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How a balance indicator system can help my organisation toward excellence: a case study in higher education

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Abstract

Nowadays, in education and in most of the sectors, there is no need to explain that performance measurement management is worthy. Nevertheless, that does not mean that our education system has implemented it as a whole. In the University Miguel Hernández, we have focussed it as a key part of our quality system.

The University Miguel Hernández was established in 1997 with the aim of offering society high quality teaching, research and services, which could fully satisfy the expectations of our customers. Our management is based in our Quality System, which has been designed, implemented, evaluated and revised. Our Quality Strategic Plan includes objectives in teaching, research and management according to our mission. We have planned activities to achieve our aims and apply different tools: process management, management by objectives, evaluation, indicators monitoring, quality cards; and we use EFQM Model as a framework model.

In this presentation we show the key factors of our performance measurement management as a part of our quality system. Firstly, we explain it as a tool integrated in our Strategic Quality Plan. Secondly, we describe its utilities: helpful for decisions making, tool for diagnosis, data for recognition system. Finally, we present the results in our key processes: teaching and research.

Key words: performance measurement, indicators, quality system, decision making, diagnosis, recognition system, process management.

Introduction

The University Miguel Hernández began its academic activity (teaching and research) in October 1997. Since then a complete system of quality management has been established to define objectives, monitor indicators and carry out actions for guaranteeing, evaluating and improving the quality of teaching, research and university administration.

The UMH's quality system has been designed, established, evaluated and revised to allow for the identification of areas for improvement and to highlight the strong points of the organization, which contribute to planning new activities. It has received external recognition, such as: the Seal of European Excellence (Gold Level) at the +500 level, awarded by the European Foundation for quality after the audit carried out by AENOR in 2004; three Certificates ISO 9001:2000 for students' work experience in companies, for Curriculum design and for Research Management. Besides these, other acknowledgements and awards have been made, such as: "Premio Mejores Practicas del Club, Gestión de Calidad" (Prize for the best practices from the Quality Management Club) in 2001; the award from the "Asociación Española de la Calidad" (the Spanish Association for Quality) in June 2002 for "a solid commitment to quality in education and for spreading the culture of quality throughout the Valencian Community"; recognition by the "Premio Ciudadanía del Observatorio para la Calidad de las Administraciones Públicas" (Citizenship Award for Quality in Public Administration) in 2000; Prize for Efficacy awarded by "Círculo de Economía" (the Economic Circle) in 2000; "Premio Cámara de Comercio de Alicante a la Formación Profesional" (Chamber of Commerce

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Award for Professional Training) and “Premio Emprendedora Universitaria” (Enterprising University Award), Special Award from the Council of Elche in recognition of the development of an inhabitable, charitable and enterprising city; more recently the Award for Excellence from the Valencian Foundation for Quality, or the NOVA prize for training and innovation awarded by “Instituto de la Mediana y Pequeña Industria Valenciana” (IMPIVA) (Valencian Institute for Medium and Small businesses).

Since the very beginning, the University Miguel Hernández has studied the need to implement a methodology for continuous improvement in order to achieve standards of quality which guarantee the fulfilment of its commitment to serving society and contributing to development and well-being. The Quality System at the UMH has a clear Quality Policy, approved in 1998 and revised in 2001, with a Quality Manual and a Manual for Designing the Key Processes of the organization. Actions in matters of quality management have been established in consecutive Strategic Plans for Quality (in 1999 and 2003 respectively). The Strategic Quality Plan works in the area of teaching research and service administration. It includes objectives, actions, indicators and incentive systems for quality.

The indicator system is, therefore, one of the fundamental parts of the system, included in the Strategic Plan. As such, it is derived from the UMH’s mission, which is, “to serve society by offering, quality teaching, research and services, which satisfy expectations and at the same time allow members of the university community to develop professionally so that all students achieve a complete education and integration in the working world.”

Strategic Quality Plan

The University Miguel Hernández, has had a Strategic Quality Plan since 1999, the year the first Strategic Quality Plan was introduced as a pilot program. This Plan was finally established the following year, 2000, and was in force until 2003, until it was substituted by our Strategic Quality Plan II. The areas of action for this Plan are teaching, research and administration, and as with every Quality Plan it has a focus point (quality management system, work plan and strategic objectives), deployment (actions, indicator systems, incentive plans) and evaluation and revision of the plan.

The results of this PESCA I¹ 2000-2003 were positive, with an improvement in the quality of the different areas (Teaching, R+D, and Administration). This guaranteed the conditions for UMH’s participation in the Finance System linked to the Quality Objectives of the “Consellería de Empresa, Universidad y Ciencia” (Valencian Council for Business, University and Science). It also helped to introduce the philosophy of Total Quality in the UMH, emphasizing the need to count on the different perspectives of the different groups of interest (students and their families, employers, teachers, researchers, administration and service staff, managers of the educational system, etc).

Towards the end of 2003, the PESCA II² was introduced. This document was drawn up from the experience with PESCA I and with contributions by different groups within the UMH. This Strategic Quality Plan 2004-2007 came into force this year (2004) and its main objective is to consolidate the excellent results achieved in the areas of teaching, research and administration, without forgetting the need to respond to the new challenges which arise in the university.

The principles of PESCA II can be summed up in: client orientation for processes and procedure; implication of all people who form part of the university community; decision making for the improvement of quality based on indicators, process management as an improvement strategy; decisive implementation of quality evaluation systems and improvement systems.

The PESCA II has been designed following the outline of all quality systems: Plan, Do, Check and Act:

¹ Strategic Quality Plan I

² Strategic Quality Plan II

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- Plan: presents the UMH's Quality Management System, and sets objectives and standards in the areas of Teaching, Research and Development and Management.
- Do: presents the different actions planned for implementation during the period of four years that the PESCA II lasts. The Quality indicator System is found in this section. This indicator system is linked to the Incentives Plan for Quality Teaching and Research, through its strategies to "Reward the best" and "Agreement for Quality". In the area of Administration there is an incentive Plan for Quality in Administration and Service Units, which is developed in the II Director Plan for Quality Administration.
- Check and Act: establishes the methodology through which the different sections of the PESCA II (objectives, standards, indicators, actions,..) will be evaluated and revised annually.

The whole of the university community has been involved in the process of defining the PESCA II, incorporating matters which were proposed by the different areas.

Indicator System

The indicator system permits the measurement of the results obtained in the different areas of the University. The information compiled is a key source of information for the factual approach to decision making in the different organs of the University, as much on a global level of the UMH as on the level of Departments and Faculties.

The indicator system has evolved over a period of time. In order to draw up the first list of indicators different sources of information were considered: lists of indicators from the Spanish University Council; from Education Programs from the Ministry of Education and Science; from the indicator system of the Valencian Universities; from the Valencian Council of Business, University and Science.

This list of indicators has been evaluated and revised annually. Once the indicators have been calculated, the Quality Committee evaluates them annually in the light of different sources: suggestions received from the university community, ANECA (National Agency of Quality Evaluation and Accreditation) indicators; changes in the indicators from the Indicator System from the Valencian Universities. As a result of this evaluation, some indicators have been modified, others have been omitted and new ones have been added.

In PESCA II, 96 different indicators are used. Each indicator can be grouped under three different criteria (examples of indicators in brackets):

- Type of indicator: Structure ("Percentage of Phd teachers out of the total number of teachers"), Process ("Percentage of subjects with programs available on the website at the start of the academic year out of the total number of subjects") and Result ("Percentage of graduates with job placements").
- Area: Teaching ("Percentage of credits passed out of the credits of students examined"), Research and Development ("Number of current contracts or agreements divided by the number of full-time teachers") and Administration ("Suppliers' satisfaction with university).
- Unit: Departments, Research Institutes and Centres, Courses, University.

The following table shows the number of indicators for each type of unit and area. Some indicators are used for more than one unit (for example, for Department and Course in the area of Teaching).

Unit	Type	Area		
		Teaching	R+D	Admin
Department	Structure		2	

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	Process	8	1	
	Result	4	10	
Research Institute or Centre	Structure		1	
	Process		1	
	Result		10	
Course	Structure	1		
	Process	7		
	Result	11		
Universidad	Structure	3	3	1
	Process	7	1	1
	Result	18	9	4

Usefulness of indicator system

The main use of the Indicator System is the support it offers for decision making, helping to approach to the Management by Facts. On the one hand, on a global level at the University Miguel Hernández, the Quality Committee has access to all the results, from which actions are established which permit the improvement of the results (for example, through the Annual Improvement Plan or through actions included in PESCA II).

On the other hand, the indicators are organized through scorecards for each of the levels of the organization. Therefore, the Deans of Centres have access to a scorecard with the indicators that affect each of the courses of their centre, with the evolution per academic year and Directors of Teaching Departments and Research Institutes have the indicators of their unit. Also, each of the Vice Chancellor is provided with a scorecard with those indicators which directly affect them and which they are responsible for.

Other uses of the Indicator System is that it can be used for reverting part of the income the University receives from the Indicator System of the Valencian Universities, to those units which participate more actively in order to achieve good results for the University. A section is included within the Strategic Quality Plan which is called "Special Incentive Plan for Quality Teaching and Research", where two strategies are included which are linked to extra financing of Units (Courses, Departments and Research Centres). These two strategies are:

- "Rewarding the best": the aim is to reward those units who make a greater contribution towards achieving better results for the University. Broadly speaking, the units are compared and grouped into three categories (A, B and C) according to the level of comparative accomplishment. The incentives assigned are different for each category.
- "Agreement for Quality": in this case, the aim is to promote continuous improvement in the units through comparison of the results of one unit with results of previous academic years. Each academic year, those units interested sign an agreement which is between the unit and the Rector. This pact is a commitment to obtain certain results in their indicators, and improvement of the results obtained previously. Once the year is over, the average accomplishment is calculated and incentives are assigned according to this accomplishment.

Another use that could be mentioned is the implications that the results obtained have on obtaining financial incentives from the University. For example, every year the University Miguel Hernández offers "Financial incentives for Centres and Courses for the Improvement of Teaching". The Courses in order to apply must fulfil minimum requirements in some basic indicators. There are also implications on an individual level in other types of incentive: (Incentives for the publication of research articles/studies and funds for travel for improving teaching quality, spreading research and for advances in administration); where teachers apply for incentives they should have passed certain basic indicators in the subjects they teach.

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Management of the Indicator System

An indicator system such as the one established in the University Miguel Hernández means there is a need to deal with a huge amount of data. For example, the indicator "Percentage of qualification certificates filled by teachers handed in the established dates" requires two pieces of information to be calculated: "Number of qualification certificates filled by teachers handed in on the established dates" and "Total number of subjects". As this indicator is used for Departments, Courses and University, these two pieces of information should be compiled for each one of the 20 Departments, for each of the 33 Courses and on a global level of the University. If we add to this that it is necessary to save historical data, the result is that for each new academic year 108 pieces of information are stored in order to calculate this indicator. That is to say, in the present academic year (6 academic years of calculating the indicator) we have 648 pieces of information stored in order to calculate only one indicator.

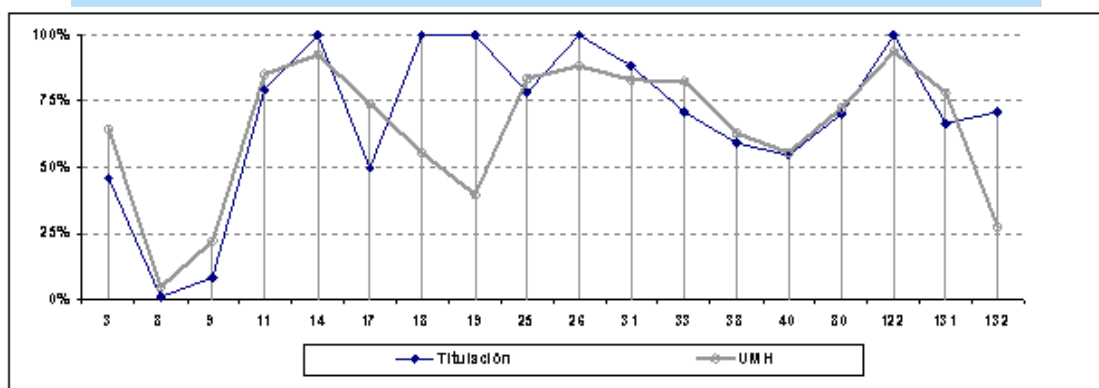
Another aspect to be considered, is that one piece of information can be used for more than one indicator. For example, the piece of information "Total number of subjects" besides being for the abovementioned indicator, it is also used for other indicators (for example, for "Percentage of subjects that facilitate content, practicals or material through the website of the University")

At the University Miguel Hernández, Elche the management of this data is carried out through applications developed especially for this mission at the Office for Management and Control of Quality, with the collaboration of other Services and Offices, especially the TI Department. These applications use the data base application Access and perform in an interrelated way as modules. The main uses of the applications are:

- Management of Indicators and data: who supplies data, on what date is it supplied, what indicator is each piece of data used for, what unit is it used for,...
- Introduction of data: forms for introducing data at different levels and for different units.
- Calculation of indicators: calculation of the results of the indicators for each Course, Department,....
- Access to results via the web: different units have access to the results of indicators through the website.
- Rewarding the best: distribution of units in groups according to the results of the indicators and distribution of incentives assigned in this concept.
- Agreement for Quality: calculation of the results obtained by the Units who participate in this strategy and the assigned incentives.
- Reports: visualization and impression of all types of reports with the different aspects of the Indicator System.

The following shows some images of these applications:

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Results of the indicator system

The following shows some results of the II PESCA Indicator System Indicators in the area of Teaching

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	1999/00	2000/01	2001/02	2002/03	2004/05
Percentage of subjects with updated programs available on the web at the beginning of the course out of the total number of subjects	-	65%	73.5%	90,2%	91,9%
Percentage of credits passed by students who do assessments. Rate of success	79,5%	81,5	82	82,9	83,6
Work placement for graduates from the previous academic year	-	-	-	87,8	94,2
Relation between the number of students who do work experience and the number of students who could do it	19,6	22,7	38,1	39,8	40,6
Percentage of teachers satisfied with conditions for teaching	96	97	98	93	93
Percentage of students satisfied with teaching	76	85	85	87	92
Percentage of courses which european students can opt for at our university through the European Credit Transfer System	39	32,1	57,6	76	70,97
Number of "5 star" recognised students	-	-	-	181	154
Percentage of teachers who have received at least one credit for attending didactic techniques courses	-	16,7	19,7	34,6	25,55
Percentage of Courses with external quality evaluation for academic activity	-	32,1	39,3	92,9	92,9

Indicators in the area of Teaching

	1999/00	2000/01	2001/02	2002/03	2004/05
Annual incomes for projects or contracts/agreements for technological and artistic research and development per full time professor	20330	22527	25816	21435	26553
Annual number of months work-study students are contracted per full time professors	3,34	3,37	4,52	5,74	5,24
Annual amount invested in acquiring bibliography divided by the number of full time students.	-	55,1	62,3	94,3	106,84
Annual amount invested in acquiring bibliography per full time teacher (euros)	1214	1.068	1214	1914	2095
Doctorate thesis presented	50	47	57	71	53
Doctorate thesis presented in relation to full time professors	0,91	0,73	0,92	1,06	0,73

Since the implementation of the Strategic Quality Plan more than 1.2 million euros have been assigned in the concept of incentives. In the following table, the assigned incentives are shown for the different strategies of each academic year.

Strategy	Units	2000	2001	2002	2003	2004
Rewarding the best	Courses	25.771,40	34.789,63	47.213,00	69.320,27	60.128,42
	Teaching Departments	13.041,96	24.514,02	34.038,00	49.975,08	42.782,08
	Research Units	16.347,53	21.020,10	27.879,34	41.914,58	34.247,00
Agreement for Quality	Course/Department/Research Unit	-	11.812,86	20.607,50	14.670,00	-
	Service	4.507,59	16.117,50	19.451,00	22.584,00	26.976,80
Awards	Best suggestion	-	-	1.950,00	1.800,00	1.800,00
	Best portfolio of services	-	-	2.500,00	-	-
Incentives of	Courses	-	-	80.000	80.000	80.000

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teaching improvement	Teaching and research staff/Administration and services staff	-	-	100.000	100.000	100.000
TOTAL (€)		59.668,48	108.254,11	333.638,84	380.263,94	345.934,30

Conclusions

The most important aspects of our indicator system have been included in the previous pages, since it is undoubtedly the key to decision making and therefore, continuous improvement. However, and as we already know, we must avoid that we “can't see the forest for the trees”; quality indicators only represent one piece of information to be analysed. It is clear that not all situations are the same and not all the objectives can be reached at the same time or with the same intensity. For this reason it is important to consider not so much the results of an academic year, but the evolution of the indicators in the different courses and their comparison with the available references.

None of the indicators alone has shown itself to guarantee quality. However, it has been demonstrated that controlling a group of indicators makes continuous improvement possible. The selection of indicators should not be exhaustive. On the contrary, it is recommended to indicate those fundamental indicators that permit us to obtain information about several processes at the same time with only a moderate effort. Having data does not mean that the information available is useful. For the same reason, one should opt for simple indicators of measurement, appropriate and easy to interpret without ambiguities.

The importance of all this information for decision making in the running of the university and for guaranteeing the efficacy of our activities is obvious. The Indicator System is clearly a valuable instrument for the management of the University Miguel Hernández, as in any other organization that is trying to implement continuous improvement. The benefit of this tool should be included as part of the system along with other instruments and resources, which combined by professionals in a complex management system, permit us to guarantee transparency and make our commitment to society patent.

Elements for the discussion:

From our point of view, this is a relevant tool for every organisation which tries to implement continuous improvement. However, it must be combined with other instruments and resources, which will allow us going toward excellence.

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