Abstract

Faculties, schools and departments have juridical entity as university organizations but research groups don’t, and this is the reason why research groups, generally, are not being studied from the point of view of advanced management. However, like other organizations, management models can be used to identify and improve the activity of research groups at universities. In fact, we did start doing so in 2008 by using the EFQM model.

In this context, the main objective of this work is to analyze the ten-year evolution of the process map of a research group focusing special attention on the need of assessment and revision of a good methodological tool.

At the beginning (2008), the methodology used to that purpose was the EFQM model (where EFQM is European Foundation for Quality Management). Since 2016, we have been using the Advanced Management Model of Euskalit (The Basque Foundation for Advanced Management).

EFQM is a not-for-profit membership foundation, established in 1989 to increase the competitiveness of the European economy. It acted as the framework for assessing applications for the European Quality Award, the transnational quality awards of Europe. Even if it was developed in the field of business to help organizations to become more competitive but it can be used for other organizations. This model is based on the identification of the processes being implemented by the organization.

Using the EFQM model as methodological tool, we first elaborated our process map in 2008, and identified nine processes: three operational processes (OP), three management processes (MP), and three supporting processes (SP). Operational processes represent the core activity of our research group and are the following: OP1. Knowledge, OP2. Formation of doctorates, and OP3. Funding. The management processes govern the operational processes, being the following ones: MP1. Assessment, revision and improvement. MP2. Strategic planning, and MP3: Management for Excellence. The supporting processes are required for the implementation of the operational processes, and are: SP1. Administration, SP2. People, and SP3. Equipment and methodologies.

After assessment and revision in 2014, SP3 process was renamed as "Innovation". SP3. Innovation is wider than "Equipment and methodologies" as it includes both product and organizational innovation.

Assessment and revision in 2016 produced another important change consisting on the elimination of the process MP3: Management for Excellence of the process map after. This change was coincident with the fact that Euskalit (The Basque Foundation for Advanced Management) elaborated its own Advanced Management Model in 2015.

This model identifies six areas impacting on the sustainability and competitiveness of organizations: 1) long-term vision for the strategy, 2) added value focused on the customers, 3) sense of belonging for the people working for the organization, 4) commitment to society, 5) innovation applied to all aspects of the organization, and 6) production of satisfactory results in a sustainable and balanced manner. Thus, after 2015, our group has been used this model as methodological tool.

The main conclusion of this work is that continuous assessment and revision (including the methodological tools) has produced an important change on the category of the process “People” which originally was a supporting process while in the newest process map is the fourth operational process.

Keywords: Research group, advanced management, process map, formation of doctorates.
1 INTRODUCTION

Universities around the globe have very distinct structures. Spanish universities, for instance, use different names (schools and faculties) for academic centers where one can get a degree: i.e. School of Engineering or Faculty of Science and Technology. In fact, university schools and faculties are usually responsible for more than one grade. For example, the Faculty of Science and Technology at the University of the Basque Country offers nine undergraduate degrees: 1) Biology, 2) Biochemistry and Molecular Biology, 3) Biotechnology, 4) Physics, 5) Geology, 6) Engineering, 7) Chemical Engineering, 8) Mathematics, 9) Chemistry, and 10) Double Degree in Physics and Electronic Engineering. Additionally, there is another level of organization at the University of the Basque Country which is very common in most of the universities and has to do with specific fields of knowledge: the departments. On the other hand, master and doctoral programs are higher levels of superior education, and doctoral studies in particular have been traditionally attached to research groups which, generally speaking, do not have any juridical entity as university organizations. In consequence, the concept of university governance has changed over the past decades away from the classical idea of the university as a sum of scholars towards the notion of the university as a stakeholder organization.[1]

The different levels of organization of university activities are related with the use of organization development. In this sense, as concluded by Torraco and Hoover (2005), senior administration in higher education must be committed to the organizational changes for the institution.[2] Leadership before and during the change process is indispensable, and, at the same time, when change is brought to academe, everybody in the organization must be involved in the process. In fact, when change is desired in an institution, it is relevant to design a new process that fits the mission, the vision, and the culture of the institution rather than adapting a process that was used in another institution. Concerned to the latter, process maps are a holistic view of all processes of an organization by visualizing their essential relationships.

Identification and improvement of the processes applying in a research group at the University of the Basque Country is exactly what we have been doing for the last ten years, and this work analyzes the changes in the process map generated for EIDOS: a research group in Materials Science. It is worth commenting that change processes and organization development take significant energy and perseverance, and therefore the people involved in the process need to be highly motivated and persistent.[2]

In addition to the mentioned aspects, the reason why research groups are not being studied from the point of view of organizational development or advanced management can be associated to their lack of juridical entity. However, like other organizations, management models can be used to identify and improve the activity of research groups at universities. In fact, we (the authors GB, BB, and MKU) did start doing so in 2008 by using the EFQM model, which is a not-for-profit membership foundation, established in 1989 to increase the competitiveness of the European economy.[3]

In the next ten years, the original process map has undergone several changes which are in accordance with the evolution of the vision of the research group. Not only the process map but also the methodological tool has been changed meantime. In fact, since 2016, we use the Advanced Management Model elaborated in 2015 by Euskalit (The Basque Foundation for Advanced Management).[4] The author AD is one of the creators of this new model, and has been supervising its use for a case like ours (a research group).

Taking into consideration all the above mentioned aspects, the main objective of this work is to analyze the ten-year evolution of the process map of our research group focusing special attention on the need of assessment and revision of a good methodological tool.

2 METHODOLOGY

As mentioned above, this work analyzes the ten-year evolution of the process map of our research group, and during this period two main methodological tools have been used. Firstly, from 2008 until 2015, the EFQM model was used as a guide to generate our process map.

The EFQM model has been widely used in higher education during the last decades.[3] According to it, excellent organizations define their mission and advance towards their vision by means of planning and achieving their results, by the criteria of meeting (or even exceeding) the needs of their stakeholders (both at the short and long-term). To do that excellent organizations create value for
customers and lead their vision with inspiration and integrity. One of the characteristics of the EFQM model is the belief that excellent organizations are managed through structured and strategically aligned processes, and use fact-based decision focused to the obtaining balanced and sustained results.

Since 2016, we have been using a model developed by Euskalit (The Basque Foundation for Advanced Management).[4] This model identifies six areas impacting on the sustainability and competitiveness of organizations (figure 1): a) long-term vision for the strategy,[5] b) added value focused on the customers,[6] c) sense of belonging for the people working for the organization,[7] d) commitment to society,[8] e) innovation applied to all aspects of the organization,[9] and f) production of satisfactory results in a sustainable and balanced manner.[10]

![Figure 1. Main aspects of the Advanced Management Model developed by Euskalit.](image)

3 RESULTS

Using the EFQM model as methodological tool, we first elaborated our process map in 2008 (figure 2), and identified nine processes: three operational processes (OP), three management processes (MP), and three supporting processes (SP).

Operational processes represent the core activity of our research group and were the following:

- **OP1. Knowledge**: This process concerns knowledge generation and diffusion to scientific community.
- **OP2. Formation of doctorates**: This process consists of the formation of doctorates, leading to the elaboration of a PhD Thesis.
- **OP3. Funding**: By means of this process, EIDOS gets financial resources. Management processes at EIDOS govern the operational processes:

  The management processes govern the operational processes, being the following ones:

- **MP1. Assessment, revision and improvement**: This process consists of cycles of assessment and revision, producing improvement actions.
- **MP2. Strategic planning**: This process consists of defining the organization’s strategy, as well as making decisions on allocating its resources to pursue this strategy.
- **MP3: Management for Excellence**: The goal of this process at EIDOS is to become an excellent organisation; this is, to achieve and sustain outstanding levels of performance that meet or exceed the expectations of all our stakeholders.
Finally, supporting processes support the operational processes, and we identified the following ones:

- **SP1. Administration.** This process is related to the administration of EIDOS’s resources.
- **SP2. People.** By this process, the head researcher (the manager) understands the people who work for EIDOS as individuals and motivate them to do their best work. The management of people includes current and future situations.
- **SP3. Equipment and methodologies.** This process is related with the equipment and methodologies we use to perform our research activity.

After assessment and revision in 2014, SP3 process was changed and became “Innovation” which is wider than “Equipment and methodologies” as it includes both product and organizational innovation. This change was caused by the publication of the UNE-CEN/TS 16555-1:2013 (European Standard for Innovation Management.), in July, 2013, which is focused on establishing and maintaining an innovation management system (IMS). Innovation is essential both as a field of study and as a practical discipline. As organizations become broader and more complex, there is a bigger need of a systematic approach to new product, service or business including the development of new equipment and methodologies.

Another important change was carried out in 2016, when process MP3: Management for Excellence was removed from the EIDOs process map. After the correspondent assessment and revision, we decided that our organization was mature enough to have interiorized the culture of excellence, so a specific process was no longer required.

The final change in our process map has been carried out recently. As observed in figure 3, the process “People” is now considered to be an operational process rather than an supporting process. The main reasons for these changes are based on the increasing demands to develop a successful scientific career and the decreasing financial resources. This process is related with both, individual collaboration choices and strategies in aspects like mentoring graduate students and collaboration “cosmopolitanism”. That concept extents to which scientists collaborate with those around them (one’s research group, one’s university) as opposed to those more distant in geography or institutional setting (other universities, researchers in industry, researchers in other nations). In fact, as claimed by Y. Dai (2018), “The comprehensive quality and professional knowledge level of teachers in Colleges and Universities determine the quality of talent training.”
In conclusion, the newest EIDOS process map consists of eight processes: four operational processes (OP), two management processes (MP), and three supporting processes (SP).

4 CONCLUSIONS

Models of change for universities show the importance of both plan-fullness and flexibility by those leading change. Regardless of the mental models we hold, process maps should be used to guide change, with special focus on the assumptions we make about the interests and values of the organizations stake-holders. In fact, our experience shows that continuous learning by change agents are critical during the process. This is especially important, as change occurs at different institutional levels simultaneously (faculties, departments, research groups,…). The main conclusion of this work is that continuous assessment and revision (including the methodological tools) has produced an important change on the category of the process “People” which originally was a supporting process while in the newest process map is the fourth operational process.

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