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Measuring - and Enhancing - the Performance of Educational Institutions

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Assessing the performance of educational institutions vis-à-vis attainment of their stated objectives is fraught with difficulties. As an alternative measure, the performance of universities has been assessed using the systemic model (input-output processes) concentrating on the means of attaining the objectives through such indicators as: outputs of the organization, administrative and technological processes, and the quality and quantity of inputs used. In general, universities are committed to the traditional goals of preserving and transmitting knowledge, extending the frontiers of knowledge, and applying knowledge. However, universities in developing societies, the University of the Philippines System in particular, should also strive to be relevant to nationbuilding, growth and development, preserve and disseminate the national cultural heritage, address the pressing problems of the nation, and provide the poor, minority groups and the underprivileged sectors with equal opportunities for advancement. Thus, certain criteria are proposed to identify and rank instructional programs and projects as well as guide the decisionmakers in choosing research projects and extension work. Given its resources, the UP System can maximize its contribution to the well-being of the Philippine society by subscribing to a certain combination of producing quality outputs and availability to a larger number of beneficiaries.

Introduction

Formal organizations are commonly viewed as adaptive systems that continually adjust to external and internal forces in order to survive. The adaptive capability of organizations depends in large measure on their ability to scan their relevant environments, to continually adjust their major activities, and to gauge their performance against feasible and targeted objectives. These control functions are relatively simple to implement in some types of organizations, but infinitely difficult in others.

The purpose of this article is twofold: (1) to discuss some problems in assessing the performance of educational institutions in a transitional society, and (2) to explore alternative approaches in dealing with these problems. The analysis focuses on the University of the Philippines.

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A deceptively simple and straightforward approach in gauging the performance of formal organizations is to determine the extent to which their stated objectives have been attained. This goalistic approach to organizational effectiveness is fraught with difficulties, however:

(1) Goals of many types of formal organizations are seldom expressed in precise, measurable terms;

(2) Goals are oftentimes arbitrarily set, usually at unrealistically high levels;

(3) Officially stated goals are frequently intended to impress the public and do not serve as useful guidelines for action (Dressel 1970); and

(4) Organizations typically have multiple goals that are all too frequently inconsistent with one another, and efforts at achieving one set of objectives may frustrate the others.

An alternative approach views organizations as input-output processes and concentrates on the **means** of attaining the objectives rather than on the goals themselves as the relevant criteria for assessing organizational performance. This **systemic** model regards these so-called **mid-range** criteria as predictive of the organization's success in attaining its ultimate objectives, whatever they are and however they are stated.

In determining the effectiveness of certain classes of organizations (for example, educational institutions), perhaps a more appropriate model is one which considers all three major components of an input-output process (see Figure 1):

(1) The output of the organization as measured, say, by the number and types of graduates or published research;

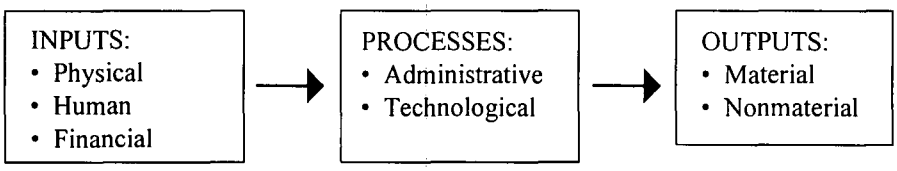
(2) Processes, both administrative and technological, such as communication, change and control processes; and

(3) The quality and quantity of inputs used, e.g. faculty, entering students, equipment and other facilities.

In applying this model, attempts are made to generate answers to the following questions:

(1) What, in **measurable and operational** terms, are the institution's goals and objectives, and to what extent have they been achieved?

Figure 1. Major Components of a Social System as Input-Output Process



(2) How well were the necessary strategies and operational procedures implemented from both the administrative and technological points of view? How **efficiently**, in other words, were the inputs combined to produce the desired outputs?

(3) To what extent were the appropriate types and amounts of inputs availed of and utilized?

The assessment of the performance of institutions of higher learning presents a special set of problems. Colleges and universities are a class of organizations in which goals are expressed in the broadest and most general terms and therefore defy meaningful operationalization and quantification. Thus, the degree to which these goals are attained cannot be measured with acceptable accuracy and comprehensiveness with existing tools and techniques (Walberg 1974). Moreover, an infinite variation in the composition and levels of the various organizational activities is consistent with such broadly stated goals and there are no cut-and-dried criteria for determining which are preferred, much less which are the most desirable.

Another characteristic that distinguishes institutions of higher learning from many other types of formal organizations is the lack of instruments by which to measure the effects of particular activities or programs. Compounding the difficulty of measuring goal attainment, therefore, is that of predicting the consequences of particular actions.

In the absence of any reliable absolute measures of performance, universities and similar types of institutions rely more heavily on comparative indices, such as their performance vis-à-vis other universities in the community, or historical improvements within the institution itself (Thompson 1965; Schramm 1975).

The Role of the University in a Developing Society

The role of the university in any society can be viewed in any of a number of ways. One view regards the role of the university in terms of the enhancement, preservation, and transmission of knowledge. This traditional conception assigns the university too idealized a role which does not seem appropriate for societies in the course of economic and social development.

The university is sometimes regarded as an institution that should operate as a service enterprise and provide instruction, training and other services in response to consumer demand. To make the university a sort of intellectual cafeteria providing a whole array of instructional services, research and other outputs on the basis of the demand of the ultimate consumer is wasteful of resources and ignores the significance of external effects usually associated with the consumption of educational and cultural outputs.

A third view conceives of the university as a producer of human capital to satisfy the trained manpower needs of the nation. This view also assigns a rather limited role to the university and ignores activities that are not generally intended to produce manpower skills or expertise. Moreover, it requires the university to provide training in areas and at levels not usually associated with institutions of higher learning.

A fourth perspective sees the university simply as an institution that provides instruction, research and public services. This is too simplistic a conceptualization; it merely classifies the types of outputs produced by the university as the means of achieving higher-level goals, without indicating what these goals are or should be.

There is little disagreement as to what, ideally, are the appropriate functions of the university; universities everywhere pursue essentially identical objectives. Difficulties arise, however, in considering the appropriate weights to attach to these goals in specific contexts. Any meaningful discussion of the matter should consider university objectives not as ideals but as realistic goals appropriate to the needs of the country and resource constraints.

The position taken here is that the appropriate mix of the university's activities should be made a function of the specific needs of the community and of the resources available to the university. The requirements of the community (and to a certain extent, the resources made available to the university), in turn, largely depend on the level of development of the community and the extent to which it has developed modern values. Hence, the major goals of the university vary with the stage of development of society and its rate of transition.

Universities everywhere are committed to the traditional goals of preserving and transmitting knowledge, extending the frontiers of knowledge, and applying knowledge. To be sure, these functions are the *raison d'etre* of the university. However, these activities, especially those pertaining to the quest for new knowledge, are appropriately regarded as the major functions of the university only in highly developed and modern societies. We do not subscribe to the extreme view that these goals are **obsolete**. What we do stress is that universities can devote themselves to these activities only in societies where specialized cultural, social, political and economic institutions that pursue specific societal functions are fully developed. In these advanced societies, moreover, the university is typically endowed with sufficient resources to effectively pursue the goals of preserving and generating knowledge.

By contrast, the university in a developing society is called upon to perform a wide range of cultural, social, political and economic functions, in addition to its primary educational role. This is to be expected, considering that these societies are characterized by the relative absence of institutions that perform specific societal functions such as museums, opera and dance companies, and public and private institutions organized to protect consumers, provide equal economic opportunities and care for the handicapped. While it is true that the university in a poor country cannot be expected to provide all these services to the community, it nevertheless has to bear a major part of the burden of satisfying some of society's noneducational needs.

Universities in developing countries cannot afford the luxury of pursuing knowledge for its own sake for yet another reason: it simply does not have the necessary resources to do a good job at it. We cannot reasonably expect significant contributions in the arts and sciences, nor in the applied fields, for that matter, because of the lack of the needed infrastructure. The university in a developing country is typically deficient in the necessary manpower, equipment and technology. For example, significant work on the theory of matter cannot be done in most developing countries because of the lack of such facilities as linear accelerators and electron microscopes.

Finally, universities in traditional societies do not benefit from externalities arising from interaction among specialized institutions in specific fields, a very important factor in the effort to extend the frontiers of knowledge.

Thus, the university in a developing society can pursue these traditional goals only to a very limited extent.

What, then, are the appropriate objectives of the university in a transitional society? What, for instance, should be the major goals of the University of the Philippines?

Upon reflection on the needs of the country and the state of development of its various social, cultural, economic and political institutions, the following appear to be the appropriate objectives of the University:

(1) To transmit and disseminate knowledge that is relevant to nation building;

The transmission of knowledge has always been a major function of the University. The philosophy underlying this goal has to be restated, however, in terms of efforts to satisfy the manpower requirements of a poor and growing society, and not in terms of the Western tradition of developing well-rounded, liberally educated individuals. The pursuit of this objective includes, among others, the training of teachers in the various fields of study.

(2) To discover new knowledge in areas that are pertinent to the needs of a developing society, and those in which the University enjoys comparative advantage;

All universities are committed to the task of discovering new knowledge. As in all other endeavors, however, there is a need for specialization in the pursuit of this goal. The University should concentrate on areas that bear significantly on the problems of growth and development, as well as those in which the University has the capability to excel. As we have noted earlier, it does not make sense for the University to aspire to make significant contributions in, say, physical theory without the necessary infrastructure. Yet, there are many fields, both basic and applied, which are both pertinent and feasible and to which efforts at expanding knowledge should be concentrated. Many of these areas are relevant to developing societies in general, some to the Philippines in particular. All are of universal interest.

(3) To preserve and disseminate the national cultural heritage;

The University is expected to play a major role in preserving and disseminating Philippine culture for the simple reason that specialized institutions for this purpose have yet to develop. The University, moreover, is the most logical center for the study of Philippine history, music, literature and arts (in much the same way that the University of Mexico is the center for the study of Mayan civilization). Activities relating to this goal also serve the purpose of bringing about a strong sense of national identity and hence facilitate national integration.

(4) To bring knowledge to bear in dealing with national problems;

The University represents the largest single aggrupation of highly-trained manpower in the country. This huge reservoir of knowledge can and should be tapped to help solve the pressing problems that face the nation.

(5) To provide the poor, minority groups and other underprivileged members of Philippine society with equal opportunities for advancement.

Because of the lack of specialized institutions to help equalize opportunities in Philippine society, the University is called upon to provide the less privileged members of society with the necessary abilities and training to help them obtain an equal chance for a better life, and to undertake instructional, research and extension activities that would improve their lot. The pursuit of this objective also hastens the process of national integration.

By stating the goals of the University in these terms, we have formulated a set of objectives that are perhaps more meaningful than those couched in such terms as justice, freedom, or academic excellence (Fernandez 1970; Masuhud 1970). In comparison to the set of objectives listed by the Committee on University Goals, 1970 U.P. Faculty Conference on University Reorganization (Fernandez 1970), they are more easily translated in operational and quantifiable terms.[1]

To translate these objectives into operationalized goals, or "targets," it is convenient to classify the University's activities in the usual manner into instruction, research and extension. In a manner of speaking, these are the three major "product groups" of the University.

In factoring the overall objectives of the University into specific **programs** or **projects** of particular units of the University, a number of considerations are relevant.

First of all, it is worthwhile noting that the major goals of the University are attained mainly through instruction, research or extension or some combination of these activities[2] (see shaded cells in Figure 2). In identifying the relevant programs or projects within each major activity group, the pertinent choice criteria can therefore be readily formulated.

Figure 2. Objectives – Activities Matrix

Major Activities of the University	*Major Objectives of the University*				
	Transmission and dissemination of knowledge	*Discovery of new knowledge*	*Preservation and dissemination of Philippine Culture*	*Application of new knowledge*	*Equalization of opportunities*
Instruction					
Research					
Extension					

The following criteria may be used in identifying and ranking of instructional programs and projects:

(1) The program must develop manpower expertise that is needed for national development (e.g. fishery experts, regional planners).

(2) The program must produce expertise in areas and at levels not being served by other institutions of higher learning in the community. For example, there is probably a need to reassess the continued offering of the undergraduate course in business administration because of the exceedingly large number of bachelor's degree holders in this field being turned out by the rest of the educational system.

(3) Enrolment in the instructional programs must be allocated among various socioeconomic and ethnic groups in such a manner as to equalize opportunities among the different segments of Philippine society. This would require that the proportion of students from underprivileged groups enrolled in the various programs should be greater than their proportions in the population. A reassessment of the University's admission requirements and procedures also seems to be called for.

These criteria imply that the University should concentrate on high cost graduate and undergraduate programs (in other words, those which private educational institutions are reluctant to implement). These programs are likely to have low net private payoffs, but yield high social benefits. The social benefits gained from greater equality of opportunities will be paid for in terms of larger outlays for scholarships and other inducements.

Correspondingly, the following criteria may be adopted in choosing research projects:

(1) The research output must be of considerable practical usefulness, and must be relevant to problems of national development (e.g. findings that will provide the needed inputs for policy decisions). Applied research on the environment, nutrition, agriculture and management will clearly be high in the order of priority.

(2) The research project must focus on problems that are relevant to the processes of social change.

(3) The research project must enhance our knowledge about our historical and cultural heritage.

(4) The research project should not require the use of expensive, or as yet unavailable equipment or facilities.

(5) The research project must have a high potential for triggering off related activities and for enhancing teaching effectiveness.

Finally, extension work should be limited to:

(1) Projects that are high in the order of perceived national priorities and social needs; and

(2) Projects that have high academic spin-offs (i.e. engagements that provide ample opportunity to investigate and gain further insights into basic problems, or those from which teaching materials can be developed).

In allocating the University's meager resources among the various units, it is necessary to evaluate these activities in terms of a single criterion. For this purpose, it is necessary to calculate each project's **net** contribution to community or national welfare over its economic life, and to determine the present value of this flow of net benefits by applying an appropriate rate of discount. A project is then rated by using the ratio

$$\frac{V}{C}$$

where V is the present value of the project's contribution to social welfare (with all relevant operating costs netted out), and C is the cost of the project. Priority in the allocation of funds—for example, funds generated from the

Commonwealth Avenue Project—should be given to projects with the highest net present value per peso.

By using this and other pertinent criteria, reasonable targets can be set for each major group of activities of the University as a whole, as well as for each unit. The performance of the University and of the colleges, schools, institutes and departments that comprise the University can then be gauged on the basis of the extent to which these targets are attained. This is one level at which the performance of the University can be assessed.

We shall turn later to yet other performance measures.

A Conceptual Framework for the Determination of a University's Ideal Activity Set

Ideally, a university or any organization, for that matter, should be able to determine its **optimal** level of operation. Such an endeavor is hampered by conceptual and practical difficulties of aggregating over a wide range of activities. Perhaps even more important, however, is the task of determining the optimal **allocation** of its given resources among its diverse activities, that is, deciding on the **optimal mix** of outputs.

For this purpose, we have developed a simple economic model for the determination of a university's optimal output mix. Special reference will be made to the University of the Philippines System (UPS).

Let us start with the incontrovertible statement that the University's ultimate aim is to maximize its contribution to the well-being of Philippine society:

$$\text{MAX} \qquad W = f(Q, A) \qquad (1)$$

In equation (1), W represents UP's contribution to social welfare. Q is a mix of output associated with "quality." This includes, *inter alia,* the number of published journal articles and Ph.D. degrees granted. A is a composite output representing the "availability" of the University's services to society, including the number of basic BS and BA degrees granted by the regional units and manhours of "Pahinungod" activities.

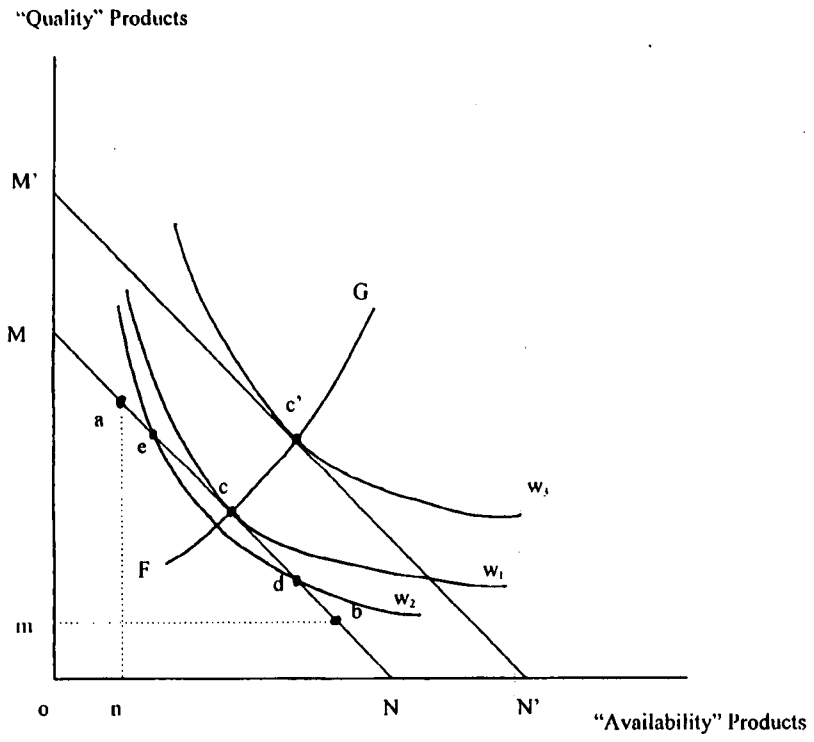
We seek to maximize (1) subject to:

$$B \geq c_q Q + c_a A \qquad (2)$$

In this "budget constraint," B is UP's total resource endowment for the relevant time frame, and the c's represent the "costs" (in pesos) per "unit" of Q and A.

In Figure 3, MN is the graphic representation of (2); it shows the different combinations of Q and A that the UPS can produce with its **given** resources. It is clear from its configuration that any increase in one of the two categories of outputs can be achieved only by giving up some of the other. If Om and On are, respectively, the **minimum** acceptable levels of A and Q, then, the segment *ab* of the budget line MN represents the outer limits of the University's feasible set of Q, A combinations. Within this range, optimality is achieved with a combination of outputs represented by point c, the point of tangency between the budget line and the **iso-welfare** curve w_1.

Figure 3. A Model for the Determination of the Optimal Mix of Outputs of the University of the Philippines System



We are tempted to postulate that in pursuing its many activities at making UP more available to a larger number of beneficiaries, UP has unwittingly moved to a point *d* on the budget line which lies on a lower iso-welfare curve w_2.

In making itself more available to the community, for example, by providing easier access to its academic programs to a larger number of students, the University is undoubtedly motivated by very valid equity objectives. It can be argued, however, that these equity targets can be better served via the quality route. Moreover, resources devoted to quality are more likely to have far greater impact on society's welfare because of their potential influence on public policy and on the rest of the educational system.

This is purely conjectural, of course. It can be argued by UP's decisionmakers that the University has actually moved from the non-optimal position *e* towards the ideal mix *c*. Such an argument would be plausible if it can be shown that UP has been producing "too much" quality to begin with, and should therefore make itself more available. Regrettably, there is precious little evidence that UP has continued to be truly a quality institution.

The question is: Is there a feasible way by which UP can produce more of **both** "quality" and "availability" products? Yes, but only if the budget line can be shifted rightward to the new position M'N'. If optimality is maintained as the budget line shifts, the organization moves along the expansion path FG. This can by achieved in either of two ways.

One way is by substantially increasing UP's resource endowment [B in inequality (2)]. This prospect, however, is not very promising for a number of reasons. First of all, UP's main funding source, the government, will continue to be niggardly in the foreseeable future. Secondly, raising tuition fees or pricing its services to the community at market rates is out of the question. Finally, the "Commonwealth Avenue Promise" has all but fizzled out due to the recent financial upheavals. Moreover, the campus' emotional reaction to the proposal is bound to be factored by prospective investors into their cash flow projections, making the project much less financially viable than it would have been otherwise.

The other way by which the budget line can be shifted upwards will be discussed in a subsequent section.

Measures of Administrative and Operational Efficiency

Considering that even the most endowed institution has to operate under resource constraints, the University has to face up to the problem of efficiency in the use of its resources. Given its operationalized objectives, the University should decide on how best to utilize its resources.

We have stressed the difficulties involved in measuring the performance of a university in terms of the degree of goal attainment. One way around this

problem is to focus not on the final output as such but on the administrative and operational preconditions for efficient and effective performance, or what is termed the mid-range criteria of organizational effectiveness. These measures can be culled from the management and organizational literature and can be readily applied to educational institutions. The following is a partial list of the appropriate indices of administrative effectiveness:

(1) Organizational Design and Structuring of Activities

(a) Extent to which activities are logically clustered and dovetailed into the administrative structure;

(b) Extent to which duplication and overlapping among the various programs and administrative units are minimized;

(c) Extent to which responsibilities are specified and properly allocated; and

(d) The extent to which external effects and interdependencies are considered in determining the levels of the various activities (programs and projects). This criterion of administrative efficiency is based on the fact that the relative impact and usefulness of a particular activity may depend in part on the levels of other activities.

(2) Decisionmaking Processes

(a) Extent of planning;

(b) Extent to which the faculty and staff are involved in planning and major decisionmaking; and

(c) Extent of proper delegation of authority.

(3) Control and Communication Processes

(a) Extent of effective monitoring of the results of the various activities;

(b) Extent to which relevant external and internal data are developed for planning and decisionmaking purposes;

(c) Efficiency of the reporting procedure; and

(d) Logistical efficiency (e.g. supplies management, scheduling of activities, use of facilities).

By the use of the appropriate scaling techniques and measuring devices, the quantitative measures of each of the major components of administrative and operational efficiency can be developed, along with a composite efficiency index for the entire system.

Yet another way of assessing administrative and operational efficiency is by calculating the amount of resources—in physical or monetary terms—required to produce the needed output. The following measures are currently used by educational administrators:

(1) Input - Output Ratios

- (a) Faculty – student ratio
- (b) Administrative component of output
- (c) Research personnel per unit of research output

(2) Cost per unit of Output

- (a) Cost per student
  - (i) Undergraduate
  - (ii) Master's level
  - (iii) Doctoral level
  - (iv) Other programs
- (b) Cost per research output
- (c) Cost per unit of extension work

The use of cost figures in assessing administrative and operational efficiency poses a number of problems however. First, with the possible exception of students who have completed their study programs, the output of educational institutions defies meaningful quantification. This is especially true of research, and to a lesser extent, extension services. The problem of specifying the unit of output is compounded further by considerations of quality, relevance, and other qualifications.

Second, cost figures, while numerically exact, could be misleading due to the fact that costs vary not only with volume of output but, more importantly, with the quality of output. Unless quality is somehow measured or controlled for, cost comparisons could be quite tenuous.

Third, aberrations in cost estimates may arise due to the arbitrary allocation of overhead, and the usual accounting practice of recording assets by their acquisition costs. More meaningful cost figures could be developed if assets are valued on the basis of replacement cost. This way, depreciation costs

would reflect the true opportunity cost of the use of physical facilities. Alternatively, estimates of potential rental income from these assets may be used instead.

Cost figures may also be distorted because they are based on actual rather than opportunity incomes, especially of the faculty. The use of market opportunity costs yields more meaningful results. Thus, cost differences (say, between the department of philosophy and the department of molecular biology) may reflect not relative inefficiencies but differences in opportunity costs.

It bears noting, moreover, that cost estimates are useful indices of efficiency only in a comparative sense. Such calculations may serve as a basis for comparing the University or any of its units with similar institutions in the community. In this regard, the University is at a distinct disadvantage considering that there is hardly any other comparable institution in the country (as compared with, say, Chicago vis-à-vis Harvard or Stanford). Alternatively, these costs estimates may be used for temporal comparisons to determine the extent of improvement or deterioration of the same institution over a period of time.

Finally, while comparative cost figures are potentially useful, caution must be exercised in using these as the basis for resource allocation. To begin with, cost figures that are readily available are expressed either in totals or on a per-unit-of-output basis. These are not appropriate for decisions to change the levels of activities. For such decisions, **incremental** costs are relevant. It follows that in deciding whether or not to implement a project, or to allocate resources to a project instead of another, changes in cost are the appropriate basis, or, more precisely, the ratio of the change in cost to the corresponding change in benefit.

Table 1 shows estimates of cost per student in the various units of the University in AY 1993-94. It is interesting to note the extremely wide variations in these estimates, even among more or less comparable units (e.g. Business Administration and Public Administration). Some units, notably, Islamic Studies and the Asian Center, exhibit extremely high per-student costs due to very low enrolments.

The **variable** component of per unit cost, if assumed constant over wide ranges of output, is a reasonable approximation of **marginal** cost, hence, a good basis for estimating the incremental costs associated with a proposed change in the level of activity.

As an instrument for self-evaluation, comparative input-output ratios and cost data of one or two universities in a socioeconomic milieu similar to ours (for example: the University of Malaysia, Thammasat University, or the University

Table 1. Estimated Cost per Student University of the Philippines System, 1993-94

College / Unit	*1994 College Budgets (000 pesos)*	*Weighted Full-Time Equivalent Students (WFTES) 1993-94*	*Rounded Cost per WFTES per Year 1993*
UP Diliman			
Architecture	3,348	360	24,000
Arts and Letters	23,924	2,675	23,400
Asian Center	4,891	108	53,100
Baguio	12,432	1,332	23,600
Business Administration	10,205	1,012	24,500
Economics	7,613	527	24,800
Education	10,327	936	25,000
Engineering	18,415	1,430	27,100
Fine Arts	4,347	343	26,000
Home Economics	9,909	843	25,900
Human Kinetics	5,885	799	22,000
Islamic Studies	1,489	21	89,200
Labor and Industrial Relations	2,996	240	25,300
Law	6,115	682	23,700
Library Science	1,126	101	25,900
Mass Communication	6,357	578	25,500
Music	6,112	353	32,000
Olongapo	128	75	16,400
Public Administration	6,311	451	27,000
San Fernando	3,407	723	19,400
Science	42,804	4,306	23,200
Social Science and Philosophy	26,925	3,104	22,700
Social Work and Community Development	5,315	317	31,300
Statistical Center	3,124	327	24,200
Tourism	3,044		26,200
UP Integrated School	13,755	1,931	14,600
Urban and Regional Planning	4,119	140	44,100
UP Los Banos			
UP Los Baños			
Agriculture	30,740	1,551	35,800
Arts and Sciences	26,817	4,891	25,500

Economics and Management	7,525	225	46,800
Engineering and Agricultural Technology	6,193	571	29,000
Forestry	11,495	486	41,700
Human Ecology	4,434	141	46,000
LB-Rural High			
Other Units with Faculty			
Veterinary Medicine	7,798	332	42,300
UP Manila			
Allied Medical Profession	2,503	429	37,600
Arts and Sciences	14,917	2,477	19,100
Dentistry	5,281	656	40,400
Health Science	4,477	100	44,770
Medicine	28,645	939	59,800
National Teacher Training Center			
Nursing	4,483	462	42,000
Pharmacy	3,558	262	45,400
Public Health	12,132	2,068	17,400
UP Visayas			
Arts and Sciences	13,499	2,029	18,000
Cebu	11,289	1,277	20,900
Cebu-High School			
Fisheries	15,661	148	96,100
Iloilo-High School			
Management	3,378	802	16,400
Tacloban	8,446	1,175	19,300
Technology	1,129	30	49,800
TOTAL/AVERAGES	**468,823**	**44,765**	**25,400**

Remarks:

These are excerpts from a preliminary study on cost per student. Results above are still tentative. Included are cash costs (including salaries) paid from college budgets and support units (i.e. including administration). Only the costs of teaching and services to students are included. Excluded are costs for research, patient care and extension. These cost figures above include only operating expenditures (PS + MOOE). Excluded are capital costs (buildings and equipment) and depreciation. In 1994, the total UPS budget (including PGH) was ₱ 2,290M. Our tabulations show that ₱1,142M (50.3%) of this is due to teaching.

The writer wishes to express his thanks to Prof. Honesto G. Nuqui who provided the data contained in this table.

of Indonesia), and for at least one university in an advanced setting (say, Kansas State University) may be developed from time to time. The University may then compare itself with these reference organizations in terms of these indices at intervals of, say, five years to determine its relative progress over extended periods of time. Some kind of collaborative effort with these institutions will of course be required.

Enhancing the University's Effectiveness and Efficiency

In an earlier section, we developed a simple framework for determining the optimal levels or mix of the University's activities. Using this method as our frame of reference, let us now consider a number of alternatives to enhance the University's effectiveness and efficiency. Basically, our objective is to push the budget line MN (see Figure 3) in a north-easterly direction by reducing the sizes of the coefficients c_q and c_a in the budget constraint (see inequality 2). While feasible, the proposed measures are by no means easy, and will require a good deal of grit, determination and will power on the part of the University constituency. The following courses of action can and should be explored:

- Getting rid of programs that have ceased to be relevant, those in which UP obviously has no competence, and those which overlap with others.
- Develop innovative multidisciplinary programs that enable the University to address pressing national issues, **and at the same time** optimally combining skills and resources. The alternative track of discipline-based program can be maintained on a more limited scale to develop badly needed teaching and research capabilities.
- Redesign courses and programs for more efficient use of faculty and other resources. This can be achieved, for example, by building learning materials around problem areas rather than specific topics, and by the logical sequencing of clusters of related subjects.
- Adopt innovative and more effective pedagogies and classroom technologies, for example, through the use of now accessible multi-media technology.

Perhaps even more challenging—some would say impossible—are long overdue administrative reforms. There is an obvious need, for example, to streamline the ridiculously cumbersome decisionmaking process in the UP System. The number of layers of administration should be reduced, and the authority to make decisions be given **to the lowest level where the relevant competence resides.**

Finally, what is perhaps needed the most is a complete restructuring of the entire UP System. We propose the adoption of a matrix design in which the UP System will be more responsible for **system-wide** resource development and utilization, including faculty development, and the autonomous units and the Open University take charge of the delivery system.

In Figure 4, the columns represent the various system-wide departments, which are grouped into colleges, which in turn are clustered into centers (i.e. one for Management Sciences, one for Medical Sciences, one for Earth Sciences, etc.). These units will be responsible for developing resources, especially faculty resources, and expanding the knowledge base of the various disciplines.

Figure 4. A Proposed Matrix Organization Design for the University of the Philippines System

			Academic Units							
			Center				*Center*			
			College		*College*		*College*		*College*	
			Dept.	*Dept.*	*Dept.*	*Dept.*	*Dept.*	*Dept.*	*Dept.*	*Dept.*
Open U	Institute	Program								
		Program								
	Institute	Program								
		Program								
Auto-nomous Unit	Institute	Program								
		Program								
	Institute	Program								
		Program								

The rows represent the various institutes—the term departments, centers, institutes, programs, etc. should be used consistently—which fall under the Open University and the various Autonomous Units. They will be responsible for implementing the entire range of academic programs of the System and for delivering services to the community.

This proposed organizational design is somewhat akin to the structure of the Philippine military. The Armed Forces of the Philippines (AFP) consists of three major branches of service, namely, the Army, the Air Force, and the Navy. The country, in turn, is divided into a number of military commands (for example, the Western Command) each consisting of elements from the three branches of service, and configured in such a way as to best meet the military requirements of the area.

For obvious reasons, we do not expect each military command to maintain its own separate navy or air force. For essentially the same reasons, it makes little sense to allow the various regional units of the UP System to set up their own academic departments. Seldom do these departments achieve critical mass. And even where the numbers are there, more often than not, their quality has much to be desired. By consolidating the regional academic departments into a single organic unit, uniform academic standards throughout the system is assured, and maximum effectiveness in recruitment and staff development is achieved. Moreover, teaching and research responsibilities can be optimally allocated within the entire system.

Even in the rare cases where an academic spin-off has attained respectable strength on its own (for example, Computer Science at UP Los Baños), much greater strength can be achieved through consolidation. It really does not matter where the emergent unit will be based, as long as it functions as an organic whole.

We feel that this division of work will simplify the decisionmaking process, and will greatly enhance the overall efficiency and effectiveness of the System. Resistance will be strong, especially from those who will feel "disenfranchised," but we are hopeful that an appropriate change strategy can be formulated. The stakes are just too great to ignore.

Assessing the University's Resources

The effectiveness of any organization in attaining its objectives depends in large measure on the amounts and types of resources that are available to it. Knowledge about the quantity and quality of the human and physical resources of the university would enable us to predict the types and amounts of outputs that it can turn out. Appropriate measures of the quantity and quality of these inputs can therefore be regarded as valid proxies for the assessment of the University's performance. It must be emphasized, however, that these measures give an indication only of **potential** output, which may very well differ substantially from **actual** output.

For our present purposes, it is sufficient to classify the University's resources into three major categories: faculty, administrative/technical personnel and physical facilities.

The strength of the University, as well as that of any of its departments, is most frequently measured by the strength of its faculty. The potency of the faculty, in turn, is best measured by its size and its composition, especially in terms of proportions with varying levels of educational attainment. Thus, the strength of the faculty can be measured as a **weighted** sum of its entire

membership, the weights being based on the highest degree obtained. Symbolically,

$$S = \sum_{i=1}^{n} w_i$$

where S = a measure of the strength of the faculty, and w_i= the weight given to the *i*th member of the faculty (w = say, 1, 2, 4 for one with a bachelor's, master's and doctoral degree, respectively). Some would prefer to use an average faculty quality index (Tan 1971) (i.e. s/n), but such measures are deficient in that they ignore numbers.

Table 2 shows the distribution of the U.P. faculty among its departments and units broken down by the highest degree held.

Realizing that the capability of a faculty member is frequently established by the volume of his published work, perhaps another possible measure of the quality of the faculty is the per capita rate of publication in learned journals per unit time.

Similar measures can be developed for administrative and technical personnel based on, say, number of years in formal training and length of service.

The measurement of the quantity and quality of physical facilities is a bit more difficult due to the fact that these resources are of infinite variety and cannot be neatly classified into a manageable number of categories. Perhaps as a first approximation, the following measures are sufficient:

buildings	- square meters of floor space
office and plant equipment	- estimated market value
library	- number of volumes in the collection
laboratory equipment	- replacement value
sports and other facilities	- replacement or market value, whichever is more appropriate

It is worth noting that measures of the value of physical resources (which are stocks), like estimates of cost (flows) are best regarded as **relative** measures, that is, they are appropriate for making spatial or temporal comparisons. Thus, these measures can be used by the University in comparing itself with similar institutions, or in measuring its progress over extended periods of time.

Table 2. Faculty Profile of the Different Units of the University of the Philippines System, AY 1996-97

College	*College Level*	*Cert. / Diploma*	*AB/BS*	*MA/MS*	*Ph.D.*	*LlB*	*DVM*	*MD*	*TOTAL*
UP Diliman									
Asian Center			1	9	10				20
Asian Institute of Tourism			3	7	1	2			13
College of Architecture			3	15	4				22
College of Arts and Letters			62	94	44				200
College of Business Administration			12	21	11	3			47
College of Education				12	33			1	46
College of Engineering			57	53	25				135
College of Fine Arts			18	7	2				27
College of Home Economics		1	21	29	12				63
College of Human Kinetics	1		10	15	1			1	28
College of Law				10	3	10			23
College of Music	1		14	19	4				38
College of Mass Communication			8	15	6	1			30
College of Public Administration				14	10				24
College of Science		1	97	67	119				284
College of Social Sciences and Philosophy			36	85	65	1			187
College of Social Work & Community Development			1	20	10				31
Institute of Islamic Studies				3	2	1			6
Institute of Library Science			1	5	2				8
Statistical Center			10	7	6				23
School of Economics				4	24				28
School of Labor and Industrial Relations				4	7				11
School of Urban & Regional Planning				10	9				19
UP College Baguio		1	35	56	18	1			111
UP Extension Program in San Fernando			6	10	2				18
UP Integrated School			37	59	14				110
Subtotal	2	3	432	650	444	19	0	2	1,552
UP Los Baños									
I. Colleges									
College of Agriculture			37	49	147				233
College of Arts and Sciences			88	121	93	2			304
College of Engineering & Agro-Industrial Technology			18	17	20				55
College of Economics and Management			6	37	33				76
College of Forestry			3	20	33				56
College of Human Ecology			3	18	10				31
College of Veterinary Medicine				13	7		19		39

Table 2. (continuation)

College	*College Level*	*Cert./ Diploma*	*AB/BS*	*MA/MS*	*Ph.D.*	*LlB*	*DVM*	*MD*	*TOTAL*
II. Independent Units									
Nat'l. Inst. of Molecular Biology and Biotech				1	12				13
Center for Policy and Dev't. Studies					3				3
Office of Student Affairs				1	1				2
Subtotal	0	0	155	277	359	2	19	0	812
UP Manila									
College of Allied Med. Professions			14	7					21
College of Arts and Sciences			52	53	12				117
College of Dentistry				4				25	29
College of Medicine			1	17	11			251	280
College of Nursing			5	13	5				23
College of Pharmacy			15	8	2				25
College of Public Health				31	11			11	53
National Teachers' Training Center				4	1			1	6
School of Health Sciences			4	14					18
Subtotal	0	0	91	151	42	0	0	288	572
UP Visayas									
College of Arts and Sciences			72	77	25				174
College of Fisheries			3	16	22				41
College of Management			13	25	4				42
School of Technology			5	3	3				11
UP Cebu College			52	34	11				97
UP Tacloban College			23	35	7				65
Subtotal	0	0	168	190	72	0	0	0	430
UP Mindanao									
School of Management					4				4
College of Science & Mathematics			4	5	6				15
College of Humanities & Soc. Sci.			4	8	3				15
Subtotal	0	0	8	13	13	0	0	0	34
Grand Total	**2**	**3**	**854**	**1,281**	**930**	**21**	**19**	**290**	**3,400**

A special type of input that does not easily fall into any of the three major categories of resources is the incoming students, the very "raw material" which the University processes into "finished products." This input, too, has both quantitative and qualitative dimensions. The quantity and quality of graduates that leave the University depend to a great extent on the quantity and quality of the students accepted in the first place. A valid measure of performance of the University in terms of the number and types of its graduates should take this into consideration. In this regard, a measure akin to the economist's notion of "value added" could be helpful (Keller 1970).

As suggested earlier with regard to resource use relative to output, data on the quantity and quality of the various types of human and material inputs may be developed periodically for the purpose of comparing the University with similar institutions elsewhere.

Concluding Note

The various criteria for measuring performance discussed in the preceding sections are applicable at all organizational systems levels: the University as a whole; its major sub-units (i.e. colleges, schools, institutes and university departments); and the academic and non-academic departments of the various units of the University. The assessment of the University's overall actual and potential performance serves as the basis for determining the amount of resources that society should allot to it. When applied to the major units of the University, these performance indices, in both the *ex ante* and *ex post* senses, may be regarded as appropriate bases for the allocation of resources within the University. Similarly, the allocation of resources among the various departments, programs and projects of each unit of the University may be based partly on these measures of effectiveness.

We have stressed the importance of measurable output rather than the ultimate objectives as the relevant criteria in assessing the performance of the University. We realize, of course, that the University must periodically determine whether or not its output mix remains to be consistent with its goals. The University must from time to time, attempt to gauge the impact of its current output of graduates, research findings, and extension services on the relevant facets of our national life, and to alter, if necessary, the nature and composition of its products to make them more conducive to the attainment of its goals. Corollarily, the University's goals should not be perceived as constant over extended periods of time. The University's set of objectives should be reviewed continually to reflect society's changing needs, to which the University must remain alert. This obviously requires a futuristic time orientation.

Endnotes

[1]The Committee listed the following "goals and aspirations" of the nation and hence, of the University:

1. National, social and individual freedom;
2. Development of the Filipino nation in all aspects, including intellectual, social, economic, cultural and political;
3. Justice;
4. Abolition of all institutionalized inequalities;
5. Free and friendly relations with all nations;
6. Attainment of position of high standing in regional and world relationships; and
7. Mutual cooperation with and help to strengthen other educational institutions.

[2]It must be stressed, however, that all these activities are interrelated and interdependent.

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