

INTERACTIONS AMONG COMPONENTS OF A UNIVERSITY SYSTEM

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Abstract. *In general, terms like competitiveness and performance are found together when we want to evaluate the competitiveness of a university in the academic system or when we want to rank the performance of the faculty members in the academic world or their competitiveness inside their institution. As such, we are interested both in the performance of the institution, as well as in the performance of its human components, the students or the faculty members, with the well defined goal of improving, when it is necessary, the low performances in order to increase se competitiveness at the general level.*

Keywords: performance, competitiveness, management.

1. Introduction

Competitiveness and performance are two concepts long discussed by the economists, and in general ignored up until recently. Krugman (1994) said that competitiveness is a „dangerous obsession” in a description of the Clinton administration implication in industrial politics, „the obsession with competitiveness is not only wrong but dangerous, skewing domestic policies and threatening the international economic system”, and Michael Porter, professor at Harvard University underlined the competitiveness advantages in the growth of companies performances, and of the economy in general Porter (1990).

In this moment the global competitiveness it is observed in almost all the countries in the world, at the level of society, industry, organizations. In the United States, it was created in 1986, a Council of Competitiveness, a unique group, formed from CEO's, universities presidents, industrial leaders, with an unique purpose of enhancing the competitiveness of the United States in the global economy (www.compete.org).

Performance, both at the individual or group level is harder to define; each individual understands differently this concept. What is important is to try to standardize this concept, to find a modality of measuring and analyzing the performance. These measures of performance have to be used to evaluate and improve the individual or institutional efficiency. The results obtained by these measures and the analysis performed will offer the necessary feedback for improving the performance and the competitiveness in general.

In this paper we will focus on analyzing the performance and competitiveness in the academic environment, at the level of students, teachers and infrastructure and finding a way of managing all these resources and their interdependencies. Figure 1 presents the interdependencies competitiveness-performance in the academic system, with emphasis on Louisiana. We will try to answer the question that in our opinion should be asked by each of us: „Which is the most important component/resource in a university?”

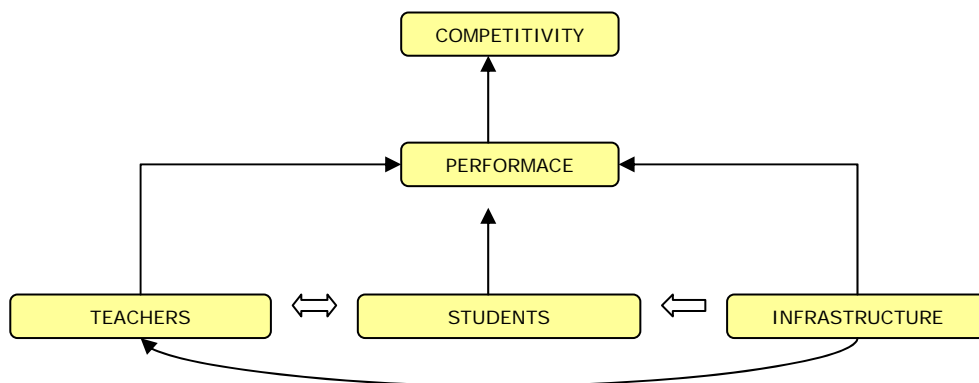


Figure 1. Interactions among the systems components

2. Student component

Before discussing about performance and measuring individual or institutional performance we have to establish what is the purpose/goal of the activity that we want to measure, to describe the factors that influence the performance, what will be the results of the measured action, to clearly define the criteria of evaluation, to use the same measurement unit and to create a homogeneous frame when we perform the measurements. We have to determine a rank for each institution in order to determine the competitiveness for each case. As we mentioned in Figure 1, the student’s performance is one of the principal components when discussing the university performance and when we want to determine the general competitiveness of a university. As we focused on Louisiana system, we describe in Figure 2 the factors that determine the performance.

To quantify the student’s performance we need well trained students, students with good performances at the preuniversity tests: the Math ACT, GRE, TOEFL, SAT. This is the initial condition if one wants, followed by a good infrastructure of the university (especially equipment), well trained teachers, who can offer the students courses well prepared and explained. What is important is how we determine the performance of these students, how competitive are they inside and outside the university.

In the literature we find several examples of measuring student performance, Bodmann (2004) proposes an evaluation based on an online examination of all students and compare this examination with the written one, however no significant differences were obtained among these methods. From our point of view, not the examination method should be considered as being the important factor when describing the performance, but the teaching method used. Carpenter (2007), presents a study performed on the second year students, enrolled in the Calculus class at Louisiana Tech University. The performed analysis suggests that unlike the traditional teaching methods, new approaches like ALEKS (a web-based, artificially intelligent assessment and learning system that uses adaptive questioning to quickly and accurately determine exactly what a student knows and doesn't know in a course), WeBWorK (an internet-based system for generating and delivering homework problems to students, that increases the effectiveness of traditional homework as a learning tool), the academic package Blackboard (a system that allows the teachers to adopt new teaching technologies, active instruments of learning for students, an intelligent way of collaborating among and inside universities) are only a few of these solutions that lead to the increase of students performance.

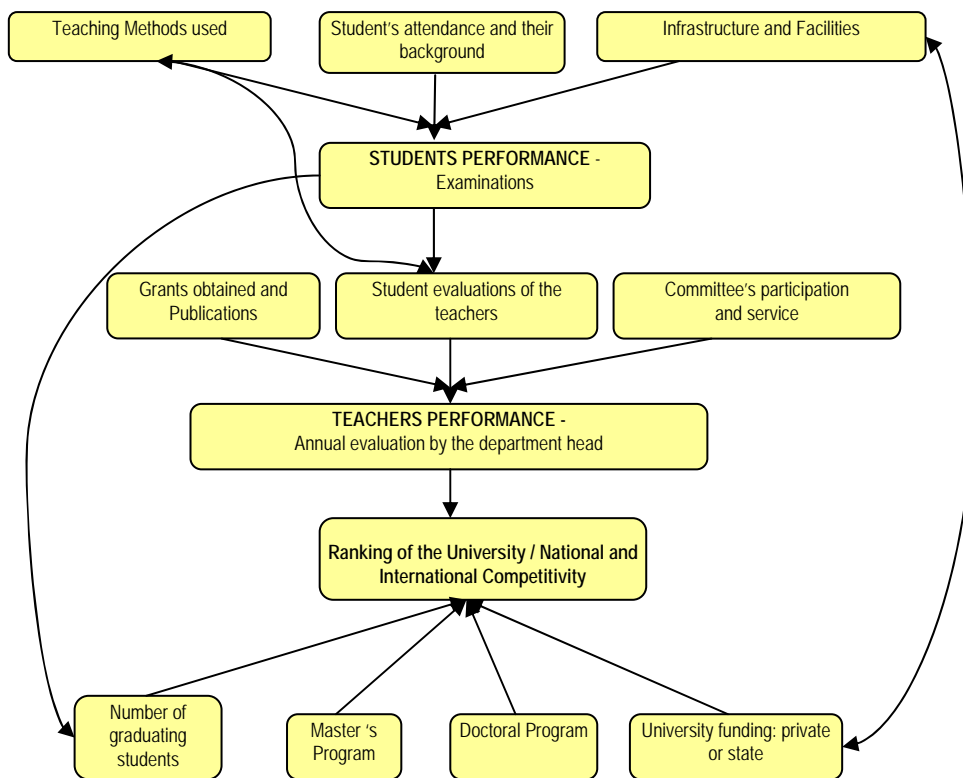


Figure 2. Factors and Interactions in a university

It is still under consideration how we can use in the most efficient manner this information, to determine as correctly as possible the students performances. To obtain a homogeneous system inside the same university, sane course notes and handbooks will be used for teachers that teach the same course in parallel. Although the teaching methods and the examinations are different from teacher to teacher, the same topics will be covered. After we decide the components of interest in the analysis of performance and collect the data, we need to define the measure that we want to use in the analysis, the manner in which feedback is offered to the students and how can the performance can be improved without violating the confidentiality rules. We have to keep in mind that, in United States, for example, the students are protected by FERPA (Family Educational Rights and Privacy Act), act that restricts the teachers liberty of discussing openly the performance and competitiveness of the students. Because of such acts, a method of analysis that does not permit the identification of the students or of the data needs to be used.

3. Teacher components

The performance at the level of teacher is a little more complicated to evaluate, in this evaluation more factors having to be taken into consideration, as we observe in Figure 2. The first factor in this evaluation is the performance as an instructor. The American academic system offers a solution for determining the performance in this direction, this solution being given by the student evaluations. Two weeks before the end of a course, each student has to complete a questionnaire in an anonymous manner. The analysis of these questionnaires is centralized at the university level and after the end of each course the teacher received the results and sometimes even comments from the students. This type of evaluation has a double scope, on one hand as an instrument of measuring the teacher's performance and on the other to give the teacher the necessary feedback and to help the teacher to improve his/her skills. Each university decides their set of inputs necessary for evaluating the teacher's performance. In what follows we will present the evaluation questionnaire at Louisiana Tech University:

1. Type of the course
A. Required B. Optional
2. Indicate the level of your GPA:
A. 3.5-4 B. 3-3.4 C. 2.5 -2.9 D. <2.5 E. Freshman
3. Did the instructor present the requirements of the course at the beginning of the semester?
A. Yes B. No
4. Was the method of calculation for the final grade defined and followed?
A. Yes B. No

5. Is the instructor available for consulting? Did he/she make available the time for consulting?

A. Yes

B. No

C. I don't know

Use A, B, C, D or E to answer each of the following questions:

A- almost all the time

B – in general

C - sometime

D – never

E – not applicable

6. Are the exams prepared according to the content of the lectures?

A B C D E

7. Is the material presented in an organized and clear manner.

A B C D E

8. The teacher explains expressively and uses diverse tonalities of voice.

A B C D E

9. The teacher stimulates the interest of the students for the topics studied.

A B C D E

10. The teacher explains the hard topics using examples easy to understand by the students.

A B C D E

11. Teacher seems interested that students learn the material.

A B C D E

12. Teacher is willing to answer questions in class

A B C D E

13. I gained a greater understanding of the topics by participating in this class.

A B C D E

14. Teacher fulfilled the goal set at the beginning of the class.

A B C D E

15. Therefore, I rank this teacher as being an excellent teacher.

A B C D E

It is widely accepted that whenever we are conducting an interview for an available position, in both systems considered, we are looking for „good candidates”. What does is actually means? We are looking for good teachers, good researchers, individuals that can participate and give their input in creating new policies, mentoring students, etc. I will emphasize first the American system and talk at large about it. When hiring a new faculty member, there are a few „conditions” that are likely to be considered. For instance, the new institution will look for the background of the candidate, the place the candidate obtained the degree, the activity the candidate had during the time he/she pursued, both as a researcher and as a teacher. This information

is considered to be a good prediction of the individual performance in the years following the hiring. This is, if we want, the initial condition for this component. Of course, we assume that we only consider candidates that match the interests of the institution under discussion. The American system differentiates the candidates in „research oriented” candidates and „teaching oriented” candidates.

A research oriented candidate is a candidate that has primarily research as the scope of his work, whereas a teaching oriented candidate has teaching as a primary scope. The management of time for both these subgroups is illustrated in the pie charts below 50-30-20 for research oriented and 20-60-20 for teaching oriented, as we can see in Figure 3.

This separation among teachers is very important, research and teaching, although strongly correlated (you can't be a very good researcher if you are not a teacher at all, and you can't be a very good teacher if you are not at all a researcher) have to be split into two different categories. A researcher needs to focus and dedicate most of his/her time to research and also needs to be able to disseminate/teach his students about the research.

An American system has three levels for the research employee: Assistant Professor, Associate Professor and Full Professor and two or three categories for the teaching employees: Course Assistant, Instructor and Lecturer. Having in mind the performance and good management of intellectual resources, there are very precise rules for these categories. For example a teaching oriented faculty will only teach first or second year courses in the bachelor program and very rarely a Lecturer can teach a third year level courses.

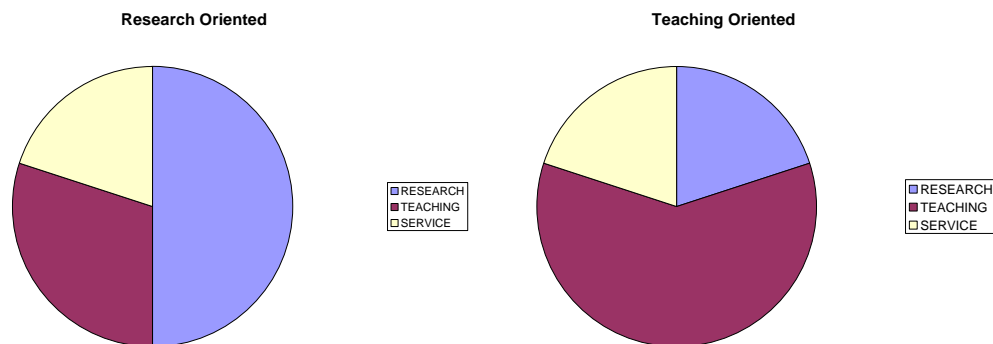


Figure 3. Faculty member's time management

A research oriented faculty can, in theory, teach any level of classes, but having in mind the performance and good resource allocation of resources will teach higher level courses in the undergraduate program and focus more on graduate level courses.

Contrary to the Romanian system a research oriented employee has the right to supervise graduate students, both of the level of Master and PhD level, even as an Assistant Professor, which is the lowest level in the research oriented faculty. However, the general rule is that a research faculty can supervise a PhD student only after successfully supervising a Master student. One may think that is a little premature to have a faculty member, so soon after obtaining their own degree, supervising a PhD student. We consider this to be in fact, a great benefit for the faculty member, as well as for the student. Being able to work with a student in such an early stage of his/her career helps the faculty member grow more rapidly as a researcher, enables him/her to produce results faster, to become visible in the research community as an independent researcher (not dependent of his/her former supervisor or of an already established group) and being able to compete and secure research grants that will continue to offer the environment for developing research and producing results. Let's keep in mind that we discuss an individual that is at the beginning of his/her career, highly motivated and driven to success. This individual needs to produce quantifiable, qualitative and quantitative results in order to obtain the promotion to the next level. Think about this young faculty member as you would think about a baby bird that learns to fly. The adults are around and will not let them fall (the older research members are always there to mentor them), but they have to learn how to fly alone.

The American system has a very well defined algorithm of measuring performance. Every year the researcher has to produce a report of his/her activities that have to cover the three categories described above: research, teaching and service. The performance in the research category is „graded” based on the number of the publications and quality of journals and conferences, the number of grants and amount of funds secured, as well as on the number of graduate students supervised. The teaching performance of the faculty member is „graded” based on the student evaluations (at the end of each course, the students enrolled into the class will anonymously fill in a survey about the quality of teaching, preparedness if the instructor, examinations), the level of the taught course, number of students enrolled in the class and if the course was newly created or previously taught.

The service component looks at how involved was the faculty member into the administrative matters at the level of department, faculty, university, his/her contribution. Most American universities have a number scale 1:3 or a qualifying scale and each member of the university will be ranked annually.

3. Infrastructure component

The infrastructure component, although is mentioned last, it is not the least important. This component greatly influences the previous two components and helps build the overall performance of the institution. For example, we can have excellent students and researchers, with excellent research ideas. If there is no equipment

necessary to carry on the proposed research, there will be no results, no application, and no dissemination.

Each member of the academic environment is, more or less, as we already explained channeled on one or two directions. And we should accept that there is no individual that can do everything. Let's look at the following aspect. In an American system if a faculty member receives a grant, his/her concern is how to carry on the proposed research and to use the funds in the proposed manner. The paper work, auctioning and actual ordering of the equipment needed is out of his/her scope of work. There is always a person that has these types of matters as their duties. We should also accept the fact that a researcher needs his/her own personal space of work, private space, not shared, Ohkubo (1990). However, based on Ferreira (2007) shared workspaces seem to improve the productivity, contrary to older theories that several individuals working in the same room are not as productive as an individual with its own individual space. Last, but not least the performances of the individuals are influenced by the health of the work environment, Lowe (2005) and the health of the individual in general. This component can be vastly discussed and we can conclude that with a poor infrastructure and environment component, the other two components cannot function properly.

In conclusion, we arrive to the conclusion that it is hard to conclude which is the most important component in an academic system, all three are important and interact with each other. The answer to our question can be answered differently depending on the individual, but in our opinion all these components are equally important and influence the others

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