Developing an Academic Performance Reporting Model for a Centralized University

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Higher education faces increasing challenges regarding economics, efficiency and accountability. To assist administrators, staff and faculty developing management accounting systems (MAS), this paper presents a model of an MAS that reports profitability of academic programs at a university with centralized decision making. The model contains measures of profitability appropriate for both academic programs (e.g., majors) and for departments. The paper describes difficulties regarding the calculation of net tuition revenues, faculty costs, and other expenses. The paper also includes authors' recommendations related to allocation decisions. An example demonstrates how the model rolls lower levels into higher academic units.

INTRODUCTION

Increasingly, colleges and universities must contend with a challenging economic environment. Contributing to this environment is consumer and governmental dissatisfaction with the growing cost of a college education, which has led to heightened scrutiny of these institutions (Davidson, 2015; McNutt, 2014; Ostrowski, 2015). Many state colleges and universities face reduced financial support from state governments, while private universities find it difficult to justify further increases in tuition (Chokshi 2015; Schoen 2015). As a result, university administrators are responding with a desire to develop financial management systems with several purposes: providing them with a better understanding of program profitability, encouraging new revenue streams, and rewarding and incentivizing strong performing programs.

One differentiating factor affecting the development of these systems is the degree of the institution's commitment to decentralization. Highly decentralized institutions often develop some model of responsibility center management (RCM) whereby academic colleges or departments make most

decisions related to resource allocation and revenue generation (see for example: Carlson, 2015; Curry, et al., 2013; Hanover Research Council, 2008). Many institutions, particularly smaller and private universities, are reluctant to delegate this level of control to the revenue-producing units of the organization. Yet, these same organizations will benefit from developing management accounting systems (MAS) that enable them to better understand the overall performance of their institutions and how various programs impact that performance.

This paper presents a reporting model for centralized universities based on the experience of working with an actual institution on these issues. The content of this paper does not always reflect the decisions made in the actual institution, but rather provides an example of a reporting model to help better understand program profitability. Accountants and accounting faculty typically understand the implications that the design of the MAS can have on future decisions. This paper aims to enhance the awareness and understanding of all administrators, staff, and faculty on issues related to the allocation process as well as reporting and performance evaluation issues that must be considered in the development of an MAS.

In more centralized universities, where many aspects of financial control have not been delegated to colleges or departments, we recommend that institutions initially develop an MAS that provides financial reports and relevant non-financial data to highlight program results. These initial financial reports should focus on the revenues and expenses most attributable to the specific program. After completion of this stage, administrators should consider further development of the MAS to include some allocated costs. And finally, the organization can expand the MAS to contain budgeted data, which will enhance the system's performance evaluation capabilities.

During the initial development of the MAS, we caution institutions to consider the benefits of allocating indirect academic or non-academic expenses to colleges, courses or programs. Allocating these costs creates an appearance of decentralized control over revenues and expenses, when actual control at the unit level does not exist. Initial reports containing allocated costs can undermine the development of the MAS by creating tension between academic colleges or programs and university administrators. Conflict will arise when there is pressure to increase program profitability without appreciating the impact of allocated costs, which were not under the control of the individual units, on reported results.

The approach presented in this paper allows for increased understanding of the various academic programs' contributions to the operations of a centralized university. We emphasize calculating a margin of those revenues and expenses most directly attributable to the academic unit. That is, revenues and expenses are included that are most influenced by program managers. In addition, we suggest that financial reports be supplemented by the use of non-financial performance metrics that represent decisions more directly controlled by program managers.

This paper introduces two perspectives related to a program's contribution to the overall university's financial results, and a metric for each perspective. The first perspective analyzes the profitability of all courses taught by a given academic department and is referred to as the "course view." The second perspective, the "major view," analyzes the profitability of a given major. These two perspectives and the related metrics are needed because departments vary in their function and their effect on the university's financial situation. Trying to develop only one view that fits all departments invites unnecessary controversy and decreases the likelihood of MAS success. Each of these perspectives require that several allocation decisions be made related to revenues and expenses.

The remainder of this paper will discuss three major components of the reporting model followed by a summary. The first section presents the two views of program profitability, course view and major view, and explains the rationale for each in more detail. Second, issues associated with the allocation of revenues and the types of costs and allocation issues associated with these costs are described. The last section related to this initial reporting model provides sample financial reports. These reports include the use of non-financial metrics that can be developed to align academic unit performance with evaluation and control of the unit. The conclusion presents a plan for further model development.

DETERMINATION OF PROGRAM PROFITABILITY MARGIN

In this section we provide a basic overview of two perspectives on profitability, course view and major view, directed at providing administration with a better understanding of the contributions of departments and/or academic programs to the overall financial health of the university. Each of these perspectives is unique, and the combination of the two provides university administration with a more comprehensive understanding of a department's overall performance as compared to a singular financial performance measure.

Academic programs and departments provide revenue and incur expenses in support of a university's ongoing activities. Primary sources of revenue result from tuition revenue (associated with the courses that are offered by the program or department and from courses taken by its majors throughout the institution), fees, grants, and donations. Tuition revenue is often reduced to some degree by financial aid given to students by institutional admissions committees or their equivalent. We treat this financial aid as a reduction in revenue rather than an expense. Programs or departments may also offer students financial aid in addition to that offered by the university. We call the residual tuition revenue after subtracting financial aid "net tuition revenue" (NTR). Expenses incurred by the programs and departments consist largely of salaries and benefits of faculty, staff, and graduate students, as well as the costs of instructional materials and supplies, and other less direct expenses.

A brief discussion of direct and indirect revenues and expenses is in order. A direct cost is a cost that can be cheaply and easily traced to an item to be costed (Noreen et al., 2017, 25). An indirect cost cannot be cheaply and easily traced to an item to be costed. For example, a department chair's salary can be easily traced to the college and department in which the chair is employed, because the vast majority of the chair's work supports that college and department. In this case, the chair's salary is a direct cost of the college and the department. However, the chair's salary cannot be easily traced to a specific course taught in the department, because the chair does much more than support that one course. So, the chair's salary is indirect with respect to the course, and some sort of allocation is needed to assign a portion of the chair's payroll costs to the courses offered by the department. Any allocation depends on judgment and is ultimately arbitrary; thus, there is no "neutral" or "unbiased" allocation.

Similar issues can arise with direct and indirect revenues. If students pay a flat tuition rate for full-time enrollment and are allowed to take a range of credit hours (say, 12 to 18 per semester), then it is difficult to trace a specific dollar amount of tuition revenue to a course. Revenues then, are also somewhat indirect. If, however, students pay per course, then it is easy to trace dollars of tuition revenue to courses, and tuition revenue is direct. The same issues arise with fees. Course-specific fees are generally directly traceable to courses. Program fees may be charged to all students in a particular major and thus may not relate directly to individual courses. Thus, program fees may be indirect. As with indirect costs, indirect revenues need to be allocated in some fashion to those items whose profitability is measured (e.g., courses or students), and again, neutrality in allocation is impossible.

Student-Level Course Margin

The student-level course margin serves as the basic building block of both views of profitability. The student-level course margin equals the difference between the tuition and expenses for a given student for a given course. In light of the above discussion of direct and indirect revenues and expenses, this calculation is not as straightforward as it might appear.

For example, consider the situation in which student tuition is $12,500 per semester. Assume Student 352 receives $2,500 in financial aid per semester, yielding an NTR of $10,000 per semester. If Student 352 enrolls in four courses, an NTR of $2,500 per course results.

To determine the expenses, consider the following facts associated with Finance 100. The faculty member's salary and benefits (both allocated and direct) is $150,000 per year and the faculty member teaches six classes per year. Therefore, faculty salary and benefits is $25,000 per course. In this simple example, we assume that 100% of the faculty salary and benefits are attributed to the courses taught. Later in the paper, we will explore the allocation issues associated with faculty salary and benefits. In

addition, Finance department costs other than faculty salaries in the amount of $150,000 per year are allocated to the 30 classes taught by the Finance department throughout the academic year, resulting in indirect costs of ($150,000/30 courses) $5,000 per course. Finally, consider the fact that Finance 100 has 20 students enrolled in the course, so the $5,000 per course will be spread across the 20 students at $250 per student.

Table 1 summarizes the scenario described above. In examining Finance 100 for Student 352, the table begins with the student's NTR of $2,500 per course. Next, the student's share of faculty salary and benefits ($1,500 per student) and the Finance Department's indirect costs ($250 per student) are charged to the student. In addition, Table 1 provides financial information related to the three other courses in which the student's schedule. This information is determined through the same process illustrated for Finance 100. Note that Science 100 has $100 of course-specific fees associated with its student-level course margin.

TABLE 1
EXAMPLE OF STUDENT COURSE MARGIN

Student 352 a Finance major enrolled in the following four courses:					
	Finance 100	Marketing 100	History 100	Science 100	Total
Net tuition revenue	$2,500	$2,500	$2,500	$2,500	$10,000
Course fees	---	---	---	$100	$100
Less: Direct faculty expenses	$1,500	$1,200	$1,000	$1,100	$4,800
Less: Indirect department expenses	$250	$300	$300	$500	$1,350
Student course margin	$750	$1,000	$1,200	$1,000	$3,950

The information in the bottom row of this table will be used for both the course view and major view of program profitability. While we have calculated this for one student, in reality, the same calculation will be performed by the MAS for all students in the university.

Course View of Program Profitability

The "course view" considers the revenues and expenses traceable to a department's course offerings. The profitability metric associated with the course view is called the department's "course margin." This measure includes the student-level course margin for all courses offered by the department, regardless of whether those courses are part of a major, minor, core curriculum, or electives. The course margin for any given course is the sum of the margin for that course associated with all students enrolled in the course. Similarly, the course margin for a department is the sum of the course margins for all the department's courses.

Table 2 presents the course margins for three courses offered by the Finance Department. For simplicity of illustration there are four students listed for each of the three courses, though realistically many more would be enrolled. Notice that Student 352 and the student's corresponding $750 margin determined in Table 1 carries forward to Finance 100 in Table 2. Course margins for the same course vary across students due to differences in financial aid and number of courses taken. For example, Student 338 shows a negative course margin for Finance 100, whereas Student 352 shows a positive course margin. This outcome could happen if Student 338 received more financial aid than Student 352, and enrolled in six courses as compared to the four courses taken by Student 352. Both of these factors reduce the NTR that Student 338 contributes to Finance 100.

TABLE 2
COURSE MARGIN FOR STUDENTS ENROLLED IN FINANCE CLASSES

Finance 100		Finance 200		Finance 300		Finance Total
Student ID	Student Margin for Course	Student ID	Student Margin for Course	Student ID	Student Margin for Course	
352	*$750*	186	$600	124	$200	
326	$330	212	$280	188	$160	
312	$400	238	$340	212	$80	
338	($250)	194	$120	154	($200)	
Total margin	$1,230	Total margin	$1,340	Total margin	$240	$2,810

Note also that Student 212 is enrolled in both Finance 200 and Finance 300, with different margins. The different margins for the same student result from higher instructor costs or other course-related expenses that vary between Finance 300 and Finance 200. Another factor that can create different margins is unequal class size. For example, assume twice as many students are enrolled in Finance 200 versus Finance 300 and that the same instructor teaches both classes. In this case, the instructor cost per student in Finance 200 would be half as much as that in Finance 300. The lower instructor cost results in increasing the margins of students in Finance 200 relative to students in Finance 300.

The course view of a department's contribution to the university is particularly relevant to departments that have few, or no majors, but provide a significant number of courses in support of the university and/or a college's general education or core requirements. We recommend separating the course view into several categories when appropriate. For example, a department that offers both undergraduate and graduate degrees, and provides courses in support of core education requirements, may want to categorize its course view margins in the following manner: course margin for undergraduate core courses; course margin for undergraduate courses in the major; course margin for graduate core courses; and course margin for graduate courses in the major. Similarly, a department that provides only service courses for undergraduate students would have only one category: course margin for undergraduate core courses. These distinctions help administrators determine how particular kinds of course offerings affect the department's contribution to the university's financial status.

The course view is inadequate, however, when a department has a significant number of majors but offers few, if any, service courses to its college or the university at large. In this instance, the department's course view will typically consist primarily of the revenue associated with its own students plus that of the relatively few students that may choose to take a course to satisfy their own intellectual curiosity, without seeking the mastery of the subject that a major provides. In this situation, the course view does not fully depict the contribution of the program to the overall university, since students that choose this major generate revenue and incur costs outside of their "home" department.

Major View of Program Profitability

The second perspective on a department's contribution to the university is called the "major view." The number of courses taken within the major vary widely across majors and universities, but may represent as little as 20 percent of the course work that the student will take at the university. For example, at the university where several of this paper's authors work, the accounting major represents 27 credit hours out of 120 hours needed for graduation, or 22.5%. If students take 30 accounting credit hours and 150 total credit hours to be eligible for the state's CPA exam, the accounting major represents 20% of the total credit hours.

Also, students enrolled in a particular major may spend a semester or more without taking any courses in their major (for example, when fulfilling only general education requirements early in their college career). Therefore, a more complete view of the program's contribution can be determined by giving the department all or a portion of the margin generated by the department's major students in courses outside of their major. This analysis assumes that the student would not have attended the university if not for the major the student chose. While this cannot be stated with certainty, it seems reasonable that the program in which the student majors should recognize some portion of the margin generated by its majors in all of the courses that they take at the institution.

The major view considers the revenues and corresponding expenses associated with a student majoring in a given program across all of the courses they take, both within the department and across the university. The primary metric related to the major view is determined as the sum of the student-level course margins for all courses taken by all students that major in a given program. This "major margin" represents the overall contribution to the university of a department's majors. This view is particularly beneficial for assessing a department's contribution to the university when the department offers limited courses in support of a university or college's general education or core requirements.

Table 3 provides an example of how to determine the major margin. For example, to compute the margin for Finance majors, we consider the department courses, other college courses, and then the courses outside the college. For simplicity of presentation, we have not developed hypothetical information for College of Business courses and Non-College of Business courses for the other 10 students listed in Table 2. The student-level course margin for each major's finance courses, other College of Business (COB) courses, and courses taken outside of the COB are summarized. In actuality, the specific course and corresponding margin would be available. However, for the reports developed for the major view discussed later, this summary information will provide program administrators with sufficient detail. Table 3 draws from the student-level course margin presented in Table 1, namely the $750 margin for Student 352. All finance course information for each of the Finance majors from Table 2 is also included. Notice that Student 212 was enrolled in both Finance 200 and Finance 300 per Table 2. The student's margin of $360 in Table 3 is the sum of the student's margins for Finance 200 ($280) and Finance 300 ($80).

TABLE 3
MAJOR MARGIN FOR FINANCE

Student ID	Total Course Margin	Finance Course Margin	Other COB Course Margin	Non-COB Course Margin
352	*$3,950*	*$750*	*$1,000*	*$2,200*
124	…	$200	…	…
154	…	($200)	…	…
186	…	$600	…	…
188	…	$160	…	…
194	…	$120	…	…
212	…	$360	…	…
238	…	$340	…	…
312	…	$400	…	…
326	…	$330	…	…
338	…	($250)	…	…
Total Margin	$44,000	$2,810	…	…

REVENUES AND EXPENSES USED TO DETERMINE STUDENT MARGINS

In the preceding sections, we presented a general overview of two measures of margin that can be used in assessing a program's contribution to the university. We recommend computing these margins only for revenues and expenses most attributable to the program. However, even with a desire to focus on this limited set of revenues and expenses, several allocation issues arise. This section discusses the issues associated with the identification and allocation of revenues and expenses in the determination of student course margins. First, we describe the determination of net tuition revenue. Next, we explore issues associated with the identification and allocation of expenses. Finally, we consider the role of this information in the determination of course and major margins.

Net Tuition Revenue

On the surface, tuition revenue might seem to be a relatively simple financial measure to attribute to courses and academic programs. However, many issues make tuition revenue difficult and at times controversial to deal with. It is also important to note that in order to effectively attribute tuition to a program or major, that tuition must first be assigned to individual students. The tuition revenue for a course consists of the sum of a course's share of the tuition revenue generated by all of the students enrolled in the course. Similarly, tuition revenue for a major will be derived from all of the courses in which students are enrolled that have chosen that particular major. Issues related to providing the major with all or some portion of this revenue are discussed later.

Net tuition revenue (tuition minus financial aid) is the most relevant measure of revenue in determining a department's profitability. When a student receives no financial aid and is charged tuition for each course taken, all of the tuition paid represents NTR for the course. Rarely is determining NTR this straightforward. Below we discuss situations involving full-time students in which tuition is a flat amount regardless of the number of courses taken. For example, assume tuition is $12,500 per semester for all full-time students regardless of the hours taken (typically, somewhere between 12 and 18 semester hours). To compute NTR, we must also consider the fact that many students will receive financial aid.

Two broad approaches exist related to assigning financial aid to students. First, should the total financial aid for all students be summed and split equally among all of the students? Or, alternatively, should each student's financial aid be attributed specifically to a particular student? Instinctively, tracing financial aid to each individual student seems preferable. That way, the discount rates will apply to those students and majors that receive the financial aid. Therefore, majors with students receiving large amounts of financial aid will have relatively low margins. Those majors whose students do not receive significant amounts of financial aid will report the higher margins, which appear "deserved" or accurate, since their students do not receive significant financial aid.

The approach that traces financial aid to individual students is most appropriate when considering the major view of department margin. However, this approach may unfairly penalize a program if the financial aid represents financial aid for merit or need, rather than aid offered as an incentive to students who plan to select a particular major. This impact could be significant when a program has a large number of students that receive financial aid for merit- or need-based reasons, and not as a result of aid directed to a specific program. In this instance, it can be argued that amounts of financial aid are outside the control of departments and therefore should not be charged to any particular major.

In some situations, tracing financial aid to specific students may be perceived as unfair by departments that tend to provide a large number of core courses in support of other majors. For example, consider a situation in which science students are targeted by the university for high levels of financial aid, and are required to take a core history class. Since these students receive large amounts of financial aid, their NTR is relatively low. To improve profitability, the History department might prefer to offer classes to students from other majors that do not receive a significant amount of financial aid.

Given the competing pressures described above, reasonable arguments can be made for directly attributing financial aid to individual students or evenly allocating financial aid across all students. However, we believe in most situations universities will benefit by having as accurate of information as

possible regarding NTR and its impact on the decisions administration must make. Therefore, attributing financial aid to specific students receiving the financial aid will best inform decision making in most cases.

The preceding discussion introduces the fact that, when it comes to determining major or course profitability, the allocation of revenue and expenses will rarely be straightforward and will almost always result in some level of controversy. What institutions must do throughout this process is continually think about why the information is being developed, the decisions that are going to be affected, and how the information will influence these decisions. What was true regarding NTR will also be true regarding expenses.

Determination and Allocation of Program Expenses

This section discusses several allocation issues associated with the expenses most traceable to programs and departments. Most, if not all, of the cost traceable to the department must be allocated to the courses the department offers and in turn to the students enrolled in those courses to develop the course and major margins of a department. Exceptions include, for example, costs incurred complying with a non-course related grant. In this section, we address allocation issues associated with several of these costs.

Faculty Salaries and Benefits

The primary direct cost of academic programs is the cost associated with faculty. This cost includes faculty salaries, retirement benefits, healthcare benefits, and other items such as faculty development, course load reductions for service or research activities, and faculty leaves or sabbaticals.

It is beneficial to separate faculty expenses into items that should be assigned directly to the faculty member and items that should be considered a common cost of the department, college, or university. First, cost associated with the faculty member should include specific faculty salary and benefits. Other costs such as course load reductions and faculty leaves and sabbaticals will be discussed after considering direct faculty cost.

On the surface, the determination of faculty salaries and benefits seems relatively simple. For example, salaries paid and retirement benefits awarded to a faculty member should be charged directly to the faculty member. However, other seemingly direct faculty costs are more complicated. Healthcare costs represent one expense worthy of additional consideration. Several faculty members may choose not to participate in a university healthcare plan because of benefits they receive through coverage by a spouse, partner, or some other source. If the cost of healthcare benefits is charged directly to a faculty (or staff) member, those opting out of the healthcare plan will have lower salary and benefit costs than those that receive these benefits from the university.

The central issue to be considered is whether the tracking of the actual benefit cost will benefit decision making. For example, does it make sense that a course taught by a faculty member opting out of healthcare coverage is more profitable than a section of the same course taught by a faculty member who received the healthcare benefit? Similarly, is the university likely to alter hiring practices to give priority to employees that will not require such benefits? This practice is likely unethical and/or illegal. (For example, departments may preferentially hire married applicants over single applicants to increase the likelihood that their faculty receive health insurance from other sources. In some locations, discrimination based on marital status is illegal.) With recognition that healthcare costs vary for reasons that the institution does not control, we recommend that total healthcare cost be allocated equally over all employees eligible to receive such benefits. We recognize that doing so makes the information in the reports less accurate, but believe the benefits of the inaccuracy outweigh any benefits of decision making with more accurate information.

Indirect Faculty Costs

Indirect faculty costs, such as release time for service or research and faculty leaves and sabbaticals, are another important consideration in determining expenses associated with student and course margins.

The fundamental issue here is whether these costs should be treated as a direct cost of the courses the faculty member teaches or as a common cost of the department, college, or university. If the cost is treated as a common cost, then the issue arises as to whether it should be allocated to the courses that the corresponding group of faculty members teach or left as unallocated common costs. For example, if the normal teaching load for a non-research faculty member is four courses per semester and research active faculty are awarded a one course load reduction, should ¼ of the research active faculty member's salary be charged to a department research cost pool or absorbed by the three courses the faculty member teaches? If the cost is charged to a department research pool, the question arises as to whether the cost should be charged back to the courses taught by the department or left as an unallocated common cost of the department. A similar set of decisions must be made for other forms of faculty release time.

Another similar situation exists if a faculty member receives release time to serve on a department, college, or university-wide committee. In this case, it must be determined whether the cost of the release time should be absorbed by the faculty member's remaining courses or charged to the department, college, or university. If a decision is made to charge this cost to the department, college, or university, it must then be decided if the costs should be charged back to a broader group of courses. Since university service is not a revenue generating activity it makes sense to allocate the cost back to courses. However, since the service is directed toward department, college, or university business, it does not make sense to charge this portion of the faculty member's salary only to the remaining courses that the individual teaches. Instead, it seems appropriate that this cost should be charged back to all of the courses associated with the level of the committee assignment. If the release time was initially charged to the department it should be allocated to all courses in the department. If the cost was initially charged to the college or university it should be allocated to all of the courses in the college or university, respectively.

Faculty release time for research activities or sabbaticals is similar to that discussed above for service. In the case of release time for research, the decision to charge the cost to the faculty member's remaining courses versus charging the cost to the department, college, or university should be considered. Charging the cost directly to the faculty member's remaining courses is consistent with the notion that the research is primarily benefitting the courses taught by the faculty member. On the other hand, it likely widens the gap between the cost of courses taught by primary faculty with research responsibilities and those courses taught by adjuncts or full-time faculty without research expectations.

The primary consideration in the case of release time for research, therefore, centers on the overall benefit of the release time. If the faculty member's department would not be able to hire adjuncts or full time non-tenure track faculty without the research activities of its research faculty, then it would seem appropriate to charge this cost to the department and allocate it to all courses in the department. On the other hand, if the release time is merely a benefit provided to the faculty member, then it would seem appropriate to charge it to the courses taught by the faculty member.

Actual Versus Average Salaries

An additional consideration associated with assigning faculty cost to students is deciding whether to charge the salary and benefits of specific faculty to the courses they teach or use an average salary and benefits cost for each course taught in the department. Charging specific salaries to courses results in the cost allocated to a course, and then to students, being significantly different for students in a course taught by a part-time adjunct versus a course taught by a tenured professor. Such a discrepancy could lead members of other departments to encourage their students to take courses from adjuncts and other low-cost faculty members in order to enhance the apparent profitability of their own majors. This situation is at best a distraction and at worst could unnecessarily impact educational quality and scheduling decisions.

Administration may also want to consider whether it makes sense to develop multiple average salaries. For example, core courses offered by a finance department may be taught primarily by adjunct or part-time instructors, while undergraduate major courses may be taught by a mix of part-time and tenure-track faculty. Graduate-level courses might be taught exclusively by tenure-track faculty. In this instance, a department could develop an average salary cost for core courses, an average for courses in the major, and a third average for graduate courses. The average salary of core courses would be lower than that of

major courses, which in turn is lower than that of graduate courses. Separating these courses would recognize the lower cost of offering core courses and would not penalize other departments for the relatively high cost of major courses offered by the finance department. This is particularly true in centralized universities, which may have university-wide salary levels for adjunct or part-time faculty, but not for tenure-track faculty, whose salary is more likely to be market-driven and therefore may vary widely across departments.

Support Staff Salaries and Related Costs

The cost of support staff associated with a department represents another consideration in determining course and student margins. Similar to the discussion related to faculty above, support staff costs consist of salary, payroll tax, retirement benefits and an allocation of average healthcare costs, if the position is eligible for healthcare benefits. In most cases, the support staff is in place to help the faculty and the department chair. Therefore, in most cases, this cost should be allocated equally to all courses taught by the department. If the support staff member serves multiple departments, the individual's salary and relevant benefits should be charged to all courses associated with the departments the staff member supports.

Department chairs of academic departments are often faculty members that are provided course load reductions and/or stipends for assuming the responsibilities of the department chair position. In this case, it is recommended that the cost of the load reduction and/or stipend be allocated to all courses taught within the department. For example, if a regular faculty member has an 18 semester hour load during the academic year and a department chair receives a nine-hour load reduction for serving as department chair, then one half of the chair's salary would be allocated to all courses taught by the department.

In the preceding sections of this paper, we discussed the allocation of expenses to academic courses. In the next section, we briefly describe how to allocate these expenses to students for use in determining the student course margin and how the student course margin subsequently impacts a department's course and major margins.

Student Course Margin and the Major View

A significant allocation issue arises in considering a student's course margin within the major view of a department's margin. Remember that the margin determined from the major view consists of the sum of course margins for all of the courses in which a department's majors are enrolled less any allocations of this margin to departments outside of the major. Referring back to Table 1, the total student course margin for Student 352 is $3,950. Absent any allocation of this margin to the other departments in which Student 352 is enrolled, the Finance major view is $3,950 for this student. The Finance Department's total margin in the major view then equals the sum of student course margins for all students majoring in Finance.

Notice that if the Finance Department receives the entire student course margin for Student 352, no margin is provided to the other courses this student takes outside the department. In effect, the "major view" of margin from this student would be $0 for the Marketing, History and Science Departments. Therefore, if this approach is followed, there will not be a major margin for departments that provide service courses but do not have majors. However, those departments will report a margin on the "course view."

An alternative approach to determining the major view is to allocate the student course margin between the department in which the student takes courses and the home department of the student's major. This alternative allocates a portion of Student 352's $1,200 margin for History 100 to the Finance major margin and the History major margin. Splits such as 75% to the department of the major and 25% to the department offering the course have been proposed and implemented by some schools. Departments arguing for such a split typically insist that they should be entitled to some of the margin this student generates in their course. However, it is worth remembering that the History Department's course margin captures the margin of the student being enrolled in the History course. Therefore, we believe that in the major view the entire course margin should be allocated to the student's home department. While

this approach arguably overstates the profitability of the Finance major in this instance, it does reflect the total benefit to the university generated by students majoring in Finance. In most cases, we believe this approach will be more beneficial to university decision makers in assessing the merits of the Finance major than if some of this margin were arbitrarily allocated to other departments.

Other Sources of Revenue

In most cases, tuition revenue is the primary source of revenue for an academic department. However, there are also a variety of other sources of revenue for academic programs that can be significant. These other sources of revenue include research grants, restricted gifts, and financial aid or scholarships.

In the case of research grants, these typically represent revenues that will be offset by other costs associated with and allowed by the conditions of the grant. Therefore, it makes sense to list this as other departmental revenue and to include the cost associated with the grant as other departmental expenses. These grant costs should not be allocated to the courses taught within the department.

Gifts restricted for use by a specific department should be recognized as other departmental revenue for a department. However, the timing of this recognition represents an interesting issue for the MAS. For example, a gift received in support of faculty development, may be spent in a different academic year. In this case, it may make sense to recognize the gift as revenue in the academic year in which the funds are spent. The expenses paid by the gift should be reported as other departmental expenses.

PERFORMANCE REPORTS FOR THE COURSE AND MAJOR VIEWS

In this section, we provide two examples of summarized reports that can be used to assist administrators in assessing the performance of academic units. The first series of reports presents the course view of program performance. This series focuses on the revenues and expenses associated with the courses offered by a department in addition to the other revenues and expenses attributed to a department. In addition to the financial results obtained from the course view, we recommend that these reports include non-financial performance factors associated with departmental performance. In many cases, these non-financial performance measures may be more controllable by the department administrator than the financial results.

Table 4, Panels A through C, provides a sample set of performance reports for the course view. These reports follow a traditional segment reporting format. That is, costs are assigned and allocated to the lowest level to which they can be reasonably traced. Costs that cannot be traced any lower in the organization are recognized as unallocated common costs of the segment.

Table 4, Panel A begins with the Finance Department revenues and expenses that arise from the courses offered by the Finance Department. Net tuition revenue and course-related costs are separated into five segments or course groups. These five groups include: traditional undergraduate core courses, traditional undergraduate major courses, traditional graduate core courses, traditional upper division graduate core courses and on-line courses. Panel A presents the course margin, which equals net tuition revenue less these course expenses, for the overall Finance Department and for each of the five segments. After computing the course margin, other revenues and expenses of the department that cannot be traced to the courses are recognized in determining the Department Margin. Examples of these revenues include private gifts and grants, while costs include expenditures for faculty development and rentals for events. Notice that these revenues and costs are not allocated to the five segments since they cannot be traced back to a specific course. Instead, these items appear only in the Finance Department total column, which is the lowest level of the organization to which these revenues and costs can be traced.

The lower portion of Panel A provides a list of departmental performance measures. These measures are largely non-financial and often are more controllable by the Academic Department Chair than the course margin or the department margin. For instance, the department chair can influence the number of sections offered and the faculty assigned to teach each class. These decisions will impact metrics such as the average class size and the percentage of faculty teaching classes that are classified as tenured or tenure track (T/TT), full-time non-tenure track (FT NTT), and adjunct.

Panel B of Table 4 summarizes the course view for the College of Business. This report will be a compilation of the individual course view reports prepared for each department in the College. For instance, the net tuition revenue for the Finance Department in Panel A is the starting point for the Finance column in Panel B. The department margin for Finance also ties back to Panel A. Again, the first column of financial results provides the total department margin for the college, as well as the total college margin. The college margin reports college-level revenues and expenses that cannot be traced to specific departments, such as the salary and benefits of the dean of the college. Panel B concludes with the same non-financial performance measures shown in Panel A, which facilitates a comparison across reporting units within the College.

Panel C of Table 4 presents the aggregation of the colleges to a total under the academic affairs division of the university. As with college-level reports, the academic affairs report includes expenses that have not been directly traced or allocated to the lower-level units. For example, "Academic Affairs other expenses" consists of costs such as the provost's salary and benefits, student support, library and classroom technology.

TABLE 4
SEGMENTED REPORTS – COURSE VIEW

Panel A: Finance Department

	Finance Department	Under-grad core courses	Undergrad major courses	Core graduate courses	MS in Finance courses	On-line courses
Net tuition revenue	$4,173,700	$866,700	$1,863,900	$760,300	$387,600	$295,200
Less Course expenses:						
Faculty salary & benefits	$1,727,000	$264,200	$808,400	$267,500	$227,800	$159,100
Staff salary & benefits	$31,500	$5,900	$13,900	$5,000	$4,200	$2,500
Other	$140,000	$44,800	$49,300	$21,000	$23,800	$1,100
Course margin	$2,275,200	$551,800	$992,300	$466,800	$131,800	$132,500
Add: Other revenues	$25,000					
Less: Other expenses	$15,000					
Department margin	$2,285,200					
Relevant performance measures:						
Average class size	28.4	30.8	28.1	26.4	15.2	20.5
% classes taught by T/TT	65%	43%	85%	75%	80%	100%
% classes taught FT NTT	30%	57%	15%	17%	10%	0%
% classes taught by adjunct	5%	0%	0%	8%	10%	0%

TABLE 4
SEGMENTED REPORTS – COURSE VIEW (CONT.)

Panel B: College of Business

	College of Business	Accountancy	Finance	Marketing	Management
Net tuition revenue	$16,991,100	$4,023,400	$4,173,700	$4,470,000	$4,324,000
Add: Other departmental revenue	$90,000	$20,000	$25,000	$15,000	$30,000
Less: Department expenses	$7,789,900	$1,844,600	$1,913,500	$2,049,400	$1,982,400
Department margin	$9,291,200	$2,198,800	$2,285,200	$2,435,600	$2,371,600
Add: College other revenues	$1,054,000				
Less: College other expenses	$927,000				
College margin	$9,418,200				
Relevant performance measures:					
Average class size	27.9	27.5	28.4	28.1	27.7
% classes taught by T/TT	64%	60%	65%	70%	63%
% classes taught FT NTT	24%	26%	30%	20%	21%
% classes taught by adjunct	12%	14%	5%	10%	16%

Panel C: Academic Affairs

	Academic Affairs	College of Arts and Sciences	College of Business	College of Education
Net tuition revenue	$94,156,300	$65,741,400	$16,991,100	$11,423,800
Add: Other college revenue	$3,893,400	$1,859,100	$1,144,000	$890,300
Less: College expenses	$45,646,600	$31,069,000	$8,716,900	$5,860,700
College margin	$52,403,100	$36,531,500	$9,418,200	$6,453,400
Add: Academic Affairs other revenues	$750,000			
Less: Academic Affairs other expenses	$31,459,600			
Academic Affairs margin	$21,693,500			
Relevant performance measures:				
Average class size	25.9	24.7	27.9	26.4
% classes taught by T/TT	66%	66%	64%	69%
% classes taught FT NTT	20%	18%	24%	21%
% classes taught by adjunct	13%	16%	12%	10%

Where:
T/TT = Tenured and tenure track faculty
FT NTT = Full-time, non-tenure track faculty

Table 5 presents the major view for the segmented performance reports. Panel A of Table 5 derives the margin generated by finance majors in three categories: Finance courses, other College of Business

courses, and Non-College of Business courses. The first column sums these three categories and thus reveals the entire contribution of finance majors to the university's financial position. As with Table 4, non-financial metrics are included.

Panel B of Table 5 presents the major margins of all the departments in the College of Business and, as with Table 4, includes those college-level revenues and expenses that cannot be traced to specific departments such as the dean's salary and benefits. Finally, Panel C presents the major margins of the several colleges within the university, and the sum of these as the academic affairs margin. Again, academic affairs-level expenses are presented separately from any college.

TABLE 5
SEGMENTED REPORTS – MAJOR VIEW

Panel A: Finance Department

	Finance Total	Finance Courses	College of Business Courses	Non-College of Business Courses
Net tuition revenue	$5,398,300	$801,400	$1,501,500	$3,095,400
Less: Course expenses				
Faculty salary & benefits	$2,850,500	$1,107,200	$1,027,000	$716,300
Staff salary & benefits	$55,500	$20,200	$20,800	$14,500
Other	$563,600	$89,800	$279,100	$194,700
Major margin by course type	$1,928,700	($415,800)	$174,600	$2,169,900
Add: Other revenues	$25,000			
Less: Other expenses	$15,000			
Department margin	$1,938,700			
Relevant performance measures:				
Number of majors	280	230	270	280
Number of credit hours	8,057	1,196	2,241	4,620
Credit hours per student	28.8	5.2	8.3	16.5
Net tuition revenue per credit hour	$670	$670	$670	$670

TABLE 5
SEGMENTED REPORTS – MAJOR VIEW (CONT.)

Panel B: College of Business

	College of Business	Accounting	Finance	Marketing	Management
Net tuition revenue	$21,976,500	$5,204,000	$5,398,300	$5,781,600	$5,592,600
Add: Other departmental revenue	$90,000	$20,000	$25,000	$15,000	$30,000
Less: Department expenses	$14,185,800	$3,359,200	$3,484,600	$3,732,000	$3,610,000
Department margin	$7,880,700	$1,864,800	$1,938,700	$2,064,600	$2,012,600
Add: College other revenues	$1,054,000				
Less: College other expenses	$927,000				
College margin	$8,007,700				
Relevant performance measures:					
Number of majors	1,140	270	280	300	290
Number of credit hours	33,470	8,127	8,057	8,760	8,526
Credit hours per student	29.4	30.1	28.8	29.2	29.4
Net tuition revenue per credit hour	$657	$640	$670	$660	$656

Panel C: Academic Affairs

	Academic Affairs	College of Arts and Sciences	College of Business	College of Education
Net tuition revenue	$94,156,300	$51,082,100	$21,976,500	$21,097,700
Add: Other college revenues	$3,893,400	$1,859,100	$1,144,000	$890,300
Less: College expenses	$45,646,600	$16,176,600	$15,112,800	$14,357,200
College margin	$52,403,100	$36,764,600	$8,007,700	$7,630,800
Add: Academic Affairs other revenues	$750,000			
Less: Academic Affairs other expenses	$31,459,600			
Academic Affairs margin	$21,693,500			
Relevant performance measures:				
Number of majors	4,790	2,570	1,140	1,080
Number of credit hours	142,322	77,100	33,470	31,752
Credit hours per student	29.7	30.0	29.4	29.4
Net tuition revenue per credit hour	$662	$661	$659	$667

CONCLUSION

This paper presents an approach to developing a management accounting system reporting model for a centralized university. This approach has several benefits. First, the paper identifies two alternative units of analysis, the course and the major, and describes views of program margin related to each of these

units of analysis. These views allow for fair and equitable reporting for programs that have substantial numbers of majors, as well as those that primarily support other majors and core curricula.

The paper also discusses the allocation of indirect revenues and expenses. The allocation of revenues is common in universities due to fixed full-time tuition beyond a certain number of credit hours. Similarly, the paper addresses allocation issues related to faculty costs, including those that do not directly generate revenue (research, service, and sabbaticals), and support staff costs. For each of these issues, alternatives are presented and a recommendation is made. Further, the paper presents an example of multi-level margin reports according to the two margin views.

It is important to note that all reporting models require the exercise of judgment and discretion to design and interpret and the MAS model presented here is no exception. Potential pitfalls exist if the model is not used with good faith and reasonable judgment. Almost all costs discussed here can be seen as more or less indirect, and the recommendations on accounting for them are admittedly imperfect and ultimately may be considered arbitrary. The use of the two different views of program margin assumes that high-level administrators and other report users will see the value of both measures, and will not strategically select only those measures that further their own objectives. As with any measurement and reporting system, gaming of performance measures is always a possibility.

There are several limitations to note about the current paper and model. First, the model discussed here is incomplete. For the sake of clarity of exposition, we excluded many revenues and costs. Future work will discuss these revenues and costs, and integrate them into this model. Examples of these costs include adjunct faculty, the use of space, athletic scholarships, student support, health care centers, transfers of revenue among programs, and more.

Second, the model presented here only includes actual costs incurred. Again, for the sake of clarity, we did not discuss integrating benchmarks, such as budgeted revenues and costs (or similar concepts such as standard or normal revenues and costs). Thus, the model here is simply a reporting model, and lacks much of what is needed for fuller use as a control system. Future work will address the inclusion of budgeted revenues and costs, and the benefits and potential drawbacks of using them for control.

Despite these limitations, this paper provides a benefit to individuals involved in planning, implementing, or using reporting models in centralized universities. The paper is intended to benefit both those with accounting backgrounds and those without one. It is also intended to benefit faculty, staff and administrators alike, as all will likely be impacted by the increased need for financial accountability and control in educational settings.

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