

The implementation of the Research Output Policy in South Africa

Challenges and solutions

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ABSTRACT

In South Africa, writing and publishing scientific articles is an important activity of academic life. It not only enhances the academic status and profile of the author and his or her institution, but also contributes towards the subsidy transfers of the Department of Higher Education and Training to universities. Furthermore, academic promotion is increasingly subject to a strong track record of research publications. Most importantly, academic publishing is the primary vehicle for the advancement of scientific knowledge required to enhance the quality of life of the society and also to strengthen the economy. Therefore, the government introduced the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003, as a tool to sustain and encourage research productivity in order to increase research output. However, despite the compelling advantages of academic publishing, research outputs of South African universities are very low and are largely contributed by a small number of academics. Therefore, it is clear that the policy faces the serious challenge of failing to achieve the intended outcomes. One of the main causes of this challenge is attributed to the inability of higher education institutions to effectively carry out the implementation process. The article evaluates the implementation of the

Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003, however paying specific attention to the University of Pretoria and the University of Venda. In conclusion, the implementation challenges faced by these institutions are examined and solutions provided.

INTRODUCTION

South African institutions are in place to provide public goods and services for the maintenance of the state through a variety of generic functions, including among others public policy, public financial administration and management as well as human resource management and administration Cloete (1981:2). The crucial fundamentals of an action oriented government to ensure that public administration is effective, efficient and economically viable, rely on these six generic administrative functions. The description of the generic administrative functions indicates that policy making provides the point of departure for public activities (Hanekom and Thornhill 1986:7). This article does not explain in detail all the generic administrative functions, but a particular emphasis is placed on the policy implementation function of public administration. In South Africa, every government institution exists because it is tasked with implementing a specific part of government policy, and these policies are captured in terms of the legislative statutory prescripts. Through the relevant policy documents approved by government since 1994, it is clearly indicated that Higher Education Institutions (HEIs) bear a profound moral responsibility to, amongst others, obtain and sustain a high level of economic growth; improve the living standards of the people; develop a new base of knowledge and initiate socio-economic change and development; and to allow South Africans to compete internationally in the quest for excellence (Kuye 2007:2). Research is one of the primary vehicles through which all these can be achieved. As such, it is important that a research culture be promoted and encouraged in all higher education institutions.

It has been estimated that advances in knowledge account for about one-third of the increases in the Gross Domestic Product (GDP) of a country (Vaughan 2008:91). Since the research function of academia remains a prime source of that knowledge, governments across the world saw a need to put measures and strategies in place to stimulate research in their countries; hence the development of the Policy and Procedures for Measurement of Research Output of Public Higher Education Institutions, 2003, in South Africa. The

development of this research output policy was driven by the imperatives for transformation of the higher education system contained in the White Paper 3, a Programme for the Transformation of Higher Education (1997) and the National Plan for Higher Education (2001). As one of the objectives intended by the National Plan for Higher Education (2001) this policy aims to sustain current research strength and to promote research and other research outputs required to meet national development needs by rewarding quality research output at public higher education institutions (DHET 2003:4).

Like many developing countries, South Africa faces the challenge of translating the objectives of public policies into measurable outputs. Government policies are very logical on paper but some might fail to achieve the desired results. The Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003, is no exception in this regard. Rogan and Grayson (2001:2) argue that all too often policy makers and politicians are focused on the desired outcomes but neglect the contextual factors that influence implementation. Public policy implementation is a core function of public administration and in order to ensure efficient and effective public administration, there is a need to address the policy implementation challenges that exist in government institutions. This article focuses on the challenges encountered by public higher education institutions in the effort to effectively implement the research output policy.

BACKGROUND AND LITERATURE REVIEW

According to Taylor and Procter (2008:1) a literature review is an account of what has been published on a specific topic by accredited scholars and researchers. In any research, it is necessary to establish what is already known about the topic at hand. It was crucial to evaluate the empirical claims of other scholars and researchers so as to identify the weaknesses or the gap that exists in this published knowledge, which served as a justification for the particular focus of this article. However, it must be highlighted that the point was not to find all published material that is somehow related to the research topic, but to avoid missing a relevant publication that lies outside the main scope, thus ensuring that the habitual channels of communication will not bias the results obtained by the study.

For the purpose of this article, it is important to provide clarity to the meaning of research output in the South African context. According to the Department of Higher Education and Training's Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003, research output is defined as textual output where research is understood as original,

systematic investigation, undertaken in order to gain new knowledge. This can be in the form of the university's original research papers, research letters, review articles which appear in approved journals, and also books for the specialist and patents. However, for the purpose of the Department of Higher Education and Training subsidy, recognised research output comprises only journals, books and proceedings that meet the criteria listed in the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003.

Scholars such as Madue (2007:35) have criticised this definition of recognised research output by arguing that textbooks and monographs are also important transmitters of knowledge and they should be considered by the policy for subsidy. Madue (2007:35) concluded that the Department of Higher Education and Training listing of recognised research outputs is intended to be indicative rather than comprehensive; it is designed to compare relative output between higher education institutions, across a selective sample of publications that meet prescribed criteria, thus excluding other important research outputs. Okafor (2011:181) also argues that research output is a means by which academics contribute their own knowledge to the existing body of knowledge, and other output such as technical reports, chapters in books, patents, supervision and training of students should not be ignored. However, Ashworth and Harvey (1994:110) compliment this policy and assert that publications which have clear evidence of research activity are usually taken to include, in order of their importance, publications in academic journals, professional journals, books, reports, edited works and proceedings. The meaning of research output is highly contested amongst scholars and many criticise the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003, for only recognising journals, books and proceedings as being eligible for subsidy.

The measuring of research output is not a new phenomenon. Scientists have communicated and codified their findings in a relatively orderly well defined way since the 17th century (Van Raan 2005:2). The most commonly used approach to measuring research output within a given discipline is biometrics. According to Moed, Glanzel and Schmosh (2004:26), biometrics has been used from as early as 1917 but it gained popularity after the introduction of the Science Citation Index (SCI) in 1961. The measurements of individual or institutional research output are often based at least in part on the number of publications produced over a specific period of time.

South Africa has a long history of measuring research output. According to Steyn and Villers (2007:253), the South African research subsidy formula has been used by the state for almost 20 years. Since 1951 and until the New Funding Framework (NFF) for Public Higher Education was established in 2004/05. There are four formulae which have been used as a basis for funding universities.

These include the Holloway formula which was introduced in 1953 and was used as a state funding instrument until the early 1970s. The discontinuance of the Holloway formula followed an interim recommendation by the Van Wyk de Vries Commission of Enquiry into Universities. This formula was implemented in 1977, and after its termination the South African Post-Secondary Education Information System (SAPSE) subsidy formula was implemented until 2003/04, when the National Research Fund (NRF) came into effect (Steyn and de Villers 2007:13). The NRF was introduced through the National Research Foundation Act (Act No 23 of 1998), subsequent a system-wide review conducted for the Department of Arts, Culture, Science and Technology (DACST). The new entity integrated the roles of the research funding agencies that were previously servicing various segments of the research community. These agencies were the former Centre for Science Development (CSD) of the Human Sciences Research Council (HSRC) and the former Foundation for Research Development (FRD) that encompassed several National Research Facilities.

However, it is important to mention that the need to develop a new funding framework for the measurement of research output was first clearly articulated in the 1996 report of the National Commission on Higher Education (NCHE). The National Plan for Higher Education (NPHE) in South Africa quoted limitations of policies which were previously used for measuring research output. This led to the establishment of the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003, based on Section 3(1) and 3(2) of the *Higher Education Act, 1997* (Act 101 of 1997) and in consultation with the Commission on Higher Education. The Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003, has been in operation since January 2005 (considering the 2004 output). This policy was intended to replace the Information Survey Manuals, that is, research output of the binary system of universities and technikons. This initiative was driven by the imperatives for transformation contained in the *White Paper 3*, a Programme for the Transformation of Higher Education (1997) and the National Plan for Higher Education (2001) (DHET formerly DoE 2001).

According to Onyanha (2010:86), publications count, patents count and citation count and impact are the commonly applied measures in measuring the performance of individuals, journals, institutions and countries in research. It is argued that such counts provide a general view of the production activity in a field or institution as well as highlighting an individual's performance. In South Africa, the Department of Higher Education and Training through the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003, expects every academic to publish at least 1,25 articles annually in journals the Department has accredited. Institutions receive financial rewards for meeting this target and are penalised for failing

to meet it (Schulze 2008:644). Therefore, the most commonly used method to measure research productivity and output of higher education institutions is the counting of publications in accredited journals, books and conference papers (Fox 1992; Creamer 1998; Dundar and Lewis 1998; Porter and Umbach 2001; Onyancha 2010).

Scholars have criticised this method of equating the measuring of research output with journal publications. Moed *et al.* (2004:26) argue that journals are not equivalent elements in the scientific process, as they differ widely in importance, and they are challenged as the 'gold standard' by new types of publication behaviour, particularly electronic publishing. Ashworth and Harvey (1994:110) base their criticism on the fact that patents and licences are also relevant, particularly in departments in which a significant portion of the work is practical and applied. They argue that groups of academic staff that are involved in this form of innovative research activity are disadvantaged if only publications in journals are used as the main criterion in judging research productivity. Vaughan (2008:91) mentions that instead of an emphasis on the number of publications, the focus should rather be on a subsidy system that inspires institutions to aim for a level of scholarship that is able to withstand the scrutiny of an international audience. Vaughan (2008:92) states that the country should consider using the National Research Foundation's rating system instead of the publication count. The policy should emphasise quality rather than quantity, as publication count does not provide any indication as to the quality of the research carried out.

Research output of South African Universities

The following table indicates the total publication output of higher education institutions by clusters. This is from the year 2006 to 2011. For the purpose of this article, the clustering of institutions is based on their individual proportions, that is, the volume of research production.

Table 1 indicates that the five institutions in Cluster A which have traditionally produced more than 60% of publications outputs experienced a gradual decline in their overall sector contribution from 62% in 2006 to 54,2% in 2011. It is clear that the percentage share of overall output produced by the University of Pretoria has been dropping steadily over the past six years from 15% in 2006 to 11.7% in 2011.

It can also be noted that both Cluster B and Cluster C institutions, that is, the seven institutions that traditionally produced about 30% of outputs and the eleven institutions that traditionally produced less than 10% of overall research publications outputs respectively, have been increasing their publications outputs over the past six years. The percentage share of overall output produced

**Table 1: Percentages of research outputs by clusters of institutions:
2006 – 2011**

Cluster A	2006	2007	2008	2009	2010	2011
UP	15%	14.9%	14.2%	13%	12.2%	11.7%
UCT	11.3%	13.1%	13%	13%	12.9%	11.7%
UKZN	13.5%	11.3%	11.7%	12.2%	11.8%	11.2%
SU	11.7%	11.4%	11.4%	11.5%	10.6%	10.3%
Wits	10.5%	11.7%	10.1%	10.1%	9.6%	9.3%
TOTAL	62%	62.4%	60.4%	59.8%	57%	54.2%
Cluster B	2006	2007	2008	2009	2010	2011
UNISA	7.3%	7.1%	7.8%	6.9%	7.5%	7.1%
UJ	4.8%	4.5%	4.7%	5.1%	6.3%	6.9%
NW	4.5%	4.9%	6%	4.9%	6.0%	6.6%
UFS	5.8%	6.1%	5.3%	5.6%	5.1%	5.1%
RU	3.7%	3.5%	4%	3.9%	3.3%	3.2%
NMMU	2.3%	2.3%	2.2%	2.5%	2.6%	3.1%
UWC	2.5%	2.8%	2.9%	3.1%	2.7%	3.1%
TOTAL	30.9%	31.2%	32.9%	32%	33.6%	35.1%
Cluster C	2006	2007	2008	2009	2010	2011
TUT	1.3%	1.3%	1.7%	1.4%	1.9%	2.2%
UFH	0.9%	0.9%	1%	1.5%	1.5%	1.6%
UL	1.3%	1.3%	1%	0.8%	1%	1.3%
CPUT	0.8%	0.6%	1%	1.4%	1.6%	1.3%
UV	0.2%	0.2%	0.4%	0.6%	0.8%	1.2%
DUT	0.4%	0.5%	0.3%	0.5%	0.5%	0.8%
VUT	0.3%	0.2%	0.2%	0.4%	0.5%	0.7%
UZ	0.7%	0.6%	0.8%	0.8%	0.7%	0.6%
CUT	0.5%	0.4%	0.3%	0.4%	0.4%	0.4%
WSU	0.3%	0.2%	0.2%	0.3%	0.5%	0.4%
MUT	0.1%	0%	0%	0%	0.1%	0.2%
TOTAL	6.8%	6.2%	6.9%	8.1%	9.4%	10.7%

Source: Adapted from DHET (2011:16)

by the University of Venda in Cluster C has been increasing over the past six years from 0.4% in 2005 to 0.8% in 2010. However, despite an increase in publication outputs of Cluster B and Cluster C institutions, the overall research publication output of these institutions remains low. Furthermore, the fact that a high proportion of research publications are contributed by only five institutions is a problem that needs to be addressed. Given the issues and background, the article evaluates the implementation of the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003, however paying specific attention to the University of Pretoria and the University of Venda. The purpose of the study is to investigate the policy implementation challenges that exist in both universities in the effort to effectively implement the research output policy, and thereafter suggest options for overcoming these challenges with the aim of improving and increasing research output produced by higher education institutions.

RESEARCH PROBLEM

The nature of public policy, its development and subsequent implementation in real time, is one of the most important features of defining democratic societies and, more specifically, of those in transition (Manganyi 2001:27). Public policies contain broad guidelines, procedures and recommendations to encourage concerted efforts toward the attainment of stated government goals. South Africa as a developmental state relies on public policies to address problems in the country and bring about change in the status quo. However, for public policies to be successful in achieving the intended outcomes, there is a need for appropriate implementation of these policies. Public policy implementation is a crucial process and its success relies on the capacity of all the respective role players to execute their responsibilities effectively, efficiency and economically.

The main problem that encouraged this study was the recognition of a gap between the intentions of the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003, and what is evident in practice. When the government introduced the national policy on the measurement of research output in 2003, the aim was to sustain current research strength and to promote research and other knowledge outputs required to meet national development needs (DHET formerly DoE 2003:4). The aforementioned aims would be achieved through the encouragement of research productivity, marked by rewarding quality research output, enhancing productivity by recognising the major types of research output and by using proxies to determine the quality of such research output. Higher education institutions are tasked with the responsibility to effectively implement this policy

and to ensure increased research capacity and productivity in order to improve research output. However, the policy does not seem to be effectively achieving this goal. The policy has been in place for eight years but research outputs of higher education institutions are very low at about 0,4 research outputs per researcher per year. South Africa spends 0,92% of GDP on research and is still struggling to reach the elusive 1% spend, which is the government's strategic aim (International Education Association of South Africa 2011:16).

The Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003 sets out all the rules, procedures and criteria for recognised research output. However, only a relatively small number of South African scholarly journals and books are recognised by the Department as meeting the minimum requirements for state subsidy as outlined in the policy. A small percentage of these journals appear on the ISI Citation Index (9,0%) and the international Bibliography of Social Sciences (5,5%) (Ligthelm and Koekemoer 2009:28). An important reason for this low research output by higher education institutions is closely related to the fact that a high proportion of research publications are contributed by a small number of academics; and also because of the high rejection rate by the Department of Higher Education and Training of research publications submitted by researchers of higher education institutions due to not meeting the requirements of the policy. The 2011 Report on the Evaluation of the Institutional Research Publications Output highlighted that a large number of submitted outputs were not recognised based on non-compliance with the policy, for example, 67% of these books were not scholarly (DHET 2011:26). It is clear that the acceptance rate of good scholarly research outputs is typically quite low, so the chances of rejection are always relatively high.

It is evident that the policy faces the serious challenge of failing to achieve the intended outcomes, and the main cause of this challenge is attributed to the inability of higher education institutions to effectively carry out the implementation process. The unsuccessful implementation of the research output policy could be due to the universities' incapacity (institutional, human, financial), owing to a number of factors, however this is to be discussed in the subsequent sections of the article.

RESEARCH METHODOLOGY

The methodology used in this article is qualitative, because findings were not derived by statistical procedures or other means of quantification, but the research relied on qualitative measures including interviews, case studies and literature review (Straus and Corbin 1998: 10). Qualitative research is typically

associated with participant observation, semi and unstructured interviewing, focus groups, literature review, and language based techniques such as conversation and discourse analysis (Brannan 1992:59). For the purpose of this article, three sets of interviews were conducted with those involved in the implementation of the research output policy. The participants were selected through purposive sampling method, whereby participants are chosen based on who, in the judgment of the researcher, will best supply the necessary information. Therefore, the sample originated from those individuals at the University of Pretoria and the University of Venda residing in the research offices who are directly involved in the implementation of the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003. Relevant employees of the Department of Higher Education and Training were also interviewed, in order to gain insight on the measures and mechanisms put in place by the Department to monitor and support higher education institutions so as to ensure a proper and effective implementation process of the research output policy. The purpose of this is to draw from the experiences of those who are directly involved in the implementation process.

An interview schedule comprising of 18 carefully constructed questions inquiring into the status of the implementation of the policy, was utilised to interview those involved in the implementation process at the University of Pretoria and the University of Venda. Questions posed to the University of Pretoria and the University of Venda had to be similar and structured in order to allow for comparative analysis. The interview held with officials in the University Education Policy Development Unit within the Department of Higher Education and Training was also structured, and inquired about the efforts of the Department in supporting higher education institutions and ensuring proper and efficient policy implementation processes of the research output policy.

The study uses the 5-C Protocol Model of policy implementation as a critical apparatus for analysing data acquired interviews and textual analysis of relevant books and documents. This provides the researcher with critical aspects of the policy that are important for the implementation process.

THE 5-C PROTOCOL OF POLICY IMPLEMENTATION

While there is no single exhaustive theory of public policy implementation that has been adopted thus far, there is however evidence that a measure of consensus exists with regard to the critical variables that impact on implementation. These variables include the content of the policy; the context in which the policy is implemented; the commitment of the policy implementers; the capacity of government institutions; the clients the policy is expected to

serve and coalitions of influence. Cloete (2006:194) argue that these five interlinked variables also known as the 5-C Protocol are critical to the success of policy implementation. It is important to highlight that even though every case of policy implementation is unique, these variables can be applied to a whole range of cases to serve as a frame of reference for successful implementation (Brynard 2005:13). Therefore, for the purpose of this study, the 5-C Protocol Model will be used as a critical apparatus for evaluating the implementation status of the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003.

Factors affecting the implementation of the research output policy

The following section deals with factors leading to difficulties in effectively implementing the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003.

The capacity of the university to implement

For policy implementation to be successful, it is fundamental for institutions to have the necessary administrative and other abilities required to carry out the implementation process. The research revealed that it is important for higher education institutions to have the necessary skills and resources to implement the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003. These necessary skills and resources include the availability of sufficient numbers of qualified staff within the research offices to evaluate and capture research output data, and also academic and research staff having skills and greater ability to perform useful research, together with financial resources and infrastructure that will allow them to effectively engage in and produce quality research.

The assessment of the implementation of the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003, within the University of Pretoria and the University of Venda depicts severe capacity limitations. The lack of sufficient staff was found to be of particular concern during the implementation process. Both Universities and the Department of Higher Education and Training sited this as a burning issue and a major stumbling block. The implementation of the research output policy at an institutional level requires the production of sufficient quality research output focusing on national development needs, the capturing of research output and the evaluation of submitted research output against the requirements of the policy. All this requires adequate personnel which is lacking at the moment. In other words, the implementation of the research output policy is personnel intensive.

Data yielded revealed that the University of Pretoria lacks sufficient administrative staff in the Research Office, whereas the University of Venda lacks both the administrative staff in the Research Office and academic staff having appropriate qualifications to oversee postgraduate research and advance knowledge creation. The University Education Policy Development Unit within the Department of Higher Education and Training which is charged with managing the national research output policy and providing support to higher education institutions also has a shortage of staff.

The important question in understanding how capacity influences implementation effectiveness is not simply one of ‘what capacity is required and where?’ but also of ‘how this capacity can be created and enhanced?’ Effective implementation of public policies can be achieved by building capacity where it is lacking. The analysis of the content of the research output policy reveals that mechanisms to ensure adequate capacitation of the actors involved in the implementation process are not incorporated in the policy.

The content of the policy and the extent of its implementation in the university

The fundamental question that must be raised at this level of inquiry about the implementation of the content of the research output policy within the University of Pretoria and the University of Venda is twofold. On the one hand, it is important to indicate on the basis of the data collected, whether the policy is regulatory, distributive or redistributive in content. On the other hand, based on the data collected there is a need to indicate whether the content of the policy is implementable. In a sense, what needs to be interrogated is whether the content of the policy is realistic and easily understood by all parties involved in the implementation process.

There is a clear regulatory content in the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003. The policy stipulates rules and procedures that regulate how higher education institutions are expected to produce research output. This regulatory content is expressed in the policy’s expectation that every academic publish at least 1,25 articles annually in journals that the Department has accredited. Higher education institutions receive financial rewards in the form of subsidy for meeting this target, and are penalised for failing to meet it.

The regulatory content of the research output policy is coupled with a strong redistributive content evident in the policy’s intention. The democratic government saw a need to overturn the inheritance of a fragmented, racially divided and inequitable apartheid higher education system by introducing the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003, as the new funding framework. This

funding framework is a goal-oriented and performance-related redistributive mechanism that explicitly links the allocation of funds to academic activity and research output contributing to the social and economic development of the county.

The data collected also suggests that not all parties involved in the implementation of the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003, understand its content. Whereas employees in the research offices at both the University of Pretoria and the University of Venda understand the content of the policy, researchers in both universities seem to be struggling in this regard. This is exemplified amongst other things by the inability of researchers to comply with the policy and submit appropriate research output meeting the policy requirements. This presents a threat to the potential that the policy has to resolve, in a targeted manner, the nature of the problem it seeks to address. Public policy is intended to be an integrated intervention that seeks to resolve a specific problem experienced collectively and has been politically constructed as warranting solution. To this extent, public policy presupposes a type of theory intended for social change. Therefore, there is a need for all the stakeholders involved in the implementation of the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003, to have a mutual understanding of the policy in order to ensure effective and efficient implementation processes.

The research also revealed that there are gaps in the policy content which impact policy implementation. These gaps include the research policy's non-recognition of other research outputs important to academics such as textbooks, artwork, music and artefacts and other important journal indices in which academics publish.

The role of the institutional context in the implementation of the policy

According to Brynard (2005:17), the focus should be on the institutional context which, like other variables, will inevitably be shaped by the larger context of social, economic, political and realities of the system. In South Africa, social inequalities were entrenched and replicated in all spheres of social life, as a product of the systemic exclusion of black people and women under colonialism and apartheid. The higher education system was no exception. Social, political and economic discrimination and inequalities of a class, race, gender, institutional and spatial nature strongly shaped, and continue to shape, the South African higher education system. Consequently, South Africa's democratic government dedicated itself in 1994 to transform the higher education system as well as the inherited apartheid social and economic structure and therefore institutionalising a new social order.

There was a need to formulate a comprehensive research policy framework that would suit the needs of a democratic South Africa and overturn the inheritance of a fragmented, racially divided and inequitable apartheid higher education system. The Policy and Procedures for the Measurement of Research Output of Higher Education Institutions, 2003, was formulated in the context of the social, economic and political variables confronting the higher education system.

Though policy makers had considered the social, economic and political variables, they have often failed to connect institutional environmental variables of higher education institutions to deliver upon the mandate. It is evident in the Policy and Procedures for the Measurement of Research Output of Higher Education Institutions, 2003, that higher education institutions are given a greater developmental mandate to produce scientific knowledge output required to meet national development needs, however, data collected reveals that institutional context of universities has a great bearing on the manner in which universities will successfully achieve their research mandate and properly implement the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003.

There are various contextual factors impacting policy implementation at both the University of Pretoria and the University of Venda. Firstly, when comparing both universities, it is clear that the University of Pretoria as a Historically White University (HWU) has always been well-resourced and well developed, whereas, to a large extent, the opposite exists in the University of Venda which is a Historically Black University (HBU). Although the democratic government has put intervention programmes and policies in place to address this imbalance and also to ensure that the role that HBU can play in the social and economic development of the people and the country is enhanced, these universities are still deeply divided in terms of material resources, research performance, research capacity, academic credibility and in the connectedness to international research environments. All these are factors in the institutional context which hamper implementation. The University of Venda finds it difficult to implement the research output policy as compared to the University of Pretoria which is well resourced.

The lack of effective strategic direction demonstrated by the profound absence of specific institutional programmes of action particularly designed to regulate the implementation of the research output policy in both universities, is another factor in the constitutional context hampering implementation. If an institution lacks a scientific mechanism designed to guide all parties involved on what and when is required of them, it is likely for the implantation process to be unsuccessful. Both the University of Pretoria and the University of Venda lack such a mechanism.

The commitment of actors to implement

The commitment of those entrusted with carrying out implementation at various levels is one of the key factors identified as crucial to the successful implementation of policy. The use of appropriate leadership and management styles, motivation and reward systems can have an impact on implementers' attitudes and therefore commitment. According to the implementation data collected, it is evident that the University of Pretoria and the University of Venda use various strategies to motivate and encourage researchers so that they can be committed to research production. Firstly, the different reward systems used by both universities, such as research bonuses, publication awards and research funding, play a crucial role in promoting a high performance research culture and commitment. Secondly, interventions to promote research such as the Post-doctoral Fellowship and PhD funding where participants are funded for a couple of years and in turn produce useful original research, are also meant to ensure the commitment of researchers. Thirdly, the mission and vision statements of both the University of Pretoria and the University of Venda also indicate the commitment of these universities to achieve their research mandate and properly implement the national research output policy.

The data reflects the actual implementation of the policy however depicts low levels of commitment from some of the actors on whose behaviour implementation depends. This is indicated in a number of instances identified during field interviews:

- Responses received from respondents regarding the main challenges faced in the effort to effectively implement the research output policy revealed that researchers tend to submit research output not meeting the policy requirements for subsidy. It seems as though researchers do not consult the policy when producing research and choosing journals in which to publish. This is an indication of lack of commitment.
- Lack of commitment is also evident in the fact that some researchers do not respond on time when certain documentation that would qualify their publications is missing. The research output policy explicitly states that all documents and information must be submitted to the Department of Higher Education and Training timeously and must be accurate. However, researchers tend to submit their research output to the research office subsequent to the deadline.
- At the University of Pretoria data capturers are primarily departmental administrators who treat research output data capturing as an add-on to their portfolios, and therefore tend to inaccurately capture data. This behaviour depicts lack of commitment to implement the research policy by departmental administrators.

- The fact that a high proportion of research publication units (80%) are contributed by a small number of academics (20%) suggests that the majority of academics are not committed to the implementation of the research output policy. Once the academics contributing to the 80% of units leave the university, the units will drop instantly, thus impacting on the commitment of the university's mandate to produce research.

The role of clients and coalition

To ensure successful implementation of the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003, there is a need for regular consultation, debate and dialogue with those affected by the policy. The Department of Higher Education and Training and higher education institutions have obvious stakes in the implementation process; however, it is important to identify other key stakeholders and to understand their interests and strategies in relationship to those of decision-makers and implementers (Najam 1995:52). The resources such stakeholders can harness (financial, technological, informational and even moral authority) can significantly direct policy implementation.

Data yielded from respondents revealed that the Department of Higher Education and Training has a tendency of making changes to the lists of journals without prior consultation with higher education institutions and requires immediate implementation. This act discourages researchers who may have engaged with a journal for the publication of an article for over 18 months only to realise that it is no longer on the list of the policy accredited journals when it is published.

Communication as an important requirement for effective implementation

Although communication does not fall under the domain of the 5-C Protocol, it has been included as a sixth critical variable for implementation in this study. The importance of communication for policy implementation lies in the fact that it is through communication that orders to implement policies are expected to be transmitted to the appropriate personnel in a clear manner, while maintaining accuracy and consistency. As a result of inadequate and unclear information, those responsible for the implementation of a policy initiative may be confused as to what exactly is required of them.

Evidence yielded by the research suggests weak communication between the critical constellations responsible for policy implementation at both the University of Pretoria and the University of Venda, and also between the Department of Higher Education and Training and higher education institutions. This is demonstrated by the misinterpretation of the policy content, particularly by some academic and research staff. The fact that some researchers struggle

to comply with the policy requirements for subsidy is an indication of a gap in communication between researchers, research offices and the Department of Higher Education and Training. It seems as though there are unclear implementation instructions. By the same token this is further exacerbated by the fact that sometimes getting feedback from the Department of Higher Education and Training on submitted research output takes long. Although respondents at the Department of Higher Education and Training mentioned that there is constant communication with higher education institutions through mini-workshops and meetings where presentations focusing on policy requirements are made and clarities are resolved, the actual implementation data collected provides evidence that these visits are not as often as they should be and therefore not efficient. This is exemplified amongst other things by the high rejection rate of research output not meeting the policy requirements. There is also an identified communication gap between the Department of Higher Education and Training and higher education institutions on issues regarding the annual modification of the different lists of journals for subsidy, where the Department makes changes on the list of accredited journals and requires immediate implementation without any prior communication with higher education institutions. These are the communication challenges that hinder effective implementation of the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003.

POTENTIAL SOLUTIONS

To this extent, drastic measures will have to be taken to expedite a turnaround if the implementation status quo is to improve significantly, and therefore improve and increase research output produced by higher education institutions. This leads the article to the following recommendations.

Decentralisation of the research output capturing process

In order to overcome the challenge of insufficient human resource capacity, data capturing should be centralised, where there will be a pool of employees residing in the research office employed exclusively to evaluate and capture data. Unlike the current decentralised system employed by the universities where research outputs are captured in the various academic departments by different people who have their own understanding of the policy, and are sometimes not even aware of all the requirements for subsidy publication, the centralised system will ensure more quality control. Both universities should consider having a pool of a minimum of fifteen employees not exceeding twenty who will be charged with

the responsibility of collecting hard copies of research output, capturing it on the RIS system, managing the system and ensuring that submitted output meets the subsidy requirements of the policy.

Fostering research collaboration

It was highlighted that the University of Venda lacks academic staff having appropriate qualifications to oversee postgraduate research and advance knowledge creation. The implementation of the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003, at an institutional level requires the production of sufficient quality research output focusing on national development needs, and this output can only be produced by research and academic staff. Therefore, the availability of qualified research and academic staff is a critical driver in ensuring the effective implementation of the research output policy. It is imperative for the University of Venda to form research collaborations with other universities, and collaborations amongst authors within the university should also be encouraged and promoted. These collaborations can serve as a research capacity building strategy.

Expansion of the policy content

Other categories of research output should be incorporated in the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003. There should be an expansion of subsidised research output to include artwork, textbooks, music and artefacts. There appear to be few rewards for academics who take part in many of the other research related activities that are excluded by the current measurement system, for example, academics who serve as referees for journals, research seminar participation, supervision of Masters and PhD students, cross discipline etc. While the Department of Higher Education and Training categories listed in the policy remain the primary reference point for research output, it must be recognised that a myriad of research output can result from such activities. Therefore, there is a need to establish indicators that would incorporate neglected research output and other research related activities contributing to the advancement of knowledge production, in order to reach a fair and reasonable measurement of research output.

It is also recommended that the Department of Higher Education and Training conduct an investigation to determine these other journal indices in which academics publish, so that they can be considered for accreditation. The policy should be reviewed regularly and changes should be implemented where gaps are identified, however all stakeholders should be involved in this process.

Monitoring and evaluation

It is recommended that the Department of Higher Education and Training develops a monitoring and evaluation division within the University Education Policy Development Unit to help monitor progress towards the achievement of the research output policy aims and objectives, the impact of the research output policy on higher education institutions and the country's development, and to assess the effectiveness of the policy and provide clear guidance on areas that need to be changed. The Monitoring and Evaluation Division should regularly visit higher education institutions to help them with some of the challenges they face. Research participants from the University of Venda particularly suggested that the Department of Higher Education and Training meetings with staff who capture data should be diarised and the invitation extended to the University on an annual basis, as this is currently not the case.

Monitoring and evaluation of the Policy and Procedures for the Measurement of Research Output of Higher Education Institutions, 2003, will have positive benefits. For example, monitoring and evaluation will bring about better understanding of the intended and unintended outcomes. These results should be well documented, and higher education institutions be provided with copies. By so doing, higher education institutions will be able to redefine their implementation strategies so that the policy can have optimum impact. When the implementation of the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003, is monitored and evaluated at regular intervals on a continuous basis, challenges can be detected earlier, and if the need arises, new or revised policy alternatives can be initiated.

It is also recommended that both universities develop institutional monitoring and evaluation divisions which will be based in the research offices so as to ensure effective implementation of the research output policy at an institutional level. The division in each institution should be responsible for conducting a thorough self-monitoring and evaluation of the university's research performance and its implementation of the research output policy. The division should monitor and evaluate each faculty's research performance by focusing on the strengths, weaknesses and achievements. Faculties experiencing challenges with implementing the research output policy should be assisted accordingly.

The development of the research output communication division

The implementation of the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003, is decentralised with various stakeholders at both national and university level playing a part.

Referring to the research findings, it is also clear that the University of Pretoria uses a decentralised data capturing system where research outputs are captured in the various academic departments by departmental administrators before they can be sent to the research office for final evaluation and thereafter to the Department of Higher Education and Training. Thus, this indicates the need for continuous communication amongst the various stakeholders for effective implementation of the research output policy. Referring to the interview responses, such communication seem to be lacking amongst the various stakeholders.

It is therefore recommended that for the Department of Higher Education and Training to improve its communication mechanisms so as to reach all higher education institutions, it should develop a division of research output communication within the University Education Policy Development Unit of the Department. This division will specifically be charged with providing information to all stakeholders; ensuring that higher education institutions receive timeous feedback on submitted research output; regularly communicating with higher education institutions about the policy objectives, the policy requirements for subsidisation and issues regarding the modification of the list of accredited journals.

Internal workshops on recognised research output

In order to foster maximum communication at all levels of implementation at an institutional level, and therefore ensure effective implementation of the research output policy, it is recommended that the University of Pretoria and the University of Venda research offices consider conducting workshops on recognised research outputs where researchers attend and presentations are made. These workshops should be conducted quarterly. The workshops will help remedy the challenge of the misunderstanding of the policy content by some researchers which is reflected in their inability to comply with the policy requirements for subsidy.

CONCLUSION

Higher education institutions play an essential role in producing scientific knowledge through applied research that will enhance the quality of life of the society and also strengthen the economy. In this regard, research output of higher education institutions becomes increasingly important for growth and development of a state. Therefore, the country's growth and development relies on the proper and effective implementation of the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003. In the problem statement of this article, it was mentioned that the policy has

been in place for eight years but research outputs of higher education institutions are very low at about 0,4 research outputs per researcher per year. South Africa spends 0,92% of Gross Domestic Product on research and is still struggling to reach the elusive 1% spend, which is the government's strategic aim. An important reason for this low research output by higher education institutions is closely related to the fact that a high proportion of research publications are contributed by a small number of academics; and also because of the high rejection rate by the Department of Higher Education and Training of research publications submitted by higher education institutions due to not meeting the policy requirements. This proves that higher education institutions are struggling with the implementation of the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003. Therefore there was a need to investigate the policy implementation challenges confronted by higher education institutions in the effort to implement the research output policy and provide recommendations for overcoming these implementation challenges with the aim to increase and improve universities' research output.

The study for this article found that the University of Pretoria and the University of Venda are confronted with massive challenges in the effort to implement the policy. These challenges include lack of human resource capacity; lack of the commitment to implement; lack of communication between various stakeholders involved in the implementation process; incorrect data capturing; misunderstanding of the research output policy content characterised by the tendency of researchers to submit research output not meeting the policy requirements of subsidy; and ineffective internal control measures. Furthermore, the absence of regular monitoring by the Department of Higher Education and Training was also identified as another hindrance to effective implementation. The abovementioned recommendations should be considered for improving the implementation of the Policy and Procedures for the Measurement of Research Output of Public Higher Education Institutions, 2003, and therefore improving and increasing research output of universities required to meet the country's developmental needs.

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