

Implementation of Quality Management Systems as proposal towards academic quality. Case study: Universidad Católica de Cuenca

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Abstract - From the perspective of the University as a co-financed higher education institution, the need to implement instruments and systems to improve the management and quality of the academic area was analyzed and determined. Among the different tools offered, from the perspective of the systematic search for efficiency and effectiveness in academic management, we opted to implement a Quality Management System (QMS) based on processes and procedures, where monitoring of indicators was carried out through a Balanced Scorecard, because it addresses most of the perspectives from which the management can be approached that affect the functioning of the University, as well as of its different dependencies derived from the academic area. In this context, the present research provides a proposal for the implementation of a Quality Management System based on processes and monitoring for proper decision making, and its impact on the accreditation process based on the accreditation models of the country, obtaining satisfactory results.

Index terms - Quality management system, management indicators, scorecard, accreditation model.

I. INTRODUCTION

Starting from the fact that Higher Education in our country is governed by principles of "responsible autonomy, co-government, equal opportunities, quality, pertinence, integrality and self-determination for the production of thought and knowledge within the framework of the dialogue of knowledge, universal thinking and scientific production (IES) throughout the country are subject to a series of profound changes in their structures, regulations, laws and regulations; as well as the reorientation to new policies aimed at improving the academic quality of our country, in this context the governing bodies of Higher Education, have established indicators with the purpose of guiding, supporting and monitoring the action of the actors of the education system towards its continuous improvement. The academic quality of our country, in this context the governing bodies of Higher Education, have established indicators with the purpose of guiding, supporting and monitoring the action of the actors of the education system towards its continuous improvement.

Catholic University of Cuenca (UCACUE) is a co-financed Higher Education institution, which, like the rest of the country's universities, is currently working to fulfill a series of requirements proposed by the country's higher education regulatory bodies, such as are the institutional and career accreditation models, in which a series of parameters and indicators are proposed with goals that will allow validation of compliance with university policies and objectives, which has affected the normal development of management within the Catholic University of Cuenca, in its departments, academic units and careers, this generates the need to standardize the management, adapting it to the new accreditation models; which is why it has been considered to implement a QMS that in the first instance standardizes the institutional processes, complying with the regulations of the control agencies and the university itself, and then measure the progress of the HEI in function of the established indicators and targets, which will allow timely and accurate decisions, fulfilling the cycle of continuous improvement, aiming to guarantee quality and achieve academic excellence.

Taking into account that the QMS becomes an internal regulatory body, which can improve efficiency, efficiency and data collection at all levels of management, for proper decision-making. In this research the implementation of the UCACUE academic processes is proposed, aiming at the improvement of the management oriented to comply with accreditation models and institutional quality policies.

II. THEORETICAL FRAMEWORK

A. *Quality Management System.*

This work was realized by Quality Management Team at Universidad Católica de Cuenca (UCACUE) and supported by authorities, Cuenca - Ecuador. A Quality Management System is nothing more than a series of coordinated activities which are carried out on a set of elements to achieve the quality in the services that are offered to the student, that is to say, is to plan, to control and to improve those elements an organization that influences student compliance and achievement of student's requirements [2], a QMS is also considered as a general outline of processes and procedures used to ensure that the organization tasks necessary achieves its objectives, that is to say, it is the

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tool that allows to give coherence to all the activities that are carried out, and at all levels, to reach the academic purposes of the university. In this context, UCACUE, proposes the following quality policies:

- i. Ensure the quality levels that allow UCACUE to provide solutions to the society problems.
- ii. Guarantee processes with a focus on continuous improvement with effectiveness and humanism.
- iii. Encourage a culture of continuous improvement. [3]

B. Academic Quality

The quality of education is derived from a model of results and quality of final product; taking into account that it has different components, different meanings, and that its foundations and consequences transcend people and not objects, so it is even more relevant. Academic quality can be found in the teaching - learning processes within the classroom - physical and technological infrastructure -, evaluation system, teacher training and qualification, student well-being, and that the education system contributes to solve the problems of society through research and links with society.

Based on the aforementioned background and the reality of the UCACUE, it can be said that academic quality aims to take on the challenge of substantially reforming the organization and management of its education systems, based on the concepts of efficiency and effectiveness.

The following are principles of educational quality, among others:

- The structure of the education system and the configuration and adaptation of the curriculum to the diverse aptitudes, interests and expectations of the students.
- The teaching function, which guarantees the conditions for the development of their work, their initial and permanent training and their professional recognition.
- The evaluation of the educational system, the performance of students, according to established standards.
- Institutional strengthening through the professionalization of management and a system of verification of processes, indicators and targets.
- The determination of the competences and responsibilities of the different sectors of the educational community, the study climate and coexistence in schools [4]

C. Management Indicators

Management indicators are interrelated variables that allow observing the situation and the exchange trends generated in the entity, in relation to achievement of goals and objectives. [5]

In this sense, a standard is a desirable and possible practice, a documented agreement on good practice. A variable is a component of a standard, a component of good practice. That is, the standards are disaggregated in variables.

Indicators are classified into two types: verification indicators that refer to the existence or otherwise of a desirable practice and assessment indicators that relate to the degree or manner in which a desirable practice exists [6]. Thus, indicators are used as a control and alignment mechanism that assess the

management of processes in departments, units and careers; and, if these are oriented to the fulfillment of the goals proposed for each hierarchical level of the strategic objectives of the organization.

The characteristics of the indicators should be:

- i) Easily interpreted, ii) clear, iii) concise, and iv) provide information on critical variables, as well as being flexible in responding to changes in the environment without the need to change indicators. [7]

D. Balance Score Card (BSC)

It is a management tool with the basic objective of being able to diagnose a situation and to perform a permanent monitoring, organize the information and obtain measurements of performance for the managers in order to know or diagnose a state of affairs, communicate and align the organization to strategic objectives and identify a set of critical indicators.

For the UCACUE, in the implementation of the SGC and the monitoring board that monitors it, the methodology used prioritized processes that did not have an adequate qualification in the first categorization carried out in 2013 by the Council of Higher Education (CHE), to then aligned with the evaluation model in force issued by the Council of Evaluation, Accreditation and Quality Assurance of Higher Education (CEAACES) and institutional policies based on the principle of service to the people.

III. PROCEDURE FOR THE IMPLEMENTATION OF THE QUALITY MANAGEMENT SYSTEM IN THE ACADEMIC AREA

As it is known to Ecuador, in its mandate 14 of July 22, 2008, it establishes a process that allows the preparation of a report on the quality of higher education in the different HEIs of the country, where CEAACES initiates the evaluation, accreditation and institutional categorization, identifying categories A, B and C as accredited HEIs, while category Ds are in the process of being accredited.

Under this slogan, many universities adjusted their management through the implementation of QMS. The following graph shows the relationship of the HEI, the categorization obtained (A, B, C, D), and which of them have implemented QMS.

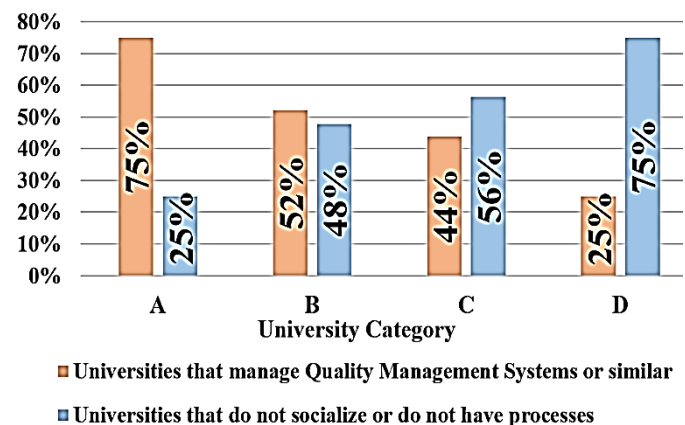


Fig. 1 Relationship of HEI according to the categorization obtained and the implementation of the GSC. Source: self made. [8]

Considering that the UCACUE was categorized as D, one of its actions, the Rectorate of the Catholic University of Cuenca, in January of 2015 authorizes the creation of the Department of Quality Management, which was in charge of designing and implementing the QMS, the development in a series of phases as shown in figure 2:

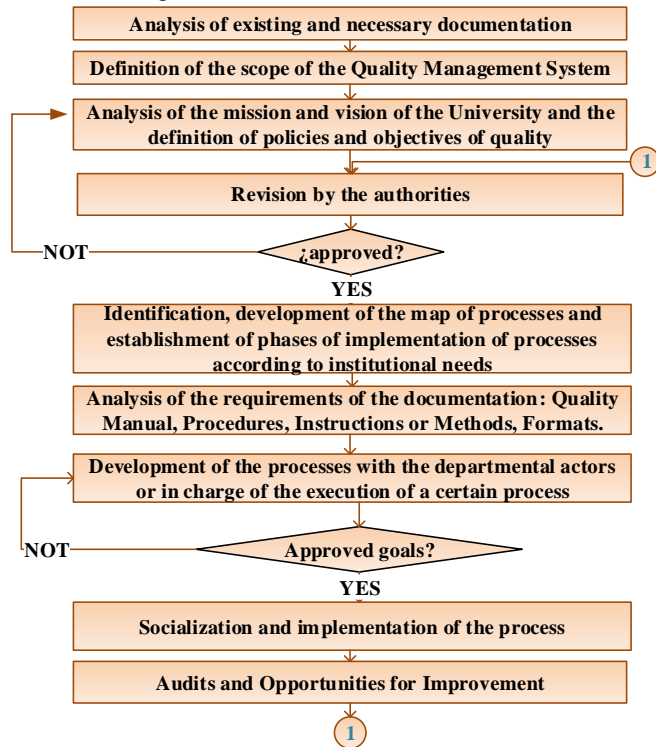


Fig. 2 QMS development flow based on ISO 9001

For the development of the QMS, an analysis of the documentation of the existing processes was carried out, in parallel with the analysis of the mission, vision and definition of quality policies and objectives. It also structured the documentary management that provided the guidelines for the development of the QMS.



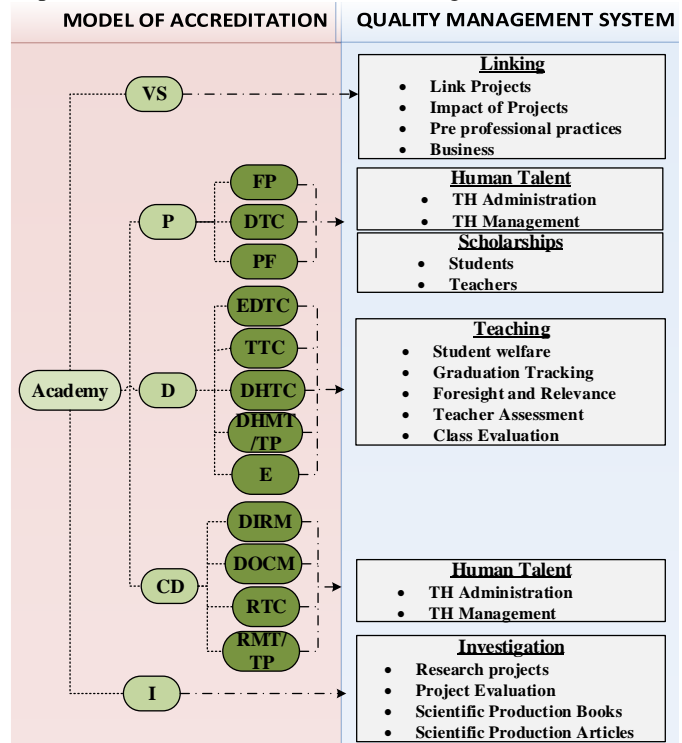
Fig. 3 Macro Processes of the University [9]

From the information obtained, the map of necessary processes of the University was defined as shown in figure 3, where it can be observed that there are three types of processes: strategic, support and missionary. For the development, implementation and socialization of the same, work was done consensually with the responsible in the different areas and

departments, always looking for the documentary and task alleviation, the efficiency of the management and especially the establishment of clearly defined indicators and aligned goals to strategic institutional objectives.

IV. RELATIONSHIP OF THE ACADEMIC QUALITY MANAGEMENT SYSTEM AND THE ACCREDITATION MODEL.

For the categorizations of HEIs, an accreditation model was established, consisting of a series of criteria, subcriteria, goals and indicators that allowed the evaluation of HEIs. In this context, we analyzed certain criteria and subcriteria to be implemented in the QMS, as shown in Figure 4:



VS: Linking with Society

P-FP: Postgraduate Courses

D-EDTC: Dedication-Students x Teacher TC

D-TTC: Dedication-TC Time Distribution

D-E: Dedication-Evaluation

CD-DIRM: Career Teacher-Leadership Women

CD-DIRM: Teaching-Compensation Career TC

CD-RMTC / TC: Teaching Career-Compensation Half Time / Part Time (MT / TP)

P-DTC: Postgraduate Full-time PhD

P-PF: Postgraduate Postgraduate in Training

D-TTC: Dedication-Ownership TC

D-TTC: Dedication-MT / TP Time Distribution

CD-RTC: Teaching-Compensation Career TC

CD-DOCM: Career Teacher-Teaching Women

I: Investigation

Fig. 4 Accreditation Model - SGA [10]

As can be seen in figure 4, the criteria and indicators of the CEAACES accreditation model allowed defining and implementing processes and indicators in the SGC of the UCACUE, thus achieving a global vision of the university and its internal relations, favoring the interrelations between people so that they are aware of their role in each of the processes and know how they contribute to achieving the objectives and the fulfillment of the goals of the indicators. Additionally, the system allows to measure and analyze the degree of client satisfaction (teachers, administrators and students), since the university is thus oriented to satisfy the needs of its users; as described in figure 5.

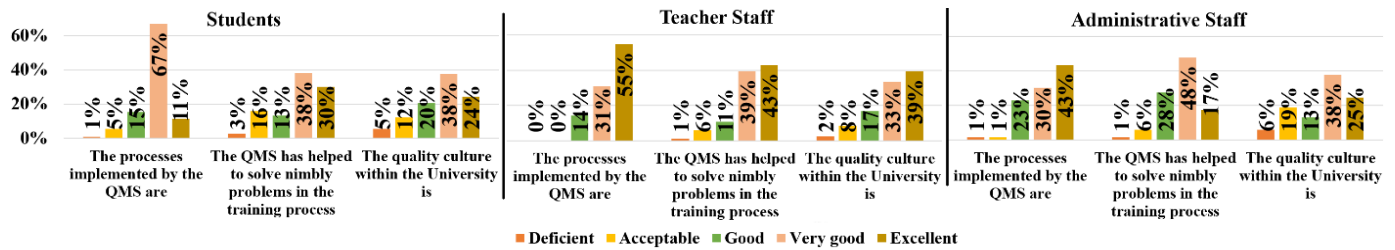


Fig. 5 Degree of satisfaction of the end user. Source: survey of students, managers and teachers of the UCACUE.

All of the aforementioned allowed to promote continuous improvement to detect errors quickly and methodically, increasing the scores achieved as described in the following table:

Variable	Cat. D (feb-13)	Present Mar-17
Total Teachers	789	869
Total PHD	0	15
Total Teachers MSc.	194	662
Total Teachers studying PHD	4	37
Total Teachers studying MSc.	10	70
Total Teachers TC	247	440
Total Management Positions	80	163
Total women in management positions	9	66
Average remuneration TC	\$1594.72	\$2179.34
Average remuneration MT/TP	\$805.2	\$869
Total students	14024	10181
Student / teacher TC	56.8	23.14
Teacher ownership TC	143	440
Average hours class per week teacher TC	13.23	6.32
Average hours class per week teacher TP	10.13	5.54
Teaching evaluation	Partial	Fairly satisfactory
Use of follow-up graduates	Partial	Satisfactory
Linkage to the community	Deficient	Fairly satisfactory
Binding Budget	0	
Binding Programs	0	
Research Planning	Deficient	Deficient
Peer reviewed books	0	80
Indexed publications	0	26
Publications of Seminars or papers	0	55

V. CONCLUSIONS

A direct correlation can be determined in the category of the best ranked universities according to the CEAACES indicators in those that have implemented process-based quality management systems, as evidenced by category A universities - maximum ranking - 75% execute process-based QMS. At the moment, the University has managed to recategorize obtaining Category B.

For the particular case of the Catholic University of Cuenca, from the implementation of the SGC and the monitoring through the control panel a considerable improvement in the 90% of indicators directly related to academic management is determined, while the remaining 10% keep in analysis and are implementing improvement actions; all this has allowed to improve response times, efficiency, efficiency, optimize

resources, homogenize, articulate and optimize the various processes in the management of academic management within the university.

Consequently, with the aforementioned, the perception of the Quality Management System for the different university actors considering five qualitative scales: Deficient, acceptable, good, very good and excellent; is obtained:

- For a sample of 220 students, we obtain the grade corresponding to the qualitative scale of excellent with a weighted average of 8.07 on a decimal scale.
- For the sample of 84 teachers, an excellent score (9.02) was obtained, and for a sample of 69 administrative staff, the grade was excellent (8.4).

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