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Factors influencing accounting research output in South Africa's universities of technology

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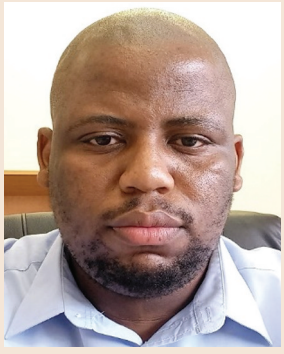
Abstract: This study examines factors influencing accounting research output in universities of technology (UoTs) in South Africa by employing descriptive statistics. The study applied a quantitative research method and primary data was used to compile information. The data was collected by using a 4 Likert scale closed-ended questionnaire. The questionnaire was administered to one hundred accounting academics across the six UoTs in South Africa. Descriptive and inferential statistics such as multivariate regression was used to analyse the data. The findings show



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Mzwandile Mbambo was born and raised in Port Shepstone, KwaZulu-Natal (KZN), South Africa and currently resides in Durban, KZN, South Africa. He completed his master's degree in Accounting through DUT, South Africa. At the moment, he is pursuing his PhD (Accounting) studies at the University of KwaZulu-Natal, South Africa while lecturing at DUT in the Department of Management Accounting. His research interests include finance, managerial & financial accounting, and teaching & learning in higher education.

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PUBLIC INTEREST STATEMENT

Universities of Technology are unique from other universities as practical skills are the basis of their career-specific programmes and concentrate more on technology innovation (Majova et al., 2021). It can be argued that since the focus is on technology innovation in the UoT's, it is the driving force that deters the maximum potential research output for accounting academics. This paper contributes to the existing literature in the accounting field of higher education about the possible factors influencing research output in the UoT's in South Africa. The study highlights that most accounting academics are being burdened with administrative duties, no support within the departments and a very high volume of classes allocated per lecturer to teach, this leaves less room for research publications. Recommendations that will reinforce a healthy working environment to stimulate the research output in the UoTs is presented.

that research funding ($t = 3.125$, $p < 0.002$, $\beta = 0.277$) and research policies ($t = 4.740$, $p < 0.000$, $\beta = 0\ .453$) positively and significantly affect research output while the enabling environment was negative and insignificant ($t = -0.613$, $p > 0.5$, $\beta = -0.055$). Based on the inverse effect of the enabling environment on accounting research output, it was recommended that the environment influencing research activities needs to be strengthened to promote research culture among accounting academics in UoTs. More so, more institutional support for research is needed such as allocating research grants/funds to academic staff and managing workload to give room to research activities.

Subjects: Educational Research; Education Studies; Continuing Professional Development

Keywords: research output; universities of technology; accounting; academics; South Africa

1. Introduction

Research implies that academic research represents a significant role in leading to economic growth (Jin et al., 2015). Sørensen et al. (2016) claim that institutions are now at the heart of the information-based economy in which they are supposed to invent and use the expert knowledge they acquire. A significant positive correlation has been found between both academic research and economic growth (Wang et al., 2016). Many countries around the world have persuaded universities to generate output from their research plans to strengthen their global productivity and competitiveness and to mobilise more funding for both universities and the nation (Cricelli et al., 2018).

In research universities around the world, research productivity on publication outputs has become a metric in recruiting, providing tenure, getting promoted and sustaining tenure. Moreover, ensuring that newly recruited academics are becoming efficient academic researchers throughout the long term to fulfil the academic institutions' research goals (Shin et al., 2014). This is the most significant factor used by ranking systems such as the Times Higher Education, QS World Ranking Universities and Academic Ranking of World Universities to rate the world's universities. Overall, academic research output is crucial for both the academics' professional advancement as well as for universities. The status and credibility of a university are enhanced by high-quality research production both domestically and globally.

Miller (2019) affirmed that universities of technology (UoTs) have been developed as vehicles to transport the nation to a league of technologically advanced countries. They have been given the responsibility to grow nations both scientifically and technologically. Furthermore, academic publishing is motivated and required by the publishing industry. Publications are also significant factors in determining how funding is disbursed across and between research institutions as well as universities (Ali, Wolski and Richardson, 2017). As a result, technological education is seen as a leap forward in the technological advancement of every nation (Miller, 2019). Unfortunately, African countries remain underdeveloped and import most of their technological needs despite the establishment of UoTs.

UoTs in South Africa has demonstrated poor research output compared to traditional universities and this has become of great concern to the Department of Higher Education (DHET) as well as the government. Additionally, many factors are influencing poor research publication output in UoTs, such as lack of research funding and institutional administrative structures, among other factors (Kabir et al., 2018). Also, research output affects how funds are allocated through and within universities and research institutions. Consequently, the accounting discipline is no exception to the output produced (Wang, 2019). On the other hand, accounting researchers, also established what seems to be an extremely advanced academic tradition, a discipline dominated by complex

techniques instead of theory. Research mainly resembles real science, which allows its exploration to be academically appropriate, yet lacking substance. Therefore, this reveals the inability of accounting research that improves accounting profession efficiency (Rajgopal, 2020).

Despite the intensification of inefficiency, this research area seems to have been overlooked, especially in the context of accounting research output in South African UoTs. Thus, creating a research gap around this area. As a result, this research paper will concentrate on factors that affect the performance of accounting researchers at UoTs in South Africa. The research aims to provide a general insight into the type of problem at hand in a developing country, given that no analysis has been performed on the same topic in South Africa. What is more, it will contribute by adding knowledge and understanding of factors affecting accounting performance in technology universities around the world. In addition to the results of the study, it will be important to improve the understanding of accounting research outputs at the country's UoTs. Therefore, the purpose of this study is to fill the gap by determining the effect of research funding, research policies and enabling environment on accounting research output in South African UoTs.

2. Overview of accounting research output

The purpose of accounting education is the development of competent professional accountants capable of making a meaningful contribution to the profession and community in which they work throughout their lifetime. Accordingly, accounting academics' output isn't up to the predicted standards. The issue is why academics are not performing in the way they intend. Lack of ambition, less autonomy, job insecurity, non-competitiveness, time constraints, financial burden, slow carrier development and lack of decision-making opportunities may be some potential factors that can affect the quality of the academics' work (Negash et al., 2019). There are only a few scholars in the field of accounting and recent studies have clearly shown that there is a substantial shortage as well as a strong demand for academia in accounting. Also, they are the people contributing to creating competent accounting which is the world's most requested carrier.

The output of research is endangered by factors such as methods used to assess the efficiency of accounting (Nygaard, 2017). Less stringent standards for academic advancement and tenure in a developing country, publishing strategies that favour quantity over quality, lack of qualified research advisors, co-supervisors and supervisors, lack of funding for training, leave and infrastructure and lack of differential pay for research-active academics are some of the problems found. Fortunately, the challenge facing accounting researchers is that there are relatively few platforms for their research publications for several historical and systemic reasons. Most of those that do exist are not ranked as high in other disciplines as those sources (Mungas et al., 2018). As a result, the paper rejection rate in the top journals well exceeds 90% and the writers who excel in this setting are mainly from very well-resourced overseas universities (Negash et al., 2019). And, along with other influences such as the rise in academic staff time required to teach a growing number of students hired by universities, has made it increasingly difficult for academics to conduct accounting research over time (Lubbe & Duff, 2020).

All this has taken its toll on scholarly accounting. In the face of a decision to hire a new accounting professor or professor from a discipline where it is easier to publish research and receive research support, senior university managers appeared to prefer other disciplines (Negash et al., 2019). Recruitment in accounting is increasingly either at the junior level or for education and scholarship (non-research) staff in the context of expanding degree programmes (Mungas et al., 2018). This, combined with the general lack of awareness of what academic accounting and scholarship research is all about, has contributed to a crisis in university accounting departments. We have now reached a point where a generation of accounting professors are going to retire and there are a large number of new hires with heavy teaching loads and little chance of publishing their studies. Besides, very few senior lecturers succeed in senior academics, mentor new graduates and uphold the research tradition (Liu & Fan, 2017). There is a poor correlation between both the accounting academic industry and what academic accountants are doing (Adedokun et al.,

2016). It is easy to recognise the economic and political stresses that brought academic accounting departments to this stage. What is less clear is how we would be able to change the balance (Tsamenyi et al., 2017). Unless we manage to raise awareness of the importance of academic accounting, we will be left with decimated accounting departments, demotivated and poor leadership, where teaching represents only existing, professional accounting activities and accounting research founders (Liu & Fan, 2017). There are two possible consequences of this. The first is a generation of students with underdeveloped skills and with little clear knowledge of the behavioural implications of such accounting practices (Eppelsheimer, 2020). The second is the absence of accounting PhD programmes and the engaged research that many accounting scholars make, along with the transfer of information that such research generates (Tilt, 2018).

2.1. Theoretical framework: Institutional theory

The institutional theory explores the mechanisms by which systems, including schemas, laws, norms and routines, are defined as authoritative standards for social actions and interactions. This theory offers resources that can be used to explain why entities operating in a particular sector replicate or adopt specific forms and essentially resemble one another. It also offers a valuable context for measuring stability and transition within institutions and processes and their relation to wider social structures. These social structures are imposed and preserved by people within the organisation's culture and can thus be used to justify both organisational and individual behaviour. Institutions are alluded to as "formal laws, ex-ante agreements, less formal mutual contact sequences and presumed expectations that organisations and individuals are supposed to obey." Institutional theory helps determine mechanisms like schemas, legislative, social and cultural factors that ensure the sustainability and credibility of an organisation. Institutional theory is especially applicable to this review. As Stensaker et al. (2014) demonstrate, HEIs are sometimes alluded to as professional associations focused on academic principles and standards.

The achievement of strategic goals by HEIs depends, therefore, on contextual factors such as the country's regulatory structure, decision-making forces, financial assistance, community, communication and assessment. Similarly, Slaughter (2014) argues that higher education systems are made up of institutions and that experience with institutional theories is important for an intimate assessment of policy networks, governance trends and ties between various organisational fields. In a similar vein, Kena et al. (2014) suggest that the institutional viewpoint is especially important when analysing educational settings as they do not typically function under market conditions. Instead, they contend for "political significance and institutional legitimacy," which is accomplished by complying with institutional rules to maintain social authenticity while at the same time gaining access to resources and preventing risks. Tuttle and Dillard (2007) use institutional theory to develop an understanding of the basic structural problems surrounding the lack of balance of research topics in academic accounting literature. The institutional theory will help us understand the institutional dynamics such as funding for research, institutional research policies and Enabling Environment.

2.2. Empirical literature review and hypotheses development

2.2.1. Research funding and research output

Research funding is indeed a key predictor of research output (Goodell, 2020). According to Altbach (2011), research institutions require continuous funding and favourable working circumstances because of their distinctive academic purpose. Sulo et al. (2012) and Atieno et al. (2021) discovered a link between the amount of research funding received by academics and the number of research outputs they generate. The funding is critical for areas like technology and medicine that require money to perform tests. Research is a costly endeavour that continuously needs financing mechanisms, and to finance further research activities, commercial exploitation contributes to alternative profits. Approximately 60 percent of Research and Development (R&D) spending in most African countries, as stated by the African Union, comes from governments, sponsors and institutions. Although it is known that many governments are the primary supporters of research

by UoTs, little or no funding is set aside for the promotion of the study findings (Unger & Polt, 2017). A study conducted at New Zealand universities to assess the role of governments in fostering the advancement of academic research reveals that a lack of funding contributes to little academic research going beyond the findings of the research (Liu et al., 2018).

The research funding provided is not adequate for further advancement of research ideas to be funded (Coles & Mensah, 2017). External funding, such as business angels or venture capital funds, is not easily accessible in many developing countries and this leads to them being left behind. The factor contending against accounting research productivity at African universities of technology is funding scarcity (Oladipo et al., 2020). Researchers in South African UoTs are mostly funded by National Research Foundation (NRF). For many years funding has been allocated more to science researchers than to commerce researchers. Nonetheless, "public investments in research and development are motivated by the conviction that advances in scientific understanding will contribute to the nation's economic growth" (Rosenbloom et al., 2015). Studies undertaken by Payne Makaya (2017) show research funding raises the volume of research but reduces its efficiency. Low-quality research has a negative effect on its citation rate and holds its degree of international ranking low.

2.2.2. Research policies and research output

Policies regulating research operations at universities must empower and enable researchers to generate returns from their research findings. To support society, university policies must also encourage researchers to transfer information from their studies into products and services (Cleere, 2017). As these impact researchers, universities interested in promoting research production generation among their faculties need to pay close attention to their research policies and training. Enabling legislation such as the Bayh-Dole Act of 1980 in the United States of America (USA) empowered universities to license their research findings and eventually pass them and sell them in the industry played a major role in selling the research results of universities (Cattaneo et al., 2016). The implementation of the Bahy-Dole Act, which allowed academic research to be interconnected with industrial needs, has accredited many of the monetisation efforts in the USA. Universities undertake simple research which is essential for providing the requisite understanding and discovery for innovation (Science Coalition, 2019). Innovation is increasingly playing a significant role in economic development, which in recent years has prompted governments to request more from their R&D investments (WIPO, 2019). Researchers are encouraged to defend themselves by filing patents as they keep coming up with inventions and improvements (Kaase-Bwanga & Kabonesa, 2016).

2.2.3. Enabling environment and research output

An enabling environment encourages scholars to produce research output without any obstacles. Research impact is the degree to which research findings are seen, noticed, read, used, built upon, cited and applied by other scholars . Most authors of scholarly content desire their papers to be widely disseminated, read, cited and built upon to increase scientific knowledge and research impact (Chan, 2004). In that regard, research performance and output remain key ingredients in most African universities as they strive to achieve the delicate balancing act of preserving national indigenous repute and worldwide visibility. Hence there is a need for scholars to exist in an environment that enables them to produce more research. An enabling environment for research output includes an available database, collaborators and a subscription to journals which needs to be open access, particularly in African countries as Africa is still underdeveloped. Open access is a publishing system or paradigm that aims to make academic evidence or study content widely accessible online, mainly in the form of journal articles and other published scholarly material relating to academic research, education, and science. In definition, open access is the free, immediate release of the final publisher version of the record, as well as the provider of full re-use rights.

3. Methodology

The design of this study is descriptive. Descriptive design is used to acquire data on the status of phenomena to describe what exists in relation to variables or conditions in a situation (Siedlecki,

2020). The research method for this study is quantitative. Therefore, the data collected will be quantified and analysed. This study falls under the positivist paradigm and will make use of a testing hypothesis. The primary data collection method has been employed using a 4 Likert scale closed-ended questionnaire. The population of this study comprised six UoTs in South Africa which include Mangosuthu UoT, Cape Peninsula UoT, Durban UoT, Central UoT, Tshwane UoT and Vaal UoT. The Census sampling method was used to collect data from the accounting academic staff members of the UoTs. According to Hu et al. (2021), census sampling is the collection of information from a defined population group who share the same interests.

The questionnaire was sent to staff emails from the accounting cluster departments. The emails of participants were easily available and could be accessed on the UoTs website page. Before the participants could be allowed to complete the questionnaire, after clicking on the link to participate, they were taken to a screen that required them to agree and give consent for the participation. Upon agreement, the participants were then enabled to proceed to answer the questions. The questions were created using Question Pro to allow respondents to complete the questionnaire electronically. The authors chose the "online-based questionnaire" method to reduce the probability of COVID transmission from one person to another (face-to-face contact). A total number of 100 accounting academic staff were requested to participate in this study. Although only 96 respondents participated and four participants out of one hundred submitted an unanswered questionnaire. As a result of this, only 96 completed questionnaires were used to gather information. The questionnaire was not lengthy, so it took about 20 minutes to complete. The questions were clear and not indirect, which made it easier for the participants to answer. The questionnaire was designed in such a way that the participants' identities are not revealed and were protected. Ethical clearance was granted by the DUT research committee to conduct this study.

The research instrument was pre-tested using five academic staff in the accounting cluster at DUT for correctness, validity and reliability of data being supplied. A descriptive analysis method has been used to find out if there are any out layers. Any out layers found were picked out so that further statistical analysis could be made. Furthermore, the analysis of variance (ANOVA) was used to collect statistical models with their linked techniques to analyse the variations among the means. Lastly, linear regression was done to establish the influence of the independent variables (Research funding, Research policies, Enabling environment) against the dependent variable (Research Output). Kumari and Yadav (2018) assert that linear regressions are widely used when more than one variable is to be tested.

3.1. Descriptive analysis

Table 3.1 illustrates the F-test to find out if the variability between group means is larger than the variability of observations between the groups. In this case, the ratio is significantly high (19.329, $p < .000$). Therefore, can be concluded that the means are not equal. The reason for selecting the three predictor variables is that these variables can have an influence on one another, and they are very important factors that contribute to the research publications.

Table 3.1. Regression analysis

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	215.681	3	71.894	19.329	0.000[b]
	Residual	327.308	88	3.719		
	Total	542.989	91			

a. Dependent Variable: Research Output
b. Predictors: (Constant), Research funding, Research policies, Enabling environment
Source: Author (2022)

Table 3.2. Model summary

Model Summary

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.630[a]	0.397	0.377	1.92858	0.397	19.329	3	88	0.000

a. Predictors: (Constant), Research funding, Research policies, Enabling environment
Source: Author (2022)

Table 3.3. Coefficient of variables analysis

Coefficients

Model		Unstandardised Coefficients		Standardised Coefficients	T	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part (Sr^2)	Tolerance	VIF
1	(Constant)	4.476	1.568		2.855	0.005					
	Research funding	0.146	0.047	0.277	3.125	0.002	0.444	0.316	0.259	0.872	1.146
	Research policies	0.525	0.111	0.453	4.740	0.000	0.573	0.451	0.392	0.749	1.335
	Enabling environment	−0.042	0.069	−0.055	−0.613	0.541	−0.261	−0.065	−0.051	0.848	1.180

a. Dependent Variable: Research output
Source: Author (2022)

Table 3.2 shows that R^2 for the overall model was 40% with an adjusted R^2 of 38%; a medium-size effect was reported for the model. The model was significant to predict research output: F (3,88) = 19.329, p < .000 as shown by the ANOVA Table. The R^2 for the overall model was 40% with an adjusted R^2 of 38%. A medium-size effect was reported by the model and variations in research output are accounted for by the linear combination of the predictor variables (research funding, research policies and enabling environment).

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$ (Regression equation).

Table 3.3 showcases the final model, two of the independent variables were statistically significant, namely research funding (t = 3.125, p < 0.002, β = 0.277) and research policies (t = 4.740, p < 0.000, β = 0 .453), while enabling environment (t = −0.613, p > 0.5, β = −0.055) was insignificant in determining the research output. The final predictive equation of regression is:

Research output = 4.476 + 0.146 (research funding) +0.525 (research policies)—0.042 (enabling environment).

4. Results discussion

4.1. Research funding

The positive B for research funding (0.146) as a predictor of research output indicated that there was about a 0.146 increase in research output for each 1-unit increase in research funding. In other words, research output tends to increase as research funding increases. The squared semi-partial coefficient (Sr2) that estimated how much variance there was between research outputs that were uniquely predictable and research funding was 0.259 indicating that 26% of the variance in the research output was uniquely accounted for by research funding when research policies and enabling environment are controlled. It was also found that research funding significantly determines research output with a significant value of 0.002. This is in line with the findings of Unger and Polt (2017) which state that provision of financial support via research grants is an essential component of research output quality. Lee (2021) observed that research funding serves as motivation for research to publish more accounting research. This is in line with the findings of Rosenbloom et al. (2015) who have clearly stated that research funding is at the heart of massive research output in developed countries. Atieno et al. (2021) discovered a link between the amount of research funding received by academics and the number of research outputs they generate.

4.2. Research policies

This factor's positive B (0.525) as a predictor of research output indicated that there was about a 0.525 increase in research output for each 1-unit increase in research policies. In other words, research output tends to increase as research policies increase. The squared semi-partial coefficient (Sr2) that estimated how much variance there was between research outputs that were uniquely predictable and research policies was 0.392 indicating that 39% of the variance in the research output was uniquely accounted for by research policies when research funding and enabling environment are controlled. It was also found that research policies significantly determine research output with a significant value of 0.000 which agrees with Cattaneo et al. (2016) who stated that institutions that have flexible policies and policies that pro research have more opportunities for more research output. Furthermore, Odeyemi et al. (2019) found that developing institutions follow pro-research policies to increase their research productivity.

4.3. Enabling environment

The negative B for enabling environment (−0.042) as a predictor of the output variable (research output) indicated that there was about a − 0.042 decrease in research output for each 1-point increase in enabling environment. In other words, research output tends to decrease as enabling environment increases. The squared semi-partial coefficient (Sr2) estimated how much variance there was between research outputs that were uniquely predictable, and the enabling

environment was −0.051 indicating that −5% of the variance in the research output was uniquely accounted for by the enabling environment when research funding and research policies are controlled. While a 1-unit increase in enabling environment explains the −0.042 reduction in the research output, it was also found that the enabling environment does not significantly determine research output with a significant value of 0.541. This agrees with the findings of Abatan (2018) who stated that if institutions of technology create an environment that will make it easier for accounting research to produce more research publications.

5. Concluding remarks

Competitive funding systems in higher education have been shown to enhance research output. Nevertheless, due to the variety of HEIs, universities may respond in very diverse ways to the implementation of competitive funding conditions. The research environments in accounting departments across the area are typified by a less-than-persuasive desire for excellence in research, deficient salaries, and lack of differential remuneration for research-active academics, shortage of qualified research advisors, supervisors and/or co-authors, limited research funding, leave and infrastructure and the number of department heads who aren't necessarily researchers with a record of success.

It would have been interesting to know whether the results might have been dissimilar had the authors conducted the very same study in another field of study than specifically paying attention to accounting. Covid limitations also made it difficult to interact with participants, other means of collecting information, like having an interview would have been used for this study. Finally, the study could have made use of secondary data research but due to budget constraints, the study resorted to primary data.

The first recommendation of this study is to have an environment influencing research culture that can be strengthened to promote research culture in UoTs. Secondly, collaborative research culture is needed in the accounting departments of UoTs to facilitate the faculty members' discussion of different research problems and to get in-depth knowledge about any type of research. Lastly, UoTs should extend institutional support for research by allocating funds to academic staff to conduct research and arrange seminars and workshops to build their capacity in research skills.

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