Jackson State University

Introducing Business Concepts into Education

Jackson State University, located in Jackson, Mississippi, the capital and largest city of the state, was founded in 1877 as a teachers college to provide a quality education for antebellum black students .

Jackson State University (JSU) was awarded university status in 1977 to recognize its evolution into a research-intensive institution. During the next twenty-five years, JSU experienced steady growth in undergraduate and graduate students. In 2005, it ranked first among historically black institutions in acquiring federal research funds.[1] Jackson State still faced serious competition for top students from the prominent, historically black colleges in the U.S. South, and from many historically white institutions, now eager to diversify their student population. State and federal funding of postsecondary education was being reduced. The university also faced its own diversity pressures when the Mississippi legislature passed a law requiring JSU to raise its nonblack enrollment to at least 10 percent, a challenging target for this historically black university.

In 2001, Ronald Mason, president of JSU, launched the Millennium Agenda, a strategic planning exercise designed to elevate the university to a new level of efficiency, accountability, and quality. Mason challenged his management team with the following questions:

- Are the *academic enterprise and academic excellence goals* of Jackson State being advanced to the point to make JSU a leading urban institution of higher learning in the United States?
- Are a superior set of *support services* from pre-admission through and beyond graduation being delivered with effectiveness and efficiency?
- Are Jackson State *resources being managed* in the most effective and efficient manner possible?
- Are the *lives and livelihoods* of the many stakeholders in the external Jackson State community being improved?
- Is the Administration embarking on its initiative in a responsible way? [2]

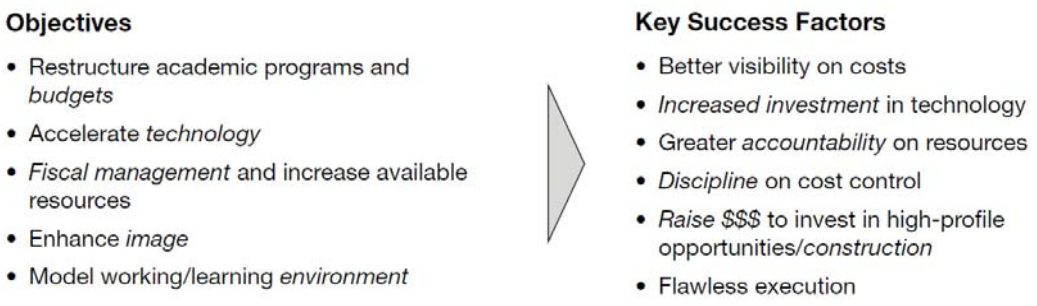
JSU would have to attract significant new funding to support the hiring of world-class faculty and invest in new facilities and infrastructure. Mason also wanted a new information system to achieve his goals of superior support services, efficiency, and optimal management of resources. He believed that JSU would have to be run like a business if it were to prosper in the challenging twenty-first-century environment.

To lead his management agenda, Mason hired Troy Stovall as senior vice president of finance and operations. Stovall, an experienced consultant from McKinsey & Company with an MBA from Harvard Business School and a master's degree in computer science from Stanford University, had extensive work experience in business analytics, operational improvements, and technology management.

True to his McKinsey background, Stovall framed the challenges faced by Jackson State with a bulleted slide (figure 1). The objectives on the left summarized the Millennium Agenda. The key success factors on the right highlighted the need for new information, organizational buy-in, departmental commitment and discipline, and strong process management. Unfortunately, Stovall soon discovered that the university had almost no discretionary money to fund new projects. The university budget was totally consumed by departmental spending and projects. Beyond finding new resources of time and money, Stovall knew that JSU needed a much-improved information system. "We are trying to navigate, manage, and plan blind right now," he explained at a preliminary planning session.

Figure 1

Challenges Facing Jackson State University



Stovall noted the enormous inertia in state budgets for higher education. Once a given level of funding had been authorized, the recipient could expect to continue to receive it as long as the money had been spent and the recipient continued to ask for that level or more. School deans and department heads continually asked for more money to improve the educational quality and experience of the students and to support the research agenda of faculty. But each department's and school's request was submitted without regard to the competing demands from other university units or the overall budget constraints of the university. During periods of generous funding, the process spawned new courses, new laboratories, new facilities, and new departments. The 6 percent average annual rate of growth in new departments exceeded JSU's revenue growth rate. In just the past few years, nearly thirty new departments, including Epidemiology, Entrepreneurship, and Environmental Health, had been added. Furthermore, a department could add a computer lab with the latest technology to support project work, with the cost of the lab supported by general university funds, not the department's budget.

Stovall noted an alarming trend of the decreasing number of students per department. The increase in number of departments and classes had outpaced the growth in the number of students. Similar increases had occurred in JSU's administrative and auxiliary areas.

A major driver of JSU's spending was the increased use of information technology in academic and administrative departments. Students were enrolling, learning, sharing, downloading course materials, conducting research, and even attending lectures online. JSU had responded to this increased demand by investing in expensive information technology infrastructure and support. To gain some economies of scale, JSU, like many other educational institutions, had established a centralized IT department and treated it as a separate cost center, with its own budget. The IT department's costs, however, were not assigned to user departments and schools. Naturally, with little accountability for costs, departments demanded more and more IT support and services, and IT spending continually increased. The IT department met the demands from academic and administrative departments with no signals or feedback about the value of the services it provided.

Mason's team clearly saw the need for change. Jackson State could not compete under its current financial duress. Processes had to be made more efficient, and resources had to be redeployed if funds were to become available for the Millennium Agenda and future growth. The president considered it dangerous to rely solely on federal and state funding for new initiatives. And annual tuition could not rise fast enough to make up the difference. With these limitations in mind, Mason and Stovall set a target of identifying $5 million to $10 million in real cost-savings opportunities across the university, an ambitious goal for a school with a $120 million budget.

Building the Time-Driven ABC Model

In his previous business life, Stovall had become familiar with Activity-Based Costing for tracing costs and analyzing opportunities for improvement in the telecommunications industry. But he wondered how the approach would be accepted at Jackson State, where academics would probably be reluctant to participate in surveys of how they spent their time and were certainly not accustomed to being held accountable for their efforts.

Stovall formed an ABC project team of internal staff—including finance, IT, and operations—and external consultants. The external consultants, from Acorn Systems, educated and guided the team about building a Time-DrivenABC

model. Senior management at Jackson State provided access to key employees and data systems. Student analysts gathered the needed information. Given the tight academic schedule, most team members worked only two days per week on the project. While most did not have accounting backgrounds, the team members quickly learned the fundamentals needed to build the model.

Early Challenges

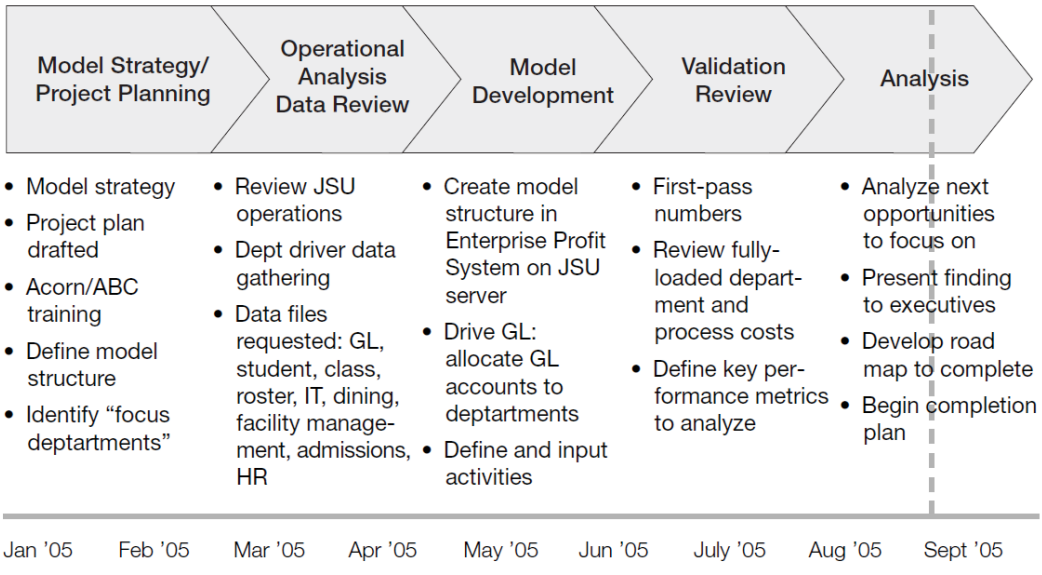
Implementing a cost model for the university posed several challenges. Academic departments enjoy significant autonomy. Having outside consultants model and monitor their cost and performance was likely to create waves. Also, few staff had private sector experience; most were unfamiliar with even the basics of a costing model. Universities use budgets to control departmental spending, but rarely attempt to link their spending to the outputs they produce. The staff was also unfamiliar with the basic data available from the school's general ledger and accounting system.

The executive team decided to go slowly, with a phased approach. In Phase 1, the project team would establish feasibility and impact, validate the effort, and set the direction. If a pilot study did not reveal significant opportunities for cost savings, the project could be terminated at that point. Phase 2 would enable the university to attack noncontroversial opportunities in administrative departments, leaving the analysis of academic departments for Phase 3. Figure 2 shows the nine-month project plan developed for Phase 2.

Many team members were frustrated about the delay in addressing the most likely source for large cost improvements in the academic departments. The project team had been briefed by James Johnson, economic model manager for Indiana University, who related his experiences in implementing ABC at his school, "Most of the value for ABC is with the academic departments. The problem is that these are extremely difficult to model. And you are not likely to get a lot of cooperation from professors and department staff as to where they spend their time." The JSU team believed that the time-driven approach would avoid some of these difficulties by relying less on interviews and surveys. TDABC would work from transaction data available directly from university databases.

Figure 2

Project Plan: Phase 2 Work



Implementation

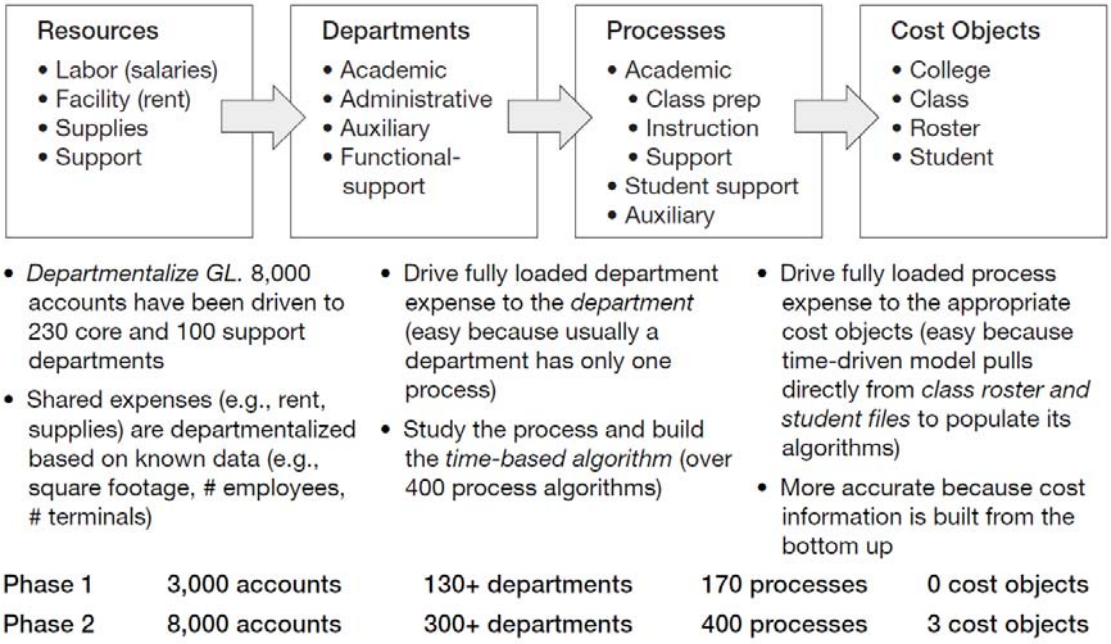
By early 2006, JSU had just completed Phase 2 and was embarking on pilot runs for Phase 3. We will describe the project through Phase 2 and the anticipated work plan for the next phase.

The project started by assigning costs accumulated in the university's general ledger (GL in the figure) to the core academic, administrative, and auxiliary departments. Core departments were those that directly touched the ultimate cost objects, the students.

Administrative and auxiliary departments, such as legal and human resources, provided infrastructure and support for the academic units and students (figure 3), and the costs of these departments also needed to be driven down to academic units and their students.

Figure 3

Model Building Process for JSU



As an example of an early run (figure 4) shows the top ten high-cost academic departments. The project team was surprised to see how tracing all of a department's support costs caused the total department cost to be much higher than its direct general-ledger assignment. For example, one department, 528, consumed large quantities of space, IT support, housekeeping, and security and safety assistance. Its total cost per student taught was nine times higher than its direct faculty costs.

Figure 4

High Costs Departments at JSU

ID	GL Amount In ($)	Support Amount In ($)	Total Amount In ($)	Outgoing Amount ($)	$/Student
528	491,610	3,827,383	4,318,993	4,318,993	414
537	1,978,277	2,087,281	4,065,559	4,065,559	390
534	427,550	3,550,368	3,977,918	3,977,918	382
399	158,695	2,995,672	3,154,367	3,154,367	302
525	835,020	2,017,200	2,852,220	2,852,220	273
531	499,837	1,952,535	2,452,373	2,452,373	235
426	585,788	1,758,207	2,343,995	2,343,995	225
543	229,089	1,813,420	2,042,510	2,042,510	196
489	446,043	1,588,514	2,034,557	2,034,557	195
420	967,914	850,096	1,818,010	1,818,010	174

Stovall examined closely the costs of the dining activity. Dining, supposedly a stand-alone business, was budgeted to operate at a small profit, which could be used to fund other parts of the university. But the Dining Department operated within university buildings that required maintenance. The IT Department tracked food purchases and sales, and the Finance Department analyzed Dining's budgets and actual financial performance. Figure 5 presents a sample calculation done by the ABC project team to estimate the full cost of serving a meal. The calculation revealed that Dining operated at a considerable deficit.

The analysis clearly identified that restoring Dining to breakeven operations would generate considerable savings to the university. Stovall commented, "The losses in Dining were a big surprise to us. Knowing the truth is the first step to identifying the opportunity."

Once all the costs had been accumulated in departments, the project team planned to drive them to five core processes for each academic department:

- Research Grant and Development
- Class Preparation
- Instruction
- Student Support
- Academic Improvement

Since the time spent by the department varied for each of these processes, this cost assignment required a Time-Driven ABC approach if it were to be done correctly.

Figure 5

Opportunities for Cost Savings at Dining Hall

	Price[a]	Cost[b]	Margin	Semester Profit[c]
Industry	$5.00	$4.00	$1.00	$149,826
JSU (GL costing method)	$5.00	$13.20	($8.20)	($1,228,573)
Difference	—	($9.20)	($9.20)	($1,378,399)
JSU (TDABC method)	$5.00	$27.14	($22.14)	($3,317,148)
Difference	—	($23.14)	($23.14)	($3,466,974)

Average price per meal that universities charge students is just under $5.00. Using the general-ledger (GL) cost of the dining department and the number of meals prepared, JSU's cost per meal is $13.20. Using the fully loaded department cost (from the TDABC model) and the number of meals prepared, JSU's cost per meal is $27.14.

[a]Assuming that JSU's price per meal is close to the industry average.
[b]Assuming an industry gross margin of 20 percent.
[c]Assuming 149,826 meals prepared per semester.

Once the full expenses had been accumulated in each academic process, the team would study each departmental process to determine the activity steps, the key drivers, and the average time spent per step and driver. Figure 6 displays an example of a time equation for teaching an accounting course.

Getting the data for the model proved to be difficult. Jackson State had just installed a new general-ledger system, and the IT people were still getting familiar with how to access and export data elements. After waiting several months without receiving the data, the external consultants became more proactive and worked directly with IT personnel to gather the data.

Proposed Actions

1) *Improve capacity utilization across departments.* The team wanted to identify and eliminate unused capacity—in people and facilities—throughout the university. The challenge was to determine how much capacity actually existed and how it was being used, department by department. On their own initiative, departments were unlikely to volunteer when they had excess capacity. The TDABC model, which reflected time spent on core activities such as research, grant development, class preparation, and instruction, would enable the team to determine each department's under—and overcapacity resources.

2) *Not all academic departments and subjects are equally "profitable".*[3] The ABC project team assigned revenues to each department. Revenues were calculated as the tuition dollars generated by teaching students in courses within the department, plus the research and grant dollars the department produced. The team could then calculate departmental profitability by subtracting the department's direct and TDABC-assigned administrative and support costs.

JSU would not use the information to shut down unprofitable departments. But the calculation would be shared with deans and department heads to suggest how they could reduce the need for university subsidies. For example, the team suggested that departments could reduce their losses through offering better courses and instruction that attracted

Figure 6

Example Time Equations at JSU

JSU Costing Model: Acorn's Time-Driven Algorithms

Activity Equation List

Show: All Activities | LIKE | Search | Number of Results: 278

ID	Activity Name	Cost Object	Equation
48686	Accounting - Academic Improvement	Class	if(DEPT_ID=="ACCT",1,0)*(10*NUM_ENROLLED)
48684	Accounting - Class Prep	Class	if(DEPT_ID=="ACCT",1,0)*(2000+2*16*CREDIT_HRS*6...
48682	Accounting - Instruction	Class	if(DEPT_ID=="ACCT",1,0)*(16*CREDIT_HRS*60*1.25)...
48680	Accounting - Reasearch/Grant Dev	Class	if(DEPT_ID=="ACCT",1,0)*(50+5*NUM_ENROLLED+If(C...
48678	Accounting - Student Support	Class	if(DEPT_ID=="ACCT",1,0)*(200+60*NUM_ENROLLED)
48676	Art - Academic Improvement	Class	if(DEPT_ID=="ART",1,0)*(10*NUM_ENROLLED)
48674	Art - Class Prep	Class	if(DEPT_ID=="ART",1,0)*(2000+2*16*CREDIT_HRS*60...
48672	Art - Instruction	Class	if(DEPT_ID=="ART",1,0)*(16*CREDIT_HRS*60*1.5)*I...
48670	Art - Reasearch/Grant Dev	Class	if(DEPT_ID=="ART",1,0)*(50+5*NUM_ENROLLED+If(CO...
48668	Art - Student Support	Class	if(DEPT_ID=="ART",1,0)*(200+60*NUM_ENROLLED)
48622	Athletics - Class Preparation	Class	if(DEPT_ID=="HPER",1,0)*(2000+2*16*CREDIT_HRS*6...
48620	Athletics - Instruction	Class	if(DEPT_ID=="PUHS",1,0)*(16*CREDIT_HRS*60*1.25)...
48618	Athletics - Recruiting	Class	1

Edit | Edit Activity | View Change Log

Activity Equation Details

This is a read-only display of the selected activity's equation and a description of the equation. To edit them, click the Edit button above.

Activity Name	Accounting - Instruction	**Activity ID**	48682
Cost Object	Class		
Description			
Equation	if(DEPT_ID=="ACCT",1,0)*(16*CREDIT_HRS*60*1.25)*If(NUM_ENROLLED>20,1.25,1)		

These algorithms estimate time spent on an activity (e.g. instruction) for a cost object (e.g. class). This enables us to drive a specific department's instruction cost to a particular class, and then on to specific students.

more students, generating more academic majors in their unit, and finding ways to lower the per-student cost of instruction. Of course, all contemplated actions must be taken without compromising the fundamental mission of the school for high-quality education and research.

3) *Not all students are equally profitable.* Costs and profits for individual students can also vary considerably. Cost variation occurs in recruiting, tuition differences, housing choice, financial aid status, and choice of coursework. For example, out-of-state students pay higher tuition, but they are also more expensive to recruit and attract. The TDABC model incorporated time equations to capture the costs of recruiting and admitting students, including travel to attract students from out of state.

4) *Not all professors or classes cost the same.* The team observed that while the overall academic processes performed by professors were homogenous across departments, the time professors actually took to perform these tasks varied greatly. New classes required more class preparation than existing courses. Large classes took more faculty time—for counseling and grading—than small classes. Some classes required expensive IT support or laboratory space, while others could be taught in standard, large lecture halls. All the factors that caused variation in faculty time or facility space would be incorporated into the ABC model's time equations. The estimates would be validated by comparing predicted capacity utilization to available capacity. The team envisioned using the TDABC model to evaluate how grant dollars, space assignment, and support services could be adjusted to support the needs of both faculty and students and to ensure profitability of the programs.

Implementation Barriers

The largest challenge for the TDABC team was data integration. Universities tend to have lower-quality data than their private-sector counterparts. Departmental data on square feet occupied, number of full-time-equivalent faculty and staff, and the quantity and cost of assets, such as laboratory equipment and computer terminals, can be missing, fragmented, or in multiple formats. JSU also lacked information on work orders performed by support departments, such as facilities management. Most of the information existed somewhere in the university, but it was usually incomplete and in varying formats. The overworked IT department could spend weeks or months to acquire the requested data and to get work orders into a compatible format.

The attention of senior leadership also varied during the course of the project. Crises often erupted that demanded all the time of President Mason and his team until they were resolved. These distractions slowed down the project since implementing the TDABC approach requires senior-level support to build accurate models and gain access to relevant data. The project team eventually shifted its focus away from the IT department, where senior managers lacked interest and commitment, and the dining hall operation, where comprehensive data were lacking. The team concentrated on the Facilities Management Department, where managers had more interest and time to support the effort.

Finally, building an enterprisewide model for the entire university can be extremely challenging when not all parts are built in unison. Because of the phased approach, certain parts of the model would be ready quickly. Yet, the time-driven model is hungry for all the data from the start (e.g., entire general ledgers, class roster file, student file, and work order files). The team faced two choices: build the entire model, but only focus on certain parts, or build a number of separate minimodels and integrate the results later. The team decided to do the first because there is still value in having a view into the impact on certain departments (e.g., IT) before an enterprise model had been fully completed.

Early Value Capture

After completing Phase 2, the project team selected three departments within the university's shared-services group for immediate attention. For each of the three departments, the TDABC model identified services or activities whose costs were much higher than expected. The team traced the cause of the higher costs to the academic or administrative departments that were making unusually high demands for the department's services. Stovall began a process to set specific service levels for each of the three support departments and manage the service expectations for consuming departments. This initial value-capture exercise became one of the project's first wins. Both service providers and receivers now had a clear view of the cost to supply a given service and could internalize this cost in their decisions for the quantity and quality of service demanded.

Stovall emphasized from the beginning of the TDABC project that "understanding true cost analytics and resource allocation optimization at Jackson State needs to be a journey, not a destination." Much like its peer universities, JSU will always face the daunting challenge of managing a complex organization with increasing operating costs and shrinking public funds to supplement its budget. TDABC analytics will become embedded in the school's management approach.

Summary

The Jackson State University case features the application of TDABC in a nonprofit setting. While nonprofits may not seem to need a system to measure and manage customer profitability, in fact many nonprofits, including JSU, are extremely complex enterprises. A research university has multiple product lines (e.g., arts, humanities, engineering, sciences, and business), multiple services (research, teaching, administrative support), and multiple client types (e.g., a physics major requires very different resources from an early-child-education major). Like many of the featured private-sector case studies, JSU had been experiencing significant growth, but its growth rate of costs exceeded that for revenues (from tuition, state support, and federal research grants). The JSU president was willing to make tough decisions, but he recognized the need to understand the institution's true cost drivers before attempting the challenge of redirecting an institution as resistant to change as a university.

JSU focused initially on its IT costs since the existing cost system gave operating and support departments no visibility or accountability for the cost of IT resources they were demanding and using. The system initially drove costs to support units, deferring the more controversial full assignment of costs to academic units to a subsequent phase. The project delivered an early win when it learned that Dining, previously thought to be operating at a small profit, was actually losing substantial amounts of money. The administration could act quickly to eliminate the losses in this noncore department and at least restore it to breakeven so that it would not drain resources that could be better spent in academic departments.

The JSU implementation, while still in progress in 2006, teaches us that operations in educational institutions, indeed in many large, complex nonprofits, are not significantly different from those in the private sector. Large nonprofits need to understand the drivers that create demands for their expensive indirect and support resources. These institutions have similar opportunities for assigning accountability for resource spending, cost savings, and setting client service levels. Understanding the true cost-to-serve by university departments greatly improves visibility into opportunities for

process reengineering, resource reallocation, and capacity planning based on actual and affordable needs. As CEOs of universities and other nonprofits become more publicly accountable for their costs and performance, having a Time-Driven ABC model of their resource demands provides them with a powerful tool for guiding expansion plans, determining service levels, and managing budgets.

Notes

[1] Troy Stovall (Senior Vice President, Jackson State University), Steve Anderson and Snehal Talati (Acorn Systems) contributed to this case study.

[2] Ronald Mason, memo to Millennium Agenda Committee, Jackson State University, October 2003.

[3] Economic profit is defined as inflow (tuition fees plus grants) minus outflow (department direct costs plus department's portion of shared services).