutional policies or specific strategies geared towards open access publishing. In addition, several barriers to open access publishing had been identified by the participating universities, as displayed in Table 6.

Table 6. Barriers to Open Access Publishing

Variable	Frequency (n=12)	Percentage (%)
Lack of awareness of the value and benefits of open access	7	58.3%
Lack of precise definitions, technical standards and procedures in the area of open access	4	33.3%
Different practices and types of data across different scientific areas	4	33.3%
Uncertainty about national regulations	3	25%
Fragmented copyright regulations	3	25%
Lack of funders` regulations	3	25%
Concerns with higher costs incurred with open access	6	50%
Concerns with privacy and confidentiality of data	6	50%
Lack of specialized staff for teaching and promoting open access	2	16.7%
Lack of support at institutional level to assist researchers	2	16.7%

Seven participating universities identified the lack of awareness of benefits of open access publishing (58.3%); six identified the higher cost (50%); six expressed concerns for privacy and confidentiality (50%); and four identified the lack of definitions, technical standards and procedures (33.3%), as barriers to open access publishing. In addition, the following barriers were identified by the participating universities: differential practices and data management across scientific areas (4, 33.3%); uncertainty of national regulations (3, 25%); fragmented copyright regulations (3, 25%); lack of funder regulations (3, 25%); lack of specialized staff for teaching and promoting open access (2, 16.7%); and lack of institutional support for researchers (2, 16.7%).

Research Policies to Address Research Productivity

Besides the contribution of human capital components towards research productivity and outputs, all the participating universities (12, 100%) reported the implementation of a research policy, or strategy document, within their institutions. These policies/documents were aimed at increasing research productivity by addressing the culture of publishing within the institutions. It was anticipated that these policies and strategies would promote research outputs, increase research productivity, enhance the quality of publications, provide incentives for publications, and encourage publication in reputable journals (high-impact and non-predatory journals). Overarching strategies utilized across universities included the following aspects: open access, publication fees, research ethics, research integrity, plagiarism, data management, confidentiality of data, as well as citation and authorship.

Support for Research Productivity

The majority of participating universities (11, 91.6%) indicated that initiatives had been implemented to support research productivity within their institutions. The most commonly reported initiatives included: (1) funding; (2) conference support; (3) project support; (4) publication fee support; (5) incentives for publication; (6) recognition of research achievements; (7) fellowships; (8) workshops and training; (9) writing retreats; and (10) a designated research repository.

The respondents elaborated on the specific initiatives that were implemented at their respective universities to build a research culture, as depicted in the excerpts presented below:

“Internal funding is available to researchers to attend local and international conferences and to pay for research-related expenses related to a specific project.” (University 6)

“Institutional researcher of the year awards, Institution Research.” (University 5)

“Internal small grants for interdisciplinary teams to undertake joint applied research projects and we have conference attendance guidelines to support staff to attend conferences where they present academic research.” (University 12)

Data Repository to Increase Research Productivity

The majority of participating institutions (n=8) reported that a dedicated repository had been established for the archiving of staff publications, which was primarily managed by: (1) library information services; (2) research office; and (3) the ICT directorate. Additionally, the institutions indicated that the database/repository distinguished between local and international publications, as well as the different types of publications. As part of a data management strategy, the majority of institutions (n=9) reported the use of an electronic data repository for the archiving of masters and doctoral dissertations.

Theme 4: Supporting Research Publications

The participating universities also described effective strategies used to increase research outputs within their HEIs. These strategies included: (1) publications as a requirement for promotion; (2) workshops to address publishing; (3) incentives for publications; and (4) the provision of mentors to researchers, academic staff, and postgraduate students. These strategies are discussed further in the excerpts below:

“Recruitment of academics makes it mandatory for academics to undertake research and is a national regulatory requirement by the Botswana Qualifications Authority and internally our statutes require academics to research and publish for teaching and promotion purposes and criteria for promotion is available to guide the kind of research and publication that earns more points than others.” (University 12)

“Taking academic members to writing retreats with the condition that they submit a draft manuscript they will work on during the retreat and submit the manuscript for publication

towards the end of the retreat.” (University 9)

“The University provides incentive funding for Department of Higher Education and Training (DHET) subsidy-earning publications, with the intention of increasing research output. However, the impact of this is not clear. While this does encourage publication, producing publications also forms part of the academic endeavour of our academic staff, and so, it cannot be ascertained whether publication output is a result of this or the incentives.” (University 6)

“Recently we established the mentorship programme for research publications development. The aim of this programme is to develop researchers’ competencies and produce high-quality research publications.” (University 11)

Barriers to Publishing

Despite these strategies, the participating institutions identified four core barriers to publishing within their institutions, namely: (1) time constraints; (2) workload; (3) lack of experience in publishing; and (4) insufficient resources. These barriers are well identified in the excerpt provided by a participating university below:

“Lack of resources to conduct cross-cutting research which is publishable. Inexperience in publishing attributable to lack of mentorship. Workload too much for academic staff with the university being a teaching intensive university. Time to conduct research is restricted by huge teaching loads.” (University 9)

Predatory Publishing

Predatory publishing has been identified as a practice that undermined the integrity of published works and served as a barrier to increased research outputs. Of the participating institutions, 83% reported that they were aware of predatory publishing. Evidently, eight institutions had implemented policies and procedures to address predatory practices; however, two institutions admitted that zero policies or procedures had been implemented by them for this purpose. These strategies included: (1) workshops; (2) communications to the research community; (3) published works; (4) research policy; (5) board meetings; and (6) the provision of an accredited journal list. These strategies are outlined in the excerpts presented below:

“The division has facilitated a workshop last year where experts have shared their knowledge with researchers of the dangers involved in predatory publishing and the pitfalls to look out for. Links to this workshop and others in this regard are available on the division’s webpage. A general information document on predatory publishing drawn up by the division will also shortly be circulated to academics.” (University 1)

“Communique regarding predatory practices are regularly sent out and the Library plays an integral role in creating awareness thereof. Academics are informed about these practices during Institutional Repository training sessions and when inquiring when they are approached by certain publishers to publish their dissertations with them.” (University 10)

“It is addressed on the library website and a database with white-listed and blacklisted journals are available to research to verify publications.” (University 5)

Theme 5: Research Publication Performance Management

The participating universities identified several licensed bibliometric databases, or products to which they had access, as presented in Table 7.

Table 7. Licensed Bibliometric Databases

Variable	Frequency (n=12)	Percentage (%)
Access to bibliometric databases or products	7	58.3%
CA Web of Science citation database (previously ISI)	7	58.3%
Elsevier Scopus database	7	58.3%
Journal Citation Reports	6	50%
Elsevier`s SciVal	4	33.3%
CA`s InCites	2	16.7%

The majority of participating universities (7, 58.3%) indicated that bibliometric analysis services were accessible to individual researchers within their institutions, while the remaining universities reported having no access to bibliometric databases. Bibliometric databases that were most accessible to the participating universities included CA Web of Science (7, 58.3%) and Elsevier Scopus (7, 58.3%). Only two universities (16.7%) with access to bibliometric databases were able to access CA's InCites. However, the participating universities specified other bibliometric databases to which they had access including Emerald, EBSCO-host, African Digital Library and Proquest Central. They indicated that the library and information services, data analysts, and research and innovation departments were responsible for the rendering of these services within the institutions.

Discussion, Conclusion, and Recommendations

The findings of this current study highlighted four key elements that foster sustainability in HEIs, namely, research productivity, an institutional research culture, support for research publications, and research performance management. These findings are consistent with the findings of a review conducted by Findler et al. (2019), suggesting that research, which promotes engaged scholarship, plays an influential role in the sustainability of HEIs. Research productivity, as outlined in the findings of this current study, focused on individual and institutional attributes in relation to the size of an organizational workforce, the enrollment of postgraduate students, and the qualification level of faculty members. Nygaard (2017),

similarly, identifies that sufficient size and capacity of a faculty is a key contributor to research productivity. The findings of this current study revealed a mean of 522 and 78.25 for permanent and non-permanent academic staff, respectively, within the participating universities.

However, increased research productivity requires more than mere faculty size; instead, the focus is placed on the individual characteristics of faculty members, such as age, gender, status, rank, discipline, and qualifications (Nygaard, 2017). The qualifications of academic staff were highlighted in this current study, as the participating universities varied in the number of academic staff who had obtained a doctoral degree (ranging from 20% to 72%). A study conducted by Smeltzer et al. (2014) highlighted the shortage of capacitated scholars to assume academic roles as senior faculty members begin to retire, and indicated the importance of doctoral programs to build the capacity of scholars, particularly its effect on promoting scholarly productivity in the faculty. Consequently, the capacity and experience of faculty members impact the research productivity of postgraduate students within HEIs.

Postgraduate students have been recognized as contributors to the research productivity in HEIs, as they are often encouraged to disseminate the results of their thesis to the scientific community in the form of peer-reviewed journal articles or conference abstracts (Obuku et al., 2018). While most participating universities in this current study indicated the establishment of an electronic database for the archiving of completed theses and dissertations produced by postgraduate students, seven institutions actively encouraged research productivity among students. A study conducted by Morales et al. (2017) suggests that faculty-student productivity, while understudied, is likely to contribute to research productivity, enhance collaborative research, produce more productive scholars, and increase the capacity of students. The review conducted by Obuku et al. (2018), similarly, suggests that reviewed articles failed to report on the effects of strategies to increase research productivity or dissemination of research produced by postgraduate students. While this current study did not report on the effectiveness of strategies for research productivity among postgraduate students, the participating universities highlighted the various strategies that were implemented to increase research productivity, including financial incentives, publication as a requirement for enrolment to a doctoral program, or dissertation submissions, and outcomes for development programs.

At inception, Dundar and Lewis (1998) suggested that research productivity in HEIs assumes a multidimensional character, drawing on knowledge production, as well as knowledge dissemination, which are to be supported by an institutional research culture. Concurring with the ideologies outlined by Dundar and Lewis (1998), this current study identified an institutional research culture as an important factor that determines research productivity, as well as the performance of individual faculty members for the sustainability of HEIs. An institutional research culture relates to shared attitudes and values within an institution which create a research-orientated culture, where all members are socialized to be strong researchers (Dundar & Lewis, 1998). This is achieved through graduate training, valuing research, maintaining communication and collaboration with other researchers, and recruiting a capacitated faculty with appropriate research credentials.

The findings of this current study highlight the infrastructure, strategies, as well as policies implemented to create a research-orientated culture within participating HEIs, with key focus areas being research capacity programs, research management infrastructure, research visibility, open access publishing, research policies, support for research productivity, and dedicated research repositories. Aligned with the reasoning of Dundar and Lewis (1998), faculty members are to be capacitated and encouraged to attain skills that are associated with strong researchers. These skills and competencies are cultivated by the participation of individual faculty members in research programs, offered at the majority of participating institutions. HEIs, especially those based in Africa, are urged to provide such training programs that focus on research methodologies, statistical interpretation, and scientific writing, to adequately develop and support individual academic members (Chu et al., 2014). Additionally, the capacity development of academic members may be strengthened further through regional and international partnerships that contribute to sustainable development across HEIs (Chu et al., 2014).

Research management infrastructure, as discussed in this current study, plays an instrumental role in the development of a research culture in HEIs, as it is often responsible for the conception and implementation of policies and programs geared towards capacity development and research productivity (Aithal & Kumar, 2016). The same infrastructure, implemented to oversee policies and strategies that support research productivity, addresses an institutional research culture which has been implemented across all participating universities. These policies and strategies promote research outputs, publication quality, incentivising research outputs, and publications in reputable journals. Aithal and Kumar (2016) identified similar focus areas of institutional policies and strategies, including financial support for research expenditure, appreciation of good performers, the provision of appropriate facilities (such as libraries and internet facilities), encouragement of collaborative research, and the development of a research-based curriculum. These ideas, expressed by Aithal and Kumar (2016), concur with this current study's findings, which advocate institutional support for research productivity. The participating universities described their continuous efforts and initiatives, implemented to support research initiatives, such as funding, conference and project support, publication fee support, incentives for publication, recognition for research achievements, fellowships, writing retreats, workshops, and designated resources for research-related activities.

While it remains important to provide support for the production and dissemination of research and knowledge, the participating universities placed their focus on research visibility. One core aspect of visibility is open access publishing, which, as Niles et al. (2020) suggest, is being met with enthusiasm and has become increasingly valued by younger academics, compared to older academics in tenure positions. Surprisingly, despite its importance, only half of the participating universities had implemented policies that were dedicated to open access publishing, while the rest lacked awareness of the benefits of open access publishing. Evidently, according to these findings, a transparent need exists to increase the awareness and strategies of open access publishing within HEIs.

Lastly, research performance management is discussed in this current study's findings, with

more than half of the participating universities having access to bibliometric databases. While research performance management remains a cornerstone in the culture of HEIs, Niles et al. (2020) and Nygaard (2017) caution against performance measures used in HEIs. The authors caution against placing preference on articles over other methods of research dissemination such as grant proposals and policy-relevant documents, as these sources are crucial in maintaining the social relevance of academic research and underscore the vitality of institutions. Secondly, index scales and emerging ranking may evaluate performance, but disregard the sustainability of HEIs. The Green League Table, as adopted in the United Kingdom, tried to address these issues by utilizing a range of sustainability indicators to measure institutional performance.

The researchers in this current study sought to highlight current institutional policies, practices, and initiatives that encourage research productivity, to enable the sustainability of HEIs. The study's findings suggest that policies, practices, and initiatives set by HEIs should focus on research productivity, creating an institutional research culture, supporting research publications, and research performance management, in order to drive research productivity and contribute towards sustainability. While these areas of focus remain significant, several areas require further recognition for future research and practice. Increased attention needs to be directed towards faculty-student productivity. In this current study, the potential of faculty-student collaboration was highlighted, to increase research outputs while capacitating students with the required skills and competencies to assume research, or academic roles, once qualified. Ultimately, this would contribute towards the research-orientated culture envisioned by HEIs.

For this to be achieved, clear guidelines need to be developed to encourage student productivity and an evaluation needs to be implemented to establish the effectiveness of such a measure. Little is known about the effectiveness of varied strategies used to encourage the research productivity of students enrolled in postgraduate programs at HEIs. Secondly, while measures to support research productivity are extensively outlined in existing evidence, the concept of research productivity remains broadly defined. Consequently, the implantation and effectiveness of strategies introduced within the HEI environment often vary with little consistency. There needs to be a larger focus on the implementation of strategies that are geared towards research productivity, and their effectiveness, for the establishment of best practice guidelines which may be adopted across HEIs to promote research productivity as well as sustainability. Finally, more resources should be dedicated to address predatory publishing and open access publishing. While most universities are aware of predatory publishing, there needs to be a greater drive to develop policies that caution against predatory publishers and the harmful impact associated with the practice. Conversely, more resources need to be dedicated to establishing policies and practices to promote open access publishing, as well as to raising awareness about the benefits of the practice within HEIs.

Implications for Practice

Several implications for practice could be highlighted for HEIs from the findings of this current study. Firstly, Research Information Management and Research Data Management are key areas for the development of research-intensive institutions. These areas are likely to provide evidence-

based information to support optimal decision making within HEIs. There is a need for liaison between institutional research-related support divisions, such as information technology departments, libraries, and research and governance offices. Liaison between these divisions within HEIs is likely to create supportive and research-intensive environments, contributing to research excellence within HEIs. Lastly, inter-institutional collaboration and networking is important for benchmarking, as well as best-practice development, and should be encouraged further.

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J. M. Frantz

Department of Physiotherapy, University of the Western Cape
Private Bag X17, Bellville, 7535.
Telephone: +27 21 959 4057
Fax: +27 21 959 2587
Email: jfrantz@uwc.ac.za

A. George

Division of Research and Innovation, University of the Western Cape
Private Bag X17, Bellville, 7535.
Telephone: +27 21 959 4069
Fax: +27 21 959 2487
Email: ageorge@uwc.ac.za

M. Hunter-Hüsselmann

Division for Research Development, Stellenbosch University
Private Bag X1, Matieland, 7602.
Telephone: +27 21 808 4623
Email: mh3@sun.ac.za

H. Kapenda

Centre for Research and Publications, University of Namibia
Private Bag X13301, Windhoek, 9000
Telephone: 061-206 3239
Fax: 0886526613
Email: hkapenda@unam.na

Z. Yassin

Centre for Interdisciplinary Studies of Children, Families and Society, University of the Western Cape

Private Bag X17, Bellville, 7535.

Telephone: +27 21 959 4145

Fax: +27 21 959 3476

Email: zyassin@uwc.ac.za

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