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Understanding Instructional Costs: Cost Modeling, Analytics, and Decision-Making

Colleges and universities are increasingly aware of the pressure to meet a growing list of needs with fewer resources. Academic cost modeling is one path to a better understanding of how programs contribute to the success of an institution and the campus investment required to make this happen.

In doing this work, it is important to remember that not every program or course will be profitable. A well-balanced program portfolio will attract and retain students, as well as meet the demands of potential employers and the community. To succeed, programs generating higher net revenues are needed to cover the cost of those that are mission critical but do not generate net revenue, perhaps because of higher costs or smaller enrollments. It is essential to reach a balance among costs, offerings, operations, values, and institutional mission. Using data, leaders are better positioned to make decisions that achieve this balance.

The Data Element

Because the largest share of an institution's budget is typically dedicated to personnel and academic costs, it makes sense for business officers to better understand these costs. However, there are often challenges to using analytics, such as the fear that data will be used only to make cuts or to punish certain programs.

Using data and analytics to understand and make decisions about academic costs—

- Provides institutional leadership with the depth of information needed to understand their institution's core work
- Facilitates the institution's ability to understand and discuss how resources are being committed in support of mission-critical programs
- Makes analyses and review more objective, consistent, and less political or subject to emotion
- Imparts financial knowledge and transparency to business officers, academic leadership, faculty, and other campus constituents about program costs and contributions

9 out of 10 business officers think more importance should be placed on using analytics to understand and make decisions about **cost of instruction**.

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How To Ensure Objectives Are Met

- Determine and gain consensus on the overall objectives
- This should be led, or co-led, by the provost and supported by the president. Confirm who should be involved and who has been assigned as the “leader” of this effort
- Determine who should provide input to best inform the process and to ensure proper understanding and buy-in. What is the process and timing for doing this?
- Determine if you need external consultants to facilitate this work
- Make sure leaders overseeing areas involved are provided with regular updates
- Align efforts with the strategic plan, mission, vision, values, and culture of the institution
- Determine information needed, who will provide this information, and when. Confirm the timeframe (is this a three-year lookback, a five- year lookback, an incremental or staged rollout, etc.)
- Create a broad and inclusive steering committee to support the work, including academic leaders, institutional researchers, enrollment management professionals, faculty, and budget professionals
- Following an institution-wide communication plan, have information filtered through a campus lead to help focus efforts, ensure data completeness and formatting consistency, avoid confusion, and keep the effort from moving in a direction outside of the intended scope
- Review all data provided for accuracy and completeness, and validate with others as needed
- Document who is involved, project considerations, specific steps taken, and how data is compiled and verified to minimize questioning and build trust
- Be factual as well as understanding of the academic and campus mission in the final presentation of findings; don't get bogged down in details that some may not understand or need

Setting and Achieving Objectives

The overall objectives should drive this activity. Are you looking to see if the bottom line is positive? Or how many years a program will run in the red before it breaks even? Are you looking to compare one program against another? Or rank how your programs compare overall? What, if any, improvements can be made to a make a specific program more profitable? Should a program be allowed to grow, merge with another, shift focus, or go away?

Although the audience, purpose, and data users will determine the level of detail to be collected or reported, “more concise and simpler” is always best. How often have analyses been so complex that the information shared is confusing, misinterpreted, or not believed? Initiative leaders should ensure a “high-level” summary of findings is made available, but also should realize some stakeholders may need to delve into the details, line by line, for a clearer understanding. Boards of trustees, or individuals at the vice president level and above, may be more interested in the annual net and overall breakeven point, whereas fiscal, department, and program managers may want to know individual line item projected and actual costs.

Initiative leaders, trying to be thorough, sometimes provide information in a way that is too complex or not actionable. When folks are swimming in data, having a sense-maker who can communicate the bottom line (e.g., “based on our projections this program will break even in year three”) makes all the difference and helps to build trust in the projections and the analytics team.

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Working Across Departments

Faculty are known for being innovative when it comes to meeting emerging demands with new programs; however, some may not have a full appreciation for the fiscal commitments associated with rolling out and supporting academic programs. Although each campus has a different structure in place for program approvals, cost analysis, and modeling, here are some important questions to consider as you move forward with academic cost modeling:

- Who are the data stewards that can be relied on for providing accurate and consistent information for a proper analysis—institutional research? The registrar's office? Admissions? Another office at the institution?
- Have committees overseeing academic program development and approvals been consulted or provided input?
- How can the faculty or heads of other departments or areas provide input to or support for a specific program be involved?
- Do the responsible faculty have a full understanding of program components, deliverables, students, and support needed?

Ultimately, the answers to these questions should align with your institution's primary rationale for starting the efforts to understand academic costs. The matrix that follows can help you consider stakeholder roles and model components.







Three in five business officers cited campus siloes and/or lack of collaboration as a barrier to using analytics for decision-making.

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Academic Cost Model Components and Institutional Subject Matter Experts

	 CENTRAL FINANCE LEADERSHIP	 CENTRAL ACADEMIC LEADERSHIP	 ACADEMIC UNIT OR DEPARTMENT	 INSTITUTIONAL RESEARCH	 ENROLLMENT MANAGEMENT	 HUMAN RESOURCES & PAYROLL
COURSE/PROGRAM DESIGN AND APPROVALS						
Credit hour requirements and duration		X	X	X	X	
Course types (i.e., lecture, activity, lab, other, in-person, remote)		X	X	X	X	
Cohorts, schedules, course periodicity		X	X	X	X	
Enrollment projections and retention		X	X	X	X	
REVENUE						
Tuition (per credit, per course, per program)	X	X		X	X	
Fees (institution, course/program specific, mandated campuswide, or enrollment driven)	X	X	X	X	X	
Credits and student credit hours generated	X	X	X	X	X	
Commitment of institutional support, resources, and other sources	X	X	X			
EXPENSES						
Recurring and one-time investments (i.e., course/program development, equipment/technology, facility improvements, materials and supplies, travel, accreditation, subscriptions, software/computing, recruitment, and other startup costs)	X	X	X			
Faculty salaries (actual, average, or projected)	X	X	X			X
Faculty workload distribution (breakout of service, instruction, re-assigned time; primary versus overload)	X	X	X	X		X
Staff and other salaries (actual, average, or projected)	X	X	X			X
Benefits (overall percent, average, or actual)	X	X				X
OVERHEAD						
How will overhead be calculated and applied; will there be an option to show costs before and after overhead?	X	X				
OTHER VARIABLES						
How do you factor in changes over time (i.e., enrollment, tuition/ fee increases, salary and benefits increases, inflation, and more)?	X	X	X	X		X
How do you allocate costs specific to a given course/ program charged to other accounts (e.g. central account supporting accreditation or program development costs)?	X	X	X			

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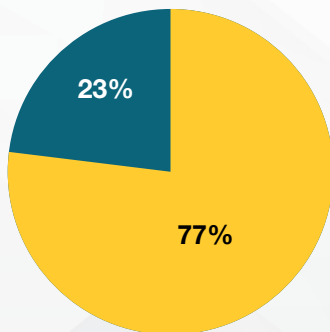
Navigating Challenges

Despite planning efforts, challenges will arise throughout the academic cost modeling process. Many of these challenges relate to constrained resources (time and effort), institutional cultural issues (people and processes), and data concerns.

In the tables that follow, we outline some common challenges with academic cost modeling and offer some advice for navigating them.

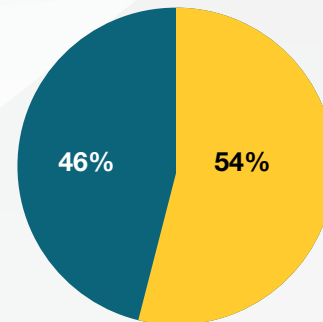
	The Challenge	The Advice
Time and Effort	Time and effort commitments from multiple units/departments are required to do the analysis well.	Senior leadership should indicate that the initiative is a top priority, so that units/departments commit an appropriate amount of time to ensure quality analyses.
	Modeling academic costs requires all involved to have some understanding of higher education finance, but many faculty or academic leadership may not have this expertise.	At the beginning of an initiative (and throughout as needed), finance and business office leadership should educate their colleagues on key financial concepts about how the institution operates and their day-to-day work.
	Finance and business officers will not be as versed in understanding the elements and requirements of academic programs as their faculty and academic office colleagues.	Business officers will need to, with the guidance of their academic colleagues, learn the elements of and requirements for programs being analyzed. They should pay attention to key details (i.e., program requirements) while maintaining a holistic, strategic view (i.e., thinking about the bigger picture).

Approximately **77%** of business officers cited **not enough time or people being "too busy"** as a barrier to use the use of analytics.



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54% business officers cited **fear** that analytics would be used to punish certain programs or departments as a barrier to using analytics.



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Navigating Challenges (Continued)

People and Processes	The Challenge	The Advice
	Cooperation and input from other individuals, units, and/ or departments will be required, but collaboration can be difficult.	Having a senior staff member (e.g., provost or CFO) leading the initiative is critical. The lead will need to ensure there are processes in place to involve and include all appropriate constituents.
	Many at the institution will see the launch of an academic cost modeling initiative as a sign that the institution is planning to cut programs.	Transparency and frequent communication are critical. Make sure to state the goals of this initiative clearly and frequently.
	Perspectives on how to approach the work will vary, often by one’s role at the institution. For example, stakeholders constituents may disagree about whether overhead costs should be included in the analyses or how those costs are calculated.	When disagreements arise, collaborators should review their initial goals with the initiative and answer this question: What is the simplest approach we can take and still get actionable information?
	Campus budgeting, procurement, advising, admissions, and registration policies and practices may influence the available data and therefore the results.	The individual leading the cost modeling initiative (e.g., provost or CFO) should learn how data are managed in each of the units/departments involved in the process. Concerns about practices that may influence data quality should be addressed.
	Certain programs may be subject to state or accreditation regulations or mandates that may have implications for the analysis and/or for decisions made.	The individual leading the cost modeling initiative (e.g., provost or CFO) should educate themselves about the program’s background and context, paying special attention to any information that may impact the process or goals of the cost modeling initiative.
	Some individuals may have a plan of action in mind before analysis even begins. For example, institutional leadership may say “we need new programs, we need to grow,” but some ideas presented have not been well vetted.	The lead may need to educate various constituent groups about the goal of the initiative—how making data-informed decisions can propel growth in a less financially risky way.
	Others will prepare their own analysis with information that may or may not be valid to muddy or contradict the findings.	Transparency and communication are key. The initiative lead should be prepared to explain how the model was developed and why that approach was taken.
	Historical ways of allocating costs may resurface and/or some may learn ways to “game” the new system.	Be mindful of unintended consequences throughout the process. Have periodic follow-up reviews.
	Once the initial analysis is complete, some findings may lead to new challenges, such as: Are some programs cannibalizing others? Is there fiscal and physical capacity to grow?	Data can provide more objectivity to academic cost decisions, but leaders should also look at the market, their institution’s mission, and strategic priorities. Faculty should be assured that decision makers are not only focused on the bottom line.

Navigating Challenges (Continued)

	The Challenge	The Advice
Data	<p>Perspectives about how to calculate model variables will differ, often by individuals' roles at their institution. Some examples of questions related to the data include—</p> <ul style="list-style-type: none"> • How will we calculate faculty workload? What weight should be given to teaching, research, and department and institution service? • How will general education enrollments and revenues be applied? • Will student program data be factored in? What if the student is non-matriculated, has not yet declared, or had changed majors? 	<p>Since institutions are unique, there is not one right answer for how to include different variables. Because buy-in is important, the initiative lead should be able to explain what approach was ultimately used and why.</p>
	<p>Some will question the validity of the data used and availability of consistent data may vary across an institution.</p>	<p>Although better data leads to more reliable findings, perfect should not be the enemy of good. In addition to being transparent along the process, the leader of the initiative should be prepared to address validity concerns with constituents as they arise.</p>
	<p>Data access and data literacy skills of the various stakeholders effort contributors involved will vary.</p>	<p>The initiative lead should ensure that contributors (from data stewards to those conducting analyses to those making decisions) have easy access to data appropriate for their responsibilities.</p>

Nearly 72% of business officers cited **poor data quality** as a barrier to use the use of analytics.
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