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AUTHOR Cox, Kelline S.; Downey, Ronald G.; Smith, Laurinda G.
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ABSTRACT

This paper describes the activity-based costing approach used to report and capture the time spent by faculty for specified activities at one Midwestern university. For each department, four major areas (instruction, research, public service, and administration) and 14 activities were identified. During the annual goal-setting period, each faculty member and the department head allotted the faculty member's time for the following academic year using the 14 identified activities. Funding allocation decisions at the department level were based on these staff assignments. Two reports were derived from the process. The first report showed the state dollar amount allocated for each of the four areas for each department. The second report provided data on faculty time utilization within the four general activity areas. Finally, university data were compared to national norms based on results from a triennial national survey. Evaluation of the process after three years determined that training and better provisions of information to departments and units was needed. (Contains 11 references.) (DB)

ABC's of Higher Education – Getting Back to the Basics
An Activity-Based Costing Approach to Planning and Financial Decision Making

A Paper Presented
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By

Kelline S. Cox, Assistant Director
Kansas State University
Manhattan, KS

Ronald G. Downey, Associate Provost/Director
Kansas State University
Manhattan, KS

Laurinda G. Smith, Statistical & Information Officer
Kansas State University
Manhattan, KS

for Management Research, Policy Analysis, and Planning

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Dolores Vura
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ABC's of Higher Education – Getting Back to the Basics
An Activity-Based Costing Approach to Planning and Financial Decision Making

Abstract

As academic institutions enter the 21st century, they will be challenged to manage shrinking revenues, rising costs for campuses and increasing undergraduate enrollment while ensuring high quality education. A few colleges/universities are meeting this challenge using responsibility center management and/or activity-based costing approaches. One university has used the activity-based costing approach where faculty time and talent were identified as the activity. Once the faculty's time/activity was identified, costs/budget dollars were associated with the activity within six broad activity areas: instruction, research, public service, academic support, student service, and/or general administration. This process proved beneficial in identifying the funds allocated by activity: faculty time and talent.

ABC's of Higher Education – Getting Back to the Basics
An Activity-Based Costing Approach to Planning and Financial Decision Making

Introduction

In the early 1980's American businesses were faced with a slow economy, rising costs, and new international competitors. In order to combat this dilemma, some businesses began a process of redesign that incorporated activity-based costing and activity-based management. The activity-based costing approach analyzes costs at an activity level rather than at a unit level. This redesign process led to higher levels of productivity while either maintaining or decreasing costs (Mahoney, 1997). With higher education facing similar problems, the activity-based costing approach has been adapted for the college/university environment. In a sense, by going "back to the basics" to identify activities, identify costs, and reengineering the processes and concepts, colleges/universities have been planning and managing funds more efficiently.

As of July 1997, very few colleges and universities have implemented ABC in their financial management. Essentially, application in the service industry has been less than enthusiastic. However, in Great Britain, several universities have recently introduced ABC accounting. These universities have found that the use of ABC has helped with tighter financial management and resource allocation. (Gordon and Charles, 1997-98).

Activity-based costing has been found to have two major advantages. First, ABC can be implemented relatively easily by changing from a traditional fund accounting to an activity related accounting. Secondly, ABC can be an essential public relations tool. Most higher education institutions, including a mid-size Research II Land Grant Institution (the University), have been asked the overwhelming question: "How do faculty spend their time?" Since the largest portion of a university's budget is buying the time of people to achieve the overall mission (Plater, 1995), the ability to quantitatively report how faculty utilize their time provides outside constituents, state legislators and university administrators valuable information to answer this question. The evaluation and budgeting of many governmental services are becoming performance-based whereby public institutions need to be

prepared to explain how they effectively and efficiently deliver their services and fulfill their missions (Senate Report, No. 1785, 1992). Activity-based costing approach provides a reliable method to report and capture the time spent by faculty within specified activities contributing to the overall performance of the university.

At the University level, the Provost did not have the information needed to explain why two departments in the same college with similar missions had drastically different outputs (extramural funding support). If the University could define the "time and talent" of its faculty (inputs) and the "costs" associated with each of the defined activities, it would be in a better position to answer the questions raised by its Provost, state legislators and other outside constituents.

Literature Review

Very few publications have been written on activity-based costing related to the public sector, especially higher education. Cooper (1988) developed the costing model called Activity-Based Costing (ABC). The ABC costing model assumed that cost behavior was driven by the activities performed by the department. Turk (1992) emphasized that the first step in activity-based costing approach was to identify the activities that were defined as being within the mission of the department. Once the activities were identified, costs could be applied to these activity centers. Beaujon and Singhal (1990) stressed that activity-based costing could provide a better understanding of how to reduce costs by managing activities that consumed resources. Again, they pointed out that a clear understanding of the activities was a key to an efficient and effective application of ABC.

As stable resource bases diminish within units, the importance of cost information increases. Essentially, cost models were seen as a way of gathering cost information and then addressing the what-if questions regarding shifts in resource allocation. According to DeHayes and Loverinic (1994), "Activity-based costing provided a method to trace financial inputs through various production activities (such as classroom instruction and laboratory usage) to the variety of instructional, research, and service outputs of higher education."

Plater (1995) concluded that most of the university's resources are fixed, but faculty and staff time is the only variable resource that can improve performance. Institutions need to periodically reassess how the uses of faculty time meet the opportunities that sustain their more focused mission.

A great deal of research has been conducted to devise ways to measure faculty workload. However, the studies have not combined faculty workload with the costs associated to support those functional activities. With the activity-based costing approach, capturing, defining, and reporting faculty time with associated costs can be achieved.

Background and Procedures

In the early 1980's, a mid-western state legislature requested that each institution provide information regarding faculty workloads using a diary approach. Essentially, faculty would keep track of what they did for one week out of the year. For faculty, this approach was time and cost intensive and it was very subjective, biased, and difficult to analyze. The University of Massachusetts at Amherst used a similar approach in their Post Audit Review to the State Senate Committee in 1992. They, too, realized that the reliability and usefulness of this type of reporting is questionable since the faculty members reported their activities retrospectively. Realizing the need to understand what faculty members are doing and to have a process that is on-going (annually), a new approach was necessary.

The University reviewed several approaches and identified that the activity-based costing approach had the potential to be effectively used in higher education. The School of Dentistry at Indiana University provided valuable information supporting the use of ABC in higher education. From the School of Dentistry's experience and analysis of the process, two items surfaced as important factors for the success of ABC: (1) the organization of cost data is by inputs not outputs, and (2) time is a major resource and its use should be measured (Gilmore and DeHayes, 1996).

For the activity-based costing approach to be feasible, major activities and associated costs had to be identified. With faculty time considered the most important fungible resource (Plater, 1995), identifying the activity associated with the faculty member's time was the initial step. The University also recognized that the talents of their faculty are its greatest and most important resource.

Consequently, when faculty talents are utilized appropriately, every aspect of the university gains. Of course, for a college/university, activities are less visible since the activities are related to the faculty member, not to a process. To many, capturing this type of information might appear impossible. With this in mind, the University merged two constructs that were already in place: the faculty evaluation/goal setting procedures and the budget process. By coordinating the reporting of faculty time with the evaluation process, the information reported was current and acceptable. More importantly, the time and costs associated with each activity could be adjusted from one year to the next depending upon the goals of the faculty member, as well as the mission of the department.

Clearly, the department's goals and mission dictate the allotment of the faculty's time. The university provides three main functions: instruction (teaching), research, and public service. With the addition of the administrative activity, four major activities were defined. Within each of these activities, sub-activities were defined and provided departments and faculty more diversity in their allocation of time. One such example is a faculty member whose primary activity is research. However, their research extends to advising graduate students about their thesis and dissertation research. Therefore, this faculty member would allocate some time to instruction (advising) even though the activity is supported totally with research funds.

After several preliminary drafts, the instruction activity was divided into four specific areas: (1) undergraduate instruction, (2) undergraduate advising, (3) graduate instruction, and (4) graduate advising. The research activity was broken out into two distinct areas: (1) research funded from outside sources and (2) research directly related to the department/unit (department-funded research). Within the public service activity, four service areas were defined: (1) non-credit programs for public use and externally funded programs, (2) activities associated with shared governance, (3) professional service, and (4) professional development (e.g., sabbatical). The final broad activity area of administration was a combination of academic support, academic administration, student services, and general administration (including facilities). Overall, fourteen activities were used to describe a faculty and staff members' time.

The process to collect the activity data was directly related to the faculty evaluation cycle. During the annual goal setting period, the faculty member (or staff member) and the department head discussed the activity assignment for the next academic or fiscal year. The faculty member's time was allotted using the 14 activities described in Table 1 and in accordance to the mission of the department/unit. This approach attempts to individualize the allocation of effort according to the strengths of each faculty member while fulfilling the goals and missions of the unit or department. This approach is similar to that used by a delegate to the Maryland House of Representative who supported a

Table 1: Listing and Definitions of Activities Assigned to Faculty/Staff Members

Service/Activity	Code	% of Time or FTE
Undergraduate Instruction	A	
Graduate Instruction	B	
Undergraduate Academic Advising	C	
Graduate Academic Advising	D	
Departmentally Funded Research - Research funded through the department and not from an outside source.	E	
Other Funded Research/Creative Work - Research funded from an outside source such as AES, Engineering Experiment Station, and Grant Contracts.	F	
Public Service – Externally funded public service such as Cooperative Extension Service. Also includes non-credit programs.	G	
University and Departmental Service Activities - Internal activities including committees, task forces, and other public service work in relation to the Department and/or University.	H	
Professional Service - External public service to professional organizations, national associations (Big 12 Representative), journal reviewer.	I	
Professional Development - Activities associated with the development or improvement of a faculty member's/staff's skills and abilities. This would include: Sabbaticals, workshops, extended training programs or activities, Harvard Management Workshop.	J	
Academic Support - Activities carried out in direct support of instruction, research, and public service. This would include Library, Art Museum, academic computing. It includes activities that directly contribute to the way in which instruction is delivered or research is conducted.	K	
Academic Administration - Includes administrative functions associated with instruction, research, and public service. This would include activities of the college Deans, department heads, and activities associated with their support staff.	L	
Student Service - Activities associated with counseling, admissions, registration, financial aid, and student activities.	M	
General Administration - Administrative support activities that are in direct service/support to the entire University. It includes executive management, institutional support areas, facilities, and administrative computer support.	N	
Total	=	

similar system whereby a faculty member's contract states, after consultation with the faculty member, the time to be devoted to teaching, advising, research, administrative duties, and community service (Pesci, 1975). This concept was seen as advantageous in providing clarification of the basis upon which the faculty member was evaluated.

Once the evaluation process was complete and the state legislature reached an agreement on allocation of state funds to the state universities, allocation letters were distributed to the departments and units. Departments used faculty and staff assignments to allocate funds within the activities identified (instruction, research, public service, and administration). The department head and in some cases the dean's office worked together to allocate these funds. Funding for support staff, student workers, and operating expenses (not directly assigned) were allocated based upon the overall percentage of each activity for the department/unit. Once the funds were balanced with the overall allocation of funds, the funding dollars and percent of time (activity) by faculty and staff was entered into a database.

Discussion

Two reports were derived from this process. The first report showed the state dollar amount allocated by activity for each department. For this analysis, the fourteen activities were aggregated into four major areas: instruction, research, public service, and administration. This report gave departments, academic officers (e.g., Provost) and outside constituents an idea of what activities were being supported by general use dollars. Also, the report provided a comparison of the dollars to be spent in connection with the overall mission of the department/unit.

In Table 2, the budgeted general use funds were reported by the four general activity areas for the total academic departments and five selected departments. The dollars represented in this table includes faculty salaries, support staff salaries, benefits, and general operating expenditures. Reporting dollars by activity provides a method to quantitatively describe what it is costing the institution to do specific functions. The sub-activities within each of the four general activities provide a greater explanation of the institution's spending of the public's state tax dollars.

Table 2: Allocation of Budgeted Dollars by Activity - FY 1999

All General Use Funding (including outside research and public service funding)

	Instruction	Research	Public Service	Admin.	Total
All Academic Departments	54,582,834 42.6%	35,102,580 27.4%	17,674,985 13.8%	20,628,983 16.1%	127,989,382
Department A	826,555 74.6%	39,700 3.6%	153,040 13.8%	88,888 8.0%	1,108,183
Department B	1,915,901 27.2%	3,559,048 50.5%	1,532,509 21.7%	46,639 0.7%	7,054,097
Department C	1,633,515 63.7%	518,081 20.2%	174,491 6.8%	237,279 9.3%	2,563,366
Department D	1,720,532 43.0%	1,656,822 41.4%	22,393 0.6%	601,632 15.0%	4,001,379
Department E	611,786 61.6%	150,818 15.2%	164,856 16.6%	65,233 6.6%	992,693

For the 60 academic departments at the University, 42.6% of the total general use dollars allocated to the academic units supported the instructional effort of the university's mission. On the other hand, 27.4% of the general use funds were attributed to the research function and 13.8% allocated to the public service activity. The balance of the academic units' allocation supports the administrative activity. This distribution of funds matches with the mission and goals of a land-grant institution.

Five departments from four of the colleges were selected to illustrate the different funding mechanisms used to fulfill the departments' goals and the overall mission of the university. As the table shows, each department has a distinct mission: (1) strong instructional activity, (2) strong research orientation, or (3) a combination of all three of the university's main functions with administrative as the support activity. Interestingly, each department supported all three of the general activity areas, but variation of support was quite prominent.

The second report was more directly related to faculty time and talent. Table 3 shows the distribution of time within the four general activity areas by service ranges. Using a frequency distribution, the number of faculty members and percent within the service range for each activity were

Table 3: Distribution of Faculty Time

Within the Four General Service Areas - Fall 1998

Service Range	Service Area							
	Instruction		Research		Public Service		Administration	
	Count	%	Count	%	Count	%	Count	%
0%	133	11.2%	306	25.8%	369	31.2%	1,054	89.0%
1-10%	48	4.1%	112	9.5%	394	33.3%	35	3.0%
11-20%	46	3.9%	155	13.1%	228	19.3%	16	1.4%
21-30%	53	4.5%	159	13.4%	73	6.2%	16	1.4%
31-40%	95	8.0%	187	15.8%	17	1.4%	9	0.8%
41-50%	211	17.8%	110	9.3%	12	1.0%	20	1.7%
51-60%	193	16.3%	43	3.6%	15	1.3%	6	0.5%
61-70%	107	9.0%	29	2.4%	7	0.6%	6	0.5%
71-80%	91	7.7%	30	2.5%	16	1.4%	5	0.4%
81-90%	78	6.6%	22	1.9%	10	0.8%	4	0.3%
91-100%	129	10.9%	31	2.6%	43	3.6%	13	1.1%
Total	1,184	100.0%	1,184	100.0%	1,184	100.0%	1,184	100.0%

provided. Table 3 highlights the diversity of faculty assignments for instruction, research, public service, and administration. Thus, 133 faculty members have no instructional responsibilities, which was consistent with the mission of a land-grant institution. Conversely, 129 faculty were devoted full-time to teaching.

The University of California, Los Angeles' Higher Education Research Institute administers a Faculty Opinion Survey every three years. From the survey, they compiled and analyzed the number of hours a faculty spent in specific activities. The activities are very similar to those developed by the University. The most recent information available was the 1992 survey. By adapting this survey's results to reflect the percent of time spent in three general activity areas, teaching, research, and public service, the University's data was compared to the national norms. As Table 4 shows, the University's percent of time spent in the three major activities were fairly comparable to the national norms for a university. Granted, the University's data is the percent of time spent in those areas by all faculty members. Also, the administrative function is not fully defined in the UCLA analysis. So, some variance can be noted in this comparison.

Table 4: Percent of Time Spent on Professional Activities

Full-time Faculty by Institution Type

Activity	National Norms[1]			
	University	4-Year Colleges	2-Year Colleges	The University[2]
Scheduled teaching or preparing for teaching, advising/counseling students	49.8%	59.8%	69.2%	52.4%
Research, scholarly writing, creative products and performances	25.6%	14.8%	6.6%	27.9%
Committee work, meetings and administration, consultation, and public service	24.6%	25.4%	24.2%	19.6%

[1]Adapted from HERI Faculty Survey, Los Angeles: Higher Education Research Institute, UCLA, Fall 1992 Faculty Opinion Survey, (Freeman, 1994)
[2]Fall 1998 Service Code Report for full- and part-time faculty in Academic Departments.

The following histograms were used to illustrate the differences in the distribution of faculty time within the four major activity areas between Departments A through Department E. In Figure 1,

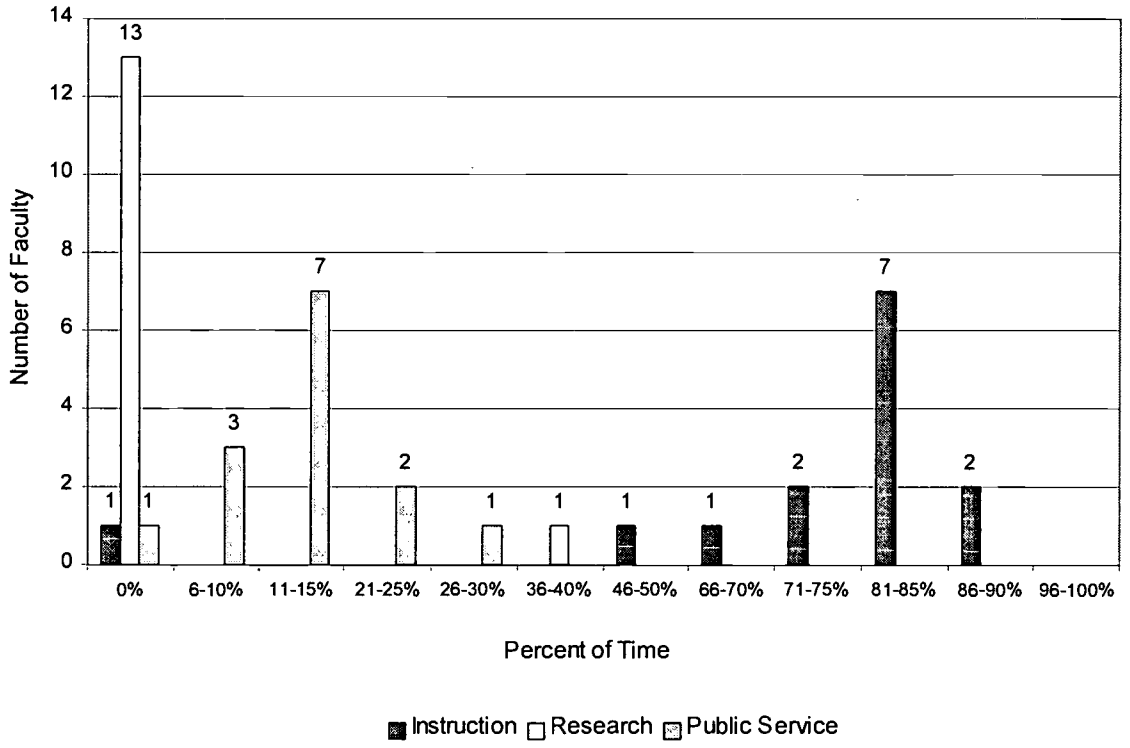

Figure 1: Distribution of Faculty Time – Instruction, Research, and Public Service for Department A

Department A, considered a more traditional department with substantial instruction, had little or no research activity and marginal public service activity. Over 90% of their faculty are contributing 45% or more of their time to instruction.

The truly research funded activity is Department B's significant mission (Figure 2). Almost half of Department B's faculty members are contributing over 45% of their time to research. About 16% of the faculty are devoting almost all of their time to public service.

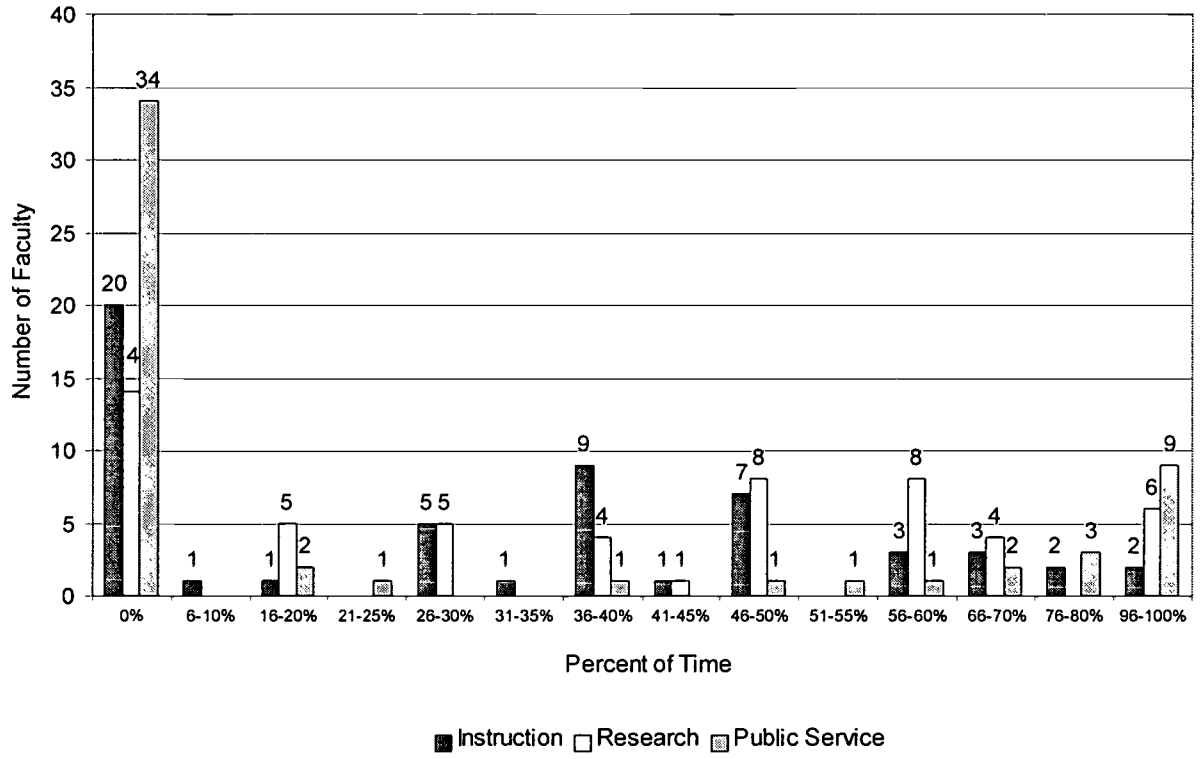

Figure 2: Distribution of Faculty Time – Instruction, Research, and Public Service for Department B

Most institutions have departments in which their main mission is to provide required general education courses for all undergraduate majors at the university. These departments are identified with heavy concentration of instructional activity with a mixture of research and public service. Usually, these departments hire the majority of the graduate teaching assistants and temporary instructors. Even though Figure 3 does not include the teaching assistants, the majority of the faculty members in Department C

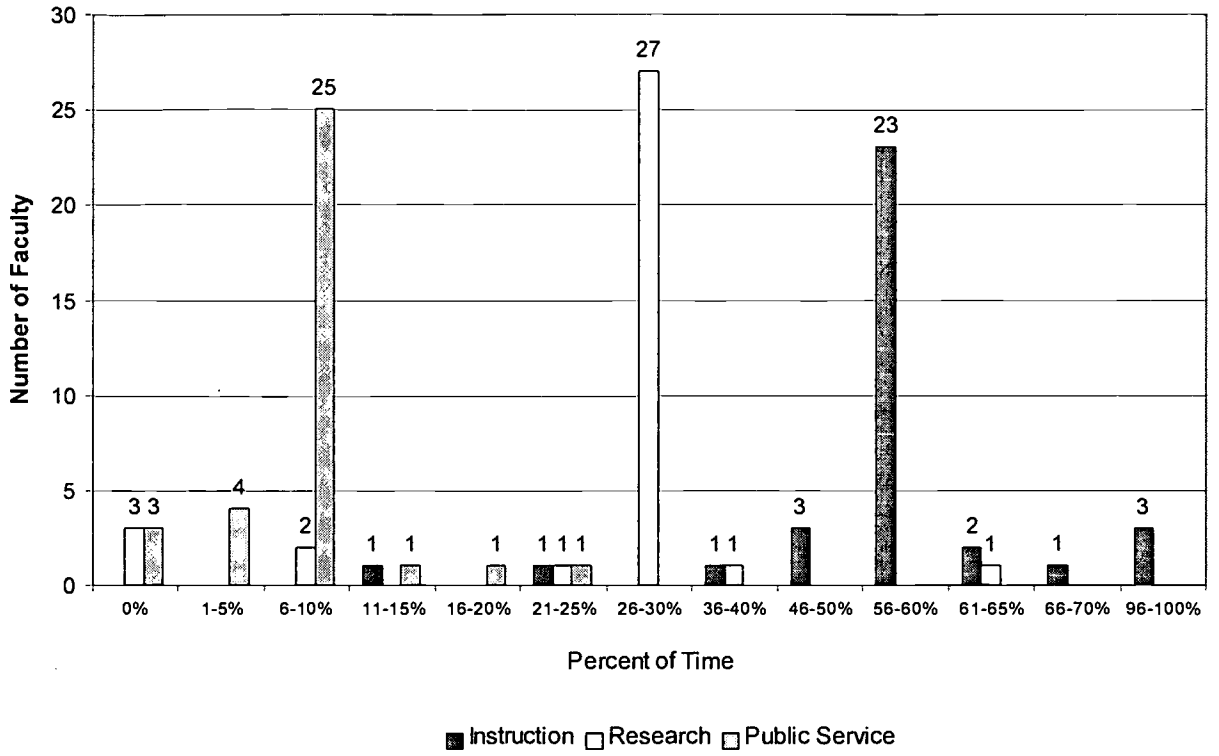

Figure 3: Distribution of Faculty Time – Instruction, Research, and Public Service for Department C

have reported 56-60% of their time spent in instruction with the other majority of their time spent in research or scholarly activity.

Faculty members in Department D allocated most of their time between instruction and research with little to no time contributed to public service. Essentially, Figure 4 illustrates a mixture of instructional and research activity with infusion of outside research support dollars.

Department E's faculty's responsibilities were heavily concentrated in instructional responsibilities with significant public service expectations (Figure 5). Surprisingly, Department E is not an extension oriented department. However, the mission of the College by which this department is associated has been to increase the outreach programs.

Conclusions

This initial step of establishing and defining the activities for faculty and support staff during the annual goal setting session was critical in laying the groundwork for the entire process of activity-based

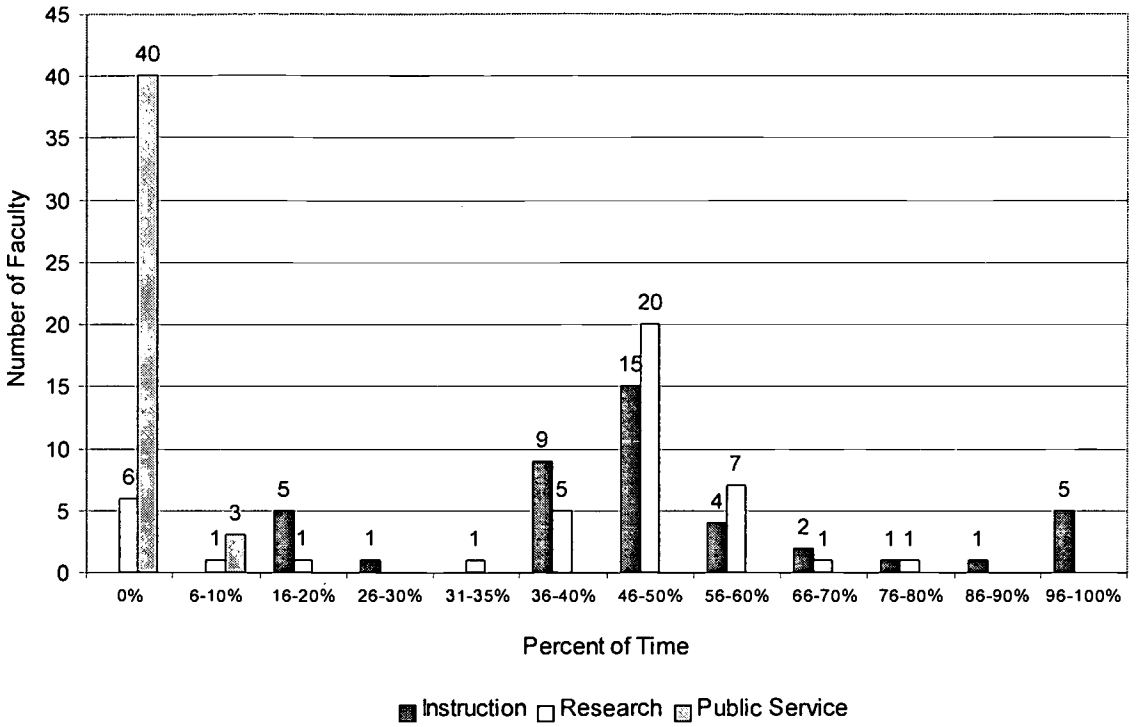

Figure 4: Distribution of Faculty Time – Instruction, Research, and Public Service for Department D

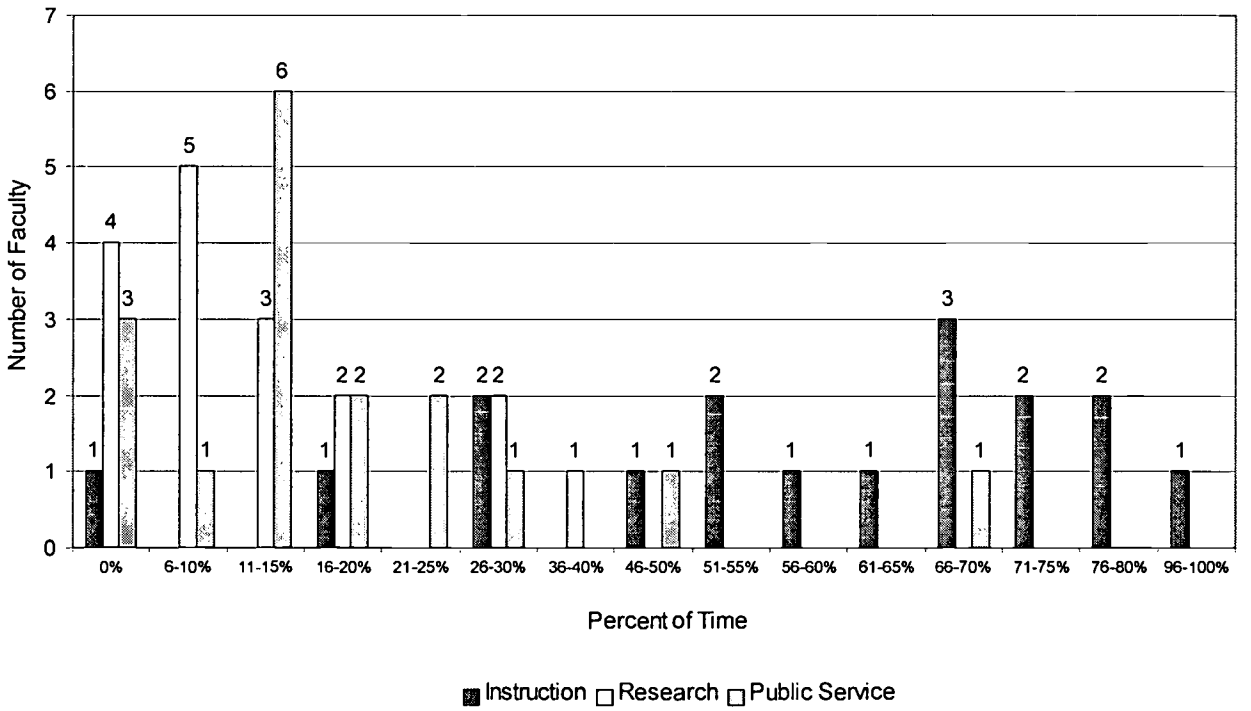

Figure 5: Distribution of Faculty Time – Instruction, Research, and Public Service for Department E

costing. The reports derived from this process have allowed the University to better understand the kinds of activities the academic community are engaging in over the year. For the most part, the departments, colleges and ultimately the university have a better ability to differentiate time and talent of their faculty.

As the faculty member is evaluated each year by the department head, the time spent by the faculty member within the four general activity areas may change depending upon the faculty's talent and achievement of professional goals, and the mission or direction of the department. This approach allows for versatility that utilizes the variable resource of faculty time in the most efficient way.

After three years of refining this initial process, it was determined that training and more information to the departments and units were needed. It is hoped that the training and improved information will eliminate overstatements about outside research responsibilities and understatements about student advising responsibilities.

In addition, the departments and faculty need to be aware of the increased effort to allocate time and talent by the 14 activities defined. Each college and department needs to have in place specified goals and missions to which faculty time and talent will contribute. The evaluation process needs to be restructured to evaluate each person based on their own expectations and then appropriately award the faculty member for achieving the goal within their area of expertise (e.g., good teachers should be awarded on the same scale as good researchers).

Each level of administration has learned something from this process. Administrative units have found that they need to report their contribution to teaching, research, and public service even though they may not be funded from the respective academic department (teaching a class in their area of expertise). Deans and department heads have used the reports summarized from the compiled data to reallocate resources, explain to faculty that there is state funds supporting research activities, and rethink their goals and missions in relation to the talents of the faculty. Finally, the Provost can easily talk about what faculty members are doing with their time and the costs associated with each activity without hesitation or a sense of unreliability.

Now that the first step is complete, the next question raised will be: "Are the amount of resources by activity producing the outcomes to meet the standards and expectations of the university community, outside constituents, and more importantly, the student (consumer)?" Determining what measurable data elements should be used to evaluate student outcomes needs to be completed before tying these outcomes to the activity-based information.

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