Evaluation of Strategies for Building a Research Culture – An Empirical Case Study at an African University

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Abstract

The impact of change strategies for developing research at an African primarily undergraduate institution is considered using a case study of the University of Botswana. After an analysis of the existing situation, a short research policy, written in understandable terms, was developed. The policy was structured so that it could be used for subsequent compliance assessment. A lengthy approval process involving consultation with all faculties increased institutional buy-in. A new Office of Research and Development managed the implementation. Motivators such as research awards and recognition were introduced to encourage staff to develop research programmes. Simplified but transparent internal funding mechanisms were also introduced. Staff attitude surveys were undertaken just after the policy was implemented, and again approximately 18 months later. The impact of the changes was assessed through a compliance exercise. The survey showed a positive change in staff attitude to research, despite a significant increase in teaching workload during the period. There was also a sustained increase in competition for available internal research funds. Compliance with the policy increased, although full compliance was achieved in only a few areas.

Introduction

In a previous publication (Studman 2003a), the first author of this article described a variety of factors involved in the development of a new Office of Research and Development at the University of Botswana. Although in a developing country, which consists mainly of the Kalahari Desert, the University of Botswana has received relatively strong financial government support since its establishment in 1982, and it has experienced dramatic growth in the number of applications for admission from students eligible for

tertiary education. Thus, by 2005 there were approximately 15,000 equivalent full-time students.

The factors that supported the financial well-being of the country and the consequent demand for tertiary education included the combination of a stable society, the discovery of diamonds in 1967, a democratic and peaceful electoral system, and generally benevolent governance with low corruption. However, in recent years, economic pressures, such as the demands on government funding for the civil service, education and other services, have forced the government, to exert more control over expenditure, including restricting the level of support for the university, while still requiring it to accept increasing numbers of students. As a result, between 1997 and 2003, the overall student-staff ratio deteriorated from 12:1 to 16:1. In practice, due to staff vacancies, the figure was often around 19:1.

As an institution with a vision for academic excellence (University of Botswana, 2003), the university recognised and acknowledged the principles of research-led teaching (Hattie & Marsh, 1996; Geiger, 1993; Lipset, 1994; Pratt, 1997; Zubrick, 2000), despite its predominantly undergraduate teaching history. The role of research in national development was also recognised (Studman, 2003b). However, in the late 1990s the university also recognised that its research activity was not satisfactory, and so set about improving the situation. It shared the problems of many other predominantly undergraduate institutions as described by Hazelkorn (2002).

Studman (2003a) outlined changes introduced to develop the research culture at the university. An analysis of the strengths, weaknesses, opportunities and threats (SWOT) of a given situation was conducted (SWOT analysis is a commonly used strategy to understand any situation). The key challenge areas identified were: 1) no strategic planning or alignment of research with university goals and strategies; 2) poor use of internal funds; 3) an absence of accountability for resources; 4) no management of the quality of outputs; 5) no structure for commercialisation of research; 6) limited postgraduate research; 7) insufficient motivation for some staff; 8) administratively complex research procedures, but no effective research support structure; 9) increasing teaching workloads; 10) insufficient training in research management, methodology, and communication; 11) no database of research capabilities, and few reported research outputs; and 12) lack of funding source information. In addition, some staff preferred private consultancy to research for financial reasons, sometimes at the expense of their teaching responsibilities. Clearly, major changes were required.

After prioritisation, and after assessing the available capability of the Office of Research and Development staff, strategic changes introduced initially included: 1) development of research policy; 2) recovery and utilisation of internal funding through simplified, transparent procedures; 3) introduction of a quality and accountability management programme; 4) introduction of encouragements to undertake research; and 5) training in research proposal writing.

As recommended by Drummond (2003), we developed a plan to evaluate the effectiveness of changes. While an ultimate measure of success in expanding research is an increase in the number of research outputs (i.e., papers, books, presentations, patents), it is too early for the changes described in this paper to be fully realized. Moreover, as Ramsden

(1994) has pointed out, many factors may affect research outputs. Other recognised measures such as the Frascati system (an international standard for assessing performance in research and experimental development which was developed by the Organization for Economic Co-operation and Development at a meeting in Frascati, Italy [OECD], 2002) were deemed to be inappropriate to the current level of the university's development. Also, due to the challenges listed later in this paper, complete data are not yet available. Therefore, we opted for a longitudinal study of staff attitudes toward research as a clearer indication of the impact of changes introduced by the research office.

Intellectual challenges exist with the assessment of some of these goals. The perception of quality management in a university context is still a challenging concept, misunderstood by academics and management alike (Houston & Studman, 2001). Internationally the Frascati system has been largely adopted as a measure of research activity and development (OECD, 2002). The Association of Commonwealth Universities has also developed benchmarking procedures for evaluating research offices (Waugaman, 2004; Kirkland & Day, 2005).

Limited support was also provided to enable staff to identify external research funding opportunities. Other desirable changes, such as the development of postgraduate research studies; publicity on research activity; management of consultancies; and policies on intellectual property, ethics and research centres, were developed but delayed for various reasons until 2005.

Development of Research Policy

A research policy was developed and approved in 2002 (University of Botswana, 2002; Studman, 2004). The policy was written in a format that enabled an evaluation of compliance. It was given high priority and developed in harmony with the university's overall strategic goals, as recommended by Drummond (2003).

The policy was designed to be straightforward and relatively short. It established the basic aims of the university with regard to research, and emphasized those areas where growth was desired. The policy was then circulated by e-mail throughout the university, and went through the normal approval procedures. At the University of Botswana, this was a lengthy process involving several committees, from departmental level to senate and, finally, to the university council. This process typically takes around two years. The research policy was no exception. Therefore, it was necessary to utilize the policy as a working document for decision-making even before it could be approved. The policy indicated that the Office of Research and Development would be responsible for implementation, and that the guidelines would be placed in the university handbook. In this way, the practical aspects of policy implementation could be undertaken simply by using a document that could be changed relatively easily, without seeking faculty, senate and council approval.

Once the policy was approved, attempts were made to familiarise staff with its content. Few academics can be expected to find time to read a research policy, so we decided to remind staff continually about the conditions and aims of the policy. Electronic media, meetings with faculty boards and faculty executives, individual

consultations, and reports to senior management all served the purpose. It was essential to refer to the research policy frequently in discussions with staff so that gradually they became familiar with its terms.

Recovery and Utilisation of Internal Funding through Simplified, Transparent Procedures

The majority of research funds were being allocated to faculties on a per capita basis. Faculties were using their own procedures for approval and allocation of funds. In many cases, these procedures were obscure, poorly advertised, and often excessively bureaucratic and complex. As a result, most faculties were stockpiling research funds in internal accounts. With the deans' agreement, early in 2001 all unused research funds were returned from faculties to a central funding pool. In addition, a review of all existing research projects was initiated, and funds in inactive accounts were also returned to the central funding pool. In this way, almost P3 million (US $800,000), or roughly four years of internal funding, was recovered. The per capita system was abandoned. To meet faculty demands for discretionary research finding, some funds (roughly P 600,000 in total) were then re-distributed to faculties based on 1.3 times the total funding each faculty had allocated in the previous year. The message to faculties was clear: use the resources or lose them. After the first two years of operation under this system, the faculty component was calculated according to the number of reported research outputs. Both methods were unpopular with some deans.

The remainder of the available money was allocated through a series of university-wide funding rounds. In complete contrast to the previous system, a simplified application form was drawn up, deadlines were set for applications, and funding rounds were advertised throughout the university. Initially, several funding rounds were advertised, including those that focused on specific topics such as HIV/AIDS, or were limited to specific areas (e.g., new staff or large projects). The initial response was moderate. After a 12-month trial, we changed to two rounds per year, one in February and one in September. As a result, interest in making proposals increased dramatically. By 2005 applications for funds were typically around P4 million to P5 million per annum, with up to 50 applications each year. This represented a quadrupling of the number of research proposals. The university's financial administration responded by doubling the internal research funding allocation to P1.6 million per year.

The process of selecting projects was also made transparent. Initially, project proposals were sent to faculty research committees for an assessment of quality. Faculties were asked to comment on and rank their proposals. However, they were not allowed to reject proposals at this stage. All proposals were then returned to the central administration. At the second stage, representatives of the faculties were asked to assess all proposals on their strategic merit. To enable this, a series of strategic criteria were drawn up. These criteria were important to the specific aims of the university's research policy, and were also chosen so that in principle they applied equally well to any area of research. Examples of such criteria included potential for external funding; evidence of collaboration among different departments, faculties and external researchers; and involvement of postgraduate students. Finally, proposals had to justify their

relevance to the strategic goals and vision statements of the university and the country.

After various trials with different versions, the university eventually settled on a system in which new staff were given priority for funding, up to a fixed limit. In this way, staff members were given the opportunity to access funds and undertake research when they first arrived at the university.

An important aspect of the internal funding system was its transparency. Full details of the procedure were publicized, and before each round a workshop was held for prospective applicants. At this workshop the procedures were discussed and the guidelines were explained, with the intent of aiding staff to complete application forms. The internal round was also an opportunity to provide practical training on writing research proposals for external funding.

Introduction of a Quality and Accountability Management Programme

There was no recognizable mechanism for ensuring staff accountability for research funds provided. In some cases there was no evidence of research activity, suggesting that staff were simply pocketing the money. Accountability checks were introduced, including the requirement for an annual financial report and a closing report giving a full financial summary of the use of funds. Failure to provide these meant that the funds would be recovered from staff salaries.

Staff were also expected to demonstrate how they were using the research funds by providing a one-page report every six months, with a more detailed report each year. In these reports, staff were expected to show some evidence of progress. If reports were not produced, funds were frozen and subsequently returned to the central pool for reallocation. In addition, faculty research committees were required to distribute funds allocated to them during the financial year. Any remaining funds at the end of the year were returned to the central pool.

Introduction of Encouragements to Undertake Research

Mechanisms introduced to encourage research growth are outlined below:

Research Awards

A system of recognizing and rewarding top researchers was introduced. This included a cash prize as well as recognition of the individual researcher. The awards were made to top researchers, the best emerging staff, and the best team leader. Separate awards were made for Sciences and for the Arts.

Key Accounts

New accounts were introduced so staff members could receive part of the overhead or administration income generated by the university from research activities. The policy specified that 40% of the overhead charge would be made available to the staff member for research related activities, while 20% would go to the department. In this way, both the researcher and the head of the department were encouraged to seek externally funded projects with significant overheads. In practice, the university set a minimum level of 15% for the overhead charge. Even so, it was often difficult to encourage researchers to include the overhead charge as part of the overall cost of their project proposals. Researchers only rarely sought more than the minimum 15% overhead specified. In 2005 the concept of any form of full cost recovery for research

projects had yet to be introduced to the university culture.

Community of Science Databases

The university subscribed to this database of research funding information, providing weekly e-mail alerts of research opportunities and enabling all registered staff to search for funding in their particular area of interest.

Database of Research Outputs

Staff outputs were recorded in a database made available on the university website. This represented the beginnings of a marketing tool to demonstrate to the country the research activity of the university. However, we experienced great difficulty in obtaining accurate details of research outputs from staff. There were glaring inconsistencies between information reported in annual appraisals and research funding proposals, and the information reported to the database. Attempts to establish the database as the only record of research outputs, to be used by the entire university for promotion and appraisal purposes, were unsuccessful.

Appointment of Assistant Directors

Additional staff positions were created in Research and Development. The two key areas identified for priority were quality management and research funding. After many delays, including the resignation of a staff member after three months on the job, more stable appointments were made to these positions late in 2004.

Training in Research Proposal Writing

Courses were run in conjunction with the internal funding rounds as outlined above.

Experimental Study

The target population for the study was the teaching staff of approximately 700 in the seven faculties at the University of Botswana. The university internal telephone directory was used to identify teaching staff. A questionnaire was developed and tested by interviewing 18 randomly selected staff representing all the faculties of the university. The results of this pilot study were used to revise the questionnaire. Questions focussed on research activity, research funding, reasons for doing research, knowledge of university research policy, research awards and overall attitudes in doing research, as well as demographic details.

The questionnaire was mailed to each faculty member, with a numbered return envelope. The numbers were used to identify those who had not responded so they could be contacted for follow-up. A double-blind system ensured that the researchers could not link questionnaire responses to individuals, but at the same time the list of respondents was available to secretarial staff. After two weeks, reminders were sent by university e-mail, with the questionnaire as an attachment. The secretarial staff received any electronic responses and printed them out to preserve anonymity. A pen was sent to respondents as compensation for the time taken in completing the questionnaire. Approximately 18 months later a repeat questionnaire was sent out to the entire university teaching staff, with a similar e-mail follow-up. A numbering system was again used to determine which staff had responded to both questionnaires, although it was not possible to compare responses from the same person directly.

A mini-survey of opinions of Research Office staff was undertaken to determine

whether the university was complying with the research policy, by surveying selected staff with a questionnaire. It listed the 40 research policy statements and asked respondents to assess compliance on a 0–5-point scale. The objective was to test whether the pilot exercise could be extended to a wider selection of staff.

Results

Demographics

The demographics of the two sets of data were very similar. A total of 199 responses were received in the first survey, and 170 in the second. Seventy-five people responded to both questionnaires. In the second survey, 75% of the respondents were male, compared to 73% in the second survey. Hereafter, unless they are identical, figures from the second survey will precede those from the first (which may also be presented parenthetically). In both surveys 36% of respondents had the rank of senior lecturers, 18% (19%) were professors, and 44% (46%) were lecturers. Seventy-two percent (67%) had PhDs, while 27% (31%) had masters degrees.

Overall Attitude to Research

The responses were divided into three groups: those who agreed or strongly agreed with a statement, those who were neutral, and those who disagreed or strongly disagreed.

There were some differences between the two surveys in response to questions about attitude to research at the University of Botswana (U.B.) (Table 1). A total of 80% (69%) of the respondents agreed or strongly agreed with the statement that research is encouraged at U.B. Only 9% (16%) disagreed.

Table 1

Research Attitudes – Percentage Comparison of Results Between the First and Second Surveys

	Agree		Neutral		Disagree	
	First survey	Second Survey	First survey	Second Survey	First survey	Second Survey
Research is encouraged at U.B.	69	80	15	10	16	9
The U.B. research administration assists me to do research	35	44	29	36	36	21
U.B. financial services assists me to do research	38	33	33	42	29	25
In my department, research activities are encouraged and supported	68	74	16	21	16	7
Consultancies should be discouraged for the good of U.B. as a whole	13	15	16	17	71	68
To meet its obligations to society, U.B. should do more research	91	96	7	3	3	2
There has been a positive change in attitude amongst my colleagues in favour of doing more research in the past 12 months	39	46	42	37	19	17
Personally I am more enthusiastic now about doing research than I was 12 months ago	37	44	38	32	25	26
Number of respondents	199	170	199	170	199	170

In the second survey, 44% of respondents (35%) agreed with the statement that "the U.B. research administration assists me to do research," while 21% (36%) disagreed. On the other hand, Financial Services were viewed slightly less favourably: 33% (38%) agreed that "U.B. financial services assist me to do research" while 25% (29%) disagreed.

Responses to both surveys concurred with the statement that "In my department, research activities are encouraged and supported," as 74% (69%) agreed or strongly agreed and only 7% (16%) disagreed. Most people felt that consultancies should not be discouraged. The statement "Consultancies should be discouraged for the good of U.B. as a whole" was only supported by 15% (13%) while 68% (71%) disagreed. Nearly all respondents – 96% (91%) – felt that, to meet its obligation to society, U.B. should do more research; only 2% (3%) disagreed.

Slightly more respondents to the second survey felt that there had been a positive change in attitude among colleagues in favour of doing more research in the previous 12 months: 46% (39%) agreed and 17% (19%) disagreed. At a personal level, there was also a slight increase in enthusiasm. "I am more enthusiastic now about doing research than I was 12 months ago" was supported by 44% (37%), while 26% (25%) disagreed.

Sources of Information about Research Activities

In a separate question introduced in the second survey, respondents were asked to indicate their main sources of information on research matters. Seventy-two percent of respondents strongly agreed or agreed that the U.B. e-mail group was where they had learned a great deal about research activities. Only 12% disagreed. In order of priority, the other sources of information favoured by respondents were: research seminars (58% agreed, 13% disagreed); other staff members (49% agreed, 21% disagreed); research mail group (46% versus 19%); presentations and research meetings (45% versus 29%). In all, 34% found the Community of Science database very helpful in identifying possible sources of funds while 13% did not. It is therefore clear that the Office of Research and Development should continue to provide information through all these outlets, and that more effort should go into alerting staff about the research funding databases.

Knowledge of Research Policy and Awards

The number of staff who were aware of the research policy – 82% (60%) -- showed a significant increase in the second questionnaire; only 18% (40%) were not aware. Seventy-one percent (45%) of respondents were also more aware of research awards to individual researchers.

Reasons for Undertaking Research

Results were generally similar for the two surveys: 89% of staff always or almost always did research because it helped their careers and 86% enjoyed doing research. Doing research to be known as a good researcher always or almost always applied to 68% (58%) of respondents.

Interestingly, financial incentives were not seen as a main reason for doing research. Only 13% (14%) always or almost always did research for financial incentives whereas 56% (63%) indicated that they rarely or never did research for this reason. Similarly, the departmental requirement on the staff member to do research was not a major factor: only 23% (16%) always or almost always did research for this reason, whereas 60% (65%) rarely or never did.

Demand for Funding

Just under half of the respondents planned to seek internal research funding within the next 12 months: 49% (48%) would seek support, while 15% (21%) were not sure and 36% (30%) would not. Of these, 46% (37%) indicated they already had funds, while 37% (27%) said funds were not needed. Only 3% (7%) were not interested. Forty-seven percent (43%) of respondents would seek external research funding, 22% (31%) were unsure, and 31% (26%) would not. Of the latter, only 3% (7%) were not interested, while 17% (34%) already had funds and 42% (25%) did not need external funds for their research. When asked in the second survey to identify obstacles to seeking funds, 17% cited lack of experience in writing proposals, 3% noted fear of rejection, 3% cited lack of previous success, and 9% did not know where to get information on funding.

Interestingly 59% (52%) of respondents indicated they were doing research that did not require funding; 44% (42%) were undertaking research funded by the university, while 29% in both surveys were undertaking externally funded research. Only 8% (15%) indicated they were not undertaking research.

Incentives to do Research

In both surveys, a large proportion of staff – 79% (85%) -- reported that being given time to do research would be an incentive. Promotion was second (61% in both surveys). Cash provided an incentive to only 32% (34%), and special commendations motivated only 29% (47%) of respondents. Receiving training in research management (an option only in survey 2) was an incentive for 32%.

Constraints

When staff were conducting research, several factors were identified as constraints or difficulties. Thirty-eight percent (46%) identified financial limitations as always or almost always a constraint, while only 18% (16%) said they were rarely or never a constraint. In the first survey, responses about other factors (availability of personnel, financial administration, support and encouragement, or equipment) were all evenly divided between those who felt they were almost always a constraint and those who felt they were not, and in all cases the number of responses either way was between 32% and 37 %. In the second survey slightly fewer staff indicated the following as constraints: availability of personnel, 26% (35%); administration, 23% (32%); and equipment, 28% (37%). Support and encouragement were constraints for 33% (35%), and not a constraint for 38% (37%), suggesting little change between the two surveys.

When staff were not undertaking research, lack of time was identified as always or almost always a reason for 65% (61%), while only 8% (11%) felt this was rarely a constraint. Lack of incentives constrained 32% (36%), but was not a problem for 42% (40%). Only 4% (13%) of staff felt constrained because their head of department was not supportive, compared to 84% (76%) who felt this was not a constraint. In the second survey, no one felt that lack of interest in doing research was a constraint; 7% in the first survey did. In additional questions in the second survey, 69% of staff felt always or almost always constrained by too much teaching, 49% by too many meetings, and 42% by lack of research assistants.

Not all respondents answered every question on constraints. However, each question identifying a possible constraint was answered by between 50% and 90% of the respondents in both surveys, with time being the most often answered, and lack of interest the least.

The study of compliance with research policy showed that, while only a very small number of policy statements had been fully implemented, an equally small number had not been undertaken at all. The mean score was 40% compliance.

Discussion

There was a steady improvement in the opinions of staff about research support, and, despite the pressures of increased teaching loads and financial constraints, there was an improvement in the attitude of staff towards doing research.

The increased number of internal research proposals shows that the new system has encouraged staff to seek funding. However, there has been only a small increase over the study period in the intention to seek internal or external funding. It is also worth noting that, while almost half the respondents to both surveys said they intended to seek funding, only 50 to 60 applications were received. Thus, intention did not always translate into action.

The slight difference between the two surveys in response to the question of whether there were sufficient incentives to do research suggests that incentives are not yet convincing to inactive staff. On the other hand, staff were clearly more aware of the research policies and incentives, indicating that the methods used to promote these were having an effect.

The reasons given for engaging in research should be treated with caution. Although the results suggest that financial incentives are not a significant factor, this may not be accurate; in internal meetings it has been suggested that this result was largely due to a sense that this would be an "inappropriate" response to the question. Alternatively, the high level of negative responses suggests that financial rewards could be less important to staff than both management and academics assume in general conversation.

The high level of unfunded research reported suggests that financial indicators should not be considered the sole gauge of research activity. This may be related to the specific research discipline. However, it is also possible that staff could be undertaking both funded and unfunded projects at the same time, or the unfunded projects could be minor studies undertaken on an irregular basis. Nevertheless, it is clear that unfunded research activity should not be ignored altogether.

It is also clear that time is felt to be a major constraint on research activity. Staff believe they would be able to undertake more research if they had fewer teaching responsibilities.

The pilot study on compliance with the research policy showed that the university could potentially benchmark performance against its policy documents by repeating this exercise at regular intervals.

Conclusions

There has been a steady improvement in staff attitude towards research over the period of the study. The most effective factor has been simplification of the internal funding system, coupled with its

transparency and fairness. Other incentives have not yet made a significant impact in overall attitudes. However, staff have only recently become more aware of the new policies and incentives. Staff at the University of Botswana identified time constraints as the major restriction on their research activity. Unfunded research may be a component of the overall research activity. The university has a long way to go to achieve full compliance with its own research policy, but it has made an encouraging start.

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