

Evolving Higher Education Business Models

Leading with Data to Deliver Results

Louis Soares, Patricia Steele, and Lindsay Wayt

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FORWARD

Anyone concerned about how colleges and universities can remain viable, and indeed thrive, in the face of today's many challenges should read this paper carefully. The ideas are profound and the recommendations are potential game-changers that challenge the conventional wisdom. They will help institutions transform themselves—in ways appropriate to twenty-first-century values, market conditions, and technology—to become better and more innovative.

The authors call for rethinking the university's "business model." The idea is not to become like a business, but rather to analyze how processes, technologies, and resources are used to deliver value. The model begins with the institution's "value propositions": in particular, meeting the needs of traditional and post-traditional students. (Research and scholarship also are important, for their own sake as well as contributing to education.) Next come resources: the mix of people, technology, products, partners, facilities, and equipment necessary to meet student needs. Processes use resources in particular ways to deliver on the value proposition, and the so-called "profit formula" considers the revenue needed to cover the cost of delivering services and maintaining sustainability. The traditional business model remains fit for purpose in many ways, but the current challenges have revealed significant flaws. My own work (Massy 2016) examines these flaws in detail, and proposes some practical solutions. This paper addresses similar issues as it considers the business model, the cost of teaching, and the need for "networked leadership."

"Illuminating the 'Black Box' of College Spending" may be the paper's most advanced and provocative section. Institutions cannot innovate effectively without knowledge of costs in relation to revenue: both historically, in terms of what they have actually done, and prospectively in terms of what they might do in the future. This is particularly important for the cost of teaching, the "business of the business." The required data go far beyond what can be gleaned from financial statements or even from conventional cost accounting. What's needed are structural models that describe how resources are applied to particular activities in sufficient detail to allow in-depth understanding of what's being done at what cost, and "what-if analysis" of what might be done to effect improvements.

The needed results can be obtained from a new generation of activity based costing (ABC) models, applied at the level of individual courses, which provide bottom-up infor-

mation about modes of teaching, the resources consumed by each mode, and the cost of the resources—plus revenues earned and the margins generated (Massy 2016). These highly flexible models can include quality-related variables such as numbers of sections and breakouts, average class size, use of teaching assistants and adjunct faculty, and whether the classes involve online work or special technology. They can readily incorporate learning metrics when they become available in particular fields. It is still early days for these models, but institutions that learn to employ them effectively will empower faculty and department chairs, deans and provosts, financial executives, and governing boards to fulfill their responsibilities more effectively.

The paper points out that achieving these benefits will require a working knowledge of activities, costs, revenues, and margins by faculty and staff across the institution. Such internal transparency means, inevitably, that the information will become available to external stakeholders—including government funding agencies. This challenges the traditional view that internal data should be held closely in order to avoid criticism and second-guessing. However, the modern view holds that such problems must be dealt with on their merits—using evidence-based arguments—because eschewing transparency makes it impossible for internal parties to use the data effectively.

The last main theme of the paper is that “network leaders” are needed to unlock the value of financial transparency. Such leadership broadens participation in shared governance and, at the same time, organizes it around coordinated information and criteria for systemic improvement. The new leaders “awaken” networks of faculty, administrators, and others—both within institutions and across groups of institutions—to create deeper insights about best practices and financial consequences. These networks exist already, but they operate in an uncoordinated fashion without benefit of common data. Indeed, the paucity and concentration of data mean that even shared governance (a kind of network) works mainly through proxies rather than wide participation. One of the network leaders’ key jobs is to “orchestrate” the development of common data sets and decision support tools like the ABC models described above, and use them to help people align objectives and get things done. The idea of networked management provides important insights about how universities can fix the flaws in their academic business models.

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EXECUTIVE SUMMARY

Higher education is more important than ever to both individual opportunity and national competitiveness. While the pressures vary across stakeholder groups, college and university leaders, public policymakers, and students and families are eager for new ways to deliver and receive a quality and affordable postsecondary education. Moreover, there is a growing expectation that college and university presidents, provosts, and chief financial officers will use data to drive decisions, including those about overall institutional expenditures, needed investment in innovation, and the tie between these dollars and student outcomes. Yet, at many institutions today, leaders are often left to make financial decisions in the dark. Higher education finance is often viewed as a “black box,” with revenue generation, spending, and the monitoring of student outcomes often taking place separately from each other. Investment and expenditure decisions are sometimes made on hunches or in year-to-year increments.

In answer to these and other challenges, this paper proposes a network approach to leadership—one that creates transparency around institutional financial data using business model analysis and empowers those on the front lines to make data-informed decisions that improve institutional practices aligned with performance outcomes. Inspired in part by proceedings from a September 2015 American Council on Education/TIAA Institute convening of college and university presidents, provosts, chief financial officers, and higher education thought leaders and researchers, this paper was further guided by the business model and networked organization literature.

This paper explores the real possibility that making the black box transparent and deploying the business intelligence therein are among the keys to re-imagining the academic enterprise itself. Key takeaways include the following:

Financial Decision Making is Best Guided through Business Model Approaches that Prioritize Data Transparency

In the case of higher education, the business model lens can provide a useful way of thinking about the mix of resources and processes used to deliver a high-quality, affordable education. A model that prioritizes granular data transparency provides stakeholders visibility into the connections between expenses, revenues, and educational outcomes.

Among the benefits of this thinking is the ability to explore the implications of cross subsidies across academic programs and the ability to understand relative return on investment. This level of transparency in turn requires improved understanding of costs at the program and course level, ultimately allowing for data-driven program and course delivery.

Shared Governance Models Can Adapt to Use “Networked” Tools

True financial data transparency necessitates an enhanced vision of shared governance. Through the purposeful implementation of the described “networked leadership” approach—in which leaders increase transparency, empower frontline community members, and guide performance standards and metrics—institutions are able to more agilely respond to environmental demands. Faculty and staff become empowered to make decisions guided by financial data, with the ability to unbundle and re-bundle program delivery and services in ways that align with their costs in accordance with established network performance indicators. The network approach, in essence, shifts shared governance from an emphasis on institutional dialogue and coherence towards institutional performance based on agreed-upon metrics.

Institutional Practices—and Their Leaders—Must Purposefully Evolve

Change is not a conclusive process but is ongoing—especially change that necessitates a structural shift in how colleges and universities operate. As the higher education landscape continues to evolve, so necessitates the development of network-oriented skills in higher education leaders. Under the networked model, leaders must continuously work to embed data-informed decision capabilities at all network levels; promote collaborative, networked approaches to established performance outcomes; and continue to utilize technologies that facilitate the use of accessible financial and outcomes data.

Noted management guru Peter Drucker said that “innovation is change that creates a new dimension of performance.” For organizations with a social mission, such as colleges and universities, he posited that systematic approaches to change based on good data, insight, and leadership would allow for innovation with integrity through which institutions might improve the lives of the individuals they serve. Using new conceptual tools to analyze financial and academic models, granular financial data to unpack return on investment, and networked organization approaches to drive efficiency and effectiveness, college presidents and their leadership teams can systematically innovate within their institutions with integrity and help boost education attainment, thus serving both their students and the nation at large.

INTRODUCTION

Colleges and universities are under extraordinary pressure not only to produce more and better-trained, skilled graduates but also to do so with decreasing revenues. Despite limited budgets for some, institutions are expected to provide more services for students and the community. They are further expected to innovate within their curriculum and co-curriculum by providing new pedagogies, delivery models, high-impact learning experiences, and technologies. Meanwhile, steadily climbing prices of higher education frequently hinder potential applicants from pursuing and completing degree programs. Colleges and universities engage these challenges in myriad ways, including with leadership and management practices based largely on tradition. The management practices that made U.S. colleges and universities world leaders in the twentieth century are ripe for evolution. In this paper, we propose a movement away from the traditional shared governance approach to a related, more effective network approach that empowers those on the front line and creates transparency around financial data and decision making. This transparency would improve resource investments so that innovations are being selected because they yield outcomes in education.

In this paper, we propose a movement away from the traditional shared governance approach to a related, more effective network approach that empowers those on the front line and creates transparency around financial data and decision making.

The rise of bureaucratic, specialized education administration carried out by professionals in the twentieth century enabled the United States to standardize degree production and to efficiently scale higher education capacity. This incredible achievement supported a massive expansion of postsecondary degree production over the last 100 years. The management practices in higher education that facilitated growth include formalized decision

making, annual budgeting and planning cycles, and a separation of administration and faculty roles and responsibilities such as recruiting and admissions, financial aid, student affairs, and business affairs. These practices produced well-governed colleges and universities, but they also move the important discussion on cost of instructional delivery, the components of cost, and quality of outcomes far from those in the delivery of instruction, and in some cases to just an elite group of those in planning and decision-making roles.

Today, some colleges and universities are augmenting these traditional management systems with new, network-aware practices and business models that enable them to more rapidly change their offerings, better align programs with student and employer needs, and improve the personal value of higher education for each student. These new network-aware practices include shared governance, but expand upon it to distribute leadership and decision making more broadly throughout the organization with the goal of improving performance. Similar to the shared governance concept, distributed leadership is one that maximizes the potential of all organization members by empowering them through strong lines of communication and collaboration, and harnessing their individual strengths and expertise in both formal and informal settings (Jones, Lefoe, Harvey, and Ryland 2012).

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The network model, while providing overall empowerment to frontline organization members, is organized so that ultimate leadership remains within formalized structures. This version of leadership allows for maximization of the use of frontline organization members' expertise and provides uniform standards for information and for performance used to evaluate outcomes relative to institutional mission. Business management literature calls this organization structure a network, and the type of leadership called for is one in which its leader is the "network orchestrator" who functions as facilitator (Hacki and Lighton 2001). In their journey to becoming more effective network organizations, colleges and universities thus explicitly cultivate these network orchestrators, people immersed in ensuring that the platform for analysis and data needed for assessing inputs and outcomes of the education process are available to all stakeholders. This person "evaluate[s] what information is needed at each stage of the value chain and when . . . and present[s] that information in a clear and consistent way," functioning as both facilitator and enabler (Hacki and Lighton 2001, 35).

Leadership that moves institutions toward a network way of functioning is key to moving institutions toward greater transparency and cost efficiency, and it is, in no uncertain

terms, an enormous task. It requires presidents and other institutional leaders to have a simple means for understanding their business model and a networked organization way of thinking to actively sponsor and oversee specific initiatives that mature the financial transparency of their own institutions (and between institutions), while empowering frontline staff, faculty, and administrators to make informed decisions that serve the institutional mission. College and university leaders will need to engage in the hard work of extracting actionable information from the data in their information systems, leading their faculty and staff to understand and articulate the real relationships between their inputs and outputs as an organization, and then executing informed decisions driven by mission, quality, cost, and revenue considerations. The construction of such a network will ultimately allow leaders and their institutions to realize the benefits of efficient, cost-saving measures and pursue business model innovations that could meaningfully improve affordability, accessibility, learning outcomes, degree production, and institutional health.

ACE/TIAA Institute September 2015 Convening and Other Sources of Inspiration

In September 2015, ACE's Center for Policy Research and Strategy (CPRS), in partnership with the TIAA Institute, convened a small group of college and university presidents, provosts, and chief financial officers (CFOs) to explore ways to improve the decision-making models pertaining to finance and innovation in higher education. Two central themes emerged from this discussion and inspired this paper: 1) the pursuit of financial data transparency, and 2) the need for data-driven leadership at all levels of the institution. (See Appendix A for other convening themes.) Leaders expressed a need for more members of the campus community to be able to understand the costs and benefits of educational delivery as a means to better decision making, hence the need for financial data in more accessible forms. With regard to leadership, participants agreed that such data were needed to honor and incentivize the strengths of the shared governance model of higher education.

In conjunction with the September convening, CPRS commissioned three background papers on financial data and change in higher education (see Appendices B-D):

In a paper titled *What Do Higher Education Leaders Need to Know About Institutional Finance? And What Can Available Data Tell Them?*, Donna Desrochers, Matthew Soldner, and Thomas Weko of American Institutes for Research explore availability and limitations of institutional and public financial datasets to inform management and innovation initiatives.

Financial Data at the Crossroads of Cost Containment and Educational Innovation, by Dennis Jones from the National Center for Higher Education Management Systems, unpacks available institutional financial data to suggest key financial measures and conventions for productive educational program delivery and also theorizes about the application of these conventions to innovative models such as online and competency-based education.

In their paper *Key Challenges in Higher Education: An Economic Models Perspective*, authors Jacalyn Askin and Bob Shea of the National Association of College and University Business Officers build on their work in the New Economic Models project to identify key leadership issues as the financial model of higher education transforms in response to changing economic and policy environments.

The convening and commissioned papers further pushed us to seek out fresh insights on how financial transparency and leadership could be aligned to enhance higher education academic and business models. For this, we looked to the business literature, particularly business model and networked organization theories and analysis. A business model frame provides a simple means to abstract from the complexity of education delivery into four categories—value proposition, resources, processes, and profit margin—that allow us to see where financial transparency can be helpful. The networked organization frame posits a way to align incentives in distributed value chains to encourage participants to deliver value that serves consumers and leverages each other's strengths. This seemed well aligned with a need to improve upon shared governance for a time of financial constraints and innovation imperatives.

BACKGROUND

Understanding how institutions can evolve as networked organizations requires a deeper look at the conflicting priorities and driving pressures U.S. colleges and universities face in the current landscape.

The Demand for More

Public policymakers, students, and their families are pressuring colleges and universities to do more, and to do more for a more diverse population of students. Demand for higher education continues to grow—enrollment immediately following high school continues to rise, adults enroll or re-enroll in college later in life, and people seek out more training throughout their careers. Higher education is under pressure to cost-effectively educate this increasingly diverse and growing population of students. There is pressure at one end of the spectrum to continue to fulfill higher education's role in preparing students to think critically and express themselves through a traditional liberal arts curriculum, and pressure on the other end of the spectrum to provide students with professional and marketable skills, with an emphasis on employability. While the spectrum is at some level a false dichotomy, colleges and universities are nonetheless under pressure to fulfill both.

In order to serve more students, particularly students who come from disadvantaged backgrounds and who are underprepared for college-level work, institutions make investments to expand the capacity of their institutional infrastructure. Among other decisions, institutional leaders may choose to invest in online or virtual presence technologies that allow them to serve a greater number of students, or they may invest in physical classroom or laboratory space, student services, or in the size and quality of the faculty who deliver instruction. All of these avenues for increasing institutional capacity require both upfront investments and ongoing costs.

In addition to the demand for capacity building, postsecondary institutions face performance criteria by policymakers and the public alike, who want to see more students completing their degrees and to see those degrees translate into career opportunities. Students and families expect that the educational investments they make, including any debt they may incur, will yield a degree with intrinsic and market value that justifies this investment. States are also zeroing in on performance. For example, instead of allocating

budget dollars based on enrollment, many are using budget models that reward institutions for degree outcomes. Experts say this trend is expected to continue as the number of states proposing to tie funds to performance grows each year (National Association of State Budget Officers 2013). Last and certainly not least is attention to access and student success by the federal government. The Obama administration, for example, has put forth various efforts to incentivize institutions to contain costs and keep prices down while also demonstrating the benefits students realize through their educational programs. The momentum for performance accountability at the federal level enjoys bipartisan support and is unlikely to subside in its pressure on institutions to be more productive and efficient.

Beyond catering to a growing student market and meeting the performance expectations of policymakers, colleges and universities are still expected to continue other mission-related functions; for example, research and development growth or workforce and economic development. In this environment, institutions themselves are the arbiters of contending expectations among students, their families, governments, taxpayers, voters, donors, corporations, academic associations, faculty, and staff, and the viability and success of the institution itself as an enterprise. Colleges and universities are rightly expected to serve multiple and diverse missions, including ensuring learning and progress for underrepresented students or returning adults. In the context of these various aims, colleges and universities make decisions—actively or passively—about how their operations fund, cross-subsidize, and produce their institution’s specific mix of outcomes. By extension, they decide the distribution of the benefits of those outcomes across a range of stakeholders. These decisions are easier to make in periods of revenue expansion when all stakeholders can become at least a little bit better off. But with declining revenues—as has been the case in recent years—institutions are forced to make choices that require unpopular tradeoffs.

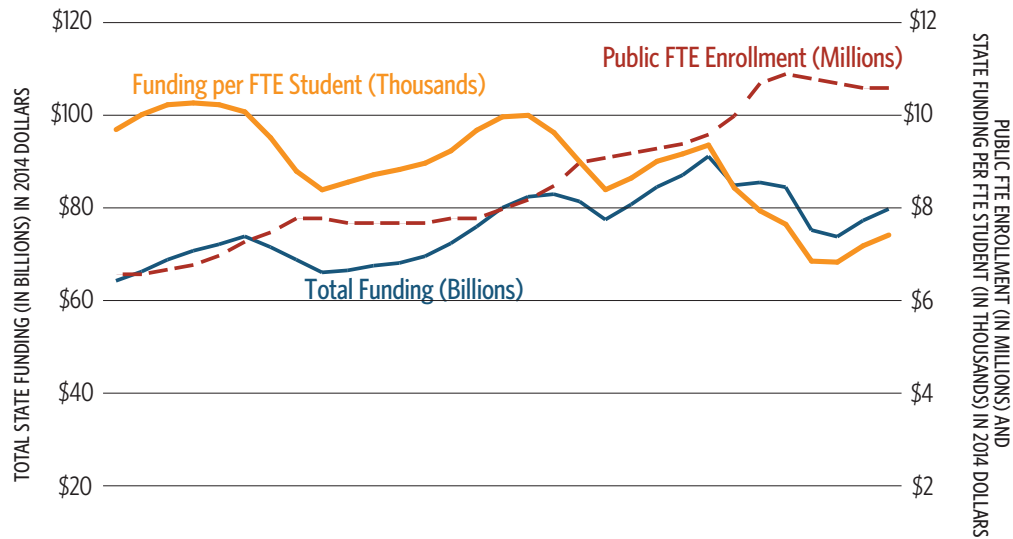
Shrinking Revenues

The Great Recession dramatically curtailed the growth of government funding for higher education. From 2006 to 2011, the vast majority of states decreased per-student spending in real dollars. While federal funds offset some of that loss, little remains, and institutions have sought out other creative sources to “refill” the revenues (Tobenkin 2013). The Center on Budget and Policy Priorities reports that states are funding higher education 20 percent less today per student than they did in the 2007–08 academic year (Mitchell and Leachman 2015).

Declining public appropriations per student are not a new trend. Over the past three decades, college enrollment has continued to rise while the public funds per student for higher education have not kept pace in real dollars (see Figure 1). A series of Moody’s Investors Service analyses (Gephardt 2015; Ortiz 2015; Osborn 2015; Sharma 2015) suggest that despite seeing general improvements in the financial health of the 500 Moody’s-rated universities, certain institutions will continue to face financial challenges. Analogous to the phrase “the rich get richer while the poor get poorer,” the rated universities that have

previously demonstrated more financial stability—those with Aaa and Aa Moody ratings and classified as global/national universities—will demonstrate financial stability due to diversified investments and less reliance on tuition for revenue. Regional colleges and universities—those that are often smaller and with less liquidity in their funds to invest in areas that will draw new students (e.g., academic programs, student life, facilities)—are more likely to lag behind.

Figure 1. Total and Per-Student State Funding for Higher Education in 2014 Dollars, and Public FTE Enrollment, 1984–85 to 2014–15



Source: *Trends in College Pricing 2015*. The College Board.

Compared to the significant complexity of cost analysis and the uncertainty of its potential benefits in an education enterprise, institutions often choose much more immediate, readily available solutions with stronger certainty of success, such as raising tuition or fees, enlisting differential pricing or fee strategies, or issuing a 100-year bond like The Ohio State University did in 2012 (Burne 2011). The preference for financial strategies that focus on the “top line” of revenues rather than on the operational costs that produce the bottom line for colleges and universities is also driven by the social expectations that staff have of themselves and of each other in the processes for financial planning, budgeting, and analysis.

The predominant business models in higher education reward spending rather than efficiency as it relates to student outcomes. The real but relatively intangible qualities of educational outcomes provide ample room for faculty and instructors to disagree with each other, administrators, and other stakeholders on the measures of educational success, their meaning, and their value, which highlights the challenge of approaching student outcomes from an efficiency-minded perspective. The revenue-focused business model and the pliable definitions of success lead to cultures in higher education skeptical about the intellectual reliability of cost analysis and resistant to dedicating energy to

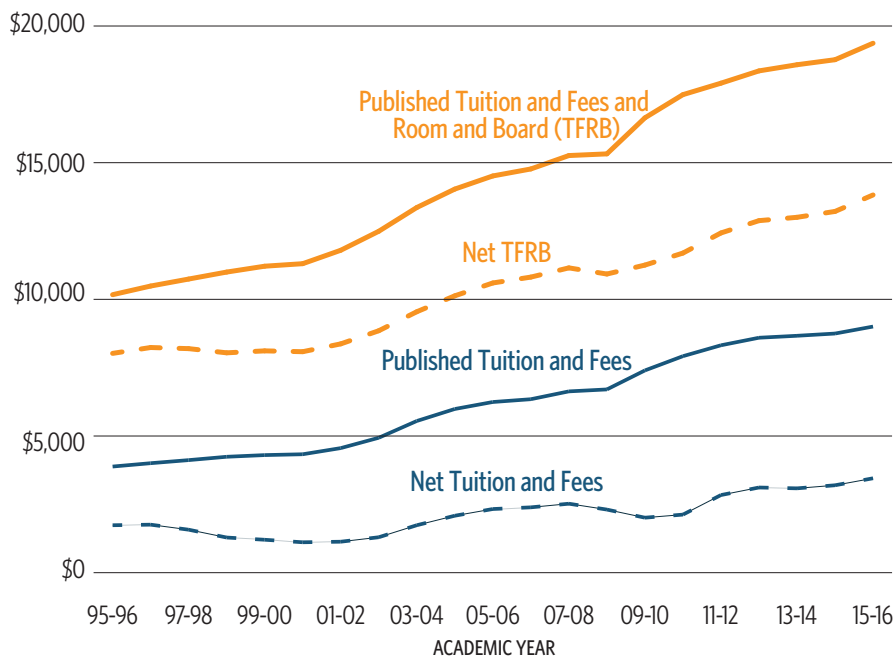
these efforts. In this way, institutional culture reinforces the bias for revenue-enhancing strategies, rather than margin and productivity strategies.

Nevertheless, colleges and universities need to do more with less. Decreased revenues and increased consumer and policymaker aversion to rising sticker prices continue to press campuses to be more productive. Moody’s most recent bond credit rating of the higher education sector (which was recently positive for the first time in over two years) highlights that the key financial risk to the sector over the next few years is not further declines in revenue, but large growth of expenses, which must be mitigated by cost containment (Bogaty and Smith 2015). To provide quality education and services to students, colleges and universities will need to continue to offset growing expenses with higher prices, or navigate the road of cost containment and innovation in new ways.

Rising Prices and Where They Lead

In the face of more demands and diminished revenue sources, higher education leaders have been constrained to respond to revenue gaps by shifting costs over to students and their families. In the last 30 years, published tuition and fees have increased by 114 percent in 2015 dollars. While these figures represent published prices, average net tuition and fees have for the most part risen over the last 30 years as well (see Figure 2).

Figure 2. Net Tuition, Fees, and Room and Board Prices in 2015 Dollars, Full-Time In-State Undergraduate Students at Public Four-Year Institutions, 1995–96 to 2015–16



Source: *Trends in College Pricing 2015*. The College Board.

Eventually, the trend must break down. Students will become more cost sensitive as education takes up a larger portion of their income, choosing institutions that offer the

best price. This will in turn be most challenging for small regional public universities and small private nonprofit institutions that have a greater reliance on tuition revenues (Bogaty and Smith 2015). According to Moody's credit research, over the next few years "stress will be highest at smaller, regional public universities with less than \$500 million in revenue, and at small, private universities and colleges with less than \$200 million in revenue" (Bogaty and Smith 2015).

Perhaps the most troubling effect of using tuition and fees hikes in response to revenue loss is its negative impact on those most underrepresented in higher education—low-income students, those from racial minority backgrounds, and first-generation college students.

Perhaps the most troubling effect of using tuition and fees hikes in response to revenue loss is its negative impact on those most underrepresented in higher education—low-income students, those from racial minority backgrounds, and first-generation college students. These populations are less likely to access certain types of grants and loan aid, or to have the liquidity to finance cost increases. The long-term impact can only yield greater inequity in access to postsecondary opportunity, entrance to graduate and professional pathways and positions of leadership, and a generation of lost talent. Despite the system's built-in bias toward revenue replacement strategies, some institutions are making the effort to focus on institutional performance by experimenting with an array of innovations in how they structure, deliver, and assess education both inside and outside of the classroom. We turn to such institutions next.

Innovation Is Underway

Independent of the financial pressures and increasing accountability for performance outcomes facing higher education, forward-looking individuals and teams have been harnessing engagement in change and innovation to make higher education more relevant and more efficient. Entrepreneurs and innovators have already disrupted twentieth-century models of instruction by creating increasingly sophisticated alternative educational experiences that are potentially more engaging and/or cost-efficient. The rise of the Internet broke the geographic link between teachers and students and enabled instruction to come to students, rather than students physically coming to class. The emergence of search technologies, such as those that power Google, made information retrieval and research activities performed by students as part of their course work exponentially quicker and more relevant. These disruptions will continue to play out in higher education, as virtual reality, telepresence, speech-recognition, and other emerging technologies make their way into the mainstream of instruction. As Eli Noam (1995) shares:

Scholarly activity . . . consists of three elements: the creation of knowledge and evaluation of its validity; the preservation of information; and the transmission of this information to others. Accomplishing each of these functions is based on a set of technologies and economies. Together with history and politics, they give rise to a set of institutions. Change the technology and economies, and the institutions must change, eventually. (para. 2)

The proliferation of these information technologies necessarily affects the internal operations of colleges and universities. But even more significantly, technology has altered the flow of information and knowledge throughout society and alters higher education institutions' relationships with other sectors in relation to the overall knowledge economy. As Noam (1995) further notes:

The system of higher education is in the process of breaking down. The reason is not primarily technological; technology simply enables change to occur. The fundamental reason is that today's production and distribution of information are undermining the traditional flow of information, and with it the traditional university structure. . . . (para. 23)

The traditional model of higher education is indeed transforming. Take the University Innovation Alliance, for example. It is a partnership of 11 public research universities committed to quality education and improving completion and retention rates for low-income students. They are leveraging the predictive analytics and course advising/mapping (EAdvisor) tools of lead institutions—Georgia State University (GSU) and Arizona State University (ASU)—to redesign their own business models. Taken together, GSU and ASU estimate that academic and business process changes enabled by these technology tools have saved their institutions and students over \$16 million (University Innovation Alliance 2015).

Brick-and-mortar institutions such as Southern New Hampshire University are spinning off both traditional credit-bearing online programs as well as competency-based models such as College For America, which is designed to provide a low-cost associate degree equivalent through engagement with employers. Each one of these spin-offs is intended to create value for distinct types of learners. The traditional online programs for college-ready yet time-strapped students, for example, and models like College For America are aimed at students not on a college track but needing to upgrade workplace skills.

Common approaches across the innovations above include course redesign to embed high-tech and high-touch solutions, data-driven decision-making tools, use of open courseware to reduce curricular costs, rethinking credentials with competency-based education and stackable modules, scaling the use of online education, and integrating robust community/industry partnerships to augment and inform academic delivery. These constitute changes to the core processes of higher education delivery as described in the next section on business models.

But traditional institutions are not the only type of player developing new approaches. Take General Assembly, a so-called “boot camp,” designed to deliver intensive college-level skill development. General Assembly is combining practical business training

BUSINESS MODELS IN PRACTICE

Activity-Based Costing

When considering financial data and decision-making processes, some business experts have posited the importance of moving beyond the annual budget cycle to more time-effective and responsive practices such as activity-based costing (Worley and Lawler 2006).

The activity-based costing (ABC) approach to budgets and planning is being adopted by the community college sector and elsewhere in the face of both financial and accountability pressures and the need to know what it truly costs to deliver an education. At its core, the ABC approach provides higher education leaders with an opportunity to make spending decisions based on activities rather than broad units or functions. Most of higher education does not have granular information on what the costs of particular activities are in the production of a course or degree, or how costs vary for different types of students. Some institutions have taken on ABC approaches with the goal of aligning their spending in ways that maximize outcomes for students. One useful guide to implementing ABC notes that the approach has its limitations, but the benefit is campus engagement in illuminating spending and possible cost savings of scarce resources in alignment with campus goals (Hurlburt, Kirshstein, and Rossol-Allison 2014).

Campus leaders can drive the activity-based costing maturity of the college or university through a combination of information system upgrades, talent upgrades for finance staff, high-touch training for staff and faculty on the practice of ABC, and sponsorship from the president, in terms of priority of ABC maturity relative to other projects on campus.

with software coding preparation and close ties to employers to prepare liberal arts graduates for success in fast-paced technology-driven businesses. As such, they are competing with both career services in traditional undergraduate institutions and, at least partially, with graduate schools. A final set of disruptive organizations are those exploring ways to document what individuals know and can do in ways that could challenge the traditional credentialing process that colleges and universities have fulfilled. Degreed and LinkedIn are each attempting to document learner competencies regardless of what institution they attended. Again, these models have close ties to employers seeking skilled staff.

These examples are meant to illustrate that the different resources and processes colleges and universities use to deliver education are evolving within traditional institutions and facilitating the rise of alternative education providers. Yet, little is known about the financial implications of these new delivery models. In fact, the value proposition for higher education is evolving beyond the place- and time-based, faculty-led experience that people usually associate with college. Institutions will likely need to adapt at least in some ways to prosper in this emerging ecosystem in order to remain relevant and seize opportunities such as:

- Understanding the nature of change and the potential to closely reexamine current practices and make significant change.
- Using data to significantly strengthen support and service to all aspects of the learners' life as they engage with the institution.
- Understanding the potential big data has to redefine the meaning of lifelong learning from an institutional to a personal service.
- Redefining the meaning and the structure of career and professional development and support through life.
- Dramatically customizing services to individuals at a scale unimaginable 10 years ago.
- Dramatically improving learning in the humanities, math and science with learners who have not been able to access high-quality opportunities in the traditional system. (Smith 2013)

The value proposition for higher education is evolving beyond the place- and time-based, faculty-led experience that people usually associate with college. Institutions will likely need to adapt at least in some ways to prosper in this emerging ecosystem in order to remain relevant and seize opportunities.

Students, their families, industry, taxpayers, and voters are pressing colleges and universities to deliver more, better, and cheaper educational and research services to their com-

munities and beyond. At the same time, higher education is running up against society's unwillingness to incur incremental costs for higher education—both as private citizens and as government entities.

The shift of the financial burden of paying for college from governments to students and their families is not sustainable, and has negative impacts on the broader mission of higher education to improve social equality and justice. With their ability to replace declining revenues largely tapped out, many institutions will need to embrace innovation in their operations and their business models in order to thrive in the new century. To do this effectively, they will need greater visibility into the interplay between activities, costs, and educational outcomes within their own institutions in order to evaluate and adopt innovations that significantly enhance their performance. Effective leadership will require greater levels of financial transparency than are currently typical in higher education.

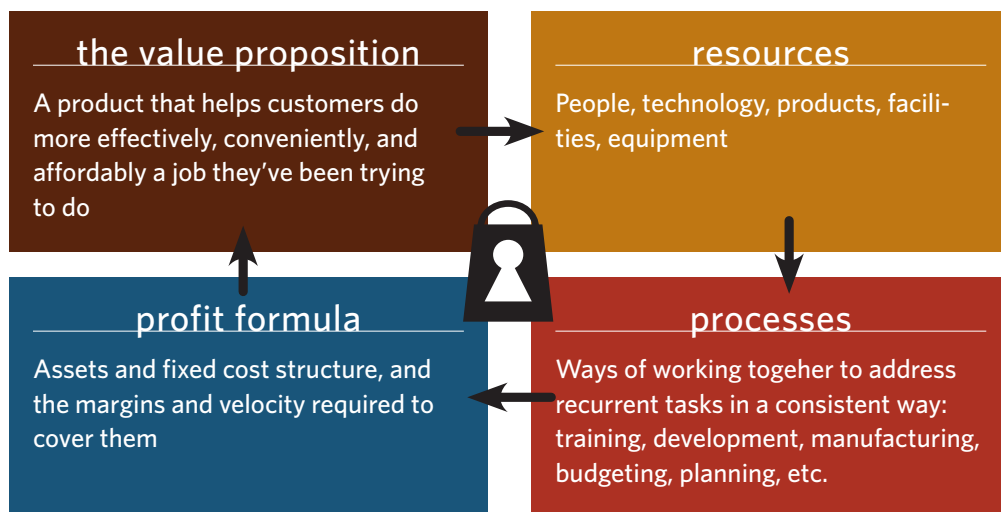
In the next section, we briefly introduce a business model framework to help us simplify making sense of the evolving value propositions and attendant academic innovations described above.

BUSINESS MODEL BASICS

As information and communication technologies have become increasingly integrated into the economy, academic business scholars have noted that the pace at which firms reorganize and redesign their use of resources and processes to deliver value to their customers has been increasing. The term “business model” first emerged from the work of Norwegian business researcher Erik Brynjolfsson, in the early 2000s, as a way of framing how new resource and process approaches could be “modeled” for research, simulation, and analysis purposes. In the United States, the term business model was popularized by business school professor Clayton Christensen as part of his broader theory of disruptive innovation. Christensen’s theory, at its core, provides a way of thinking about how new technologies can impact the way resources and processes are used by firms to deliver value to customers.

In *Disrupting College*, Christensen and co-authors (2011) laid out how disruptive innovation theory could apply to higher education by looking at the specific case of online education as a technological enabler of business model change (see Figure 3).

Figure 3. Workings of a Business Model



Source: Christensen, Horn, Caldera, and Soares. 2011.

Figure 3 illustrates that a simple definition of a business model is a blueprint for creating and delivering value and generating revenue needed to continue doing so. While many experts have different lists of the key components of business models, Christensen and co-authors' (2011) formulation includes value proposition, resources, processes, and profit formula. These are each described below:

- **Value proposition.** How an organization addresses the targeted customers' needs through its products and services and how those will be accessed and priced.
In postsecondary education: Meeting the needs of traditional and post-traditional students, from liberal arts education for the 18- to 24-year-old to licensure preparation for a returning adult.
- **Resources.** The value proposition, in turn, helps determine the mix of people, technology, products, partners, facilities, and equipment necessary to meet customer needs.
In postsecondary education: Faculty and staff delivering on recruitment and outreach, admissions, financial aid, student support services, on- and off-campus housing, athletics, career services, etc.
- **Processes.** Resources, in turn, are applied in certain ways to deliver on the value proposition. Over time, these recurrent ways of working together become formal processes.
In postsecondary education: Processes that control general education and program-specific curriculum, credit transfer, academic advising, student life, cross-subsidy, shared governance, tenure, etc.
- **Profit formula.** How the organization generates enough revenue to cover the costs of delivering its services, including the associated pricing strategy. This includes sufficient revenue to cover fixed and variable costs and a sufficiently robust operating margin so that it can invest in new products, processes, and markets.
In postsecondary education: The combination of pricing (tuition and fees), public financial aid and loans, student enrollment, and estimated time to degree.

In the case of higher education, the business model lens can provide a new way of thinking about the mix of resources and processes used to deliver a quality, affordable higher education. Add to this the financial and performance information discussed in the next section, and we begin to find new and effective ways to make colleges and universities academically vibrant and financially sustainable. In addition, by simplifying the processes used in the business model, college and university leaders are able simulate unbundling and rebundling academic delivery in different ways. When linked to financial data, these are powerful tools to help institutions understand costs and revenues of new approaches. At the risk of radically simplifying the way we approach the higher education business model, let's unpack how we get at the financial data embedded in higher education processes.

BUSINESS MODELS IN PRACTICE

Using a Business Lens

Using a business model lens can provide higher education practitioners, even those with varying perspectives, with new ways of thinking about and using resources, which allows for a focus on outcomes while facilitating cost savings.

Within the value proposition of a public research university, the University Innovation Alliance is introducing metrics that can measure the effectiveness of course delivery and advising processes that can both increase outcomes and save resources. For example, implementing eAdvisor has allowed Arizona State University to help undergraduates select majors sooner, significantly reducing the number of freshmen enrolled with exploratory majors. The average per student cost savings is \$31,000 per year (University Innovation Alliance 2016).

College for America, although still using a business model lens, provides an entirely different value proposition by using different mixes of highly technology-enabled resources and processes to meet the needs of employed students seek to upgrade employer-related skills.

ILLUMINATING THE “BLACK BOX” OF COLLEGE SPENDING

The current business model of higher education is often analogized to a “black box” in which spending decisions are often made without linking revenue and output data to expenditures. Jon McGee acknowledges this challenge:

Unlike a manufacturing industry, which can readily measure and evaluate outputs per unit of input, higher education has a much less certain production function. Colleges and universities often struggle with ideas of efficiency and effectiveness because they lack well-understood or definitive metrics for evaluating either. (McGee 2015, 138)

William Massy notes that the “black box” of college and university spending is further exacerbated because of the concept of Bowen’s Law (Massy 2004). Bowen’s cost theory suggests that as any revenue source comes to the campus (whether through public subsidy, benefactors, or philanthropic organizations), the need for continuation of that stream of revenue is anticipated and then expected in the following year’s budget (Bowen 1980).

In order to make changes that lower costs and improve performance, professionals (and students themselves) should be equipped to understand how different activities occurring within the institution are related to each other, and how each drives spending and revenues, with an eye toward student success.

In short, many institutions will spend all the money they raise and raise as much money as they can in order to continue enhancing practices deemed valuable. Jon McGee further posits that Bowen’s revenue theory of cost “sets in motion a never-ending money chase

that at some point may become unsustainable when revenue can no longer be raised quickly enough to support growing expense needs and wants” (McGee 2015, 131). This current business model, operating in a market that tends to prioritize revenue generation, is not sustainable.

Many colleges and universities are at a crossroads, at a point where relying on continued tuition increases with a backdrop of decreased state support is not viable. Leaders recognize that revenue growth cannot alone determine spending; rather, spending, revenue, and output must be linked to facilitate cost containment balanced with performance. This necessitates the illumination of the “black box” of institution spending decisions; greater transparency is needed. In order to make changes that lower costs and improve performance, professionals (and students themselves) should be equipped to understand how different activities occurring within the institution are related to each other, and how each drives spending and revenues, with an eye toward student success.

The Challenges and Needs for Financial Transparency

True business model analysis—information about the linkages between the cost of campus activities and the quality of educational outcomes—is not gleaned from public financial disclosures by a given institution. More useful is information pertaining to the “efficacy of a proposed intervention . . . [and] an accurate estimate of the resource cost of implementing the treatment.” (See Appendix B, Desrochers, Soldner, and Weko 2016.) Yet the latter is at odds with the standards for public accounting by higher education for strategic and practical reasons.

Strategically, institutional leaders behave rationally and competitively, and thus seek to maintain the confidentiality of internal activity and its associated costs to avoid losing market share to competitors and to avoid losing their bargaining positions with the governments, foundations, students, and families who are their suppliers and customers. Practically, institutions must incur a high cost of time, effort, and trust to capture internal, financially meaningful measures of activities within an organization. It is also true that public accounting by higher education is most often driven by the information needs of stakeholders external to a given institution, not by the information needs of decision makers within it.

Yet despite these challenges, postsecondary leaders do recognize their need for a different view of the information that couples the data in their financial systems with information on the educational outcomes of their programs. According to recent analysis, university CFOs in particular anticipate that their institutions’ business models will undergo significant change in the next 10 years, with only 13 percent of CFOs expressing strong confidence in the sustainability of their current business models (Jaschik and Lederman 2013). While CFOs understand that business analytics capabilities are an enabler of the business model innovations they anticipate will need to happen, fewer than half believe their institutions have the information they need to make informed decisions and are lacking infrastructure for routine activity-based costing and performance metrics (Jaschik

BUSINESS MODELS IN PRACTICE

Financial Transparency

Some businesses are working toward creating a “lean enterprise,” or one which an environment of continuous improvement within a company allows for the distribution of products “with half or less of the human effort, space, tools, time, and overall expense” (Womack and Jones 1994). A lean enterprise approach to business necessitates a culture of trust, clarity, and transparency. Transparent activities ensure “that the upstream and downstream collaborators can verify that all tasks are being performed adequately” (Womack and Jones 1994). An example of a business that uses financial transparency is Whole Foods Market (WFM). WFM provides all employees with data on company sales and employee salaries; the financial awareness this creates fosters a “metrics-based culture” that drives productivity (Dutta 2009, 29).

To further financial transparency in higher education, Maria Anguiano, at the University of California, Riverside, proposes a succinct framework focused on courses as the central unit of accounting. Courses, as the building blocks of all college programs, are intuitively meaningful to all stakeholders and are in use by all institutions, regardless of sector or mission. In Anguiano’s framework, total education spending (amounts taken for the institution’s financial accounting systems) is categorized into direct and indirect cost categories that are then allocated to specific courses. The allocation of costs to specific courses requires the institution to develop an appropriate model of the relationships between the institution’s educational activities and its delivery of courses (Anguiano 2013).

With costs calculated by relevant activity, course delivery transforms from a “black box” with a fixed-cost structure into a set of component parts—a business model that can be redesigned and improved as a system. Deans and faculty then have the tools to routinely evaluate the cost effects of changes and innovations in course delivery, something that can only be accomplished on a course-by-course basis if activity-based costing practices are not in place. When deployed across the full network of the institution’s activities, activity-based costing has the potential to provide leaders with a powerful perspective for making important strategic and budget decisions.

and Lederman 2013). These CFO perspectives, as well as identified data-point gaps, were considered by Maria Anguiano (2013) in her proposed framework for institutions considering a per course cost methodology.

Inward-looking financial transparency becomes immediately crucial for two main reasons: first, to support academic innovation at the course level, and second, to support business model innovation at the institutional level. At the course level, activity-based cost accounting coupled with information about outcomes and their quality enables faculty and instructors to engage in meaningful, substantive improvements in the efficiency and effectiveness of their work. Conversely, the aggregation of activity-based cost accounting across the institution provides leaders with a rational representation of their operations, including greater insight into the cross-subsidies that occur between departments, programs, and student-level outcomes. This type of modeling then supports the analysis of change under different scenarios—growing particular departments, adding particular programs, investments in particular research capabilities—and enables institutions to forecast their performance against their mission and strategic priorities. This kind of insight has the potential to further enable understanding of future demand, pricing, and needs for external support.

Activity-based accounting next enables governing boards to plan and execute systemic strategies that improve institutional performance and financial health. Richard Staisloff (2013) states that “to remain relevant and serve the future needs of students, institutions must shift their focus from inputs to outcomes, from spending to investing” (34). He recommends that governing boards focus on mission, market, and margin. A focus on mission aligns the organization to its purposes and the things it does well. A focus on markets connects the organizational strategy to the needs of the public and its demand for educational services. The focus on margins reveals future strategic opportunities by identifying those areas where mission and markets come together to produce net revenue for the institution. This identification requires colleges and universities to link the activity-based costs of educating students with a granular view of their motivations for enrollment in order to understand the true economic margins of an institution’s business model.

Aggregating activity-based cost accounting across an institution also reveals the patterns of cross-subsidy that an institution has employed in order to maximize its achievement against its competing goals and makes explicit those areas where the institution is investing in particular outcomes.

Aggregating activity-based cost accounting across an institution also reveals the patterns of cross-subsidy that an institution has employed in order to maximize its achievement

against its competing goals and makes explicit those areas where the institution is investing in particular outcomes. The National Association of State Budget Officers (2013) identified cross-subsidy patterns across research universities and reports: “Over time, spending on instruction has declined slightly, and administrative and general support costs have increased. Lower division education (freshman and sophomore levels) has historically been a source of ‘cross-subsidy’ to upper division and graduate education, a spending practice that may be contributing to high rates of attrition in the first two years of college” (iv). (See Table 1.) This research found cross-subsidy evidence at the level of aggregate outcomes and aggregate spending. Activity-based costing at the course level would give leaders and other stakeholders a more granular view of the effective cross-subsidies at their institutions so they could make better decisions about resource allocation to interventions that yield better outcomes.

Table 1. Credit hour distribution and average instructional costs

Average of four-state cost study (SUNY, Florida, Ohio, Illinois)			
	% OF ALL CREDITS TAKEN	% OF TOTAL SPENDING ON INSTRUCTION	AVERAGE WEIGHTED COST/CREDIT
Lower Division	38	23	1
Upper Division	48	44	1.42
Grad 1	12	23	2.88
Grad 2	4	9	4
TOTAL	100	100	1.55

Source: State Higher Education Executive Officers (2010).

The Need for Understanding Activity Costs

Greater transparency of the cost drivers and revenue engines within an institution enables higher education leaders to execute strategies in support of mission through the very practical, relevant exercise of the annual budgeting process. In considering course-level activity costing, William Massy (2016) posited:

Activity-based costing (ABC), the methodology used in course redesign, offers the best approach for campus-wide, quality conscious cost measurement and cost containment. It avoids the serious problems associated with rations, such as cost per credit hour, and opens the way to better design of course portfolios for departments and degree programs. (220)

Absent activity-based costing linked to outcomes and their associated revenues, most higher education institutions construct their annual budgets using across-the-board incremental increases (or decreases) for expenses administered centrally; formulas that set department budgets based on rates of enrollments or outcomes; or responsibility-centered budgeting, which delegates out to departments the matching of costs against revenues (Curry, Laws, and Strauss 2013). As Askin and Shea note in their paper (see Appendix

BUSINESS MODELS IN PRACTICE

Responsibility Center Management

Responsibility center management (RCM), also referred to as revenue-centered budgeting, is essentially a budgeting method whereby units of responsibility (such as departments) have control over revenues and expenses.

While the RCM approach to budgeting is not widely used, a growing number of institutions have moved toward it or are using a hybrid model that includes RCM principles. This type of budgeting “transfers revenue ownership and allocates all indirect costs to units whose programs generate and consume them respectively . . . [using] centralized resource redistribution—to achieve balance between local optimization and investment in the best interest of the university as a whole” (National Association of College and University Business Officers 2013). In part, the growth in popularity may be explained by its relevance to innovation as this approach has built-in incentives to be entrepreneurial. For example, when Temple University (PA) was in the process of transitioning to the use of RCM, one faculty member commented that this model “can empower academic leaders of colleges and schools to guarantee that their budgets will *follow* rather than *lead* their academic mission” (Halbert, Huffman, Wager, and Scott 2012, 7; italics added for emphasis).

While RCM has limitations in practice, it represents a direction that is in line with a networked organizational approach to costs. For example, the budget process under RCM would require departmental units to discuss revenues and be transparent about sources, understand the indirect cost items in their budgets, and debate the priorities of their spending. If the units are unsuccessful in keeping their budgets neutral or saving overages, then they must revisit the decisions at the next budget cycle and adjust. Engagement in this conversation, given the availability of the appropriate data, could yield substantial innovation at the unit level. It is, however, limited in its ability to engage the wider college or university and other centers collaboratively.

D) “traditional budgeting and planning methods” tend to “treat the future merely as an extrapolation of the past” (3).

Each of these common methods has drawbacks. Budgets constructed using the incremental method are likely to rely on one-time changes to close gaps between revenues and expenses, such as outsourcing business services like dining halls or IT support, or across-the-board budget cuts in areas that are not mission-critical like travel, rather than through deliberate changes in the budget areas closest to their mission (American Association of State Colleges and Universities and SunGard Higher Education 2008). An example of such nonstrategic changes used by one institution include:

... across-the-board salary freezes, a 50 percent reduction in travel, and a one-time window for staff early retirements in addition to an adjusted incentive to an existing faculty early retirement incentive program. The university did not reduce employer contributions to employee retirement plans or increase employee health-care contributions. To avoid further staff reductions, the board decided to draw from reserves. (Hignite 2010)

Budgets constructed using formulas that rely on enrollment or degree completion metrics are susceptible to unintended consequences whereby institutions are induced to reduce quality and “to pass on degrees to students without paying attention to learning results” (National Association of State Budget Officers 2013, 14). And while responsibility-centered budgeting has the advantage of pushing the responsibility for financial management deeper into the organization, it leads to local optimization whereby better institutional strategies that span departments are ignored, since the delegation model does not support the emergence and approval of those strategies. And responsibility-centered budgeting wastes organizational energy on debates over allocation of charge-backs for centralized services (such as facilities, utilities, etc.) that neither improve overall revenues nor decrease overall costs (Curry, Laws, and Strauss 2013). While the responsibility-centered model produces better budgets, it is prone to the same inattention to innovation in delivery of core education services, just at the department level rather than the institutional level.

The focal point of evolving higher education finance and business models should include greater visibility into the actual activities and associated costs for the value created by higher education to meet its key mission: producing educational outcomes for students, increasing the store of the public’s intellectual capital through research, and achieving the wider benefits that spill over to local, state, national, and global communities. Institutions regularly use a broad set of criteria to make decisions about curriculum, instructional supports, student support services, developmental education, and online delivery that have significant implications for cost efficiency and program effectiveness. However, few analyze the financial and performance impact of these changes by evaluating the expected improvements to student outcomes and institutional missions across alternative courses of action, and few assess the actual cost savings of the changes that they make. For instance, one survey of state colleges and universities indicated that more than half of the participating institutions cut costs through the use of adjunct faculty and online courses,

though almost none record the results of their cost savings efforts. This makes it difficult to determine effectiveness and/or share results with others in a useable format (American Association of State Colleges and Universities and SunGard Higher Education 2008).

The next era of higher education finance can and should be concerned with the internal management accounting practices that empower decision makers within colleges and universities to make choices that improve the economic performance of their institutions, and evaluate the ways in which choices relate to institutional mission, especially student success. When adopted across a college or university, the activity-based cost and outcome measures discussed above will give institutions the capability to make better decisions about efficiency, innovation, and strategic growth. In addition, analyzing this type of data at the activity level allows for these measures of cost and output to be balanced with the consideration of outcome quality to avoid what many fear, which is a “sacrifice [of] quality in the interest of saving money” (Massy 2016, 112). Institutional vision is in fact grounded in internal operations. A clear understanding of how an institution is financed—down to the course level—provides not only presidents but faculty, staff, and other on-the-ground stakeholders with a powerful tool for achieving that vision.

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NETWORK LEADERS NEEDED: Unlocking the Value of Financial Transparency

Leadership that is mission-driven and fosters engagement by a wide network of campus stakeholders beyond executives and managers is by definition network leadership. The Corporate Executive Board describes network leadership as one that “involves establishing strong network performance by building, aligning, and enabling broad networks both internal and external to the organization. Network leadership is more about influence than control; it is also a more indirect than direct form of leadership, requiring leaders to create a work environment based on autonomy, empowerment, trust, sharing, and collaboration” (Corporate Executive Board 2014, 11).

A conventional leadership framework involves transformational and transactional leadership. Network leadership expands on this and “requires leaders to drive a broad spectrum of performance: setting the agenda, leading individual employees and work teams, and establishing the networks required for enterprise contribution” (Corporate Executive Board 2014, 12). As facilitators of network leadership, and in the context of institutional finance, presidents and CFOs expand the discussion of financial data and budgets to all individuals who are directly responsible for student and other outcomes central to the institution’s mission. In short, the full community understands how money moves, what things cost, and how this information is tied to campus mission and goals.

Endeavoring to be a networked organization is not an end to itself, but a pathway to improving performance outcomes for the organization. The foundation of this organizing principle is achievement of the educational mission of the institution through the empowerment of stakeholders at the front line who are in the best collective position to achieve it. In the 1980s, U.S. businesses and other organizations aggressively adopted the practices of Total Quality Management with the goal of creating organization-wide changes that ensured continuous improvement through “consistent efforts to achieve the objective for a customer through systemic efforts for the improvements” (Thamizhmanii and Hasan 2010, 204). In the case of higher education, empowering individuals to engage

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Prioritize Organizational Learning to Improve Frontline Operations

Within networked organizations, leaders need to “value and nurture organizational learning” (Mukherjee 2009, 26). This means that leaders within organizations need to facilitate learning by creating processes in which pertinent information on productivity is collected, analyzed by those with the skills to do so, and then shared in accessible formats with employees throughout the company. This “plan-and-execute” process with embedded “sense-and-response” practices requires effective collaboration among all network partners.

This organizational learning dynamic can be seen, for example, in business practices such as those at Zingerman’s, a deli in Ann Arbor, Michigan (Spreitzer, Porath, and Gibson 2012). Zingerman’s “uses open book management to share information in a transparent way through the organization. . . . Leaders of the operating units outline the company and the unit’s numbers on a white board and then discuss performance issues. Employees need to ‘own’ the numbers and offer a plan on how to get back on track when the numbers indicate a deviance from the plan” (160).

Higher education leaders should place a priority on the college or university’s need to learn as an organization in ways that empower frontline staff, such as providing training and incentives for participation, to improve student success outcomes. In the higher education context, leaders can facilitate the use of data about student success to inform deliberations and decisions about the curriculum and other institutional priorities. Campus leaders should ensure collaborative learning opportunities between academic and student affairs staff and faculty and tighten the philosophical and operational linkages between academic and student affairs (Kezar 2005).

in analysis of inputs, outcomes, and their relationship to cost would create an opportunity for collaboration towards the goal of student success. Kezar (2005) argues that higher education stakeholders need to come to a shared understanding about their mission and that collaborative, shared leadership is instrumental to achieving student success. A network leadership approach is the ideal approach for facilitating that shared understanding and the engagement around it.

Networked Leadership and Organizations

Cultivation of network leadership at all levels of a college or university can serve to empower and awaken the community to unlock the value of financial transparency for themselves, their students, and their stakeholders. Networked organizations are ones in which leaders focus more on teams and not on linear management. Leaders “adopt strategies that promote collaborative action . . . and learning” and create technologies that allow for analysis by any and all stakeholders (Mukherjee 2009, 26). According to Hacki and Lighton (2001, 34-35) some key principles for the networked organization include:

- Uniform standards governing the exchange of information.
- Rigorous performance standards maintained mostly through customer evaluations and partner incentives built into the network.
- The sharing of benefits generated by the network with all partners.
- An online presence for all key business processes.
- The development and dynamic testing of new opportunities with network partners.

Networked organizations link network partners (various departments and functions within a college or university) through an established communication paradigm, have rigorous expectations (which are less likely to be held in a centralized structure), and provide benefits to all partners and the network as a whole. This structure functions through the use of standardized communication and technology, utilizing the strengths of network partners, and facilitation of collaboration (Hacki and Lighton 2001).

Within this framework, it is the network orchestrators who design and monitor the network’s communication and performance standards, keeping the needs and experiences of the customer (students and other stakeholders) paramount. Orchestrators are immersed “in the underlying software that makes it possible to construct an information standard,” “evaluate what information is needed at each stage of the value chain and when,” and “present information in a clear and consistent way” (Hacki and Lighton 2001, 35). They function as facilitators and enablers, allowing network partners to benefit individually and to benefit the entire network. It is not difficult to imagine a scenario where institutional research offices provide both a platform and training for various campus stakeholders to utilize system data to conduct analysis of any kind—and in fact some universities are already implementing this approach.

If a college or university wanted to establish opportunities for engagement around edu-

educational inputs, costs, and outcomes, it could adopt the principles outlined by Mukherjee (2009):

- Embed sense-and-response capabilities in normal plan-and-execute process.
- Adopt strategies that promote collaborative action among network partners.
- Value and nurture organizational learning.
- Deploy technologies that enable intelligent adjustment to major environmental shifts (26).

Yet merely providing the opportunity to engage as a network is unlikely to be sufficient without both training and incentives for college and university employees to engage in the work. This is where the shared understanding of mission becomes important, and incentives for engagement are needed. In turn, this level of engagement should be paired with clear performance metrics for the expected outcomes the network of engaged faculty, staff, and other contributors should produce for students. College and university leaders' task is to balance the importance of empowering individuals with using standards and metrics to drive the performance of the entire network or value chain of academic delivery. This creative tension holds the promise for a shared governance model for today's institutional realities.

Yet merely providing the opportunity to engage as a network is unlikely to be sufficient without both training and incentives for college and university employees to engage in the work. This is where the shared understanding of mission becomes important, and incentives for engagement are needed.

Rationale for a Networked Approach

Higher education leaders well understand the potential value of innovation, as discussed in the earlier section; however, the process by which ideas are generated, tested, and built into the formal structure of the college or university may be unintentionally hindered by hierarchal processes and structures focused on maintaining the current organization rather than inventing the new. Absent a network approach, decisions in an organization are made by senior leaders operating with limited and/or outdated information. This traditional model lacks the flexibility and responsiveness that continuous improvement requires and lacks the capacity and incentives to nurture more substantial innovations in educational programming.

Some would argue that not only do hierarchical structures squelch innovation, they make

BUSINESS MODELS IN PRACTICE

Data Analysis and the Front Line

Knowledge management (KM) is a practice initially used in the business sector as a framework to “illuminate and address organizational obstacles around issues of information use and access” (Petrides and Nguyen 2008, 2476–2477). In practice, KM encompasses the interactions among people, processes, and technology and how these interactions facilitate gathering data, turning data into information, using information to build knowledge, and allowing knowledge to guide action.

Research in the higher education sector, specifically research conducted at the community college level, has indicated that institution members at different levels (including department heads, faculty, and staff) both want and need data to use for decision making (Petrides 2004).

This desire to use data for decision making creates an opportunity for leaders in higher education. Leaders can construct opportunities for faculty and staff to engage in data analysis—specifically, cost analysis. First, to do this, there must be significant opportunities for sharing information, exchanging ideas, and communicating institutional priorities. Second, leaders need to work with institutional research and budget offices to identify ways to make data regarding those institutional priorities available for analysis. Their objective is to create a platform, guided by mission, that enables frontline employees to understand the impact of their own role on the institution’s priorities and to co-develop plans for working toward goals. Within a networked organization that is guided by the use of data for decision making, the campus culture should encourage all institution members, including students, faculty, and staff, to think about and discuss student outcomes for success, how money moves through the college or university, and how the two are related.

BUSINESS MODELS IN PRACTICE

Formalized Networks

Informal and social networks are more representative of information exchange and knowledge that facilitates day-to-day work than are organizational hierarchical structures; leaders within organizations can capitalize on this by formalizing informal networks (Bryan, Matson, and Weiss 2007).

One way to visualize business place networks is to picture the office water-cooler, the cliché informal office networking location. Here, organization members informally discuss, among trivial topics, information related to daily business operations. Some companies have worked to create more formal means to facilitate the communication flow through the network. For example, when working toward more lean processes, one of the steps Jefferson Pilot Financial took was posting company performance results, including hourly productivity rates, alongside company expectations. Initially, some employees “feared that the posted results would be used to assign blame or punish low performers” but “the displays became rallying points for celebrating successes and encouraging the team to set net performance records” (Swank 2003).

In a higher education context, leaders can create practices in which existing ad hoc networks of mutual self-interest are formalized so that the institution can capitalize on its idea generation and information exchange. This can be done by naming a leader, focusing the network on specific topics (and providing network members with needed data on these topics), and putting in place an infrastructure that supports an ongoing exchange of ideas (Bryan, Matson, and Weiss 2007). This process can facilitate both data transparency and employee empowerment. First, as informal networks are made formal, pathways for the exchange of knowledge, including key financial data, are created. Second, as faculty and staff—those on the front line of the institution—are provided with essential institutional data and information, they are empowered to make informed decisions in line with the college or university mission and performance expectations.

organizations less responsive and less adaptable and dynamic (Hamel 2009). Companies that utilize less hierarchical and more networked practices that empower frontline network members can realize the strengths of employees throughout their organizations. This utilization of human capital is facilitated by an understanding of the often already existing informal networks within organizations. One business article suggests that informal and social networks are more representative of information exchange and knowledge that facilitates day-to-day work than an organizational hierarchy (Bryan, Matson, and Weiss 2007). When one formalizes those social and ad hoc networks that are generated from mutual self-interest, organizations can capitalize on the strengths of the informal network and empower new ideas and collaboration. Higher education already has one foot in this door with a long history of relying on shared governance to make academic decisions on campuses. Institutions can take advantage of and expand upon this familiar model. The shared governance model for academic decision making can be expanded to facilitate financial decision making and action across the institution. The network approach, in essence, shifts shared governance from an emphasis on institutional dialogue and coherence toward institutional performance based on agreed upon metrics.

In the context of transparency of finance data, leaders who awaken networks—both within institutions and across them—will create deeper insight into the inner workings of institutional finances, how they flow, and how they are related to outcomes. As one author puts it, this kind of collective action is needed because it “. . . creates opportunities for effective action around real-world problems . . . [and] encourage[s] a spirit of experimentation, risk taking, and accountability to real-time learning that can produce new solutions” (Leadership Learning Community 2012, 10). These networks touch not just a select few leaders at the top of the hierarchy, but contributors throughout the institution. In order to make progress on their financial transparency agendas, institutions will need to think about leadership as a collective process.

As college and university administrators consider this collective approach to leadership, they should be aware of current barriers to participation by faculty and staff. Senior administrators make most financial decisions under traditional higher education business models, using data more often and more intensely than faculty or student services professionals. In a study of community colleges in Washington State, Kerrigan and Jenkins (2013) found that “the most frequent and intensive users of student progression and outcomes data . . . were not those closest to students” (25). Faculty were more likely to cite lack of time as the reason they did not use institution data in their roles, and student services staff were more likely to describe institutional data as not relevant to their roles. Since faculty and staff participation is critical to the networked approach—and key to facilitating more nimble and cost efficient decisions at all levels of the institution—the most successful leaders will address current barriers to data use by frontline organization members.

Barriers cited by faculty and staff as reasons for not using data in their roles highlight the missed opportunity for a networked institution and network leaders who engage faculty and staff in the discovery and management of the institution’s business model in order to

foster better, evidence-based decision making and leadership at the level where instruction and student services delivery actually occurs. The path to greater financial transparency for colleges and universities is not primarily about better financial and performance reporting, the unidirectional publication of a set of key performance indicators. While this type of transparency has a role to play, the greater work—and greater opportunity—is a focus on multi-directional engagement of a broad range of stakeholders who are able to collaboratively extract meaning from financial and performance information in ways that augment decision making and innovation within the institution. To support these kinds of networks, leaders not only need to provide information, they also need to provide the capability for stakeholders to collaborate on the shared use of the data. One model for empowering frontline faculty and staff that leaders can consider involves a focus on: (1) building the knowledge and skill level of employees, (2) having a clear flow of communication within the organization, (3) developing trust among all levels within the institution, and (4) building incentives for frontline employees to participate within the network (Bowen and Lawler, as cited in Thamizhmanii and Hasan 2010).

Empowering the Front Line and Moving Toward a Culture of Evidence

Within higher education, shared governance ensures a minimal amount of engagement for employees through proxy representation of staff, faculty, and administrators in the various centralized governing apparatus of the college or university. This engagement via proxy, however, is not enough. What higher education can learn from other industries is network leadership that creates frontline empowerment of multiple individuals in their specific roles rather than special-interest stakeholder diversity in centralized decision-making structures. Higher education institutions need to empower decentralized decision making that uses transparent, relevant information about students, programs, finances, and educational outcomes. To do that, they must become an organizational environment where “employees [have] the freedom to act quickly and the data to act intelligently. If they have to refer decisions upward, adaptability suffers” (Hamel 2009, 91).

What higher education can learn from other industries is network leadership that creates frontline empowerment of multiple individuals in their specific roles rather than special-interest stakeholder diversity in centralized decision-making structures.

Companies in many industries have replaced overly specific, bureaucratic (and costly) processes with information transparency as a way to more efficiently meet goals and

objectives. For instance, instead of implementing a tedious review process to ensure that expenses were adhering to per diem spending rules, one company simply published all business expenses by name to use peer pressure to monitor compliance. Broad, on-demand availability of performance information is an effective way to empower effective decision making throughout the organization. Siebel Systems implemented this approach when they created a business intelligence portal for employees called mySiebel that gave each employee access to information about corporate, market, competitor, and project health indicators, and the status of quarterly objectives. This widely available information “allowed everyone throughout the organization to make customer-related decisions with the most up-to-the-minute data available, and it helps people align their individual behaviors with corporate objectives” (Kale 2015, 88).

These practices of information transparency and the empowerment of frontline staff to make value-enhancing decisions are also growing in the higher education industry. Institutions are making reliable student success and financial data more broadly available to frontline staff. Below are some examples:

Student success data

There are many examples of campuses using data in new ways to innovate and achieve greater success outcomes for students, particularly among frontline professionals working directly with students. We have already mentioned the University Innovation Alliance as one such model. As another example, one study of *Achieving the Dream* describes the linchpin step of evidence-based change as “engag[ing] faculty, staff and other stakeholders in the use of data to develop intervention tools to address problems that they identify as priorities” (Mayer et al. 2014, 4). They found that using knowledge-management technologies that support virtual communication and collaboration such as webinars, social media, archives, and other tools are just as important an enabler for change as the publication of the information itself.

In some cases, institutions have the data they need, but it is not organized in a way that makes analysis of success or cost possible. This scenario would do well by network leaders who press their institutions to construct useful information out of their existing data. There are several examples in the *Achieving the Dream* literature. For example, Cuyahoga Community College in Ohio began using decades of longitudinal data for decision making (Lincoln 2009). Other campuses engaged faculty through structured training on institutional metrics and engaged community partners in reviews and discussions. Valencia Community College (FL) began using its institutional data as part of an “innovation funnel” through which ideas were prototyped and tested in order to concentrate investments for full implementation with a smaller number of higher value interventions. Senior leaders championed these new uses. For example, the president of Tallahassee Community College (FL) led the effort to “overhaul the college’s data system, to collect more and better information for strategic uses as opposed to merely meeting federal and state requirements” (Lincoln 2009, para. 19).

Financial data

Governing boards at the very top of college and university hierarchies also need frameworks for engaging with institutional information as much as faculty, student services, and administration staff. As it stands, Wellman (2007) has observed that the majority of universities do not use financial and performance information for strategic decision making at the board level. While CFOs report aggregate expenditures, they are not performance-related measures; and benchmarks are used to compare input costs (like faculty salaries) and output prices (such as tuition discounting) to peers, but not to compare productivity or performance. Richard Staisloff recommends that governing boards update the business models of their institutions by first assembling a baseline of transparent institutional data and identifying relevant stakeholders and decision makers. Most importantly, decision makers have the authority and the courage to reallocate resources in line with changes to the university's business model with the intention of generating better outcomes (Staisloff 2013).

Some campuses are taking a more networked approach to evaluating their budget models. Portland State University (OR), for example, in an effort to better understand how funds flow into and through the university, created a revenue and cost attribution tool (RCAT) to inform more strategic decisions. The provost is promoting the "Rethink Portland" effort, which is designed "to deliver education that serves more students with better outcomes, while containing costs through curricular innovation, community engagement and effective use of technology" (Portland State University 2016). Through that effort they are realizing ways to bring the RCAT platform to all campus stakeholders for use.

In his article on data and cost containment (see Appendix C), Dennis Jones suggests that in order to produce evidence of student success and its relationship to costs, institutions need to construct better financial information, such as cost data at the course and program levels. And in order to consider cost containment in the context of education delivery, stakeholders need to know the full-time equivalent (FTE) costs of each type of personnel assigned to each activity, the costs of services purchased from outside vendors, the scale, number of students served in the course/program, as well as the revenue per student served.

CONCLUSION

This paper has posited that financial transparency created by and for a network of staff, faculty, and administrators spanning departments, functions, and even institutions, yet linked by performance standards and metrics, is important for the future of innovation, cost efficiency, and efficacy in higher education. Emerging higher education leaders will distinguish themselves by forming networks within and across institutions that engage stakeholders in the hard work of extracting actionable information from the data in their information systems, empowering frontline professionals to understand and articulate relationships between the inputs and outputs of educational activities across the institution. The result is informed decision making driven by mission, quality, cost, and revenue considerations. Colleges and universities that reach this stage of financial transparency will have the capability to pursue valuable innovations in education delivery, perform better modeling of their strategies for institutional planning, and drive better execution of their strategies through the lever of the annual budgeting process with the goal of improving performance outcomes such as student learning and success.

Emerging higher education leaders will distinguish themselves by forming networks within and across institutions that engage stakeholders in the hard work of extracting actionable information from the data in their information systems, empowering frontline professionals to understand and articulate relationships between the inputs and outputs of educational activities across the institution.

While data is key, the problem is not a lack of data, but rather a struggle with data transparency. Institutions generate an exponentially growing amount of data about themselves. The challenge, then, is shedding light on what many term the “black box” of spending—the set of relationships between various activities that are conducted as part of a student’s

education and the costs and outcomes of those activities. Put more positively, the “black box” of spending is also the business model of the college or university—a conceptual model of the inputs, network of activities, and outputs of an enterprise that generate net benefits that exceed net costs. The agendas for both cost containment and innovation require this form of financial activity-based costing transparency to make good decisions that help an institution successfully achieve its mission.

Emerging higher education leaders will distinguish themselves by using business model thinking to understand their enterprises and by forming networks within and across institutions. This effort requires the initiative of leaders to expand the circle of engagement beyond the narrow set of senior-level budget and finance staff to the individuals at every corner of the college or university active in producing the outcome of student success. Successful networks will engage stakeholders in the hard work of extracting actionable information from the data in their information systems for the improved outcomes they collectively seek.

The cultivation of these engaged networks, with performance standards and metrics for outcomes, will bring content and quality to institutional efforts through collaborative engagement across units. The opportunities inherent in shared and transparent data among networks of individuals are untold. Higher education is at the beginning of the journey to data-driven, financially transparent business management aligned to student outcomes—a journey on which other industries from manufacturing to financial services to healthcare are further ahead. The acts of opening the data and engaging stakeholders in these conversations will further inspire a movement toward a culture of evidence.

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Appendix A: ACE and TIAA Institute Convening

The American Council on Education (ACE) and the TIAA Institute invited a number of higher education thinkers, business model experts, chief financial officers, and chief academic officers from colleges and universities across the nation to come together in for a day-long exploration of the financial data challenges faced by higher education leaders as they manage and navigate the complexity of college affordability and pedagogical innovation.

The need for the meeting arose because of the pressing college affordability questions that continue to arise from the limits on the growth of current funding (direct subsidy, public financial aid, and student sources). As higher education leaders face these pressing questions, they must still keep up with the costs of delivering a college education. At the same time, pedagogical innovation, from competency-based education to digital content, is driving new delivery models that have the potential to change the underlying cost structure of teaching and learning in higher education.

The convening was held in September 2015, and consisted of a dynamic conversation that honed in on three main questions:

- What are the strengths and weaknesses of available data sets for unpacking how resources and processes are used to deliver value in higher education?
- What would be necessary to improve the data to more deeply explore key performance variables at the institution level?
- How can enhanced data sets be used with business model analytical tools to explore key affordability and innovation questions?

Participants were selected and invited by recommendation of ACE, TIAA, and NACUBO leadership, as well as by recommendation of those who were innovators in the arena of budgeting and finance. While the group represented a diverse set of institution sectors and background, the nature of the dialogue was open and generous, with a genuine curiosity about the directions for the future. Participants all reviewed the issue papers written for the event (see Appendixes B–D), and engaged in the discussion of solutions. The meeting served as a true model for dialogue and debate on challenging cross-sector topics pertinent to the future of higher education.

Several meta-themes emerged from the conversation, which led to the thinking behind this paper. They include:

- **Barriers to transparency.** The group listed a number of barriers to transparency, such as the messiness of data and the risk of exposing things that could be misunderstood. There was also general con-

sensus on the notion that transparency has its challenges. Some group members asked: What are we protecting that we maybe don't need to and that may be weakening in value in higher education? Or might financial transparency reveal that the financial model is not really supporting the core mission of the campus?

- **Get the data out there.** Several participants agreed that much of the data about costs of instruction are already available in campus information systems, but the problem is getting it out there for use in the right way with maps to guide users on direction.
- **Student success and innovation.** The group discussions focused on the importance of degree completion, employability of graduates, and the general certifying of student learning. All stakeholders have to focus on strategy, risk, and data for estimating alternate futures, and begin making data-driven decisions on costs and activities rather than just innovating for innovation's sake.
- **Leadership with data and evidence.** The group all agreed that leadership was key to moving forward in this area. Participants agreed that leadership was central to creating a narrative and map of the data and meeting the difficult-to-discuss issues head-on. Several suggested that it was time to create a boot camp for data analytics, fundraising, strategic discussions in units, and using institutional data for trustees, faculty, students, and other stakeholders.

Because good financial data is a key to addressing the issues of college affordability and pedagogical innovation, the group was gathered to launch a fresh discussion on what data is needed, and how to put that data into a format that provides public policymakers and institutional leaders with the information needed to sustain accountable public investment, on the one hand, and strategic financial management on the other.

Group Participants

- Jacalyn Askin, National Association of College and University Business Officers (NACUBO)
- Kemp P. Battle, Tucker Capital Corporation
- Sandy Baum, Urban Institute, The George Washington University (DC)
- Stephanie Bell-Rose, TIAA Institute
- Walter C. Breau, Elms College
- Nancy Brickhouse, Saint Louis University
- Molly Corbett Broad, American Council on Education (ACE)
- Lewis Burley, TIAA
- J. Michael Crafton, University of West Georgia
- Ryan Craig, University Ventures
- Dean Currie, California Institute of Technology
- Jeff Davies, ACE
- Donna Desrochers, American Institutes for Research
- Bill Dillon, NACUBO
- Tiffany McKillip Franks, Averett University (VA)
- J. Michael Gower, Rutgers, The State University of New Jersey
- James Jacobs, Macomb Community College (MI)
- Paul Jenny, University of Washington
- Nate Johnson, Postsecondary Analytics, LLC

- Dennis P. Jones, National Center for Higher Education Management Systems
- Cathrael Kazin, College for America
- Lucie Lapovsky, Consultant
- Christopher Liedel, Smithsonian Enterprises
- Linda C. Lucas, University of Alabama at Birmingham
- William F. Massy, Stanford University (CA)
- Michael S. McPherson, Spencer Foundation
- Joseph M. McShane, Fordham University (NY)
- Ed Moslander, TIAA
- Thomas Nedell, Northeastern University (MA)
- Patrick J. Norton, Middlebury College (VT)
- Anne Ollen, TIAA Institute
- Cynthia Pemberton, Dickinson State University (ND)
- Kevin Patrick Reilly, University of Wisconsin System
- David P. Richardson, TIAA Institute
- Bob Shea, NACUBO
- Vernon C. Smith, University of the Pacific (CA)
- Louis Soares, ACE
- Matthew Soldner, American Institutes for Research
- Richard Staisloff, rpkGROUP
- Patricia Steele, Higher Ed Insight
- Jeffrey Vitter, University of Kansas
- Leon Wyden, Tiffin University (OH)
- Paul J. Yakoboski, TIAA Institute
- Robert Zemsky, The Learning Alliance University of Pennsylvania

Appendix B: What Do Higher Education Leaders Need to Know About Institutional Finance? And What Can Available Data Tell Them?

Donna M. Desrochers, Matthew Soldner, and Thomas Weko, Delta Cost Project at American Institutes for Research

INTRODUCTION

Higher education in the United States is facing a challenging financial landscape. It is under pressure to expand opportunities, serve increasingly diverse student populations, limit rising prices, and improve student learning and employability outcomes—all while containing or reducing operating costs. As Daniel Greenstein, director of postsecondary programs at the Bill & Melinda Gates Foundation observes in the March 26, 2015 *Gates Postsecondary Success Notes* newsletter, this “mandates that we rethink how institutions and systems do their business, as well as address the policy environment in which they operate.”

Many senior higher education administrators acknowledge that their current business models are ill equipped to meet the challenges ahead. Fewer than one-half of public and private nonprofit college and university presidents are confident their business models are sustainable over the next 10 years. Finance officers are even less optimistic: only 40 percent believe in the long-term sustainability of current models (*Inside Higher Ed* 2014a, 2014b).

The higher education community must do more than rethink the shape of higher education institutions and their business systems. We must also rethink how we measure and analyze the finances of higher education institutions; our inherited ways of doing so fail to provide answers we need for fruitful thinking about “how institutions and systems do their business.”

To assist in this rethinking, this issue paper poses three primary questions:

1. What do higher education institutional leaders and stakeholders need to know about institutional spending?
2. What can existing data tell us, and what questions are they unable to answer?
3. What options exist to obtain data on unanswered questions and make them available to analysts inside and outside of higher education institutions?

The paper will begin by identifying the financial and performance questions that concern higher education institutional leaders and stakeholders. Next, it describes existing higher education finance data collections, and the information they can, and cannot, provide. Lastly, the paper examines possible pathways forward.

What Higher Education Leaders Need to Know About Institutional Spending

For simplicity, one may identify two sets of higher education leaders: those who *lead and manage higher education institutions* (presidents, provosts, and chief financial officers), and *external stakeholders* who call upon managers to account for their stewardship of resources, including trustees and policymakers located in system offices, state budget offices, and appropriations committees.

Broadly speaking, external stakeholders' concerns about spending are less granular than those of institutional leaders; their focus is on the allocation of resources among institutions and comparisons of institutional performance. State budget offices do not care, for example, how much money the English Department receives, or whether an institution is spending more on advising per student than its peers. Those who lead and manage institutions are focused on the allocation of resources within the institution, and on the alignment of resources to mission. Institutional comparisons are useful, but more granular information is needed to make strategic decisions about the allocation of resources to programs, activities, and services. For this paper, we concern ourselves primarily with the information needs of those who lead and manage institutions, since granular information about spending that is useful to institutions can be aggregated to provide evidence that supports thoughtful policy choices. Rethinking finance data should proceed "from the bottom up."

How does my institution compare to others like it on financial and outcome metrics?

Institutional leaders and stakeholders often compare colleges and universities to their peers on financial and performance metrics. Comparisons of institution-level financial metrics are useful in pinpointing areas where institutions may be operating in ways that depart from past patterns, or in ways that differ from peer institutions or aggregate benchmarks. Within-institution trend analyses can identify early warning indicators that may signal the need to reallocate financial resources. They can also provide a way to measure the effect of policies and programs designed to change the distribution of revenues and expenditures. Comparisons across institutions can yield different but similarly important findings, including information about relative investments in key activities, student outcomes, and efficient resource use.

However, institution-level trend and benchmarking analyses are less useful when institutions need to determine the underlying cause of these patterns and trends (e.g., rising health-care costs, the changing composition of professional staff, or executive compensation) or develop targeted interventions to contain costs while maintaining quality.

What changes could my institution implement to become more efficient or cost effective?

When institutional leaders need to understand *why* costs are what they are, or how those costs might be expected to shift given a particular intervention, information about institutional costs below the aggregate level are needed. This might include resource data at the academic program, function, or activity level, as well as detailed information on spending and potential cost drivers outside the instructional setting.

An example, familiar to many, is something akin to: "*Would it be more or less expensive to eliminate stand-alone remedial instruction, and incorporate added assessments, differentiated curriculum, and more extensive learning supports within our institution's introductory courses?*" More nuanced questions about institutional performance might also be combined with a need to compare against peer or national benchmarks, such as, "*Are we graduating as many biology or business students per thousand dollars of instructional spending as institutions in our peer aspiration group?*" or, "*What is the source of rising student services costs, and are we spending more or less than other institutions on activities to improve student retention and outcomes?*"

How can we most efficiently allocate our resources to reach our most important goals?

The third type of question that higher education leaders might pose extends beyond an analysis of costs. It links detailed information about costs to evidence on the effect of alternative educational structures and practices, allowing leaders to evaluate the implications of resource reallocation on student outcomes. For example, “*Will the impact of integrated remedial instruction improve retention and completion enough to help us recover the added cost of providing instruction this way?*” Or, “*If we have \$20 million to invest with the goal of reducing entering student attrition by 15 percent, would it be more efficient to invest that money in introductory course size reduction, replacing one quarter of adjunct instructors with permanent staff, or a better learning management system (LMS)?*”

Answering questions such as these requires two very different types of information, neither of which is routinely available to many institutional leaders. The first relates to the efficacy of a proposed intervention. If evidence of effect is not based or is not rigorously grounded (that is, if we cannot have confidence the effect being observed is attributable solely to the intervention at hand) even the most careful cost analysis is of little use. If, for example, an institution is offered a “student retention solution” from a proprietary provider that comes with highly detailed cost information, but without strong evidence of the intervention’s effect, a leader’s capacity to make efficient choices is limited. The second kind of information needed, and often equally as challenging to produce, is an accurate estimate of the resource cost of implementing the treatment. For example, at the outset it may be difficult to determine “*How much will it cost to integrate remedial instruction?*” or “*Is \$20 million enough to reduce student attrition by 15 percent?*” As we discuss below, few institutions currently engage in the type of costing activities that would yield credible and actionable results.

What Publicly Available Higher Education Data Can Tell Us

Information on a broad set of higher education spending and outcome measures is publicly available for most colleges and universities. The most comprehensive higher education data comes from the U.S. Department of Education’s Integrated Postsecondary Education Data System (IPEDS), administered by the National Center for Education Statistics.

Each year, a series of nine IPEDS survey components are administered to four-year, two-year, and less-than-two-year postsecondary providers to collect information on their enrollments, finance, staffing, completions, graduation rates, financial aid, and institutional characteristics. Participation is required for all public, private not-for-profit, and private for-profit institutions that participate in Title IV federal financial aid programs. Other data on specialized topics, such as endowment values, athletic spending, or information technology spending, is collected by various associations but institution-level information is often not publicly available or requires a data-usage fee.

While IPEDS provides a wealth of information dating back to the 1986–87 academic year,¹ institutional comparisons are hindered by survey reporting requirements that vary among sectors and survey changes over time. Notably, the finance survey has undergone a series of changes related to reporting requirements specified by national accounting standard boards, which differ for public and private institutions.² Since

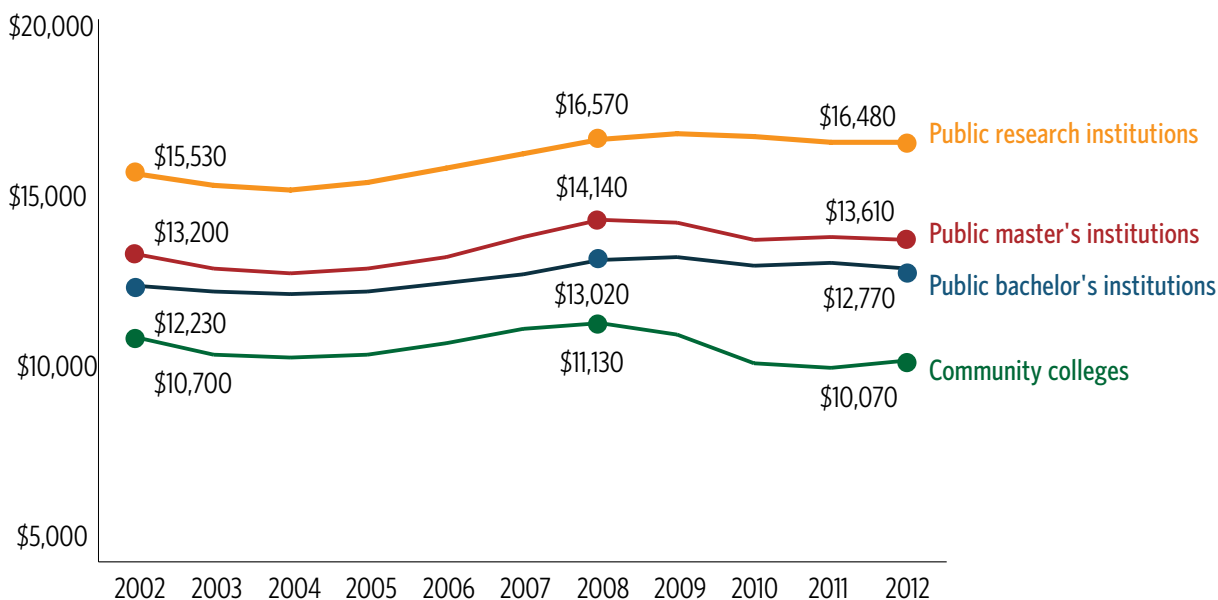
1 Prior to the 1986–87 academic year, higher education data was collected beginning in the 1966–67 academic year, by the Higher Education General Information Survey (HEGIS).

2 Between fiscal 1987 and fiscal 1996, all institutions reported finance information on the same IPEDS survey. Beginning in fiscal 1997, private not-for-profit institutions, which follow the Finance Accounting Standards Board (FASB) guidelines, began reporting on a new finance survey that provided similar information, but in a different reporting format. In fiscal 2002, a separate survey change was phased in for public institutions following Government Accounting Standards Board (GASB) guidelines. A second major change in the GASB finance survey was phased in beginning in fiscal 2008, resulting in a reporting format that was similar to FASB institutions.

fiscal 1997, public and private institutions have reported financial information on different IPEDS surveys, which have continued to evolve.

Fortunately many of the reporting differences and survey changes can be reconciled to generate comparable information among institutions, and over time. The data transformations required to provide comparable analyses among higher education institutions are captured, to the extent possible, in the Delta Cost Project Database, which currently includes data from 1987 to 2012.³

Figure 1: Average Education and Related Spending per Full-time Equivalent Student, Fiscal 2002–2012 (in 2012 dollars)



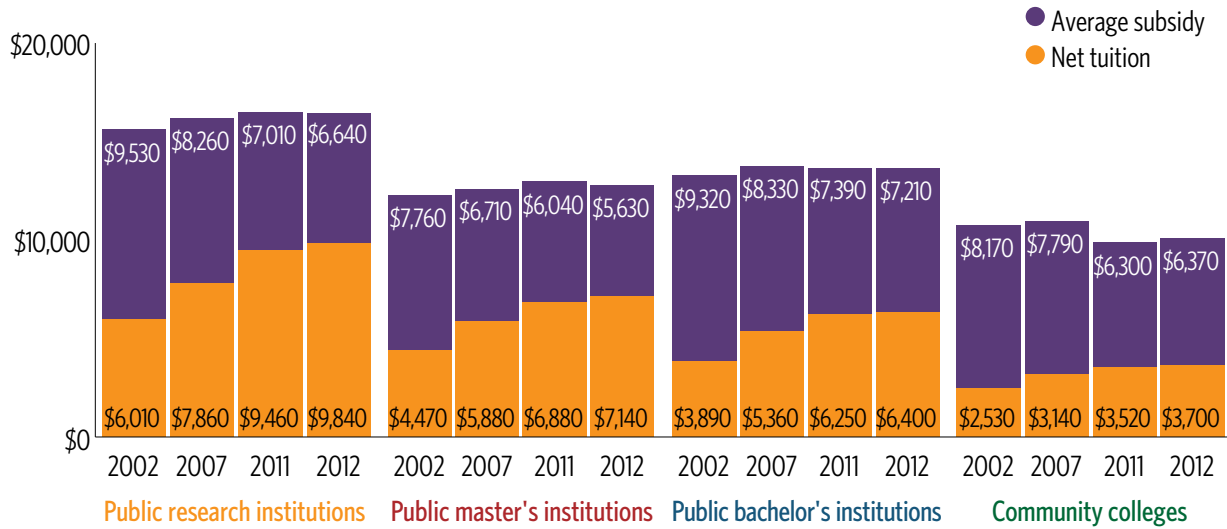
Sources: IPEDS Analytics: Delta Cost Project Database 1987–2012 (11-year matched set).

Delta's improvements to IPEDS permit us to look at high-level patterns and trends in college spending. Delta provides a broad understanding of how much money institutions are spending, what the money is being spent on, and how it has changed over time. For instance, isolating spending related to the academic mission⁴ shows average education and related spending per full-time equivalent (FTE) student declined across all types of public institutions since the onset of the 2008 recession (see Figure 1). Community colleges were hit hardest and spent less money per student in 2012 than a decade earlier; however, public research universities sustained smaller cuts and still spent nearly \$1,000 more per student in 2012 compared to 2002.

3 In addition to reconciling survey changes over time, the Delta Database also facilitates longitudinal analyses by accounting for parent/child reporting relationships present in IPEDS, creating institutional panels for multi-year analyses, developing consistent variables names and derived variables, and providing financial information standardized by enrollment and inflation adjustments.

4 Excluding spending on sponsored research, public services, and auxiliaries such as student housing and bookstores.

Figure 2: Average Education and Related Spending per Full-time Equivalent Student, by Net Tuition and Subsidies, Fiscal 2002–2012 (in 2012 dollars)



Sources: IPEDS Analytics: Delta Cost Project Database 1987–2012 (11-year matched set).

Metrics derived using extant data showed there is much to be learned from information that is contextualized through comparative and historic analyses. Metrics designed to go beyond measures of total revenues and spending broadly illustrate how well financial and institutional decisions align with institutions’ own priorities, and compare with similar institutions.

For external stakeholders, especially those in government, it is important to understand what colleges and universities spend on their academic mission, but also whether spending on administration is rising faster than instruction, how much spending students and institutional subsidies finance, and whether the cost of producing a degree is increasing. For example, rapidly rising tuition prices suggest that college spending is out of control, but this largely reflects massive cost-shifting within higher education. Institutional subsidies⁵ at public colleges and universities declined by an average of 22 percent or more between 2002 and 2012 after adjusting for enrollment and inflation (see Figure 2). Student tuition revenue was used to backfill lost revenue, while spending increased modestly. So, while students were paying more, institutions were not necessarily providing them with more educational resources.

Although the Delta Cost Project has greatly improved the usefulness of IPEDS data, there are limitations to IPEDS data that it cannot solve. Because IPEDS is collected at the institutional rather than program or activity level, it is not sufficiently detailed to pinpoint specific cost drivers, nor is it linked to student-level data that would allow spending to be linked to outcomes. To provide an evidence-based response to the cost and productivity challenges facing higher education, new evidence is needed.

Moving Beyond IPEDS

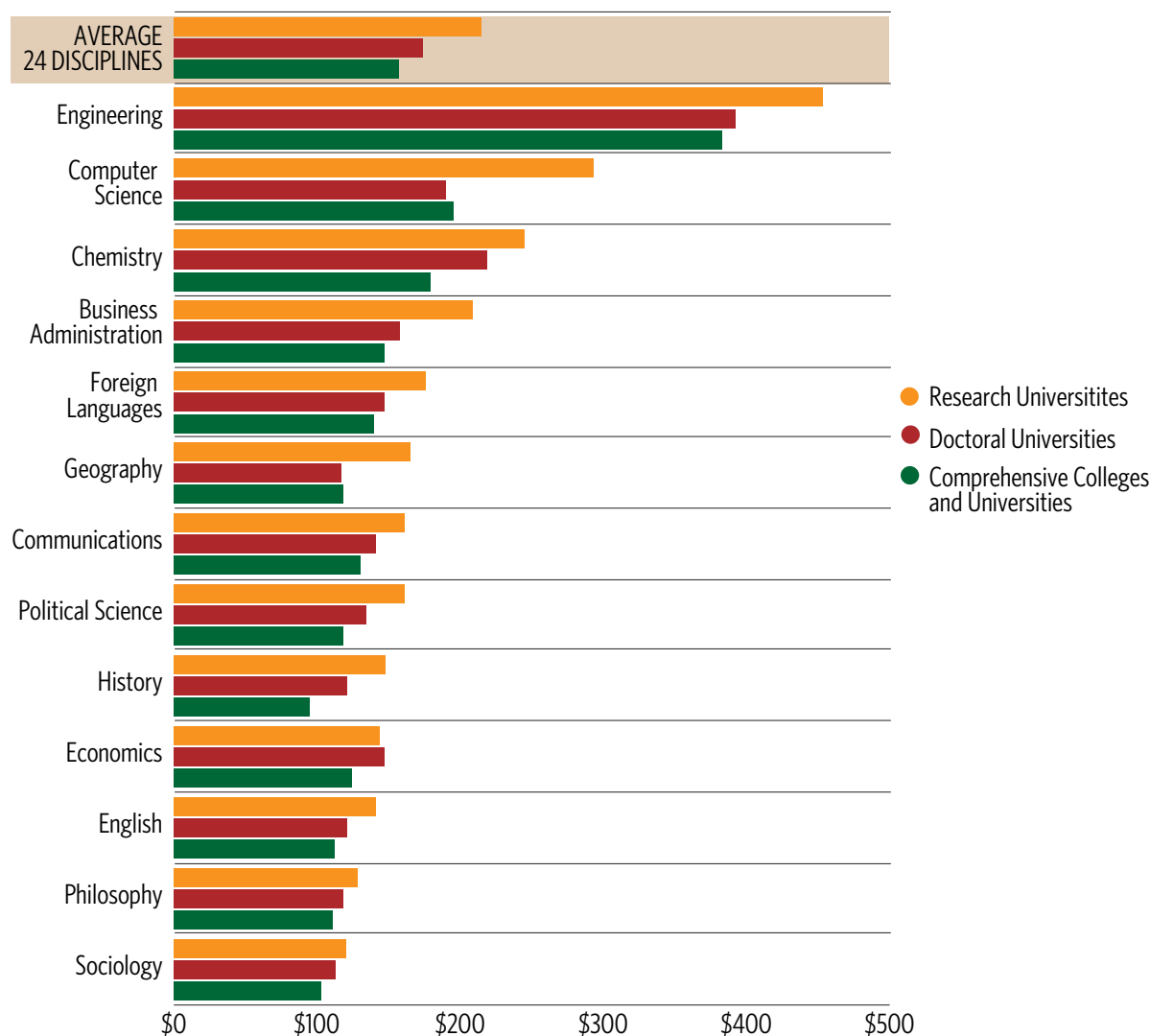
If IPEDS data are insufficient to address the increasingly complex questions facing institutional leaders and education policymakers, where can stakeholders turn for answers? Below, we consider existing methodologies and promising practices that may offer interim solutions and platforms for greater innovation.

⁵ At public institutions, state and local appropriations are the primary source of institutional subsidies.

Costing instructional programs

The *National Study of Instructional Costs and Productivity*, better known as the Delaware Cost Study, collects direct spending on instruction by program for participating four-year institutions. Participating institutions receive feedback on their own institutions, benchmarked against peers and national estimates. The Delaware Cost Study reports direct instructional costs per student credit hour across 24 disciplines, with Figure 3 showing the most common disciplines. The Delaware study provides useful aggregated spending benchmarks, and also illustrates that program mix is a much larger determinant of overall costs than the type of college or university offering a program.

Figure 3: Direct Instructional Costs per Student Credit Hour Taught: Delaware Cost Study Benchmarks, Fiscal 2003



Source: Middaugh, Michael M. 2005. "Understanding Higher Education Costs." *Planning for Higher Education*. 33(3): 15-18.

At its core, the Delaware Cost Study provides critical insights about the *direct* cost of instruction in a given educational program, including salaries and benefits of faculty and departmental staff, and non-labor costs such

as travel and office or lab supplies. This approach functions well as a rough benchmarking or planning tool for provosts and other institutional leaders who wish to know, for example, “*What would it cost me to build a program in X, which I don’t have at present?*” or, “*Is my instruction cost per FTE out of line with peer institutions?*”

What the Delaware Cost Study does not do is provide a deep understanding of the *full* cost of instruction, which encompasses any number of additional human, and non-human, resources that institutions deploy to deliver that education. It does not include the cost of activities that are operated by non-academic units, including costs associated with educational technology, central administrative support, student supports, and operations, maintenance, and depreciation.

Little detail is available on the costs of non-academic activities, apart from the specific information collected by associations whose members have an interest in this information. Many of these activities may not be manifestly instructional, but are nonetheless critical to institutional efforts to achieve their specific missions. Running the gamut from admissions and marketing functions to career and alumni services, these operations can be situated anywhere on the campus organizational chart. Each requires a commitment of institutional resources, each makes more (or less) of a contribution to student success, and each is a component of any “true accounting” of what it costs to educate a given student.

Because the Delaware Cost Study is, foremost, a service to its members, its data are not regularly made available as a public resource. However, in some states information on academic program costs is available for public institutions. This can include detailed information about instructional costs, credit hours, and cost per credit hour across programs and instructional levels. This information allows comparisons of instructional costs and credit hours across programs for lower- and upper-level undergraduate and graduate programs⁶ (Johnson 2009; Basu-Conger, Bell, and Stanley 2010).

Methods for collecting this information often differ across states. Some systems include only direct instructional expenses, while others may include all or partial indirect expenses. The allocation of credit hours to instructional level also differs, with some using the course level and others using the student level; however, these differences do not appear to affect relative cost per credit hour in a meaningful way. Because relatively few states implement these costing methodologies, this information cannot easily support interstate peer comparisons, and is principally used for intrastate benchmarking.

Information collected by these state systems (or the Delaware Cost Study) can be used to broadly address limitations in IPEDS. Cost estimates can be *constructed* by level or program mix by applying “weights” or coefficients derived from this data to existing financial totals available in IPEDS. Because this approach is likely to produce substantial errors when estimating costs at a detailed level, it is best adapted to highly aggregated state or system-level information needs.

Activity-based costing

Answering increasingly detailed questions about resource allocation requires data well below the institutional level. However, institutions are typically required to only report costs by broad function, such as instruction, research, and student services, and are rarely asked to assign costs to specific activities that comprise those functions. For example, instructional spending is generally reported in the aggregate, yet instruction encompasses a number of different activities, including course development, individual tutoring, advising and, of course, teaching.

Activity-based costing originated in manufacturing to provide a better way of allocating fixed overhead and administrative costs (e.g., indirect costs) to product lines. For example, information on the cost of operating a customer call center and the number of calls received can be used to determine a per-call cost. When combined

6 Examples include Florida, Illinois, Ohio, New York, Minnesota, and Texas.

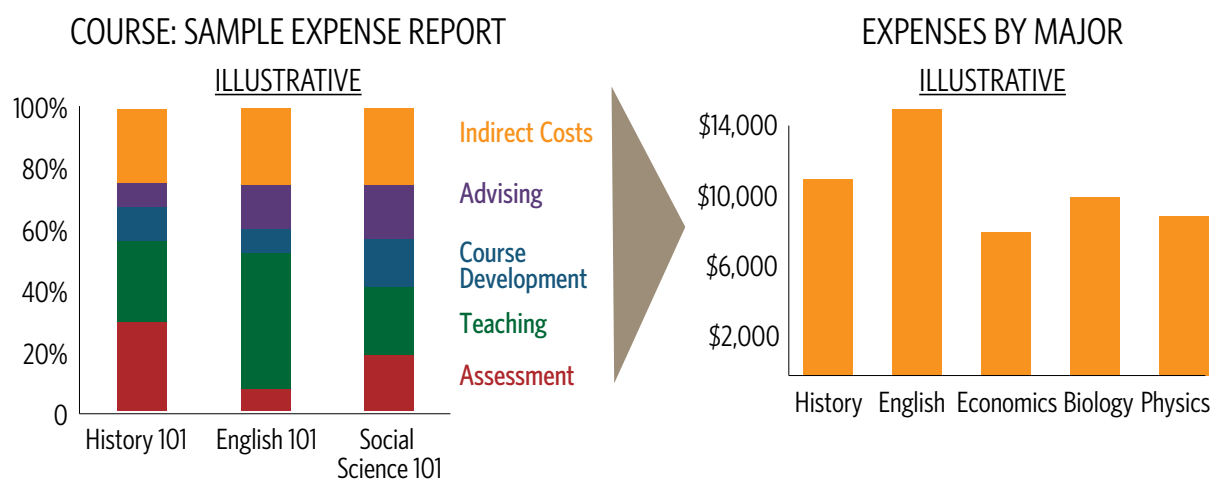
with information on the number of calls for each product, call center costs can be allocated across product lines and included as part of the full cost of production. Other industries with significant overhead and diverse product or services lines, such as construction, healthcare, and banking, also use activity-based costing.⁷

In higher education, there is little information on the underlying costs of the educational “product,” whether at the institution level, academic unit level, or course level. So activity-based costing is applied first to understand the instructional cost drivers, and then the associated overhead, or indirect, costs are often added (Hurlburt, Kirshstein, and Rossol-Allison 2014; Anguiano 2013). Activity-based costing looks at how much time is spent on specific predefined activities (e.g., teaching, course development, and student advising) and on the personnel and non-labor costs associated with these activities. This approach focuses primarily on the work that is performed, reflecting on the work process itself, and attempts to encompass the totality of resources is required to execute the process successfully.

The level of rigor with which this resource accounting takes place can vary substantially. In a typical implementation, the focus of the costing exercise is the identification of the underlying cost activities, and the proportions of time staff members devote to each activity so that salary and benefit costs can be allocated accordingly.⁸ Salary and benefit expenses are collected by academic unit and are allocated to activities within each academic unit by multiplying these costs by the estimated proportion of time staff spent on each activity. Labor costs are then aggregated to the institution level by summing these costs across academic units.

Non-labor costs, such as supplies, travel, and software, are collected at the institution level and are distributed among the academic units using an appropriate weight, such as the number of FTE students or staff, or student credit hours produced by the academic unit. These costs are then allocated to activities using the staff time estimates and aggregated back to the institution level by summing across academic units.

Figure 4: Sample Activity-Based Costing Expense Report, by Course and Major



Source: Anguiano, Maria. 2013. *Cost Structure of Post-Secondary Education: Guide to Making Activity-Based Costing Meaningful and Practical*. Seattle: Bill & Melinda Gates Foundation.

⁷ <http://yourbusiness.azcentral.com/types-businesses-activitybased-costing-28437.html>

⁸ There are two ways to create time estimates: managerial assessment (in which deans or department heads estimate the percentage of time staff spend on each identified activity), and faculty/staff surveys of time use. Managerial assessment provides a relatively efficient and cost-effective process for generating estimates marked by “rough accuracy” rather than precision. Faculty and staff surveys are comparatively burdensome, and may yield lower quality data and foster negative attitudes toward activity-based costing, thus jeopardizing staff buy-in. Moreover, institutions may need to employ dedicated staff just to manage survey data collection, processing, and reporting.

Activity-based costing also may be used to distribute the indirect costs of non-academic units (e.g., institutional support, technology, library services) to specific academic units (divisions or courses) based on usage, thereby decreasing general overhead and providing a more accurate representation of divisional or course-related costs. To simplify, one may exclude indirect costs, such as electricity and use of buildings and equipment, but in a more expansive approach, assigning these to activities provides a more complete measure of activity costs. Figure 4 provides an illustrative example of the direct and indirect costs for a detailed cost accounting model examining specific courses, which are then aggregated to illustrate total expenses by major.

The advantage of activity-based costing is that it provides a more accurate estimate of production costs. It identifies who or what is driving costs. Improved transparency may also lead to better stewardship of spending. But foremost, this is a cost-analysis and decision-making tool intended to provide a better understanding of cost drivers and inform resource allocation decisions; it does not replace traditional cost accounting. Activity-based costing can be expensive and time-consuming to implement. Detailed cost accounting requires extensive data collection and manipulation, which is often complicated by the different campus systems that house financial, course, and facilities information.

Given the challenges associated with implementing activity-based costing, it has experienced limited adoption. Four universities appear to have made ongoing use of it, and the Gates-supported activity-based costing pilot had a cohort of 26 community colleges. However, universities in Australia successfully implemented a similar costing methodology many years ago, which also includes predictive models to assist in strategic planning. And new financial software is available that may help overcome data-related challenges and burdens (Anguiano 2013).

Administrative data systems and their use in resource allocation and management

More detailed, and more widely available, administrative data provides new ways for stakeholders to allocate resources and then better understand the ways in which they are deployed to achieve an institution's mission. Because these systems typically contain data at the student, faculty, and course level, they can be used to generate estimates of cost that are potentially more precise than those generated from managerial surveys.

Typically, state higher education leaders employ administrative-data-based solutions, not to establish the true (or actual) cost of production, but to construct funding or budgeting methodologies that rely upon notional costs. For example, the Louisiana Board of Regents employs a fairly complex budgeting methodology built upon total student credit hour production by academic term/year, institution, classification of instructional programs (CIP) code, and student level, and is then weighted by notional academic program cost differences obtained from the Texas Higher Education Coordinating Board.⁹ While the Regents' model (largely) allocates state appropriations to public higher education institutions on the basis of a cost model that is heavily informed by "true" administrative data, it does not purport that the model captures the actual cost of campus activities and programs. To the extent the information resources and incentives to create true cost estimates exist, these are to be found on campuses themselves.

An example of improved costing can be found in implementations of "responsibility centered management" (RCM), an increasingly common approach to campus budgeting. Typically, colleges and universities build budgets incrementally (that is, prior year plus a percentage increase or decrease), or via simple funding formulas, both of which are centrally driven and lack incentives for improving efficiency. RCM allocates revenues and costs to academic units, the aim of which is to create incentives for increased financial respon-

9 The Texas methodology is described at <http://www.theccb.state.tx.us/reports/pdf/2185.pdf>.

sibility. It includes both direct costs and revenues that are typically known to units, as well as the indirect costs for which there is often an incomplete accounting. The result, at least in theory, is an accurate net cost associated with each major program and activity across the institution.

We distinguish between the principle of RCM as a management tool and the data and analytical capabilities that RCM implementation can provide. Our focus is not whether units within a university *should be* responsible for revenues and expenditures (i.e., “each tub on its bottom”), but rather how techniques associated with RCM might be used to advance campus-level information about costs. Institutions with RCM-level cost information have the potential to develop cost estimates for different student curriculum profiles: for example, the cost to educate a bachelor’s-level electrical engineer. From there, constructing profiles for other student groups, such as Pell Grant recipients, first-generation students, or other populations of interest, may be possible.

To the extent that programs, services, and supports can be accurately costed, and their effects on important student outcomes such as progression and completion correctly identified, it would be possible for campus leaders to receive accurate estimates of the additional resources needed to improve outcomes for specific student groups to specific levels. Moving beyond the institutional level, we can envision that an evidence-based understanding of costs to raise the completion probability for a first-generation student in engineering would provide an empirical basis for system and state budgeting policy, including discussions of equitable resource allocation and funding adequacy within a state’s higher education system, and smarter formula-based funding formulae.

NEXT STEPS

We do not presume this effort would be simple. On most campuses, neither the requisite costing data nor the information about the efficacy of programs and services are widely available, if at all. However, it is not hard to imagine a path forward. Improvements in campus data systems, as well as efforts like RCM, make it increasingly likely that well-resourced institutions will soon have the capacity to have a more complete understanding of costs to operate all parts of the educational enterprise. Similarly, more rigorous evidence about the effectiveness of various interventions *is* coming, albeit slowly.

Needed now is a coalition of institutions interested in a further exploration of these concepts. Whether they are motivated by increasing the efficiency of resource allocation, fostering a sense of fiduciary responsibility within individual campus units, or monitoring the equitable distribution of tuition and tax dollars, or some combination, this coalition would have the potential to make substantial contributions to the field of higher education finance. Many of the organizational models needed to support this work, including data-sharing consortia and topically driven research alliances, already exist. With the need for more and better information as important now as ever before, the time is right for institutional leaders (and those who support them) to move forward.

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Appendix C: Financial Data at the Crossroads of Cost Containment and Educational Innovation

Dennis P. Jones, National Center for Higher Education Management Systems

INTRODUCTION

The imperative facing higher education as an industry is widely understood and agreed upon, generally if not specifically: The enterprise must (substantially) increase the number of students it graduates with high-quality postsecondary credentials. Well-reasoned analyses suggest that about 60 percent of the nation's working-age population must have knowledge and skills at a level obtained through education beyond high school if the country is to remain economically competitive (the current attainment rate is about 40 percent). Achieving this will require graduating about 20 million more students by 2025 than the current attainment rate.

These heightened expectations will need to be met within the constraints of very limited resources. Neither state governments nor students, the sources of funds for general institutional operations, can be relied upon to provide resources at levels commensurate with the increased numbers of students that must be served. Public funds will be limited by both an unwillingness to raise taxes (and in many states, an appetite for reducing them) and the competing demands for available resources. The rapidly escalating costs of Medicaid represent the largest threat to education funding.

With regard to funding from students, the reality is that the additional students who must be served will be those from families with very limited means. Participation rates of low-income students are historically lower than students from high-income families and their completion rates are similarly lower. Students from the lower half of the income distribution have about a 25 percent chance of attaining a baccalaureate level degree by age 24, compared to about 90 percent of students from the upper quartile of family income. Continually raising tuition will serve to make postsecondary education unaffordable to the very students who must be brought into the system if attainment levels are to be reached. The alternative is to increase funding levels of the student financial aid system to levels that will be unsustainable.

There are no simple, silver-bullet approaches to reconciling these conflicting pressures. To be sure, there are still efficiencies that can be wrung out of the system, even after the steps taken as a result of the pressures imposed by the Great Recession. Purchasing cooperatives for energy, property insurance, and various commodities are still the exception rather than the rule, as is centralization of back-office operations. And, while some "administrative bloat" can be eliminated, the requirements of revenue-raising from a broader array of sources and the substitution of "administrative" professionals for faculty in the provision of many

services (e.g., advising and counseling) make the amount of such bloat more apparent than real. But none of these steps, even if pushed to the limits, will free enough resources to cover more than a fraction of the funds needed to pay for the demands of increased student access and success. Increased system productivity will simply *have to be* a major part of the solution.

This reality has important implications for higher education, with regard to both public accountability and internal strategic management.

External audiences will push even harder for improvements in productivity. Given the penchant for state expenditure controls and the growing expectation that investments in higher education should yield better results, expectations of greater productivity are not unreasonable; there is plenty of room to increase the proportion of college enrollees who successfully complete a program of study.

Internally, more and more institutional leaders will be forced to recognize that their existing education and business models are simply not sustainable. They will have to modify their approaches in ways that maintain the educational integrity of their institutions while adjusting to the harsher environment in which they must function. This will require not only better financial data, but better information about factors that affect student success.

The balance of this paper is devoted to a discussion of the data needed for both public accountability and strategic management, and the degree to which these data are, and are not, generally available.

The General Data/Information Implications

These conditions directly affect the data and information required for both public accountability and institutional strategic management.

Public accountability will require institutions (and systems of institutions) to provide evidence they are responding to public demands for both increased productivity and assurances that affordability is being sustained. In short, cost containment and more effective use of resources from the perspective of both students and institutions will become more important.

Strategic management will require that institutions have ready access to information that:

1. Helps them identify barriers to student success
2. Allows them to make informed choices about changes to their education models to help them fulfill their missions at lower costs
3. Provides a basis for assessing the effectiveness of strategies regarding expenditures of institutional resources for student financial aid (or knowingly reducing revenues through tuition waivers), a major factor in the cost equation for most independent and many public institutions. Do recipients stay enrolled or graduate at higher rates than non-recipients? To what extent do the (marginal) collected revenues exceed the institution's student financial aid investment?

In some areas supporting data are available, but they are not routinely converted into information usable to decision makers. In other areas, the required data are not being captured. Each circumstance is described below.

Areas where data are available but conventions for creating information are missing

In some of these areas the necessary data are available; needed are conventions concerning the conversion of these data into information decision makers (and the public) will find useful. In this category are the following:

1. **Presenting information about institutional or system productivity.** Metrics in this arena have been proposed by the National Governors Association and are being used in several applications, accountability reporting, outcomes-based funding models, etc.
 - Number of awards (degrees and certificates) per \$100,000 of general operating revenues (tuition and fees, plus state and local appropriations)
 - Number of awards per 100 full-time equivalent (FTE) enrollments (separately for undergraduate and graduate students)

Both of these metrics become more meaningful if they are shown as trends and/or displayed in comparison to other institutions having generally similar missions. As stated, the first of these metrics treat all awards as being of equal value. This problem can be overcome by establishing a convention for weighting different kinds of awards differently (see Table 1 for example).

Table 1. Sample Weighting of Certificates and Degrees

	CERTIFICATES	ASSOCIATE	BACCALAUREATE	MASTER'S	DOCTORAL & FIRST PROFESSIONAL	TOTAL
Number	20	20	20	20	20	100
Weight	0.25	0.5	1.0	2.0	3.0	
Weighted number	5	10	20	40	60	135

There will always be pressure to refine the metrics, but metrics already exist that are perfectly adequate for communicating about productivity. To the extent that there is a flaw in this metric, it revolves around the absence of data about students who transfer before completing a program. For most institutions, use of National Clearinghouse (NSC) data can overcome this shortcoming.

The clearinghouse compiles data from most higher education institutions about the large majority of students in ways allowing students to be tracked from one institution to another. NSC data also identify when and from which institutions students earn degrees. As a result, it is possible to create a productivity metric that counts, not only graduates, but also students who successfully transfer as successes.

2. **Data that allow identification of barriers to student success.** Most institutions now have longitudinal student tracking systems (or at least the capacity to create them). These systems can identify the point at which students drop out. Emerging experience with data analytics provide evidence that thoughtful analyses of data available in institutional record systems can provide useful insights into the barriers to student success, bottleneck courses, failure to make the transition from developmental education to collegiate level work, financial problems indicated by students who leave while in good academic standing, etc.
3. **Data that allow assessment of the efficacy of institutional financial aid strategies.** The same longitudinal student tracking data systems that help identify barriers to student success can be used to track retention and completion of students who are granted institutional aid compared with those who are not. Knowing this, marginal revenues associated with recipients can be compared with institutional costs of providing aid to these students, and a reasonable approximation to return on investment (ROI) calculated.

Data that are not readily available

There are other key areas where data limitations preclude creating information that is critically important to the accountability and strategic decision-making processes. For accountability purposes, the absence of data about affordability that can be presented in a way that truly communicates the concept is a major impediment. For institutional leaders, the lack of data about the distribution of personnel time, and therefore costs, across the various activities that comprise the instructional function constrains their ability to make informed decisions about more cost-effective ways to provide education. It is in these two areas where greater attention and more work are particularly crucial. Both are discussed below.

With regard to affordability, the root problem is the absence of a convention, a widely accepted algorithm, for constructing a metric that adequately reflects the concept. At heart, the construct can be conceived as a) the costs to be borne by the student, and b) relative to the students' ability to pay those costs. The difficulties arise to a considerable extent because the specifics of the calculation are so highly individualized.

Conceptually, the cost to the student = cost of attendance - grant aid from all sources

The cost of attendance is relatively simple. Ways can be found to standardize this calculation given an institution's sticker price. Determining an appropriate value for grant aid is much more difficult. The summary data available from IPEDS are deficient in at least two important ways:

- They reflect aid to first-year students only. Given common aid packaging strategies, it is likely that grants are a smaller component of the package in subsequent years. Data that would allow a reasonable estimate of grant aid over the course of a college career are simply not available.
- They do not provide information on the socioeconomic characteristics of students receiving this aid. More specifically, the data provide no information about the distribution of grant aid across students in different quartiles (quintiles, deciles) of family income. Since affordability is determined as cost to the student in relation to student resources available to meet those costs, the inability to compile student cost data by family income makes calculation of a meaningful metric of affordability metric almost impossible.

The other major area of data insufficiency is in the area of costs associated with different instructional activities. For almost all institutions, the primary costs of serving students are personnel costs. As a consequence, a manager's ability to make informed choices regarding ways to contain costs while maintaining the effectiveness and integrity of the educational process requires data about the amounts of human resources (of various kinds) devoted to different instructional activities.

Table 2 depicts, in simple form, the array of data about courses or programs needed as a starting point for any decisions about changing at least some portion of an institution's education model.

Table 2. Course/Program Data Needed for Changes to Education Model

	PROGRAM DESIGN	MATERIAL DEVELOPMENT	CONTENT DELIVERY	MEDIATION	ASSESSMENT	STUDENT SUPPORT SERVICES	TOTAL
Full-Time Faculty							
Part-Time Faculty							
Students							
Professional Staff							
Other Employees							
Technology							
Vendors							

Entries are FTEs

Cost containment requires that either a) personnel costs be reduced or b) costs be distributed over more students, thereby increasing the scale (number of students served without adding costs).

Institutions have generally sought to contain costs by substituting part-time for full-time faculty. They have lowered the costs of inputs but not fundamentally changed their educational (or business) models; part-time faculty perform the same, full array of instructional activities as their full-time counterparts.

With no change in the delivery model, it is straightforward to calculate the costs of teaching a course/section using part-time rather than full-time faculty. But there are limits to how far this substitution strategy can continue before quality suffers and academic support functions go undone. And, even if carried to the responsible limits, it is unlikely cost savings would be sufficient to offset declines in state funding, and to ensure tuition increases can be minimized.

The typical attempt to reduce costs by substituting part-time faculty for full-time faculty could result in a distribution of personnel time across activities as illustrated in Table 3.

Table 3. Example Allocation of Resources in a Traditional Model

	PROGRAM DESIGN	MATERIAL DEVELOPMENT	CONTENT DELIVERY	MEDIATION	ASSESSMENT	STUDENT SUPPORT SERVICES	TOTAL
Full-Time Faculty	1	1	3	3	1	1	10
Part-Time Faculty	1	1	8	8	2	0	20
Students							
Professional Staff						2	2
Other Employees							
Technology							
Vendors							

There are numerous examples of alternative delivery models, among them:

- The large-section models, widely used by research universities, in which (graduate) student effort is substituted for full-time faculty in the tutoring/discussion class and assessment (grading) activities. This is the most common and accepted form of “unbundling” the instructional function.
- Online education which takes the large lecture model one step further and substitutes technology for full-time faculty in the actual delivery of content. Frequently missed (or mishandled) in cost calculations of this modality are the amortized costs of creating and maintaining necessary course materials.
- Competency-based education in which faculty effort is concentrated on course and assessment design, and other instructional activities are conducted by part-time faculty, professional staff, or vendors.

The list of combinations of these strategies could go on.

While individual institutions have undertaken to compare the costs of these alternative educational strategies, the ability to compile findings in a reasonably comparable way is totally lacking. As a result, there has emerged no “conventional wisdom” about costs of alternative models, and the scale or other circumstances that make them particularly attractive.

Full-blown cost studies of alternative models can be time-consuming and expensive. An alternative is to create a heuristic model that allows estimating the costs of alternative models with sufficient fidelity to support strategic decision making. Base cost calculations require assignment of values to the following factors:

- FTE numbers of each type of personnel assigned to each activity
- Average price per unit (FTE) for each type of staff
- Costs of services purchased from outside vendors
- Scale, number of students served in the course/program
- Revenue per student served

With this short list of data elements, values for which can be either determined or assigned (by policy) in a straightforward manner, it is possible to calculate the economic consequences of:

- Employing a wide variety of alternative means of education delivery, including traditional face-to-face classroom instruction.
- Operating at different scales and answering the question, “What scale has to be attained to make each model economically viable?”

The areas in which data gleaned from existing education providers in less traditional ways are the distribution of personnel effort across instructional activities, scale, and expenditures on purchased services and materials. Once there is a body of data on these factors, it is likely that commonalities/central tendencies will be found that are sufficiently sound to allow heuristic modeling without the need for further data collection.

Table 4. Example Allocation of Resources Under New Delivery Model

	PROGRAM DESIGN	MATERIAL DEVELOPMENT	CONTENT DELIVERY	MEDIATION	ASSESSMENT	STUDENT SUPPORT SERVICES	TOTAL
Full-Time Faculty	2	1			2		5
Part-Time Faculty				10			10
Students							
Professional Staff						4	4
Other Employees			1				1
Technology			\$				
Vendors		\$			\$		

In summary, some of the data key to responsible accountability practices and effective managerial decision making are simply not available on a routine basis. The environment in which colleges and universities will have to function demand that these data come to the fore. Equally important, this paper points to the fact that many of the needed data elements are available; they just need to be deployed in a (standardized) way that allows meaningful and accurate interpretations to be drawn from them. Table 4 illustrates how the resulting allocation of resources to activities can be very different using this delivery model.

Appendix D: Key Challenges in Higher Education: An Economic Models Perspective

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INTRODUCTION

Caught in the crosshairs of public opinion about the value of higher education, and the debate over who should pay and how much, America's colleges and universities are facing the need to develop new financial operating models.

From complex public research institutions to small private, community, and technical colleges, all are encountering continuing reductions in public appropriations. In addition to the well-publicized announcement by Governor Scott Walker of Wisconsin, governors in Illinois, Louisiana, Arizona, Kansas, West Virginia, and Ohio, in just the first two months of last year, called for budget cuts to their public colleges and universities.

Customers are also more unwilling and/or unable to pay ever-increasing tuition and fees. Nonetheless, tuition and fees are being raised, again. Arizona, among many other states, has approved statutory changes making its largest community colleges ineligible for state funding. In Louisiana, university leaders have been discussing bankruptcy and fiscal exigency.

In addition, students are not the only ones to bear the effect of state divestment. Faculty and staff have been subject to layoffs, hiring freezes, furloughs, and reductions in pay, as this labor-intensive industry tightens its ever-shrinking belt.

While last decade's recession accounted for a part of this funding decline, this trend of state funding reductions for public state colleges and universities began over 25 years ago. And, despite a slowly improving economy, state appropriations for colleges and universities declined an average of \$2,016 per student between 2008 and 2014, while tuition increased by almost the same amount.

This has occurred simultaneously with increased public questioning of the value of higher education, particularly when compared with the debt burden many students are incurring. This value question has also raised considerable debate about what the outcomes of higher education should be, and what metrics should be used in an increasingly market-driven industry (Brenneman 2005). As Vedder (2004) explains in his analysis of the high cost and inefficiency of colleges, "there is no clear, unambiguous means of measuring success" (37).

While some believe the longevity of the higher education industry evidences continued need for current models and methods (recall the results of similar assumptions made by the American automobile and steel

industries of the past century), others assert that emerging models of higher education (including competency-based credentialing, “badging,” and open courseware) will replace current institutions within the next decade.

In response to the need for campus-wide discussion of these issues, the National Association for College and University Business Officers (NACUBO) has embarked on a two-year project titled the NACUBO Higher Education Economic Models Project. The project will neither attempt to resolve the public-good versus private-good debate about higher education, nor focus on institutions’ revenues and who should contribute what shares. Rather, the project examines the effect of the current economic, political, and social environment on colleges and universities, and examines the internal structural, operational, and cultural variables critical to their success.

The outcome of the project is not intended to be prescriptive in its approach, but to provide higher education leaders with recommended discussion points and methods to engender needed changes. Thus, we propose solutions from *within* these institutions of higher education, led by those who know them best (faculty, staff, administration, and board members), and focus on methods for implementing those changes.

Given the diversity of institutions’ environments, missions, market segments, and “customers” in the higher education industry, we anticipate different and unique solutions will be forthcoming for different institutions. As Arizona State University President Michael Crow has stated, academic entrepreneurship, “the process of innovation and spirit of creative risk-taking,” will be a critical attribute to change (Crow 2012, 21).

While institutional researchers and others have attempted to explain the economic underpinnings of higher education, as in the Delta Cost Project, their work has focused largely on macro-, industry-level data. The lack of models of higher education cost functions, combined with the diversity of institutions, pose challenges to development of elegant institutionally focused economic models.

However, factors affecting institutions’ ability to respond to environmental changes can be discerned from thoughtful, experienced industry leaders. Consequently, NACUBO has begun by asking an array of stakeholders, including board members, presidents, provosts and chief academic officers (CAOs), chief business officers (CBOs), and others to identify those factors.

The preceding discussion reflects the input from initial focus groups with such higher education stakeholders about the challenges and opportunities of changing financial and operational models currently used by colleges and universities.

Key finding: It’s all about leadership

Initial focus groups have represented the range of nonprofit higher education institutions: research, comprehensive doctoral, small institutions, and community colleges. Responses collected to date have centered around four themes: institutional leadership, strategic resource deployment, a labor-intensive organization, and capital resources. While each of the themes can be described independently, they reflect highly interrelated aspects of a complex industry comprising complex institutions. From a series of focus group discussions with chief business officers, provosts, presidents, board members, and chief information officers, we have identified four key areas of concern around the current higher education economic model: resource allocation, labor dependence, capital, and leadership. In ensuing discussions, leadership emerged as the priority.

Embedded in the leadership topic are the dimensions of organizational structure, decision making, and culture that imbue higher education with both its collegial and shared governance, as well as its tradi-

tion-bound nature. Combined with a vertical organizational structure and competing outcomes, these create an atmosphere of reluctant change (and then, change only at the margins), as well as leaders who fear votes of no confidence from faculty and/or boards should they dare to innovate.

Institutional leadership

Leadership can make the difference between an adaptive, mission-centered, effective, and efficient organization, and one that simply maintains the status quo. The role of leadership in colleges and universities, however, is complicated by institutional culture, once described as both shared governance and organized anarchy (Cohen, March, and Olsen 1972).

These contradictory views reflect the differing perspectives of intent and execution. While shared governance views the decision-making processes of higher education as collaborative and deliberative, in many cases the framework yields a governance structure that separates outcomes (academics, generally the purview of the faculty senate) from resource means, managed by the administration (Halachmi 2001). Within this messy organization, “higher education leadership can be considered an extreme profession equivalent to extreme sports” (Mossberg 2001, 206). As is often the case in sports, success will depend on the strengths, talents, and commitment of the entire team—in this case, the institutional leadership team of president, CAO, and CBO. The team must also share a vision for the institution and accept the necessity of taking risks to create its sustainable future.

While data cannot resolve such deeply rooted cultural and structural issues, development of agreed-upon, institution-wide metrics can provide common ground for constituents to identify and discuss needed changes. Shared metrics, quantitative and qualitative, provide key input into strategic thinking about the institution’s areas of excellence that may serve as the foundation for institutional change. They also facilitate participation across the organization in development and alignment of strategic actions.

CBOs increasingly find themselves spending time developing communications for wider ranges of institutional constituents, including more time educating an institution’s faculty and staff. This requires development of metrics that link operations to institutional performance.

Further, institutional leaders need to understand the interrelationships of the analytics and their relevancy to varying audiences. For example, while the board of trustees may be concerned about figures as they appear on the year-end financial reports, deans and department chairs need timely operational metrics that support their daily decision making, and individuals throughout the organization need to regularly see the results of goals and progress towards reaching them.

One university president has suggested that a financial dashboard appear on every college home page; perhaps this could be augmented with a shared, transparent progress report on institutional metrics. With such transparency, however, comes the potential for increased external political influence and constraints, further reinforcing the need for leadership alignment.

Equally critical to the establishment of metrics is the incorporation of quality into the discussion of institutional effectiveness. Quality is, of course, a much more complex and nuanced concept than efficiency; but, it is the superordinate goal of education. One key dimension of quality is student learning, and, as the learning college movement has demonstrated, student success should be measured by the depth and breadth of student learning, not by input measures of instruction.

Strategic resource deployment

A second challenge to economic sustainability, identified by business officers, is that of strategic resource deployment. Colleges and universities, as with many other bureaucratic institutions, have long relied upon

traditional budgeting and planning methods. Financial planning processes are generally lengthy, beginning long before the commencement of the fiscal year, and collaborative. Largely incremental and linear, these processes rarely examine past assumptions or unanticipated outcomes, and treat the future merely as an extrapolation of the past. It is rare for colleges and universities to undertake “shifts in resources, year after year, in pursuit of a clear strategy” (Fruk, Hall, and Mittal 2013).

While college and university leaders have had the opportunity—some would say the mandate—to make changes in resource allocations and the underlying business model in response to the changing economic environment of the past decade, few have done so. Instead, they continue to focus on net revenue management (at least, in the past few years moving beyond tuition discounting) and methods to increase enrollment. Citing this dependence on short-term fixes rather than long-term strategies, retired Bucknell University (PA) President Brian C. Mitchell predicts that additional external shocks are necessary before board members and administrators are willing to make necessary changes.

Current Dartmouth University (NH) President Philip J. Hanlon agrees the impetus for change must be from the outside “because presidents at higher education institutions have learned to be cautious” (Shea 2015, 20).

Another factor limiting colleges and universities in moving to more informative financial operations is the absence of useful information. While colleges and universities have abundant data about students, employees, and finances, their capabilities and tools to perform sophisticated analytics informing decision making are more rare, frequently because financial management has focused on transactional processing and reporting. The absence of leadership focus, and a distrustful culture that questions the accuracy and utility of administratively provided numbers, exacerbate this data vacuum. Additionally, cost is often cited as a barrier—both the cost of tools and the cost of analytics that professionals need to transform mounds of data into answers for strategic decisions.

A 2012 study by the EDUCAUSE Center for Applied Research determined that institutions viewing analytics as an investment were progressing faster than institutions viewing it as an expense. The report further identified the need to focus on “expertise, process and policies before acquiring new tools or collecting additional data” (Richsel 2012, 4).

Although most higher education institutions have well-equipped institutional researchers to analyze student data, these researchers frequently lack expertise and training in using financial data. As a result, higher education institutions frequently lack the methods to present timely information to administrators and boards—the norm in other industries. Consequently, a key recommended practice is assembling a cross-section of institutional functional leaders and administrators, in addition to technical talent from information technology and institutional research.

Higher education also lacks cost functions, resulting in “almost a complete lack of transparency regarding the actual cost to deliver post-secondary education, and how those costs compare with the outcomes achieved.” (Anguiano 2013, 3). Since many faculty engage in both instruction and research (and possibly administration and service) sometimes concurrently, this multiplicity and overlapping nature of functions creates difficulty in discerning the costs of either, and arguments over the amount and the appropriateness of cross-subsidization abound. As a result, some, such as David Breneman (2001), argue that the complex joint production functions of university activities make cost allocations and internal cost analysis a political rather than an informative financial exercise.

New approaches are being tested and tried at some institutions. These include activity-based costing, responsibility-centered budgeting (also termed responsibility-centered management), and program prioritization. While activity-based costing is gaining some attention, as in the Maximizing Resources for Student Success project at Johnson County Community College (KS), and responsibility-centered management

(RCM) has enabled some institutions (generally larger, research universities) to tie resources to the activity that generated the revenue, neither process focuses on setting institutional priorities and strategically deploying resources to accomplish them.

First discussed in the 1980s in the manufacturing sector, activity-based costing is an attempt to better match resources with an organization's activities, and link those activities to outputs. The Maximizing Resources for Student Success project, for example, focuses on collecting data on the costs of instructional and student services to provide community colleges with comparison benchmarks. Ultimately, the project intends to facilitate better understanding of institutional cost drivers' effect on student success outcomes. Maria Anguiano's 2013 paper on the cost structure of postsecondary education demonstrates the potential of activity-based costing to improve institutional planning and decision making, while noting its limited use in U.S. universities. She notes that the emphasis on outcomes measurement has neglected assessment of the cost of attaining those outcomes, something activity-based costing can provide.

At the research university level, RCM has been the more common response to the need to enhance resource deployment strategies. RCM is an incentive-based budgeting system, often referred to as "each tub on its own bottom." Under RCM, each unit is credited with its own revenue (from tuition, research, etc.) to cover its operational expenses. Central costs, such as those of the president's office and the business office, as well as costs of facilities, are allocated to the unit, and unit leadership is charged with managing its financial bottom line, making each unit a potential "profit center." The goal is to incent efficient decisions regarding resource usage via local control. With local control, however, comes potential loss of focus on and sub-optimization of institutional priorities.

Most recently, program prioritization has garnered interest as a methodology to reallocate resources in colleges and universities. In 1999, Robert Dickeson proposed that—with new resources dwindling and pressure growing to reduce costs and increase accountability—it was incumbent upon institutions to critically examine existing programs and services to identify strategic priorities. This process, which includes assessment of quality and mission focus, expanded the parameters of resource allocation beyond merely quantitative and financial ones. While there are examples of success in applying Dickeson's methodology, there are also institutions whose leaders have lacked the will to make the tough decisions required.

Labor-intensive organization

A third challenge to institutional change is the labor-intensive nature of higher education. The complexities of the multiversity are reflected in the multi-faceted roles played by employees, particularly by faculty, and particularly by faculty who are evaluated based on teaching, research, and service contributions. As described above, this bundled but synergistic set of roles complicates attempts to understand the cost of any one. Faculty autonomy and generally decentralized organizations further complicate examination of the complexity of joint costs and products. Staff roles have also expanded as an institution's "standard of care" (Archibald and Feldman 2011, 76) grows to meet increasing expectations from students, potential students, and their parents.

For many colleges and universities, compensation constitutes 70 percent, or more, of their operating budgets (Davis Educational Foundation 2012). For more than 800 years, higher education has been organized around a group of students taught by a learned faculty member. While other industries have availed themselves of technology to expand capacity and capability of their delivery models, higher education has largely used technology to supplement, not supplant, its traditional teaching modes. Rather than fundamentally altering the parameters for workload and compensation, online and hybrid courses have simply been integrated into existing models. While the faculty role as teacher continues, other roles formerly ascribed to faculty members have evolved to become professional staff roles.

In the 1970s and 80s, the number of professional positions and staff increased, both in response to the seemingly limitless growth of higher education institutions, as well as the changing role of faculty. Faculty divested themselves of institution-centric roles, as their focus became more discipline-centric, and more time was required for increased scholarship and research (Zemsky, Wegner, and Massy 2005). In the last two decades these professional roles have expanded yet again (per Desrochers and Wellman, by nearly 40 percent in research universities and 100 percent in master's and bachelor's degree-granting institutions).

Some new staff roles were developed to address the needs of increasingly underprepared or first-generation college students. In the inter-institutional competition for students, other staff play “high touch” roles; still other roles have been created by the growing enrollment management industry. They also serve the ever-increasing need for development of new revenue streams. Yet others are the result of the further unbundling of the faculty role resulting from the growth of online education, where tasks ranging from curriculum development to instructional design and delivery are performed in a “virtual assembly line” (Smith 2010, 50).

Also affecting the growth in staffing at colleges and universities is the environment of ever-increasing regulation. This was highlighted in the recently released report of the Task Force on the Regulation of Higher Education (2015). Data cited from work by the Mercatus Center at George Mason University (VA) shows a 56 percent increase in regulations from 1997 to 2012, the result of which is to “require colleges to become expert in unfamiliar topics or to hire outside consultants with such expertise” (Task Force on the Regulation of Higher Education 2015, 13).

The labor-intensive, “labor expensive” nature of higher education exacerbates the leadership challenge. Tenure, (particularly in institutions lacking meaningful post-tenure review systems), combined with shared governance, can complicate and prolong decision making about program life cycles and associated resource allocation requirements. Attempts to focus on mission and institutional niche can conflict with the tendency to proliferate programs and the absence of protocols to sunset programs or services. The vertical, siloed structure of colleges and universities places additional demand for strategic and operational alignment in the leadership team.

Capital requirements

Capital is the fourth challenge identified by CBOs to financial sustainability. For many years, public colleges and universities could rely on separate state allocations for capital. These funds supported the rapid growth of brick and mortar campuses following World War II, and during the construction boom of the 1990s. However, just as those buildings are approaching critical needs for renewal (Sightlines 2013), state funding is diminishing. Capital requirements for equipment, particularly to support growing technology systems and networks, compound these resource needs.

In 2012, *The Chronicle of Higher Education* estimated that, nationwide, colleges and universities had accumulated deferred maintenance of \$36 billion. In addition to the immediate effect of building system obsolescence on operating budgets, Rick Biedenweg, former assistant vice president of information resources at Stanford University (CA), estimated that for every dollar of deferred maintenance, institutions will incur four dollars in additional renewal costs (SchoolDude 2012). These costs are in addition to the funds colleges and universities are currently investing in new facilities. Whether investing in new dorms, fitness centers, and student unions to attract students, new research facilities to attract faculty, or new athletic arenas and stadiums to attract alums, a “facilities arms race” is underway at many institutions.

Utilization of space is yet another dimension of the facilities challenge. Because it is often considered a “free resource” by users, improving space utilization requires not just encouragement and tools but changed mindsets. Efficient use of space is driven by course and activity schedules. These schedules, in turn, are

frequently driven by traditions—traditions of the two-semester academic year, traditions of 50-minute class periods and twice-weekly class meetings. But use of classrooms is quantifiable, and while no national standards exist, “campuses can improve usage by understanding the space inventory; reviewing the actual hours, days and times occupied; and analyzing the related data to formulate ways to improve” (Grans-Korsch 2013). For the intrepid leaders who take on this challenge, there are significant risks and rewards. Increased efficiency can yield substantial financial savings for traditional academic organizations willing to take on the cultural and governance conflicts of modifying schedules and calendars.

The challenge to find capital to fund equipment is also significant, particularly for colleges and universities with large science or engineering research programs or medical facilities. One equipment challenge faced by all institutions is that of technology. The pervasiveness and continuous rate of change in technology exacerbate the financial requirements in this area. While technology has been a factor in reducing costs in the production of goods, it has not been equally effective in service industries, including higher education (Archibald and Feldman 2011). Nonetheless, sophisticated technological infrastructures have become ubiquitous at colleges and universities, in research labs, in classrooms and offices, and in building infrastructures; and the rapidity of change requires continual refreshment to remain current.

While online education has been promoted as the arena in which technology may generate the most future cost savings, technological developments in building systems are currently making significant contributions to college bottom lines through energy efficient devices and controls. The future of online education as a sufficient pedagogical replacement for all or most of higher education, and all or most students, is a continued source of discussion and debate. While the future of massive open online courses (MOOCs) is uncertain, by 2012, 32 percent of higher education students were taking at least one class online. Technology is also supporting countless blended or hybrid classes and class supplementation through learning management systems. And such institutions as Arizona State University (ASU) are piloting creative approaches using systems such as edX to deliver programs. In ASU’s case, the entire freshman year is online without requirements for admission or pre-payment of tuition.

While it is too early to obtain data on the success of such projects, with nearly 70 percent of CAOs reporting that online education is a critical part of their strategic plan (Seaman and Allen 2012), we can anticipate continued development of the online medium.

With the reduction (and, in some cases, elimination) of state allocations for capital, public colleges and universities are joining private institutions in identifying alternative funding streams. In addition to the traditional means of fundraising and bond financing, institutions are turning to public and private sources to finance projects. They are also examining ways to monetize existing assets as financing sources for both capital and operating needs. Institutions that have developed the most effective partnerships that have communicated their value propositions to their communities—and that have maintained strong balance sheets—will be most able to secure resources.

CONCLUSION

Leadership must play a role in the imminent changes coming to higher education. Most importantly, the president, chief academic officer, and chief business officer must be on the same page when assessing, making decisions, and implementing change on their campuses to drive changes in the economic model that lead to long-term fiscal sustainability. This higher education leadership triangle is, arguably, the most important component of the change dynamic in higher education today.

Higher education leaders, as with today’s leaders in other global industries, must demonstrate an evolving

set of competencies. These include deep knowledge and understanding of the complexities of both their institutions and the industry. Beyond this, they must apply a strategic perspective to long-term viability and implement appropriate, resulting strategies to the goals and actions of their institutions. This perspective must be grounded in data and qualitative evidence which leaders must be able to translate to their teams and other constituents, and which they must use to take risks to innovate and create new institutions and economic models. The tendency within higher education to debate the numbers in “cultural data wars” needs to be addressed with transparent sharing of information and maintaining a focus on outcomes and action.

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