

# **Accounting Strategy to Improve Public Higher Education Management**

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*A paradigm change is proposed in the management, accounting and financial reporting for universities that organizes both the management and the financial reporting by value streams within the university. A value stream organization will theoretically embrace and promote lean management concepts directed at improving efficiency and effectiveness. Value stream reporting should provide more transparency and alleviate agency problems associated with traditional GAAP financial reporting for colleges and universities.*

## **INTRODUCTION**

Higher education in the United States is considered by many to be the best in the world. Testimony to that fact is the large number of international students that immigrate from their home countries to enroll in U.S. education (NCES, 2007). However, it should be noted that higher education in the U. S. is suffering from an image problem as well as from upwardly spiraling costs (Immerwahr, 2004; Symonds, 2003). This paper has a two-fold purpose. First, we propose an integrated management and accounting strategy that has functioned in other contexts to address higher education cost and quality issues. Second, we link the strategy to a reporting model that should alleviate potential agency problems and make public university financial statements more useful.

The purposes are accomplished by setting the context through an introduction to the current educational climate. Next, the literature is reviewed on agency theory and continuous improvement using accounting models applicable to universities. Next is a discussion of the concept of the accounting model as an enabler of improvement with a proposed model heretofore unused in a university context. This is followed by a section with an illustration of the proposed accounting and reporting model. Finally a conclusion is provided.

## **COLLEGE COSTS AND QUALITY**

Notwithstanding that higher education in the US is still considered to be the best in the world, a recent survey indicates perceptions of quality for higher education has declined (Immerwahr, 2004). At the same time, the cost of attending college has risen at a rate much faster than the cost of medical care, which is widely thought to be of grave concern and out of control. In the past two decades, college tuition and fees have risen at an astounding rate of 439% compared to 251% for medical care (Callan, 2008). U.S.

leadership in college accessibility has eroded and the U. S. now ranks 7<sup>th</sup> in proportion of 18 – 24 year-olds enrolled in college (Callan, 2008). The cost of obtaining a college education has caused many to question the future capacity of our country to succeed in a knowledge-based economy and, as a result, predict possible grim economic consequences. Critics have suggested that higher education is locked into continuous cost increases without examination (Guskin, 1994). Rising costs in education have caused demands for greater accountability since the early 1990s (Doost, 1998).

Perhaps one reason that costs continue to rise is that leadership in higher education is lacking on a national scale. “College and university leaders have certainly worked hard on issues of institutional self-interest, as they must, but few have provided strong voices on policy matters that transcend the local campus” (Breneman, 2008, p.8). While criticism is increasing, the reaction of leaders in higher education has become defensive, rather than embarking on a proactive search for solutions (Breneman, 2008; Lingenfelter, 2007). Some critics of higher education believe the priorities in colleges are too focused on building institutional prestige, rather than developing a high performing educational system (Breneman, 2008).

Possibly due to what some consider misguided priorities, higher education has suffered from diseconomies of scale. While enrollments have grown at universities, total spending on a per student basis has increased dramatically; between 1993 and 2007 the increase was 34.5% (Greene, et.al., 2010). Even more alarming is the growth in spending per student on administration; the rate of increase is almost double at 61.2% (Greene, et.al., 2010). Despite technological advances that should have had cost-lowering effects, higher education spending continues to increase. Vedder (2004) comes to similar conclusions with respect to productivity in higher education. He suggests that part of the problem is a lack of use of technology and further notes only pennies on the higher education dollar actually go toward instruction; often as little as twenty-one cents of every dollar. In some universities faculty positions have decreased while the number of administrators grew substantially (Leslie and Rhoades, 1995).

## **PRIMARY CAUSES OF DISECONOMIES OF SCALE AND DECREASED PRODUCTIVITY**

We propose that diseconomies of scale and decreased productivity in an era of enrollment growth and technological advances have two primary causes. First, we postulate that there is a principal-agent problem. We believe the other cause has to do with the lack of a managerial accounting model that enables continuous improvement. Both are discussed in the sections that follow.

### **Agency Issues**

External financial reports have multiple objectives that include evaluation of performance and stewardship by stakeholders as set forth in the Statement of Financial Accounting Concepts (SFAC) No.1, (FASB, 1985a). Furthermore, external reports should be understandable to users according to SFAC No.2 (FASB, 1985b). While traditional GAAP reporting for public universities has undergone revisions, criticism began in earnest in the 1980’s (Mautz, 1989). In response to recognized deficiencies in traditional GAAP reporting, the Service Efforts and Accomplishments (SEA) project determined performance measures for nonprofit organizations (Brace, et.al., 1980; AAA, 1989). Although various measures were identified, no agreement was obtained concerning what measures might be included in financial reports.

In the late 1980s, the Government Accounting Standards Board (GASB) initiated new performance measure research pertaining to governments and governmental nonprofit organizations (Hatry, et.al., 1990). Faced with questionable financial statement usefulness, GASB Concept Statement No. 2 *Service Efforts and Accomplishments Reporting* (GASB, 1994) asked accountants and organizations to experiment by including financial and nonfinancial performance measures in the financial report disclosures. GASB amended Concept Statement No. 2 to include communication methods in 2008 but has yet to issue performance measure reporting guidance. In summary, despite decades of criticism concerning the usefulness of financial statements of governmental organizations, including colleges and

universities, as well as the difficulty in evaluating stewardship of those charged with the administration of public resources, nothing of substance has changed.

Reduced usefulness of financial statements and diminished ability to evaluate stewardship produce conditions that are ripe for agency problems. The stewardship duty is recognized as more significant in governmental entities than in private industry (GASB, 1987). Therefore, the usefulness and understandability of external reporting is of utmost importance to users. Despite financial accounting guidelines, Herzlinger (1996) charges that most governmental entities are shrouded in secrecy and that their financial reports do not reveal much that is useful.

Principal-agent issues in for-profit environments are well documented. In recent years researchers have begun to test the potential for principal-agent problems in a non-profit environment. Yetman and Yetman (2010) noted that the activities of charitable organizations were sometimes obfuscated through financial and regulatory reporting, creating potential for agency problems. They found that reporting quality increased with oversight. Fisman and Hubbard (2003, 2005) had similar findings with respect to endowments of foundations in that stronger governance led to greater endowment gifts. They concluded that it is possible that donors more readily donate when they perceive less potential for agency problems. Core, et.al. (2006) contend that “excess” endowments, i.e. unexpended endowment income, lead to inefficiencies in charitable organizations. They speculate that excess endowments are desired so that agents can obtain more discretion over the use of endowment income funds.

Ramachandra (2008) studied foundations of universities using the Core et.al. methodology to study excess endowments and had contrary findings. However, this study is limited as only one year of data is utilized.

Desai and Yetman (2006) note that expenditure allocation choices of management of non-profit organizations are remarkably unconstrained when compared to for-profit management. They cite other research finding that non-profit organizations may evolve into worker cooperatives where the elite workers determine activities of the organization. This theory could provide support for the cause of the diseconomies of scale associated with administration in higher education. They further tested this hypothesis and found that the more forceful the detective provisions are in state law to identify unlawful not-for-profit behavior, the greater the correlation with higher expenditure ratios for charitable purpose and the lower the compensation ratios for management of the organizations.

Information asymmetry caused by obfuscated financial reporting creates a condition whereby facts are not easily understandable and potentially enables moral hazards predicted by the theory of economic regulation and the social science theory of propaganda. Propaganda may be intentional or unintentional, but is a type of false communication (Schick, 1985). Such false communication can provide more influence when it is provided by a high prestige source (Lewis, 1941). Presumably high ranking university administrators are regarded as high prestige sources and might engage in propaganda, albeit unintentionally. Schick (1985) likened propaganda to saccharine, a type of false nutrient that can trick rats into using it until they starve themselves to death.

### **Continuous Improvement**

Clearly the current higher education management model has not found viable solutions to the issue of spiraling costs. Fortunately, experiences in other industries that have faced similar problems can provide insight to strategies that offer enhanced solutions. Higher education has become big business; even small public regional universities have annual revenues and expenditures of 100 million dollars and more, not including expenditures from their private foundation (NCES, 2007). In the early 1970s it was suggested that college costs can be contained by following business examples (Gales, 1973).

Global competition has forced business and industry to systematically focus efforts on continuous improvement. Management accounting systems have evolved over time to embrace the concepts of continuous improvement to provide management with insightful information regarding cost reduction and continuous improvement. This paper proposes that the same can be done for higher education. However, existing management and accounting models in higher education must be dramatically changed and

modern management methods instituted in the administration of each institution to accomplish a continuous improvement management philosophy.

Temponi (2005) notes that higher education has lagged in its pursuit of continuous improvement initiatives and points to a lack of understanding of quality management tools and cultural obstacles within higher education as deterrents to continuous improvement. Other research regarding continuous improvement in higher education represents rather basic and simple descriptions of the elements and culture needed for continuous improvement. For example, researchers proposed that leadership, information, abiding by the results of analysis rather than personal preferences, monitoring strategic plans and outcomes, and establish quality higher education cultures are mentioned as necessary (Ewell, 2002; Sayers, 2006; Lingenfelter, 2007). Most continuous improvement research in other contexts goes well beyond these basic tenets.

A continuous improvement model that has worked in industry is based on lean management concepts. Lean management focuses on the value stream and enables organizations to specify value and sequence processes that produce value in the most effective and efficient manner (Womack, et.al., 1990). Lean thinking is based on the reduction or elimination of non-value added activities with the aim to simplify and improve processes while reducing costs. Comm and Mathaisel (2005a) conducted an investigation of 18 institutions concerning lean management techniques in use at the institutions and identified a common lack of institutional strategy based on a lean management vision. In subsequent research Comm and Mathaisel (2005b) conclude that many administrators do not understand lean concepts, consistent with Temponi's (2005) conclusion that higher education needs to become more educated about lean. Comm and Mathaisel (2005b) believe that lean principles are a good fit for higher education, but that it will require a new perspective with respect to the roles of departments and responsibilities, despite the immutable nature of academia.

## **ACCOUNTING AS ENABLER OF CONTINUOUS IMPROVEMENT**

Colleges and universities do not traditionally have well-developed and meaningful cost management systems (McChlery and Rolfe, 2004; Ahumada, 1992). Cropper and Cook (2000) use survey evidence to conclude that users of costing data within universities are dissatisfied with their systems and would prefer a more robust decision support and analytical system.

Management accounting has as its objective to produce information that can be used to support strategic planning and decision-making by management to achieve organizational objectives. That is, management accounting is not about being a watchdog, but is meant to become an integral part of the continuous improvement process. In contrast, college and university accounting is based on fund accounting that was developed with the objective of providing budget control, not as a tool to become more effective and efficient. It is clear that traditional, generally accepted accounting principles (GAAP) for nonprofit and governmental entities provide information that is of little use in meeting the needs of administrators with improvement objectives (Coy, et.al., 2001). These limitations are not lost on educators themselves (Zbaracki, 1998; Harvey, 2002 cited in Houston, 2008).

A management accounting function within the university that utilizes true management accounting data would decrease the susceptibility of decisions based on internal politics or subjective information and increase the probability of linking decision-making and strategy to the university mission.

Continuous improvement requires a systematic need for timely, relevant, objective information and analysis. This has been the approach in industry and is now being recognized in the academy where the tradition has been that politics within the institution create priorities that may not relate to appropriate policy development and even lead to a culture of misinformation (Sayers, 2006). Sayers (2006) points out that educational institutions are considered loosely coupled bureaucratic structures that create an organization disconnected from outcomes; he counsels that the solution is objective information.

Management accounting in industry has evolved conceptually to meet the needs of Total Quality Management (TQM), continuous improvement, and lean management concepts. All of these concepts require information on processes and activities within the processes in order to seek improvement

strategies. Activity Based Costing (ABC) provides management with insightful information about these activities the amount of resources they consume. Under ABC a direct link of cause and effect between activities and costs is identified and costs are allocated to the product or service on the basis of the activities generating the costs. With accounting information in this format, management is able to affect better control over costs because costs are associated with tangible activities, rather than stand-alone numbers.

ABC costing has been promoted as a strategy to raise awareness of the costs of activities in universities for over two decades (Port and Burke, 1989). The ABC approach to costing has been employed in university settings with favorable results produced by better management and improved resource allocations (Gordon and Charles, 1998). Goddard and Ooi (1998) utilized ABC costing for library services and obtained significantly different results from the existing system of costing, as well as potential to improve operational efficiency. Acton and Cotton (1997) advocate the use of ABC as a means of management control of support department costs. While the benefits from ABC are touted, a significant practical disadvantage is the time involved to establish and maintain an ABC data base (Simmons, et.al., 2006; Cox, et.al., 1999; Gordon and Charles, 1998). Less onerous in terms of cost to maintain and implement is Time-Based ABC, but the cost to establish and maintain is still significant, although mitigated.

ABC costing integrates well with Activity Based Management (ABM), which seeks to manage activities in a way that will decrease costs and increase value. A further extension of ABM includes Value Based Management (VBM), where value is included in the equation. These approaches are used in industrial settings but are not common in higher education. However, McChlery and Rolfe (2004) posited that VBM could be applied to university settings and developed a model for the purpose of assisting in the strategic positioning of an academic unit. They report beneficial results with respect to the potential for improving management processes by making managers more aware of total costs to run their departments, as well as providing more transparency with respect to spending levels and enables better analysis and linkages to strategies.

McChlery, et.al. (2007) state that ABM models used in industry that design-out costs are transferrable to higher education. They support the claim by providing a methodology for ABM in a higher education context.

Although not widespread, management accounting reports have been utilized in higher education. Swonger and Mead (1998) developed a report designed to measure cost effectiveness of university programs by determining net contribution after deducting direct and indirect costs from revenue generated by a specific program. Responsibility Based Budgeting (RBB), often known within universities as a “tub on it’s own bottom” concept, has been promoted as a method of guiding cost control efforts in universities (Scarborough, 2009; Strauss and Curry, 2002).

While these costing models have provided insight into continuous improvement in universities, all have practical limitations such as time and cost. Another approach to cost management, based on value stream accounting, overcomes these limitations as well as integrates with lean management concepts.

### **Value Stream Accounting**

A recently evolved management accounting model, Value Stream Accounting (VSA), has potential for providing administrators with valuable information in a format that encompasses costs as they relate to value streams within the entity. This approach has the advantage of tying accounting information to lean management concepts and has proven effective in for-profit environments (Brosnahan, 2008; Gordon, 2010). Since lean concepts are considered a good fit for higher education (Comm and Mathaisel, 2005b), VSA should be considered a valid model and tool to assist with continuous improvement in higher education.

There is a set of activities or processes that form a value stream in the production of a product or service. An organization may have several different values streams that represent a single product or service, or a value stream may be made up of a family of products or services that have similar characteristics in their design, production and use (Baggeley, 2003). Each value stream includes the



support activities that relate to the creation of the product or service. A value stream, therefore, represents all activities required to create value for the end user or customer (Maynard, 2007). In a university setting, a value stream can be represented by each academic college.

Lean organizations focus on links between activities and customer needs with the objective of continuously improving customer satisfaction while simultaneously reducing non-value added activities. Value stream measurements, derived from value stream accounting, can be devised that highlight this lean management focus and objective. Communicating value stream measures and their use as evaluation tools for the organization will naturally motivate and focus employees at all levels on the improvement of these measures, thereby engendering a lean mentality throughout the organization.

Furthermore, value stream accounting can assist in better understanding the effects of strategic decisions. The vast majority of strategic decisions are driven by overarching objectives of becoming more effective and efficient. Through value stream accounting, the effects of strategic decisions are more transparent in terms of the impact of decisions on effectiveness and efficiency of each value stream.

One reason that value stream accounting enables better analysis and decision making is that value stream accounting attempts to reduce the use of indirect cost allocations, which are often made on more or less arbitrary bases. Direct costs are those costs directly traceable to the product or service. In a university setting, if each academic college is considered a value stream, the direct costs are those costs normally budgeted within each academic college. Indirect costs are all other costs associated with operating the university. Other recent accounting innovations such as ABC and RBB allocate indirect costs in determining a particular academic unit's contribution. However, indirect cost (overhead) allocations often create frictions as one academic unit may feel disadvantaged due to the allocation methodology chosen.

Value stream accounting overcomes much of the problem by viewing the production process as a value stream and assigning all costs associated with the value stream as direct costs. This has the added benefit of forcing management to view the entity differently and often supports an organizational change related to value streams, rather than traditional functional lines. A value stream perspective views all support functions necessary to produce the product or family of products as an integral part of the value stream. Thus support costs become direct to the value stream and not part of overhead which results in a more precise cost determination because no indirect cost allocation is necessary. In a university context, many support functions that represent indirect costs to the academic college can be dedicated to specific colleges, although under organizational control of administrative units. Examples would be student counseling and career services, registration, the library, etc. Some functions cannot be dedicated to a specific academic college such as the president's office and are not allocated, but are considered entity sustaining costs because their decisions/activities impact the entity as a whole.

Lean management thinking requires viewing the value stream as a sequence of activities that produce the ultimate value for the customer which does include many support functions that interact directly with the customer, student in this case. However, viewing the value stream as crossing functional (departmental) lines naturally creates the possibility of a nontraditional organizational hierarchy. The management adage that responsibility and authority should be equal is borne out in the necessity to view the organizational hierarchy differently. That is, only one person should be responsible for the value stream and should have authority to manage the value stream equal to that responsibility. Since the value stream crosses functional lines, the manager of the value stream should have the authority to direct all employees within the value stream, regardless of their function. In this case, the academic dean would be responsible to manage not only the academic part of the value stream but also the support functions dedicated to the college value stream. The decentralization of decisions, however, would have to be made within the broad parameters of university policies and strategies. All of the traditional costs of the college, as well as all other support costs would now be considered as direct costs to the value stream and under the authority of the value stream manager (i.e., the dean).

Such a change in organizational hierarchy is consistent with lean management concepts as it empowers the value stream manager to make decisions that affect the value stream regardless of the functions affected within the value stream. The change in hierarchy can also reduce the size of the hierarchy and simplify the operation. In a college and university setting, there is the further advantage of

ameliorating the criticism leveled by Sayers (2006), and others that claim universities are highly bureaucratic and loosely coupled, creating limitations for appropriate decision-making.

Adapting VSA to a university setting should not be difficult, or require change in the way expenditures are recognized or recorded. Therefore, traditional governmental or non-profit accounting processes can continue to be used for data entry. While lean theory would suggest that organizational hierarchy should be changed, VSA can be utilized for managerial accounting and reporting purposes without making the organizational changes.

### **Solutions Afforded Higher Education by VSA**

With respect to both FASB and GASB concept statements that promote the objectives of understandability, usefulness and the ability to evaluate stewardship, VSA can produce financial statements that satisfy these objectives. An empirical test of the usefulness of VSA financial reporting compared to traditional college and university GAAP reporting showed statistically significant differences for users' perceptions and preferences for VSA for the constructs of understandability, ability to evaluate management and utility for internal management (Gordon and Fischer, 2011).

VSA provides more transparency with respect to university spending patterns and priorities. This would address the criticisms leveled by Herzlinger (1996) and Yetman and Yetman (2010) that governmental and non-profit reporting shrouds activities in secrecy or obfuscates activities.

In environments where activities are obfuscated, the potential for information asymmetry exists. Information asymmetry can create the potential for propaganda which can mislead taxpayers concerning the priorities of any specific university. Further, the potential for agency issues is heightened. Research on agency issues in governmental and non-profit areas has indicated that this leads to inefficiencies (Core, et.al., 2006) or even situations where governmental institutions devolve into elite worker cooperatives where the elites determine spending priorities (Desai and Yetman, 2006). This condition could explain why the growth in administrative functions in universities has increased at a rate much faster than the other areas within higher education. In fact, Greene, et.al. (2010) maintain that growth in enrollment coupled with increased government subsidies to higher education generate increased funds that are not directly and proportionally utilized for education, but consider them as excess profits. According to Greene et.al. (2010), these excess profits are provided to the administrators, who they describe as *de facto* shareholders, in the form of higher compensation.

Under these circumstances where activities and priorities are obfuscated through financial reporting, it is doubtful that much will change. As Desai and Yetman (2006) speculate, the system may have evolved into an elite worker cooperative run essentially for the benefit of the elite workers. In this case it may be that the administrators are not consciously aware of how the system has evolved and is only perpetuated through an unconscious tradition of administrative growth. Vedder (2004) concludes that change will have to come from outside of the academy.

VSA can represent the catalyst for needed change. More understandable reports provided to the public and to legislators that demystify and make more transparent spending priorities and patterns can produce the impetus for change from outside the system.

Within the system, research on the lack of usefulness of traditional GAAP reporting for colleges and universities has already been cited. While new approaches have been tested, all of them still require allocation of indirect costs. The allocation methodology chosen will necessarily lead some within the university to feel that the methodology disadvantaged them *vis a vis* other departments or academic colleges, which creates inevitable friction. VSA obviates the need for indirect cost allocations.

Additionally, lean management techniques have functioned well to foster continuous improvement in other contexts and research is cited as supporting lean as a good fit for higher education as well. Since lean concepts are centered on value stream analysis, lean thinking integrates well with VSA.

Finally, VSA makes transparent the spending priorities of those charged with administration of resources. Such transparency assists in evaluating the effects of strategic decisions.

## ILLUSTRATION OF FINANCIAL REPORTING USING VSA

Value University (VU) is a state supported regional university. The GAAP Statement of Revenues, Expenses and Changes in Net Assets is shown in Table 1.

**TABLE 1**  
**VALUE UNIVERSITY**

Traditional Format	Current Year Totals
<b>Operating Revenues:</b>	
Student Tuition and Fees	\$35,000,000
Discounts and Allowances	(\$6,000,000)
Federal Sponsored Programs	\$6,500,000
Fed. Sponsored Programs-Pass Through from Other State Agencies	\$2,000,000
State Sponsored Programs	\$1,000,000
State Sponsored Programs Pass-Through from other State Agencies	\$2,000,000
Local Sponsored Programs	
Private Sponsored Programs	\$2,000,000
Sales and Services of Educational Activities	\$1,300,000
Auxiliary Enterprises	\$5,200,000
<b>Total Operating Revenues</b>	<b>\$49,000,000</b>
<b>Operating Expenses:</b>	
Instruction	\$30,500,000
Research	\$3,000,000
Public Service	\$1,300,000
Hospitals and Clinics	
Academic Support	\$6,300,000
Student Services	\$5,500,000
Institutional Support	\$11,000,000
Operations and Maintenance of Plant	\$6,400,000
Scholarships and Fellowships	\$7,000,000
Auxiliary Expenses	\$8,300,000
Depreciation and Amortization	\$7,700,000
<b>Total Operating Expenses</b>	<b>\$87,000,000</b>
<b>Operating Income (loss)</b>	<b>(\$38,000,000)</b>
<b>Non-Operating Revenues</b>	
State Appropriations	\$36,300,000
Gift Contributions for Operations	\$1,500,000
Net Investment Income	\$4,100,000
Net Increase( Decrease) in Fair Value of Investments	(\$5,800,000)
Other Non-Operating Revenues	\$100,000



	<b>Net Non-Operating Revenues/(Expenses)</b>	<b>\$36,200,000</b>
Income/(Loss) Before Other Rev./Exp, Gains/Losses, & Transfers		(\$1,800,000)
Gifts and Sponsored Programs for Capital Acquisitions		\$1,700,000
Additions to Permanent Endowments		\$5,000,000
Reclass from/ (to) Other Institutions		\$27,200,000
Transfers Between Institutions & System, Debt Service-Mandatory		(\$8,500,000)
Transfers Between Institutions & System, Debt Service-Non-Mandatory		\$2,600,000
	<b>Change in Net Assets</b>	<b>\$26,200,000</b>
Beginning Net Assets-		\$218,800,000
Ending Net Assets		<b>\$245,000,000</b>

Value University (VU) has five separate colleges within the university. Each college is viewed as a separate value stream. Table 2 reformats these same data from Table 1 using a value stream format and further allocates costs within each college to teaching, research, service or administrative to enhance the transparency. In this example, only the traditionally budgeted costs associated with each college are shown as value stream costs. Since university missions focus on some basic mixture of teaching, research and service, the costs associated with those functions within each value stream represent value added costs. Administrative costs and entity-sustaining costs are considered non-value added since they are not specifically directed at the mission. It is noteworthy that only about 27 cents of every dollar spent at VU is considered value added by this definition.

Some administrative functions and their associated entity-sustaining costs can be shifted to the value stream and control of the function given to the value stream manager (college dean). Lean theory predicts that the cost of these functions would decrease and the proportion of total non-value added costs also would decrease as a result of the managerial changes due to the enhanced ability to evaluate expenditures. Furthermore, the percentage of entity-sustaining costs would decrease with a shift of some functions to the individual value streams.

Although not used in this analysis, data on student credit hours (SCHs) generated by each value stream can be included so that administrators and those responsible for costs can better evaluate the efficiency of each value stream. Furthermore, this efficiency measure of each stream represents a benchmark that can be used to make appropriate inter- and intra-university comparisons.

Table 2 also reports return on operating revenues. This statistic indicates that College 2 is not operating nearly as efficiently as the other colleges within the university. College 2 is only contributing five percent of its revenue to support the entity's sustaining costs while each of the other colleges contribute over 50 percent of their revenues.

Reporting costs as either part of a value stream or part of entity sustaining costs highlights how resources are being consumed as either creating value toward accomplishment of the entity's mission or sustaining the entity's overall operation. Reporting percentages of value stream costs to the total costs provides a better context for analyzing and evaluating administrative decisions in terms of intra-university priorities. It also provides the ability to benchmark among peer universities.

**Table 2**  
**Value University**  
**Operating Activities**

**Value Stream Format**

	College 1	College 2	College 3	College 4	College 5	Total	
Value Stream (Operating) Revenue \$	7,500,000	8,000,000	12,000,000	7,000,000	14,500,000	\$ 49,000,000	
Expenses							Percent of Total
Instruction	2,500,000	5,500,000	3,000,000	2,500,000	4,000,000	17,500,000	20.11%
Research	150,000	500,000	200,000	200,000	500,000	1,550,000	1.78%
Public Service	50,000	100,000	100,000	100,000	100,000	450,000	0.52%
Administrative	1,000,000	1,500,000	700,000	600,000	800,000	4,600,000	5.29%
Total Value Stream Expenses	3,700,000	7,600,000	4,000,000	3,400,000	5,400,000	24,100,000	<b>27.70%</b>
<b>Value Stream Contribution Margin \$</b>	<b>3,800,000</b>	<b>400,000</b>	<b>8,000,000</b>	<b>3,600,000</b>	<b>9,100,000</b>	<b>\$ 24,900,000</b>	
Percent Return on Operating Revenue	51.00%	5.00%	66.67%	51.43%	62.76%	50.82%	

**Other Revenues**

Non-operating State Appropriations	36,300,000
Gift Contributions for Operations	<b>1,500,000</b>
Investment income used for Operations	<b>200,000</b>
<b>Total resources available to support sustaining costs</b>	<b>\$ 62,900,000</b>

Institution's sustaining expenses

Presidnet's Office	1,000,000	1.15%
Business Affairs	13,700,000	15.75%
Advancement and Fund Raising	1,000,000	1.15%
Academic Affairs	7,000,000	8.05%
Sponsored Research	1,600,000	1.83%
Student Affairs	7,000,000	8.05%
Athletics	1,500,000	1.72%
Scholarships and Fellowships	5,500,000	6.32%
Institutional Support	24,600,000	28.28%
Total Institutional Sustaining Expenses	<b>\$ 62,900,000</b>	<b>72.30%</b>

Net Revenues over/(under) Expenses \$ 0

Reconciliation:	Resources	Expenses
Operating Revenues	\$ 49,000,000	Value Stream Expenses: \$ 24,100,000
State Appropriations	36,300,000	Sustaining Expenses 62,900,000
Contributions	1,500,000	
Investment Income	200,000	
Combined total	<b>\$ 87,000,000</b>	<b>\$ 87,000,000</b>

In this illustration, about 27 cents of every dollar goes directly toward the mission. Vedder (2004) indicates that sometimes this is as low as 21 cents. Interestingly, the average proportion of every dollar that goes toward program expenses (mission) of charitable organizations is 79 cents (Gordon, et.al., 2009).

Obviously, care must be taken in making value judgments about performance between value streams and/or between universities. Clearly, this data should be supplemented with information about quality. Furthermore, not all universities are directly comparable for many reasons, so any benchmarking must be done with extreme care.

## CONCLUSIONS

Spiraling costs, diminished productivity and diseconomies of scale are placing in jeopardy the affordability of a university education to all but a few wealthy Americans or those students receiving significant financial aid. There is little dispute that reducing the availability of education will place America's economic future in peril.

Adding to the crush of higher costs in universities is the reality that tax revenues are at risk of diminishing over the next few years. Reduced tax revenues will likely result in the reduction of resource allocations to publicly supported higher education.

Lean management concepts prevail in industry as a strategy for becoming more competitive. These concepts when properly implemented improve quality and lower costs by reducing non-value added activities. However, the trend in universities has been to create more hierarchy and concomitant costs. The current administrative model is clearly broken.

Current university financial reporting requirements do not provide much analytical insight to evaluate the administration (management) of the university, or to provide the administration with information that enables the development and analysis of management strategies to improve quality and reduce costs. Furthermore, under traditional university management there is no incentive to reduce spending below budgeted levels as that might result in reduced future budget allocations. The tendency of "use it or lose it" is anathema to lean management.

Value stream accounting can promote the use of lean management concepts by administrators as internal accounting reports are formatted in a way that highlights the costs of each value stream and non-value added activities. Adopting a lean approach to manage universities can reduce the accelerated rate of costs of education and has the potential to increase quality in the process. Value stream accounting can be a powerful tool to aid in that process.

If value stream reporting is employed, it is likely that stakeholders will have more useful information to evaluate performance of the university, as evidenced by our findings. The ability for meaningful external evaluations by stakeholders can have a positive effect on university administration.

If higher education cannot solve its problems, solutions will be imposed from outside governance groups. Furthermore, without acting administrators face the possibility of losing public credibility. Without finding substantive solutions, it would not be farfetched to predict that state legislatures will be lobbied by for-profit companies to administer (manage) universities.

To implement a lean approach to management, information is needed in a different format than is traditionally provided by current GAAP accounting and reporting for universities. Value stream accounting provides that needed context. Further, some entities reorganize around the value streams within the organization, often providing further leverage of lean benefits. We urge administrators and policy setters to consider the possibility that value stream accounting represents a powerful tool and strategy to decrease costs and improve quality.

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