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*Accounting Methods to Effectively Measure the Performance of Public
Universities' Academic Units and Increase Allocation Efficiency: The
Role of Research Grants*

by Madeleine Arivett

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Program

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Louisiana State University & Agricultural and Mechanical College
Baton Rouge, Louisiana

Introduction

The Financial Accounting Standards Advisory Board (FASB) does not explicitly outline the cost and resource allocation methods used in public universities in the Generally Accepted Accounting Principles. The statement of requirements for governmental financial reporting entities such as public colleges and universities focuses on the preparation of financial statements including extensive notes that explain the managerial methods selected in relation to the performance of governmental funding and costs. Because of past abuses and heavier reliance on indirect costs, accountability has become increasingly crucial within the complex structure of public universities and costs, and this has been exacerbated by rising tuition rates over the last decade caused by the high demand for secondary education and subsequent premiums on education costs (Fortin, 2006, p. 982).

Responsibility centers have become an important concept in the financial analysis of public universities and may aid in managerial strategic decisions regarding budgetary issues and resource allocation. Better application of managerial accounting methods may lead to more effective managerial decisions, which will be reflected in the financial statements and attached notes. Accounting methods for managing research grants are currently influenced by state regulations and grant organizational requirements. Federal guidelines exist to recommend statutory limits and accounting procedures, but for public universities, state regulations override federal recommendations. Although the FASB does not recommend specific managerial methods for internal university purposes, the Governmental Accounting Standards Board (GASB) does provide some direction for public university accounting, such as codified financial statement disclosure requirements, manager's discussion and analysis (MD&A) topics, and accrual accounting methods. Cost limitations for reporting research-related inventory and associated

depreciation can significantly impact the efficiency of allocating grant funds in universities, and implementing higher limitations may prove beneficial to the overall financial position of public universities. The details of cost limitations, responsibility centers, relevant facilities and administration rate calculations, fringe benefit rate calculations, and other managerial topics should be closely investigated during budget estimates and restructuring.

Section 1 outlines recent scholarly journal articles applicable to public university accounting methods, and Section 2 analyzes some implications of the concepts presented in the literature review. Section 3 presents a modern example of public university budget issues and how various methods may be exploited to counteract decreased state funding. Section 4 includes several case studies in which various Louisiana State University faculty members were interviewed to gain perspectives from multiple university departments. Section 5 highlights suggestions for improving not only the process of accounting for research grants but also the role that research plays in university budget challenges.

The literature review, analysis and interpretation, and case studies provide the basis for the following conclusions and recommendations for research grant accounting and public university budgets, particularly at Louisiana State University:

- The flow of information throughout the overall research grant accounting process should be uniform throughout university departments. Individual professors should be presented with useful and accessible information about their grant accounts. LSU Department of Biological Sciences accountants' tailored monthly budget reports, which outline each professor's significant account activities, are an example of a best practice technique at LSU and should be required by all university departments that conduct accounting procedures for research professors' grants.

- GASB recommends a \$5,000 floor for reporting research grant equipment purchases as university assets, but some universities, such as LSU, use a lower number (for example, \$1,000). As several public universities are faced with declining of state appropriations, in some cases less than 50% state funding, a low floor may not accurately reflect university assets and should be revised and adjusted accordingly.
 - Further, these assets should be properly depreciated and resale proceeds should return to the university in an equitable manner. In LSU's case, the current Louisiana Property Assistance Agency-Property Management resale system is no longer equitable and should be revised so that funds from the sale of outdated equipment flow back into the university. Equipment items that are above the floor and are reported as university assets should be depreciated (at LSU, no depreciation is currently taken on these items). Additionally, all items purchased using grant funds should be inventoried and recorded by individual laboratories.

Section 1. Review of Relevant Literature: Managerial Accounting Methods

In the past few decades, the demand for post-secondary education in the United States has increased rapidly. This growing demand has led to escalating enrollment rates in higher education institutions, and this has affected public universities' costs and funding as well as subsequent increases in tuition costs for students (Fortin, 2006, p. 982). These amplified costs have generated fierce competition among all higher education institutions, compelling colleges and universities to consider more sophisticated business-oriented approaches to analyze and resolve problems created by the evolving economic climate (Bublitz & Martin, 2007). The following literature review focuses on the accounting methods that higher education institutions have adapted in order to not only properly understand and record organizational costs, but also to identify procedures to trace resource allocation in a manner that leads to more efficient financial and budgetary decision-making. Additionally, evidence is mounting to support the notion that research is a powerful aspect of universities that contributes substantial monetary and intangible benefits to universities' distinctive brands. Therefore, it is advantageous to explore the efficiency and success of university research programs in light of higher education's troublesome economic climate.

An article by Balderston (1974) provides a general overview of the importance of documenting indirect costs in higher education institutions, the uses of cost analysis, problems associated with measuring costs, and relevant managerial strategies. The article argues that it is important to examine costs associated with higher education to comply with governmental budgetary regulations and because it is necessary for university reimbursements from federal research funds (Balderston, 1974). Facility and administration fees include the university's indirect costs, and it is important to properly allocate the indirect costs for appropriate

reimbursement from the federal fund. Universities establish a facility and administration rate in order to calculate the indirect cost allocations. As referenced in **Case Study 2**, various methods are used to establish this rate.

According to Balderston (1974), uses of cost analysis include operational and managerial implications, improvements in budgeting and planning, comparison of university costs with other institutions, and justification of costs recorded. It is crucial that managers perform cost analysis because it allows for the creation of budgets that estimate the operational costs that the organization will face. Managers should avoid attempts to spend any leftover budgeted funds because comparison of actual and budgeted costs is instrumental to the creation of more accurate budget projections over time. With respect to planning, universities need to be aware of possibilities for long-term growth such as construction of new campus buildings and facilities. Cost analysis and review of budgetary performance may help universities to properly estimate future costs and examine realistic long-term options and plans.

Comparison of university costs with those of similar institutions can provide a benchmark for measuring performance, illustrating evidence of any necessary cost adjustments. Cost justifications are not only important for internal cost/benefit and trade-off analysis, but they are also often required by external parties such as state and federal agencies providing funding to the university. Proof of efficient use of resources is attractive to these external parties (Balderston, 1974). Cost justifications and efficient use of resources becomes extremely critical when universities are facing a budget crisis. With respect to research grant accounting, inventory such as lab equipment acquired using grant funds should be properly tracked. A unit of the public university or a separate state entity may be responsible for monitoring this inventory. An example of this concept is discussed in **Section 34: Case Study 2**. The equipment is often

tracked using bar code systems and frequent physical verifications. The state or university oversight entity is responsible for making decisions about depreciating and reselling the inventory. Although often overlooked by university board members, these inventory accounting decisions can significantly impact the depiction of assets in financial statements as well as budget plans.

Balderston (1974) further states that the problems associated with measuring costs revolve around four issues: “What resources are being absorbed? How does resource use vary with changes in the volume of activity? Is the pattern of resource use efficient? What is the trend over time?” (p. 97). Measurement of resource absorption proves difficult because, although the author does not use the term “indirect costs,” pooled costs need to be accounted for as well as direct costs. For university research, indirect costs would include overhead costs associated with using and maintaining laboratory equipment and storing outdated equipment. The article explains that it is often challenging to select the most applicable cost pool categories and classifications. The importance of reevaluating and selecting proper classifications is amplified when university budget goals are not consistently achieved. To exploit the benefits of proper cost analysis, Balderston (1974) describes the implementation of management strategies such as cost reduction, cost shifting, and greater effectiveness in resource use. Properly identifying overhead costs associated with research and their sources may help universities understand how to better control these costs or modify associated regulations such as the facility and administration rate. Universities should also consider activities, costs, and effectiveness of the regulatory entity that monitors research-related inventory, if that entity falls within the authority of the university.

In a journal article by Bubit and Martin (2007), the implications of current public university internal/managerial accounting methods are discussed. The authors describe the

revenue and cost allocation process in a way that illustrates relationships among university departments, using a step allocation approach. Some departments generate high revenues while other departments are faced with a net loss. The revenue generating departments must subsidize funding for the net-loss departments. The authors explain that universities' cost pools are broken down into categories such as "Administration," "Student Services," and "Research Centers." These cost pools consist of divisions of cost drivers such as state labor dollars, square feet of space, and total dollars. The flow of cost pools and drivers represents how costs are allocated down to categories such as semester credit hours and research dollars. Then, the allocation results provide more accurate information about the net gains and losses of each department. These gains and losses are more accurate than the net incomes calculated by the individual departments, because more costs are considered than simply departmental revenues and expenses (Bubitz and Martin, 2007). If universities can identify the dollar returns associated with research, such as attracting and retaining highly valuable research professors that contribute to measurable tangible and intangible aspects of university reputability, it could be possible to determine a net gain for a research department. Incorporating scientific research cost drivers into universities' analysis may be beneficial, because evaluation of this university segment could potentially reveal a source of funds that could be allocated to departments that generate a net loss. Even though identifying a net gain for research departments may not be probable, a more in depth analysis of these departmental costs may support more accurate university budget estimates.

The article also explains the changing issues arising for higher education organizations in recent years. Public universities now face competition from not only private institutions and other public universities, but also from corporate technical universities. For example, "...Harvard should be worrying as much about corporate universities, such as Motorola University and the

University of Phoenix, than a university that it considers a competitor, such as Stanford University” (Bubitz and Martin, 2007, p. 60). Bubitz and Martin’s (2007) analysis demonstrates that using cost pools and drivers in universities is beneficial to university financial advisors, because more precise resource allocation information can help the advisors to develop better strategies and budgets. These improved financial strategies and budgets can help universities to combat the evolution of new competitors and the pressure of dealing with the negative consequences associated with increased tuition. Regarding the recent trend of tuition increases that US public universities have been facing, the authors explain, “ State and local appropriations have not kept pace with enrollment growth of 38 percent in the 24 years between 1980-1981 and 2004-2005, causing tuition to increase in response to declining appropriation levels” (Bubitz and Martin, 2007, p. 57). The increasing tuition issues that public universities are facing has in turn caused many private colleges and universities to also raise tuition rates. The overall result has been a significant increase in the national average cost to students of obtaining an undergraduate degree in recent years.

Recently, some universities have considered an approach where student tuition rates vary based on students’ degree programs. Bubitz and Martin (2007) explore this idea and conclude that it is not a viable strategy. If some degree programs are more expensive than others, then some students may be influenced not to pursue the subjects they originally intended, skewing the natural demand associated with individual degree programs. Consequently, the subsidy system would be affected, and departments that previously generated high revenue would become less viable. For example, “...students in fine arts, engineering, and science would pay higher tuition and fees” (Bubitz and Martin, 2007, p. 59). The authors’ study indicated that science and engineering departments not only generate revenues that may subsidize other departments, but

also contribute to the overall value and integrity of the university through intangible benefits that would be diminished if their enrollment dropped.

Instead of varying degree program tuition rates to respond to financing problems, Bubitz and Martin (2007) suggest that public university management focus on concepts such as branding. Their study found that successful research programs in departments such as engineering and science add value to universities, creating a more appealing public image/brand. This technique can be used in response to competition from corporate technical universities. To illustrate the growing threat of corporate technical universities, the authors explain that one Harvard professor's theory "...suggests that the main players in an industry develop 'sustaining innovations,' which at some point develop a product with more features, quality and/or power than the customer needs. A new disruptive technology develops that may not meet the customer needs but improves until it does meet these needs at a much lower cost" (Bubitz and Martin, 2007, p. 60). These new universities provide a convenient solution for many non-traditional students, and if allowed to flourish, many traditional students will increasingly see these universities as a more cost-efficient option than public universities. Bubitz and Martin (2007) note that it is becoming increasingly important for public university managers and financial advisors to not only be knowledgeable and capable of sophisticated analysis to deal with dynamic issues; they must also be able to effectively communicate their strategies and reasons to more knowledgeable university presidents and chancellors.

The review of recent literature suggests that higher education institutions should adopt relevant and effective accounting methods to analyze research grant costs and allocations. GAAP does provide comprehensive guidelines for reporting these costs, so it may be difficult for university administration to identify the best accounting procedures to analyze the research

segment when preparing internal and external reports. More extensive evaluation of the costs and benefits associated with university research may be a valuable tool for university managers and financial advisors facing compelling issues such as overwhelming competition and inadequate funding to cover budgeted costs. Research can provide a university with an impressive brand that stands out from others in the higher education market, and it often aids in subsidizing costs. The true costs and benefits associated with university research need to be more carefully examined so that increasingly efficient managerial accounting models may be developed within universities.

Section 2. Analysis and Interpretation of Relevant Literature

The preceding literature review has provided support for the application of various managerial accounting methods in public universities. In practice, the integration of these methods requires proper evaluation of cost pools, drivers, and centers. Financial management control systems need to give extensive consideration to identifying responsibility centers. The cost pools and drivers selected will in turn affect the categorization of responsibility centers into cost and profit centers. Careful examination of the movement of costs and revenues through successive levels of organizational subunits provides more accurate analysis of which subunits generate net losses and, more importantly, which subunits actually generate net revenues that may be applied to other areas of the organization.

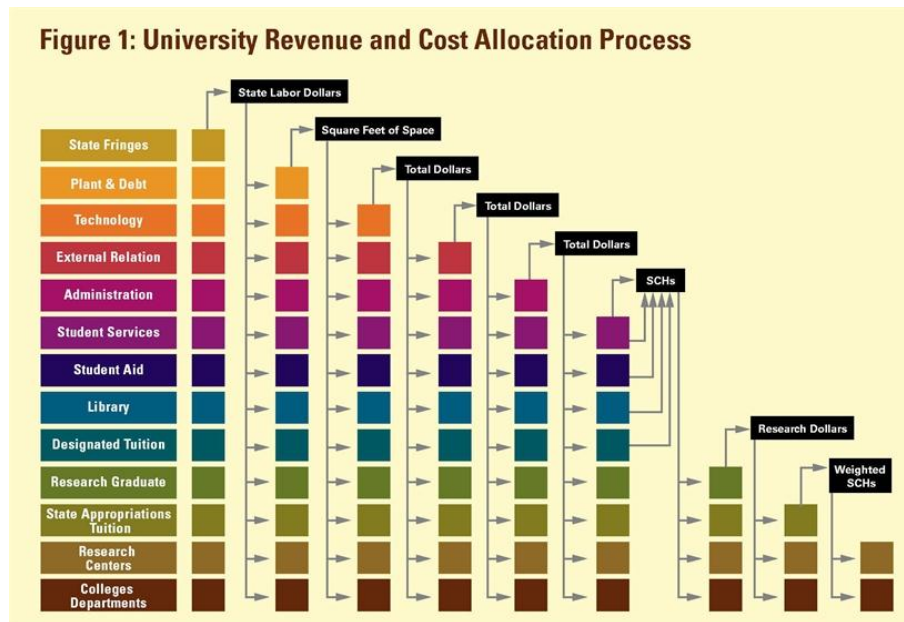


Figure 1.1: Graph: "University Revenue and Cost Allocation Process." (Bublitz and Martin, 2007).

The cost allocation process depicted in Figure 1.1 exemplifies a typical approach to categorizing a large public state university's cost pools and drivers. This step allocation process focuses on the flow of revenues and costs into relevant responsibility centers and respective

semester credit hours (SCHs). The cost pools of revenues and expenses are identified on the left of the image, and the allocation of funds flow down to the applicable responsibility centers on the right, such as research units and academic departments. The bottom right of the illustration depicts the revenues of research centers, which may be subsidized to other university departments and academic units that generate a net loss. This method of graphically demonstrating areas of accountability is useful to managers examining the efficiency and effectiveness of cost allocation, and may foster an enhanced understanding of strategic budgetary options in relation to financial planning.

Responsibility center divisions serve as components that may be seen as subsystems of the organization. Each of these subsystems consists of managerially defined objectives. The inputs and outputs of a responsibility center are quantitatively defined as the cost of resources used by the center and measurable goods and services produced by the center, respectively. Managers can then conclude, “Because every organization is the sum of its responsibility centers, if each responsibility center meets its objectives, the goals of the organization will have been achieved” (Anthony and Govindarajan, 2001, p. 109). The basic types of responsibility centers include revenue centers, cost or expense centers, profit centers, and investment centers, although these major categories may be further classified as administrative and support centers, marketing centers, or research and development centers.

Revenue centers such as marketing centers quantify output in terms of revenues, but revenues are not matched with relevant expenses. In contrast, expense centers measure inputs in monetary terms but does not seek to match these costs with any revenues that may result from these expenses incurred. Profit centers do seek to formally link appropriate expenses and revenues to measure the net gain associated with particular subsystems of organizations, while

investment centers focus more on the use of capital to accomplish objectives as opposed to raw costs or profits. Although public universities are governmental academic systems that are considered not-for-profit organizations, it may be advantageous for university financial managers to evaluate expenditures using the responsibility center approach as a way to comprehend the actual flow of funds and costs throughout the entity.

Continuing with the example depicted in Figure 1.1, the major cost allocation of individual colleges and schools to respective departments is illustrated in Figure 1. 2. The chart exemplifies which departments within the university's colleges recorded net gains and which departments recorded net losses. For example, it is evident that using the cost pools and drivers defined by management, the university's School of Education recorded a net gain of \$2,265,834. Once managers identify which colleges consistently generate net losses and net gains, further examination of costs and revenues within each department may be useful in budget projections as trends among each department are realized over time. Thus, if it becomes apparent that the department of General Education has consistently reported a net gain throughout the past decade, it would be meaningful to examine where these gains are coming from within the department and what policies and environmental factors have contributed to the net gain. Then, managers may examine where the funds from the net gain are currently being applied within the university system costs such as other general administrative salaries, academic support systems, or funding for future buildings and facilities. Appropriate adjustment of the assignment of net gains from "profit centers" throughout the university may result in more effective subsidies to "cost centers" such as other academic departments that generate net losses and better overall budgetary control. University managers should be careful to keep the results of allocation analysis internal though, and net loss segments should not be viewed as dysfunctional units. Managers should simply

consider how to better subsidize funds from net gain segments (revenue centers) to compensate for less “profitable” departments.

Figure 2: Allocation Results

College of Liberal Arts and Sciences	
Center for Archeology Research	(\$344,394)
Center for Environmental Studies	(298,721)
Center for Life Sciences	(52,267)
Center for Women's Studies	(111,298)
Anthropology	(56,822)
Biology	545,965
Chemistry	(164,441)
Communications	124,690
Computer Science	(164,198)
English & Linguistics	(244,894)
Environmental Science	253,711
History	1,283,990
Language	(137,313)
Math	219,333
Physics	(23,399)
Psychology	895,367
Political Science	1,331,933
Sociology	249,157
Subtotal, College of Liberal Arts & Sciences	\$3,420,043
School of Applied Sciences	
Center of Demographic Studies	(\$59,797)
Center for Culture & Policy	(107,141)
Architecture	242,947
Criminal Justice	40,761
Health Studies	951,673
Public Administration	(285,992)
Subtotal, School of Applied Sciences	782,451
School of Business	
Center for Information Security	451,676
Accounting	116,993
Business Economics	393,408
Finance	(735)
Information Systems	40,468
Management	1,090,208
Management Science	3,791
Marketing	170,025
Subtotal, School of Business	2,265,834
School of Education	
Counseling	330,806
Education Leadership	720,334
General Education	1,301,701
Multicultural Studies	(150,190)
Subtotal, School of Education	2,202,651
School of Engineering	
Civil Engineering	(484,165)
Electrical Engineering	(284,426)
Mechanical Engineering	(1,148,676)
Subtotal, School of Engineering	(1,917,267)
School of Fine Arts	
Music (965,411)	
Visual Arts & Theater	(589,146)
Subtotal, School of Fine Arts	(1,554,557)
Total	
Increase (Decrease) in financial resources of university	\$5,199,155

Figure 1.2: Chart: “Allocation Results.” (Bublitz and Martin, 2007).

Section 3. Modern Relevance and Propositions Regarding University Responsibility Centers and Accountability

Recent debates and research indicate that in the future, public universities will rely less on state fund appropriations. If this idea materializes, managers will need to place greater emphasis on examining the financial performance of academic units and strategies available to improve this performance, consequently increasing the bottom line of organizational gains and losses. Controlling costs will become a significant issue, and the demonstration of stable budgetary improvements will be critical for management presentations to government entities.

The results of redefined planning objectives should be attractively reflected in financial statements. Current suggestions to alleviate financial pressures on public universities include raising tuition prices or varying the tuition rates across individual degree programs (Bublitz and Martin, 2007, p. 57). This approach focuses on solving short-term funding issues, and is not well suited for long-term success in the face of a dynamic and highly competitive market for students in higher education. A more enduring approach is for university management notice the financial performance of research departments within academic units. Surprisingly, research units may not only contribute to branding a favorable academic image, but also these units may actually contribute net gains that may be utilized to subsidize other university costs. In particular, the nature of research costs and revenues represent a unique combination of inputs and outputs that other organizational subunits may not exploit.

Louisiana State University, like many other public universities, is currently facing a pressing budget crisis in the aftermath of national economic decline and its effects on post-secondary education. University administrators and state government officials have held numerous debates and meetings to formulate strategies to resolve the challenging budgetary

issues. In late August 2011, Chancellor Mike Martin discussed the university's objectives in a press release. Martin explained that the university's annual operating budget has been cut by \$50 million in the past two fiscal years. Martin points out an important statistic, stating:

“Fiscal year 2010-2011 marked the first year that the appropriation from the state was less than half LSU's operating budget (48 percent). This was the result of severe reductions in state support rather than significant growth in other revenue sources. With little hope of a radical reversal in state funding over the next several years, LSU needs to begin now to increase operating funds by aggressively increasing funding from non-state sources.”

Chancellor Martin goes on to explain that some peer institutions have recently made efforts to reduce their dependence on state funding to less than 30 percent. He notes that the university needs to increase other revenue sources such as tuition, grants and contracts, endowments, intellectual property, and gifts. Although state taxes previously contributed more than half of the university's funding, tuition and fees and endowments are becoming much more important revenue sources. Tuition increases appear eminent, as public and private universities have been forced to pursue this option throughout the past, and many universities have considered implementing the controversial varying degree program tuition rates mentioned in **Section 1**. Laboratory equipment/inventory associated with research grants presents a particular point of interest for university administration. Dedicating more attention to improving research grant accounting issues also complements another objective that Martin highlights: developing a highly reputable long-term faculty. Distinguished research professors typically need up-to-date laboratory equipment to perform experiments, and keen inventory management can help provide this for them.

Section 4. Case Studies of University Research Units

Case Study 1. Professor Meredith M. Blackwell, Ph.D.; Louisiana State University Department of Biological Sciences, Baton Rouge, LA

Meredith Blackwell, evolutionary biologist and LSU Boyd Distinguished Professor, was interviewed to gain insight on a public university research professor's point of view of the research funding process. Blackwell explained that the first step in the process is writing a grant proposal to a foundation such as the National Science Foundation. Such a proposal can be completed within a month.

The 15-page research description and additional documentation includes the focus of the research and applicable hypotheses, a description of the intellectual merit, detailed estimates of projected expenses, a budget justification, and other required information such as letters of support regarding any related work that will be outsourced to other professors or researchers. The research professor must also state the research results from prior NSF grants, training opportunities, and reference other current research that is similar in nature and focus. Figure 1 contains an example of a proposal budget projection over one year. Similar projections are prepared for each year of the project funding desired as well as cumulative projection of the total funding requested. The justification of the budgeted items (see Figure 2) details the necessary costs of the project. Further, each institution that will be conducting the proposed research must submit conforming budget proposals and justifications. Each institution/professor listed must also record the current and pending research funds, and facilities and equipment must be listed and described. Finally, the proposal submission sometimes includes letters of support from colleagues to approve their involvement in the project.

SUMMARY PROPOSAL BUDGET				YEAR 1			FOR NSF USE ONLY		
ORGANIZATION Louisiana State University & Agricultural and Mechanical College				PROPOSAL NO.		DURATION (months)			
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR Meredith Blackwell				AWARD NO.		Proposed	Granted		
A. SENIOR PERSONNEL: PMPD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)				NSF Funded Periodic months			Funds Requested By proposer	Funds granted by NSF (if different)	
				CAL	ACAD	SUMR			
1. Meredith Blackwell - none				0.00	0.00	0.00	\$	0	
2. Joseph V McHugh - none				0.00	0.00	0.00		0	
3. Song-Oai Suh - none				12.00	0.00	0.00		35,000	
4.									
5.									
6. (0) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)				0.00	0.00	0.00		0	
7. (3) TOTAL SENIOR PERSONNEL (1 - 6)				12.00	0.00	0.00		35,000	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)									
1. (0) POST DOCTORAL ASSOCIATES				0.00	0.00	0.00		0	
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)				0.00	0.00	0.00		0	
3. (0) GRADUATE STUDENTS								0	
4. (2) UNDERGRADUATE STUDENTS								6,000	
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)								0	
6. (0) OTHER								0	
TOTAL SALARIES AND WAGES (A + B)								41,000	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)								7,875	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)								48,875	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)									
PCR machine				\$	4,000				
TOTAL EQUIPMENT								4,000	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)								1,800	
2. FOREIGN								3,000	
F. PARTICIPANT SUPPORT COSTS									
1. STIPENDS \$ _____				0					
2. TRAVEL _____				0					
3. SUBSISTENCE _____				0					
4. OTHER _____				0					
TOTAL NUMBER OF PARTICIPANTS (0)				TOTAL PARTICIPANT COSTS				0	
G. OTHER DIRECT COSTS									
1. MATERIALS AND SUPPLIES								5,000	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION								500	
3. CONSULTANT SERVICES								0	
4. COMPUTER SERVICES								0	
5. SUBAWARDS								16,039	
6. OTHER								200	
TOTAL OTHER DIRECT COSTS								21,739	
H. TOTAL DIRECT COSTS (A THROUGH G)								79,414	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) MTDC (Rate: 47.0000, Base: 75414)									
TOTAL INDIRECT COSTS (F&A)								35,445	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)								114,859	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.C.6.)								0	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)							\$	114,859	
M. COST SHARING PROPOSED LEVEL \$ 0				AGREED LEVEL IF DIFFERENT \$					
PI/PD NAME Meredith Blackwell				FOR NSF USE ONLY					
ORG. REP. NAME*				INDIRECT COST RATE VERIFICATION					
				Date Checked	Date Of Rate Sheet		Initials - ORG		

1 *ELECTRONIC SIGNATURES REQUIRED FOR REVISED BUDGET

Figure 1. A typical research proposal budget covering the duration of one year of the project.

BUDGET JUSTIFICATION (LSU)

A. Senior Personnel. No support for salary is requested for Blackwell, although she will invest considerable time in identifying fungi, overseeing the handling of the specimens and cultures, and writing manuscripts. This is her primary research project.

A.3. CoPI Sung-Oui Suh has been the postdoctoral researcher on the study and will continue the work this work as his primary effort. The requested salary represents approximately a 3% increase over his current salary, because he is exceptionally well qualified for the work. His PhD dissertation was a phylogenetic study of basidiomycete yeasts to which he applied electron microscopy and molecular techniques. Since then, he worked with yeasts for a year in the national fungus collection of Japan and has continued to study yeasts and yeast-like fungi at LSU. He obtained most of the results described in this proposal, and is highly qualified to participate in the study. A 1% raise is included in year 2 and 10% in successive years due to an anticipated promotion.

B. 4. Undergraduate Students. Undergraduate students are an important part of our research group. These students may do independent but related projects for which we will make individual REU requests; however, the funds requested for two students per year at LSU are for grant-related work, including specimen processing and yeast characterization.

C. Fringe Benefits. The LSU fringe benefit rate for new projects is 22.5% of salaries and wages.

D. Permanent Equipment. The three PCR machines available are adequate for the study. They have, however, received heavy use over the last four years, and there is no backup if the existing machines break down. Other equipment needed are a Magellan Trailblazer XL GPS receiver to record precise locality data and an additional incubator dedicated to the project to avoid contamination, a necessary concern in a lab where insects and mites are attracted to the fungi we study.

E.1. Domestic Travel. Travel funds to collect material for this study comprise a substantial portion of this request. Domestic expenses are for local collecting including at least 3 trips per year in the southeastern U.S. whenever fungi are abundant. Expenses are for local collecting including local collecting trips year around whenever mushrooms are plentiful. Support also is requested to attend a national meeting each year where the results of this project will be presented (including registration, hotel and airfare).

E.2. Foreign Travel. Funds would be for two collecting trips for 2-3 LSU participants to Barro Colorado Island, Panama, in each of the first two years of the project. Funds will support a collecting trip to Barro Colorado Island, Panama, in Years 1-2. Funds requested include airfare and room and board. Collecting in South Africa in year 3 would be expensive, in part because it would require vehicle rental, but this is an important component of the study. The generosity of the Drs. Wingfields (see Letter of Support) will help keep the costs as low as possible, because they will supply labs without cost. The foreign travel for collecting in the fourth year would depend on results of the first three years, and will consist of either 1) recollection in Panama or 2) recollection in South Africa.

G. Other direct costs.

G.1. Materials and Supplies. The figure is based on expenses encountered this 2000-2003, and includes agar and culturing supplies, PCR reagents, and sequencing kits.

G.2. Publications Costs. No unusual costs are expected because we will publish in the journals of several societies.

G.5. Subward to McHugh. (see University of Georgia budget)

G.6. Lab fees for STRI (Panama) and sample mailing costs incurred during foreign collecting.

Figure 2. Example of budget justification expanding upon budget information presented in Figure 1.

After the research professor submits the proposal, NSF will approve, deny, and/or make recommendations about how the proposal should be altered for resubmission. Estimates vary, but Blackwell estimates that only about 10% of NSF grant proposals in her field receive funding. If NSF funds the proposal, the professor will not actually have access to the research funds until after the university receives another approval form from the professor notifying the university of acceptance of the grant. Once the university approves the award, the funds may be received from NSF. Professors like Blackwell manage laboratory purchases, mostly by use of the LA Carte procurement card, and she also informs the university about which grant accounts their purchases are related to, often when or before orders are placed. Then the professor receives monthly and annual ledger reports from the university in conjunction with departmental bookkeepers so that he or she may compare budgeted and actual expenses. An example of a budget report that a professor would receive from the Biological Sciences departmental accountants is illustrated in Figure 3. The professor and the university should compare their totals to the budget projections in the performance report, and the professor must then document and explain to NSF any deviations from the object code budget projection on certain items when changes in spending are desired. In order to increase the efficiency of this funding process, fringe benefits, indirect cost rates, fixed assets, and asset depreciation should be further investigated.

DEPARTMENT OF
BIOLOGICAL
SCIENCES

Restricted Fund **SPA Contact: Parks** F & A: 47%

Account # **115-80-5167** **Acct. Name: NSF** Fringe: 34%

As of Month Ending **5/31/11** **Blackwell**

Grant Expires:
06/30/2011

Description	Object Code	Budget	Budget Year 2	Total Funds Available	Encumbrances	Total Expenditures	Tentative Encumbrances	Projected/Tentative Expenditures	Tentative Balance
Salaries - Empl Pd Mnthly	1110	109,235.00	42,774.00	152,009.00	0.00	135,427.90	0.00	0.00	16,581.10
Graduate Student	1230	6,000.00	6,000.00	12,000.00		0.00			12,000.00
Student Comp Regular	1240	12,000.00	0.00	12,000.00	0.00	16,439.07	0.00	0.00	(4,439.07)
Travel	2000	4,400.00	1,300.00	5,700.00	0.00	2,955.27	0.00	0.00	2,744.73
Foreign Travel	2320	10,000.00	3,500.00	13,500.00		15,744.95	0.00	0.00	(2,244.95)
Operating Services	3000	2,100.00	700.00	2,800.00	0.00	3,774.84	0.00	0.00	(974.84)
Supplies	4000	15,000.00	5,000.00	20,000.00	0.00	53,890.30	0.00	428.11	(34,318.41)
Professional Services	5000	48,802.00	16,724.00	65,526.00	10,832.91	46,369.06	0.00	0.00	8,324.03
Facilities & Admin Costs	6700	97,908.00	32,382.00	130,290.00	0.00	133,414.89	0.00	0.00	(3,124.89)
Related Benefits Recovered	6800	24,578.00	9,624.00	34,202.00	0.00	30,471.29	0.00	0.00	3,730.71
Cap Outlay/Equipment	7000	4,000.00	0.00	4,000.00	0.00	7,288.10	0.00	0.00	(3,288.10)
Total Expenditures		334,023.00	118,004.00	452,027.00	10,832.91	445,775.67	0.00	428.11	-5,009.69

Figure 3. Example of monthly budget report received by a research professor from the university.

**Case Study 2. Shelly Ortiz, Business Manager; Louisiana State University-
Department of Biological Sciences, Baton Rouge, LA**

Shelly Ortiz, the Business Manager of Louisiana State University's Department of Biological Sciences, was interviewed in order to further understand the flow of information and documentation throughout the research process. After professors in the department are approved for research grants, Ortiz oversees these professors' daily and monthly expenditure approvals as well as budget execution. Ortiz also monitors the overall accounting records of the department and the financial performance of the department as a whole. Beyond Ortiz's level of supervision, there is no consolidated review by LSU's College of Basic Sciences; each department within the college must oversee their respective accounting records and submit their records to the university's Accounting Office of Sponsored Programs. The Department of Biological Sciences that Ortiz oversees represents the largest research department in terms of monetary expenditures related to federal grants within LSU's College of Basic Sciences.

Ortiz explains that most of the research grants within her department are cost-reimbursement grants such as National Science Foundation (NSF) grants. Each particular grant has its own account number within the university's accounting system. Lab equipment purchased on grant accounts by professors is typically obtained using a university procurement card. The procurement card purchases are examined and undergo a first line of approval within the departmental business office that Ortiz manages. These equipment purchases must meet the guidelines that were outlined and approved in the respective grant proposals.

One caveat of LSU's system of accounting for research-related equipment is that any item purchased that costs over \$1,000 must be approved and monitored by LSU Property Management. Property Management is separate entity from the university, and is operated by the state agency, Louisiana Property Assistance Agency (LPAA). In contrast, federal guidelines recommend a \$5,000 floor for reporting such equipment purchases. Nevertheless, all equipment over \$1,000 that is purchased becomes part of LSU's inventory and assets, but Property Management ultimately controls the equipment. This signifies that the Department of Biological Sciences, university professors, and the university itself are not allowed to resell or depreciate these assets. Thus, any funds obtained by Property Management from resale of equipment are allocated to the state of Louisiana, indicating that LPAA's LSU Property Management operates as a profit center. Property Management may seize any surplus equipment at their discretion.

The lower \$1,000 floor imposed by the state of Louisiana has other implications for LSU's accounting records. Purchases under \$1,000 are not added to inventory, rather they are used in individual labs by individual professors without a uniform system to keep track of these items. It appears that the only record of these items is the list of procurement card purchases. If a professor were to leave the university, he or she is allowed to bring these supplies (inventory) and equipment that is related to a current research grant to another university, regardless of the cost of the items. Also, professors are not required to keep an accurate record and count of these supplies. Perhaps creating an inventory system within each individual lab would allow more efficient monitoring and use of these supplies and subsequent restocking and related expenses. Currently, when laboratory equipment that

has been tagged by Property Management becomes outdated, individual professors are supposed to inform departmental accountants that the item will be picked up by Property Management. The informal nature of this inventory system is prone to many human errors, such as professors forgetting to give the department notice of the Property Management pick-up, and can lead to inaccurate university asset reporting.

Further, the \$1,000 floor implicates that the research equipment inventory listed as university assets is not actually controlled by the university. Additionally, LSU does not depreciate these assets, and because of the system structure involving Property Management, the university will never receive any additional funds from the disposal of these assets. Aside from these details, costs related to inventory also have an affect on the fringe benefit rates, indirect costs, and facilities and administration rates. The university dictates indirect costs by way of establishing the facilities and administration rate. The indirect cost rate is the same for every college within the university. The fringe benefit rate is also defined by the university and may fluctuate based on the university's costs. In order for the university to determine overhead in departments such as Biological Sciences, a "space survey" is typically conducted annually. The "space survey" measures how much space is being used throughout university buildings, laboratories, and facilities. The survey also takes into account how this space is being used in order to update indirect cost estimates.

One of Ortiz's other responsibilities is to calculate the costs within the department that are affected by facilities and administration rates and fringe benefit rates. Ortiz performs these calculations and enters transactional data into the university's general

ledger system. Further, she prepares monthly, quarterly, and annual reports from the general ledger and sends the reports to LSU's Accounting Office of Sponsored Programs. Ortiz and other Biological Sciences accountants also prepare monthly budget reports for each individual research professor, such as the one depicted in Figure 3. There is currently no standard reporting system among colleges to generate these tailored monthly reports, therefore a format similar to Ortiz's may be an example of a best practice among colleges and should be required by the university. More detailed monthly, quarterly, and annual financial reports are also prepared and reviewed by Ortiz and departmental bookkeepers, and eventually arrive at the Office of Sponsored Programs and are further scrutinized by the Accounting Services manager, Dana Gomez. This serves as the final check on the university's financial reporting information related to research grant funding and allocation.

Case 3. Dana Gomez, Office of Sponsored Programs: Accounting Services Manager; Louisiana State University, Baton Rouge, LA

As mentioned in Case 2, the final level of review of research grant accounting records occurs in LSU's Office of Sponsored Programs (OSP) under supervision of Dana Gomez, the OSP Accounting Services Manager. OSP Accounting Services activities are considered part of the university's Central Accounting Office and are ultimately the responsibility of LSU's Associate Vice Chancellor of Accounting and Financial Services. Gomez explains that the OSP is considered the "pre-award" office to monitor grant funding, while OSP Accounting Services monitors "post-award" funding activity. She individually reviews the accounting of research grants, and explains that scientific research, namely

National Science Foundation (NSF) grants within the Department of Biological Sciences, comprises the majority of her reviews.

Each month, Gomez receives a general ledger based on previous data input from Shelly Ortiz and other department managers explaining relevant departmental transactions. Gomez subsequently reviews every ledger for each account (most of which are NSF accounts). This ledger is also linked to personnel information from university Human Resources Management so that she may contact the corresponding employees when transactional data requires further investigation or justification. Gomez is accountable for monitoring allowable expenditures based on grant proposal guidelines as well as NSF and other organizations' (such as other state and federal agencies) rules and regulations. She ensures that the transactions and purchases are in accordance with relevant standards and occur within the proper time frame. Further, she asserts that the expenditures are allowable, allocable, and appropriate for the respective projects. Gomez must consider if the transactions implicate re-budgeting, internal changes, or if she will need to contact the sponsor in order to process the expense.

Once Gomez reviews and revises the monthly transactions that have been made on credit, she draws on NSF and the other organizations to obtain the necessary funds. Some of these funding draws are performed quarterly when university financial reports are prepared. She is responsible for sending financial information to NSF and interacting with them throughout the grant funding process. In order to maintain transparency and proper accounting procedures, NSF and similar organizations may ask to do a "desk review" of Gomez's financial reports and ledgers for individual grant accounts. LSU internal auditors

periodically also perform similar reviews. Consequently, Gomez receives general ledger transactional data that has already been reviewed by individual departments (such as Ortiz and the Department of Biological Sciences), LSU Human Resources Management, and the outside grant agencies.

The series of checks completed throughout this process allows the system to maintain transparency and accountability of information. This information is often needed in order to construct and revise university and state budgets. In light of recent budget issues, Gomez explains that Louisiana state departments are requesting more and more transparency of this kind of information in order to devise successful budgets. LSU internal auditing and state agency auditing services help to provide assurance of accurate information throughout OSP and other university and state departments.

Overall, the system in place to process research grant funding helps to maintain thoroughly reviewed accounting records. High information sharing among professors, departments, OSP, and Accounting Services allows smooth and effective receipt of funds and the execution of valuable research projects. Research professors are able to attend conferences and publish manuscripts in scholarly journals, and the university is able to add value to its academic experience by allowing students to seek out research opportunities. Organizations such as NSF facilitate this research advancement through funding prestigious grants that allow professors and students to contribute to the academic realm and gain important experience. The services provided by university personnel such as Ortiz and Gomez help create an important link between individual professors and organizations like NSF.

**Case Study 4. Professor George G. Stanley, Ph.D.; Louisiana State University
Department of Chemistry, Baton Rouge, LA**

George Stanley, inorganic chemist and Cyril & Tutta Vetter Alumni professor, was interviewed to obtain an additional researcher's perspective on the accounting and funding of grants. Stanley cited a process similar to Professor Blackwell's outline, but noted a few key variants of specific procedures. For example, the feedback he receives from the Chemistry Department's Business Manager Kelly Small is more informal than the detailed reports prepared by Biological Sciences' Business Manager Shelly Ortiz. Stanley explained that throughout his various research projects he does receive general ledger reports directly from the university's Office of Sponsored Programs identifying his purchase transactions from the LA Carte procurement card, but these reports simply list object codes and account numbers that may prove meaningless to an individual professor.

The total account balances listed in the reports may be helpful to him if he were to track the balance history every period and subtract these numbers from the initial amount of grant funding, but this may become tedious throughout multi-year grants. Additionally, the total balance on the report for a given period may not be a true measure of how much a professor should deduct from his initial amount of grant funding, since accounting procedures may become complex and are often unknown to individual research professors. Stanley explained that during his early years as a research professor, he attempted to keep his own records of purchases but eventually abandoned the burdensome process. From experience, he has become able to use discretion to judge how much he can spend per month on his research projects, and his corresponding departmental business manager Small contacts him when his account balance gets very low.

Stanley expresses some frustration with the current process of accounting for research projects. From his perspective, it can be difficult to manage his grant purchases and measure current available funds, and this information is often necessary for making decisions about laboratory employees/research assistants. Further, additional problems arise when professors switch universities. He explains that a recent LSU colleague of his moved to a different university and was unable to move some of his pricey laboratory equipment with him because the grant account that was used to purchase the equipment had expired. Because of certain restrictions, the professor's new university was unable to buy the equipment, and LSU was unable to sell the equipment. Professors within the department may decide to use equipment left behind as needed if they are aware of its existence, and outdated equipment simply piles up in storage areas temporarily until Property Management recovers it (see Figure 4).



Figure 4. Hallway storage site of outdated equipment; Louisiana State University, Life Sciences Building basement.

Stanley went on to describe previous attempts at improving the process of research fund accounting. In 2007-2008, LSU sought to implement a grants accounting program, but the venture was ultimately abandoned. A group of professors also created a Barriers to Research Committee, aimed at informing professors and graduate students about the details and difficulties of research grant funding, but this too was ultimately unsuccessful. Stanley has experience in overseeing a university research facility, which acts as a cost center. Managing the facility requires analysis of its relevant costs, including out-of-pocket, administrative, and opportunity costs. He suggests that the issues related to fund management of research grant accounting could be tackled using project management techniques. For example, one focus could include optimizing the efficiency of equipment inventory and seeking out any possible cost savings.

Section 5. Concluding Remarks: Relevance to Louisiana State University's Current System

Louisiana State University should reevaluate its current regulations for research equipment inventory management. **Section 4: Case 2** describes the university's current \$1,000 floor for research equipment items that must be approved and controlled by LSU Property Management. This cutoff is significantly lower than the federally recommended \$5,000 floor. Regardless, only research-related items over \$1,000 are reported as assets on the university's balance sheet, and items below the floor are considered period costs that are expensed through procurement card transactions and related overhead maintenance is estimated and reported as a cost. Property Management is a state entity rather than a university segment, and it retains ownership and responsibility of assets above the floor even though the items were acquired using grant funding acquired by university professors. The entity is also able to seize and resell surplus or outdated equipment at its discretion, driving all resale proceeds back into state capital funds. Perhaps this was an equitable system when more than half of the university's funding originated from the state of Louisiana, but declining state appropriations constitute that less of these capital gains will return to the university in the future.

Increasing the floor for reporting Property Management-controlled research equipment to \$5,000 would cause numerous changes. If the regulations were changed so that the university itself could be responsible for equipment items that cost between \$1,000 and \$5,000, then reporting all items over \$1,000 (or only items within the \$1,000-\$5,000 range) as assets would more accurately reflect the value of these university assets. The university could devise a system of monitoring this range of inventory items in

laboratories. Individual laboratories could be required to keep a list of items within this price range, and the university could periodically review these items for obsolescence or resale opportunities. Laboratories could also be required to keep their own records of inventory items costing less than the specified floor (for example, \$1,000). This would lead to better records of all laboratory purchases, and laboratories could even collaborate to purchase certain below-the-floor items in bulk to obtain purchase discounts, thereby decreasing these period costs. The university could designate storage sites for outdated equipment and become responsible for either disposing of items with no resale value or reselling the equipment, thereby retaining funds from resale proceeds. Additionally, depreciation of these items could be estimated upon acquisition, and the value of these assets could be written down accordingly until resale or disposal. The university would therefore own and control equipment items within the \$1,000 to \$5,000 price range, so recording these items as university assets and writing them down accordingly for depreciation would lead to better representation on financial statements.

Implementing these changes would generate some additional inventory management and administrative costs, but overall the new system would allow a long-term additional source of revenue for the university. To minimize costs associated with the new system, individual professors and laboratory workers could assist with carrying out many steps of the new system, such as providing estimates for items' useful life and salvage value. Professors could also be responsible for moving outdated equipment to designated storage sites. At the very least, increasing the Property Management-controlled equipment floor to \$5,000 and only reporting these assets on the university balance sheet would more

accurately reflect the number of these assets controlled by the university. Equipment resale regulations should also be seriously reconsidered. For example, if a professor moves to another university and wants to bring an acquired equipment item that is not on a current grant, the option of selling the item to the professor's new university could be an additional revenue source. This is not currently possible because the university itself does not essentially own or control these items—they are the responsibility of Property Management.

The topics discussed in this paper are meant to illustrate useful accounting methods for public universities and highlight areas of university accounting that could be reevaluated or improved. The recent national economic decline has created many issues for the future public universities, including the budget crisis at Louisiana State University. Investigation of the research grant accounting process has revealed an area that could develop more efficient resource allocation and possibly become an additional source of university revenue within a difficult current financial atmosphere.

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