Demands and Contemplations on Research Management in South Africa: Perspectives from a University of Technology

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Abstract

The paper addresses the challenges and prospects of universities of technology as research institutions in South Africa. Currently, universities of technology have suffered a great deal of polarity in terms of academic works and research quality. Ideas, innovations, and trajectories from such institutions are not received with the same energy and vitality as those from traditional universities. While one can attribute the laxity thereof to the historical development of the universities of technology, mainly starting as Technikons and teaching universities, one cannot categorically assume that this is the entire reason for such a lack of enthusiasm for studies emanating from such institutions. Nowadays, universities of technology engage in as much research as traditional universities as they also have centers, directorates, and units overseeing the administration and management of research. Using the Durban University of Technology as a case study, through interviews with research focus area leaders and strategic members of the institution's research and innovation section, the study investigates the possible challenges of research administration and management as a

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potential challenge to understand the necessary areas for improvement and the prospects that lie within research outputs in universities of technology by suggesting new research management strategies. Four themes emerged from the study: improving the administrative support system, insufficient financial resources, institutional attitude to research culture, and inadequacies in postgraduate enrolment.

Keywords: Research administration, research management, challenges, prospects, institutions

Introduction

In the well-known, *Research Management in Africa and India* Mayor (2018) argues that University research management is an emerging profession in the developing world. Good research management is crucial if research and innovation are to underpin social and economic development in Africa, research administration, research management, or research management and administration, as different institutions of higher learning and authors have referred to it, signifies the handling of research-related affairs in universities. Suffice it to note at this stage that, as important as research management and administration is to universities, academic literature on these concepts is still in its infancy. As such, at this stage, it is mostly policy documents, institutional reviews, reports on collaborative projects, and organizational documents related to research, that have emerged as main sources to address the issues of research management and administration, more so than academic papers.

In fact, it has been over a decade since Kirkland, in 'University Research Management: An Emerging Profession in the Developing World (2008: 717), established that research management and administration had become an emerging profession in the developing world. However, as necessary as this profession, with its many dimensions is, it is still laden with its own challenges and hurdles. And, it is important to note that there is no single universally accepted definition of research management (Kirkland 2008: 718), just as it is difficult to agree on a single definition for most ambiguous academic concepts to allow for academic flexibility. For this study, however, we adopt Kirkland's (2008: 718) definition, which regards research administration and management as 'being an activity instituted at

the level of the institution, which seeks to add value to the research activity of academic staff, without being part of the research process itself' is useful. As such, research administrators or managers are drivers of research outputs without necessarily being involved in the research process but instead being supportive in their administrative and managerial tasks.

Mashaah *et al.* (2014: 1), in a study focusing on research governance, state that:

> Universities are strategic national and international institutions that assist in social and economic development through the generation of new knowledge. University rankings depend heavily on research output and quality, and their transformation into research intensive institutions is a mark of development. Universities therefore strive to sustainably develop research capacity, which enables them to compete for shrinking research funding and be among the institutions generating cutting-edge knowledge and innovation.

The above excerpt from Mashaah *et al.*'s (2014) study auspicates for this study in several degrees. They concede that a university should assist in the generation of new knowledge, which can only be achieved through research and innovation. Also, that a university being ranked based on its research output is no longer news, especially in South Africa, where research outputs are rewarded. Worth noting is also that universities strive to develop a research capacity to meet the demand expected of an institution of higher learning. The choice of this study to premise its research on the Durban University of Technology (DUT) is thus aptly captured in their study due to various reasons:

> (1) The DUT as an institution evolved from a predominantly teaching university to a knowledge-producing university through research and innovation;
>
> (2) The DUT still suffers a great deal of polarity, and as such, like other Universities of Technology (UoT), is not substantially ranked or regarded for their research output;
>
> (3) As with other institutions of higher learning, DUT also has a research and postgraduate support directorate which oversees the

> development of research capacity as well as research-related administration and management.

The topical study, accordingly, draws its strengths from Mashaah *et al.* (2014).

The researchers contend that the reassuring administration and management of research-related activities will not only contribute to an increase in research outputs but will also equally improve the quality of research. This is a point echoed by Sawyerr (2004: 213) that, in building an effective and productive research culture, individual skills developed in research work are not enough. There are enormous administration and management factors that one needs to consider, among which are the quality of the research environment, funding, adequate infrastructure, research incentives, and time available to the researcher. Similarly, Walwyn and Cloete (2016: 7) state that investment in research and development is an important decision for all countries, especially in countries with an appreciable set of structural and economic problems, such as South Africa.

The above is a complete removal from South African institutions when one considers Stetar's (2015: 19) position that South Africa is a very minor player in the world of research and development, given that the country is in a unique position in the African continent as its wealth and academic traditions permit it to have first world universities if it wishes to do so. Based on Stetar's (2015) view, common to all institutions in South Africa are their own respective challenges, regardless of their status as traditional or UoTs. In fact, his study concentrated on already established traditional universities, namely the University of Cape Town, University of Witwatersrand, University of KwaZulu-Natal, University of Pretoria, Stellenbosch University, and the University of the Free State. This is to note that challenges regarding research administration and management are not particular to UoTs.

Therefore, Stetar (2015) calls on South Africa as a country to find a way to provide universities with the support necessary to maintain their critical missions as places of knowledge production. The South African National Research Foundation's (NRF) Strategy 2020 (2016: 4) mandates the promotion and support of research through funding, human resource development, and the provision of the necessary facilities in order to facilitate the creation of knowledge, innovation, and development in all disci-

plines, including indigenous knowledge. As the NRF is the highest research administrative and management body in South Africa, it is expected that their mandate should be replicated across South African higher institutions.

For this study, therefore, the challenges particular to Universities of Technology, specifically DUT, in relation to research administration and management, will be studied viz-a-viz how these challenges can be harnessed and turned into prospects for Universities of Technology. Zikos *et al.* (2012: 15) have stated that 'successful research management includes equal teamwork and efficient coordination, in order to increase the impact of the research outcomes and provide added value knowledge', more important for this study is to recognize the possible administration and management deficiencies that will assist DUT in putting the university on a research pedestal that is respected and regarded for its prowess in knowledge production while gradually washing away the stigmatization associated with the university starting as a Technikon.

Durban University of Technology: An Overview

According to the DUT website, the institution is an amalgamation of both the ML Sultan Technikon and Technikon Natal as a result of the 2002 merger to form the Durban Institute of Technology, which later became the Durban University of Technology in 2006. The merger was attributed to the objective of the South African Department of Higher Education (DHE) to streamline and harmonize academic activities in all tertiary institutions. The DHE then recommended additional restructuring to ensure that South African higher institutions position themselves against global benchmarks. This initiative by the DHE saw the DUT department change from just a vocational and teaching institution to an institution where research and knowledge production are equally prioritized.

Unfortunately, the institute's historical background as a vocational and teaching institution has created an impression suggesting that ideas, innovations, and trajectories from such institutions are to be received with limited enthusiasm compared to those from the popular, traditional universities whose historical mandates are not only to teach but to also produce research and knowledge. Against the backdrop that UoTs were not initially designed for research purposes since they were initially intended to prepare people for the practice, promotion, and transfer of technology within

a vocation or industry, the reality upon us is that UoTs are now more research inclined. Considering this, administrative and managerial efficiency that would translate into quality research productivities should be studied and encouraged.

Literature Review: Insights from Prior Contributions to Research Administration and Management

Research Management has evolved into a profession (Kirkland 2005; Shambrook & Roberts 2011; Shelley 2010; Bonnici & Cassar 2016). Research management refers to the 'duties and responsibilities commensurate with the successful implementation of the research strategy and its daily operational implications, the control, and coordination of specific research projects, their quality and related tasks of sponsor management' (Bushaway 2007: 42). Research management changes with the nature of the institution within which it is practiced. Important elements include the level of emphasis given by the institution to research and innovation and the mandate of the institution (Jain *et al.* 2010).

A significant function of university research management is to act as a catalyst to influence the behaviour of individuals (Kirkland 2008). Bonnici and Cassar (2016) state that an aspect of research management common to other professions is that it does not happen in a vacuum but requires a context. However, a major complexity of the research management profession is that the context can span various levels. Research can be managed at a national level and is concerned with the management of national research and innovation (R&I) systems (Schuetzenmeister 2010). Research can also be managed at a level of funding agencies, and it is usually aimed at translating societal problems into research opportunities (ibid.). On a micro-scale, research can be managed at a level of organisations, universities, and other research-oriented entities, or even at a lower level, that of a research group. Research management at each of these levels is not automatic; it depends on the structure and organisation of the research ecosystem of a specific country. However, the more organized and structured the research ecosystem of a country, spanning across different levels, the wider the scope of the research management profession in that country, and vice versa.

These advances in research management have occurred in response

to developments in the research enterprise as an academic and professional entity (Gabriele & Caines 2014). Governments, private entities, and the general public started acknowledging that research can provide an essential contribution towards the well-being of society in general. Research management is recognized across the world to be a highly diverse and eclectic mix of responsibilities. In Southern Africa, it is evolving into a bespoke profession with its own body of knowledge, set of principles, linked associations, formal qualifications, and human resource descriptions and specifications (SARIMA 2019). Research management and administration are conducted primarily in Higher Education Institutions (HEIs) in a South African context. The growth of research at UoTs has resulted in the need for well-trained research managers and administrators. Research environments have become increasingly complex in recent years. Highly skilled individuals with a clear understanding of the research world and well-developed administrative skills are invaluable to research institutions (Research Africa 2013).

Harle (2013) indicates that obstacles to research are more than financial; the ways in which research is managed at institutional levels are critical. Ineffective stewardship of existing resources can limit the potential of new investments while also reducing funder confidence. According to Research Africa (2013), research management's key roles are to make sure that institutions' research programs are on track and to provide researchers with a supportive environment, smooth funding flows, assistance in identifying appropriate research partners, and administrative support. Kirkland (2008) further states that good research management, compared with the restoration of infrastructure and the recruitment of internationally recognized staff, is a relatively affordable strategy that can bring strong catalytic effects. On the other hand, if research management systems fall behind those of developed countries, existing disadvantages will be compounded by a lack of information, presentation, and negotiating skills. These will make the institution even less able to access increasingly competitive funding streams (Kirkland 2008).

Theoretical Component

The current study is entrenched in Henri Fayol's Administrative Management Theory (1949) in what is popularly termed 'Fayolism,' implying a

theory of management that scrutinizes and harmonizes the role of management in organisations. Almost a century since it was developed, the theory is still recognized widely as one that has contributed most immensely to the practice of administration and management in organisations. Although not from a research perspective, the framework describes the complexities of administration and management, which is flexible enough to fit into different administrative and managerial ambits. He has thus been regarded by scholars as the father of the modern operational management theory as his ideas have been fundamental to administrative management concepts, just as he has been discussed extensively in literature by scholars such as Bedeian and Wren (2001), Breeze (1985; 2002a; 2002b), Breeze and Miner (2002), and framework for management perspectives (Brunsson 2008; Rodrigues 2001). Fayol identifies five functions of management, namely to plan, organize, command, coordinate, and control. In this respect, given that they oversee research affairs at higher institutions, Mintrom (2008: 231) recommends that university research administrators pay closer attention to how they manage a range of university research activities. Thus, this study is guided by Fayol's principles of Administrative Management Theory: division of work, authority and responsibility, discipline, unity of command, unity of direction, interests and common organizational goals, remuneration or compensation package, centralization, scalar chains, order, equity, stability or tenure, initiatives, and team-spirit or *Esprit de corps*. Although he proposed 14 principles, the topical study adopts only four of these principles in line with the findings of this study, namely division of work, authority and responsibility, unity of direction, and remuneration or compensation packages.

Pryor and Taneja (2010) simplified these four principles within what they termed 'relevance for contemporary management' as they argued that Fayol's principles were a guide to theory and practice in the early days of management theory and thus, emphasize the need for re-interpretation within today's context. On the division of work, they advocate for the need for specialisations and thus, note that cross-training is used so that employees (and organisations) develop more capabilities. For authority and responsibility, they note that empowerment enables people at all levels to make decisions pertaining to their jobs. The unity of direction advocates for the need for strategic management to involve bottom-up, top-down, and cross-functional input to be integrated into plans within the organisation. Finally, the remuneration or compensation package suggests compensations

for knowledge and core competencies in terms of team rewards and profit-sharing. The selected principles are embedded in this paper and employed as foundations for the thematic findings that emerged from the study.

Methodology

The study adopts a qualitative methodology to investigate the demands and contemplations of research management and administration in South Africa using DUT as a case study. The method is employed as it often captures the perspectives of people involved in complex contexts (Creswell 2009), thus, making it an ideal platform to generate thematic evidence from data (McMillan & Schumacher 2006) produced relatively from a small group of participants (Silverman 2009). Through a purposive sampling, five of the seven research focus area leaders were recruited at the university alongside two strategic members of the university's research administration and management ambiance. The factors considered in selecting participants are the research productivity level of the participant, their wealth of experience, variety of discipline, and their status as attracted through their research outputs, as well as their familiarity with the administration and management procedures of research activities at the university.

A semi-structured individual interview was conducted with the participants (n=7) in the English language. The interviews were recorded with the consent of the participants to ascertain accurate information from the collected data. The interviews ranged from 15-30 minutes each. The participants produced in-depth information about research administration and management at DUT. The interviews were then transcribed, sorted, and thematically categorized. The key themes emerging from the transcripts were generated, and a code-recoding process was employed to establish the trustworthiness of the findings.

Thematization of Results and Discussion

The data produced from this study yielded four major themes leading to a few other sub-themes. The following themes have been discussed in a tripartite fashion. As such, some direct quotes from the participants were provided, then a literature reference was established, and insights from the authors. Put differently, opinions from interviewees are presented below with

support from literature texts and insightful perspectives from the authors of this study.

Improving the Administrative Support System

A perhaps recurring threat facing UoTs is the flaws in administrative support, especially because of perceived inconsistencies and sometimes ineffectiveness. Bider (2017) describes this better by noting that 'with the introduction of computers in the office, administrative functions have got a new generation of tools for information processing and communication. Despite these tools, however, the expectation that their introduction will automatically lead to improvement of the administrative quality has not been realized'.

One of the most mentioned administrative issues was the strategies employed in procuring research materials. Participants are of the opinion that the existing procurement strategies are largely flawed by inconsistencies, and there is a need for members of staff in this section to be aware of research rudiments. Hence, members of staff in this department may be trained to understand research tenets which would then inform how they conceive administrative issues pertaining to the procurement of research-related services. In another perspective, it was also recommended that the Research and Postgraduate Support Directorate oversee administrative processes regarding research to ensure that staff members in charge of procurement are well informed. As such, there should be a closely related connection between the procurement department and the Research and Postgraduate Support Directorate. This shares affinity with Bider's (2017) perspective that an effective administrative system requires synergy, as the quality of the administrative procedure depends on the interplay of people and the operational instruction, which is currently regarded as a gap at the Durban University of Technology. Thus, to ensure a better administrative quality, the partaking components must be synchronized.

In another perspective, the processes involved in the allocation of funding are considered a challenge. It was discovered that some researchers are displeased with the processes involved in the allocation and disbursement to researchers. Hence, the researchers advise that remunerations in terms of allocations of funds should not focus solely on the quantity of research articles produced but also on the quality of the research papers. As such, the

merit of papers should also be considered in terms of citations and impact factors when remunerating researchers for their outputs. One of the researchers noted that '*quality is good as one can also witness in traditional universities with quality-driven researchers which also translates into the promotion policy of the universities*'. In Tijssen and Kraemer-Mbula's (2018: 398) study, they also pontificate that a quality-driven research culture should be accompanied by an increase in the remuneration of researchers. It was, therefore, encouraged in this study that UoTs may benchmark themselves against traditional universities regarding the effectiveness of their administrative and managerial procedures.

Given the above, it becomes important that administrative measures be flexible enough to accommodate changes when the existing strategy is considered ineffective. The participants established that an efficient administrative support structure bodes well for research management and administration as they currently condemn existing strategies which seem to be cumbersome for researchers. They call for more efficient administrative strategies through revisiting existing administrative procedures. Their perspectives corroborate Hoffman *et al.'s* (2014: 2) argument that 'well-designed rules of administrative procedures and policies will have beneficial effects for effectiveness, implementation, and realization of desirable tasks'.

Insufficient Financial Resources

Explorations of participants' views about resourcing issues and their influence on research productivity drew the attention of participants, as evidenced by the number of assertions that were posited against the backdrop of South Africa's Ministry for Education's National Plan for Higher Education, which identified wide-ranging measures to ensure the sustainability and promotion of research. Centrally, the national plan has been heralded for its primary focus on providing stimulus measures that incentivize researchers towards superior research productivity. In agreement with the tenets of the National plan, participants in the current inquiry were unanimous in the view that 'quality research needs funding'. This view was elaborated on by participants in different guises, from those who indicated that costs related to seeking innovative solutions were, by definition, reliant on the provision of 'just in time' funds to support idea development, data management, and the dissemination of findings.

Beyond this, interviewees expressed concerns about the way in which remuneration and the incentivizing of researchers were facilitated. The concerns included views that,

(i) incentivization policies within universities were discriminatory and promoted senior and permanently employed academics at the expense of less senior contract workers who often conducted much of the fieldwork and manuscript development;

(ii) the over-emphasis on the incentivization of research outputs had created a predatory environment often referred to as the 'publish or perish' imperative where all of a university's core business was assessed exclusively on whether or not it resulted in an accredited output, in ways that diminished other functions, such as teaching and learning and community engagement.

Even within these cautions about an over-emphasis on research development, participants' feedback was unanimous that greater investment in research development was necessary to increase research outputs, which in turn would result in financial gains for the institution.

Institutional Attitude to Research Culture

The participants recognize a defect in the research culture of the institution, which suggests that the university is still in a transitional stage and struggling to inculcate the research culture. Coetzee (2019: iii) intimates that 'the focus on becoming a research-intensive institution requires an awareness of the existent research culture in order to support and stimulate research. In order to achieve this feat, there is the need for a presence of a culture of research, enabled by the research environment'. Hence, to merely conduct research is not enough to form a culture; the research environment also needs to be enabling. Barner *et al.* (2015: 6) note that, due to the ranking of universities based on the research activities, much emphasis is placed on becoming a research-intensive institution. Despite this belief, UoTs are continuously making efforts to improve. However, they are still some steps behind.

The participants identify two critical issues in this regard, namely the lack of infrastructure and lack of mentorship if research is to be made a

cornerstone at DUT. The study borrows from Coetzee's (2019: ix) explanation of a research culture to serve as a backdrop:

> Research culture refers to the individual and institutional factors that may influence research such as values, ideologies and assumptions that pertain to policy and processes, reward and promotion, communication, relationships of collegiality, leadership and mentorship; resources, technologies, infrastructure of the institution; opportunities, challenges, strengths and weaknesses within university.

The participants note that DUT still lacks infrastructure, equipment, and maintenance. While some equipment is outsourced, some researchers collaborate with other institutions where they can loan equipment or even work in their laboratories. The researchers criticize the lack of equipment as to continuously outsource is even more expensive compared to the cost involved in procuring such equipment. It is believed that with the existence of the relevant equipment at UoTs, the number of research outputs will increase and, as such, will put UoTs on a research pedestal amongst traditional universities. Gaal and Afrah (2017: 49) admit that adequate infrastructure contributes to development by increasing productivity and providing services, which in turn translates to an increase in aggregate output. This is akin to Mafenya's (2014: 441) view that 'without adequate research infrastructure and equipment, researchers are left with an impossible task of producing outputs and undertaking innovative projects without support'. It is thus evident that the lack of infrastructure and equipment limits the ability of researchers to produce research outputs. Mafenya (2014: 437) argues that the lack of such facilities will, in turn, affect the quality of research and hence, the university's ability to contribute to national development.

While the researchers advocate for the need to possess adequate equipment, they also recognize a lack of mentorship as a danger to the inculcation of a research culture. As such, one of the participants noted that the '*university should attempt to attract bigwigs from traditional universities who will serve as mentors emerging academics and researchers at UoTs*'. They recommend the adoption of retired professors who can bring with them their experience with the sole responsibility of producing research outputs

and mentoring a new generation of researchers. Xu and Payne (2014) also establish that there is a need for academic staff, particularly early career staff, to have mentors, as this would contribute to greater success in terms of their research-mindedness.

Inadequacies in Postgraduate Enrolment

Universities of technology are relatively new in the provision of postgraduate education in comparison to their traditional university counterparts. In South Africa, for example, they offered their first post-graduate courses as recently as 2004. Being relatively new within this competitive landscape carries with it a few challenges, most notably, the critical challenge of low postgraduate enrolment. With respect to this, participants articulated several notable postgraduate enrolment challenges that had a resulting negative impact on research productivity. Firstly, the university, much like the rest of Africa, continues to have difficulties related to admissions both in terms of the ongoing massification attempts, a lack of prospective students from previously disadvantaged backgrounds, and disproportionately high learner support needs among students with varying readiness for postgraduate study (Schwab 2018). Interviewees echoed many of these observed challenges and were able to offer an additional dimension by pointing out that they were often faced with navigating their ways around poorly harmonized postgraduate requirements and guidelines from one faculty to the next, even within one university. This lack of consistency was indicative of the general lack of attention to uniformity, much to the detriment of student inclusion.

In addition to the above-specified universal inadequacies in postgraduate enrolments, participants highlighted a particular challenge that related to an important national imperative for South Africa, that of increasing the enrolment and active promotion of local postgraduate students. This challenge coincides with governmental efforts to counter the much-publicized effects of the brain drain in South Africa and the low participation rates among local indigenous individuals that are a legacy of apartheid. Even within the limited numbers of enrolments, the results of the current study revealed that the quality of outputs remains distinct, as one would find in any other traditional institution. In fact, DUT is believed to be able to compete anywhere, regardless of its status as a UoT. Although the researchers recognized that there had been significant growth in the

institution's research journey, they also admit that there is a need for substantial improvement. They remain steadfast that UoTs can be leaders in any research field provided the administrative and managerial strategies are effective. Hence, the status of the university as a UoT does not afford for the quality of outputs to be compromised, and it is important for UoTs to continue to produce outputs that are relevant in local and international contexts.

Conclusion, Limitation, and Opportunities for the Future

UoTs are fast positioning themselves as research-centric institutions. It has been established that UoTs have quality research outputs of international standard, despite possible managerial and administrative threats stemming from their traditions as non-knowledge-producing universities. The study finds that UoTs continue to produce quality research and should, therefore, not be disregarded as lacking in research simply for their historical background. However, internally, procedures and processes require significant advancement and reforms in order to reinforce more outputs once managerial and administrative support services are improved. The culture of research, which is considerably lacking at UoTs, requires a drastic change from top-to-bottom by ensuring smooth and less challenging administrative measures for researchers. It is no gainsaying to contend that administrative and support staff play an important role in the achievement of desired tasks when it comes to research output.

However, the discussion above suggests a drift away from Fayol's administrative management theory with the fundamental principles of administration and management. There is a continuous need for a largely supportive administrative system that provides a more conducive environment for researchers to produce top-notch research outputs. This is, in fact, more valid when one considers Mayor's (2018: 4) opinion that 'researchers should operate in a supportive environment that allows them to focus on their research and strong research management within institutions enables this'. In a similar vein, Chidzonga (2018: 10) suggests that an 'effective management and administration support system allows researchers to concentrate on their core research activities while significantly increasing the ability of the university to attract research funding'. The study presents findings on research administration and management through emerging

themes from interviews supported with the available literature engraved in insights from the authors of the paper. Issues relating to administrative support, financial resources, research culture, and postgraduate enrolment are influential to the developed themes.

Importantly, managing to resolve these issues will prove advantageous for UoTs in their research-centric endeavors. Given that the study focused mainly on a single case, the Durban University of Technology, it is considered a limitation as insights from other UoTs in South Africa may have produced fresh ideas. As such, future studies may focus on a wider range of UoTs for data collection. Suffice it to note that, although the study relied on one institution, findings from the institution are evidently relevant as all UoTs in South Africa, that have similar trajectories, cultures, and traditions owing to their historical background. A significant opportunity for future researches is the development of a working model for research administration and management, not only for UoTs but all institutions of higher learning in Africa, as there seems to be a laxity in this regard, especially when one considers the limited number of literature available in this field. The advent and emergence of research management are upon UoTs, and these institutions need to be prepared for a working strategy since research works will continually lead to innovations contributing to the development of Africa as a whole.

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