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# Total quality management in higher education: A two-level assessment

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## Abstract:

An assessment of the EFQM Excellence Model was conducted at universities in Greece to evaluate staff perceptions of their university as a whole and its individual departments. The study aimed to identify strengths and areas for improvement and to promote a quality culture within universities. The assessment focused on the functioning of institutions according to the criteria set by the European Foundation for Quality Management (EFQM) Excellence Model, which emphasizes self-assessment, continuous improvement, more effective and efficient operation of all services, and stakeholder satisfaction. Data were collected through quantitative research using questionnaires and analyzed to understand staff perceptions of university operations based on the principles of Total Quality Management and the criteria of the EFQM Model. The findings revealed that university staff expressed greater satisfaction with their departments compared to the university as a whole, particularly in the areas of People, Partnerships and Resources, and Processes-Products-Services. The education level of staff significantly influenced their satisfaction with university operations. Additionally, perceptions of Processes-Products-Services and Social Outcomes were related to demographic characteristics such as job position and the specific university where the staff were employed.

**Keywords:** Total Quality Management, Higher Education Assessment, European Foundation for Quality Management, EFQM model.

## 1. Introduction

The perception of quality desired by an organization is based on the values and beliefs it possesses, as well as the expectations it develops, depending on its organizational culture. For organizations aiming to evolve, a need has emerged for a more holistic management approach focusing on the continuous improvement of all functions and the satisfaction of all stakeholders. This need seems to be addressed by the philosophy of Total Quality Management (TQM), which can be applied not only in the private sector but also in the public sector, which is called upon to meet modern demands (Hides et al., 2004).

A significant sector that needs to align with new standards is education, especially in tertiary education, which needs to operate efficiently for successfully addressing competitive challenges and contributing to the prosperity of nations. The traditional way in which Higher Education Institutions manage their processes faces pressures from the pursuit of achieving a high position in the ranking series among others and from simultaneous reduction of financial resources due to government budget constraints (Platis & Fragouli, 2019). Their success depends not only on the recognition by their users but also on the funding that ensures their sustainability. Higher Education Institutions are increasingly willing to adopt quality systems similar to those of entities and industries in order to improve their performance while reducing costs at the same time (Dick & Tari, 2013). Therefore, reputable accreditation bodies have committed to their continuous improvement by developing systems based on European guidelines for Higher Education. One such organization is EFQM, which has developed the corresponding Excellence Model.

## 2. Total Quality Management and EFQM Excellence Model

### 2.1 The Concept of TQM

The concept of quality can adopt various definitions, each reflecting its multifaceted content. Quality possesses strategy, content, and perspective. Understanding and commitment from management, effective leadership, collaboration, and proper process management are the secrets to success, while the benefits of getting everything right from the very start are immense (Oakland, 2004). Knowles (2011) notably states that customer requirements are often not defined by the customers themselves, however when presented, they automatically transform into expectations for future cases. Particularly for purposes of service quality, customer focus can be the key to quality management (Berry et al., 1988).

The effort for survival and growth in an increasingly competitive environment and at the same time the inefficiency of previous quality assurance methods leads to the adoption of Total Quality Management. Total Quality Management does not constitute a separate program of an entity that aims to be developed but a part of its targeted strategic planning.

Total Quality Management is defined as "the set of activities and methods applied by the organization, aiming at customer satisfaction and the simultaneous activation of the entire potential (both human and non-human) of the organization with the least possible cost", and when applied as a management system it maximizes the value of the provided product or service (Τσιότρας, 2016). Total Quality Management, through all the definitions it has received, appears as the management approach that aims at continuous improvement, effectively utilizing the capabilities of all employees and embracing all activities aimed at meeting customer expectations.

## 2.2 TQM in Higher Education

Implementing TQM in Higher Education is particularly complex, as it attempts to simultaneously satisfy many different stakeholders and ensure proper functioning of numerous processes. For the successful implementation of Total Quality Management planning in universities, high-level leadership skills are required. Strategic planning, action development, evaluation of results, and corrective actions pose a significant challenge for the top executives of university administration (Barnett, 1992). Transformational leadership is needed to change previous traditional assumptions.

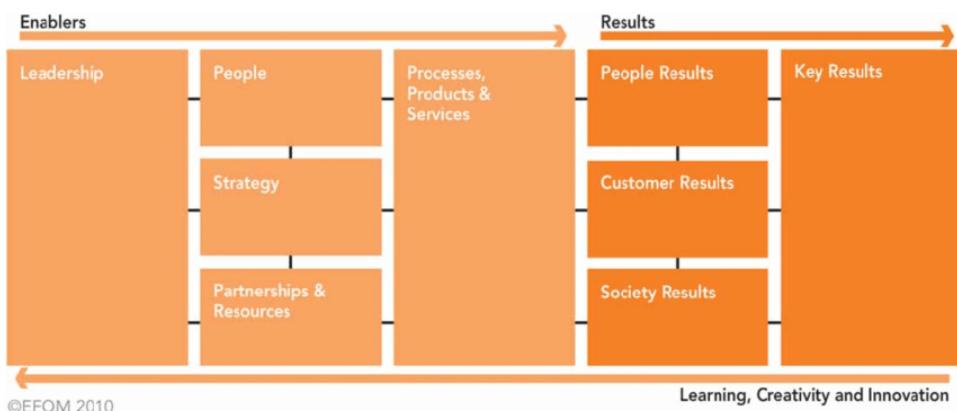
There are numerous available studies that reach positive conclusions from the implementation of TQM in universities. The perception that Higher Education Institutions constitute inherently quality organizations without any improvement effort is outdated. The need to respond to constantly changing needs is clear, and there is evident need to follow processes that fall within the framework of Total Quality Management. In this direction, it also contributes the broader competitive environment, seeking institutions with clear advantages over others (Everard et al., 1996). Antony and Preece (2002) highlight the benefits of TQM as a self-assessment tool given the fact that it helps identify weaknesses.

On the contrary, Houston (2007), who gives harsh criticism, claims that these two concepts are incompatible, argues that TQM cannot support the ultimate goal for quality in Higher Education. Withal, Srikanthan and Dalrymple (2005) express a similar opinion, noting that the implementation of TQM in Higher Education primarily concerns administrative services rather than the research and teaching aspects.

## 2.3 EFQM Excellence Model in Higher Education

The EFQM Excellence Model, developed by the European Foundation for Quality Management, is aimed at businesses and organizations regardless of their size and scope (Τσιότρας, 2016). It offers a holistic approach for ensuring long-term success and can serve as a reliable self-assessment tool for an organization's current status (Oakland, 2011). It helps organizations remain successful by presenting their weaknesses and encouraging them to find solutions (Osseo-Asare & Longbottom, 2002). The EFQM organization itself supports that the Excellence Model establishes a common mindset and business vocabulary that governs all departments and processes of the entity. It also enables the organization to understand its current organizational maturity and contributes to depicting its performance for the information of suppliers and sponsors. Additionally, it can serve as the starting point for a benchmarking process with other similar businesses and facilitate the exchange of best practices.

Steed (2002) argues that the nine criteria of the model, as presented in the diagram 1 (EFQM 2010), align with the basic principles of TQM, influence the performance of Institutions, and can lead them to Excellence. Their positions on the 9 criteria provide answers to their current status and, at the same time, present indications of the steps they need to follow.



**Diagram 1:** Representation of the EFQM excellence model

More specifically, the assessment criteria are:

- **Leadership:** This criterion explores how leaders shape the purpose and engage employees by motivating and supporting them.
- **Strategy:** It examines how the strategy is formulated to realize the vision.
- **People:** This criterion investigates whether employees are encouraged to develop their own skills for personal and corporate benefit. It's also important to recognize their efforts, reward them, and adhere to the principles of fairness and equality.
- **Partnerships and Resources:** It examines whether resources and partnerships are utilized in a way that benefits the organization.
- **Processes, Products, and Services:** This criterion studies whether processes evolve to meet changing needs.
- **Customer Results:** This criterion explores how well customer requirements are met.
- **People Results:** It measures to what extent are the needs of employees satisfied.
- **Society Results:** It investigates how well the expectations of social stakeholders are met.
- **Business Results:** This criterion measures the performance results of the business.

### 3. Methodology

This section presents the methodology used in this study to investigate the perceptions of employees in Greek universities, either as teaching, research, or administrative staff, regarding the implementation of Total Quality Management principles of their university, specifically based on the criteria set by the European Foundation for Quality Management (EFQM) Excellence Model.

For the collection of the necessary data for this research, the quantitative method was chosen, through which data are quantified and analyzed to produce elements that will identify specific opinions of the sample or population (Huesco & Cascant, 2012). The survey was used as the research tool, which requires written completion by respondents, answering questions posed to achieve high response rates, ensure anonymity, and encourage sincere responses (Marshall, 2005).

According to the analysis of the demographic characteristics of the sample, there were 25 males, accounting for 30.5% of the participants, and 57 females, accounting for 69.5% (n=82). Almost all participants, 81 out of 82, accounting for 98.8%, work at a university in the city of Patras. The age of the participants ranges from 29 to 64 years old, with an average of 48.39 years old. The majority of participants are from the university of Patras, with 64 individuals, accounting for 78% of the total sample of 82 individuals. Nine individuals, accounting for 11%, are from the university of Peloponnese and the Hellenic Open University. According to the analysis, it is concluded that the majority of individuals in the sample, specifically 43 individuals, accounting for 52.4% of the total sample of 82 people, work as administrative staff, while 34 individuals work as teaching staff, accounting for 41.5%, while only 5 individuals, accounting for 6.1%, are employed as research staff.

Upon analyzing the results, it is observed that only 7 individuals out of 82 are graduates of Secondary Education, accounting for 8.5%, while 12 individuals, accounting for 14.6% of the total sample, hold a Bachelor's degree, 32 individuals, accounting for 39%, hold a master's degree, and 31 individuals, accounting for 37.8%, hold a Doctorate degree.

### 4. Results

Participants were asked to express their perceptions regarding the operation of the department in which they are employed, whether as teaching staff in School Departments or as employees in administrative service departments, separate from the broader general operation of the university to which they belong.

From the examination of correlations between the 9 criteria of the Excellence Model, it appears that employees feel approximately the same level of satisfaction with all individual functions of their department and the broader university operation, as evidenced by the high degree of positive linear correlation among all dimensions. The analysis was performed using the Pearson correlation coefficient, while in all cases there is statistical significance with a p-value < 0.001.

Analyzing the results, it emerges that employees are quite satisfied with the clarity with which their department has communicated its mission, the encouragement of employee creativity, and support for change, as opposed to the leadership function of the broader university. However, they express dissatisfaction with the recognition of their efforts, the identification of their needs, and the establishment of a spirit of excellence. In the Strategic dimension, participants' positions indicate areas for improvement in the field of developing clear strategic planning and understanding the needs of stakeholders. Regarding the dimension of satisfactory employee management (People), the analysis of the results concludes that teaching and administrative staff express dissatisfaction both with their department and the university in terms of how understandable the overall mission is to the human resources, or how clear and effective their evaluation system is. However, they positively assess internal communication, working conditions, and the opportunity to develop skills in their respective work departments. In the dimension of Partnerships and Resource utilization, employees feel that

their department takes into account the benefit of the service, while for the broader university, the low average response rates imply a different strategy. Technology is used effectively, while financial arrangements do not ensure permanent benefits.

Participants are particularly satisfied with the way services evolve to meet changing needs, with a strong sense of satisfaction, especially from their work departments. They express particular satisfaction with the services offered in the specific area in which they are employed, and they believe that mutual relationships of trust have developed among those involved. Regarding the operation of universities in the results dimensions, employees express their dissatisfaction, as their responses indicate that systematic recording techniques, which could provide data and assist in the improvement process, are not being implemented (Table 1).

Criteria	Department of employment	University of employment
LEADERSHIP	2.99	2.87
STRATEGY	3.00	2.91
PEOPLE	3.00	2.73
PARTNERSHIP-RESOURCES	3.15	2.94
PROCESSES-PRODUCTS-SERVICES	3.16	2.98
CUSTOMER RESULTS	2.97	2.98
PEOPLE RESULTS	2.60	2.53
SOCIETY RESULTS	2.44	2.50
BUSINESS RESULTS	2.60	2.69
<b>Average</b>	<b>2.88</b>	<b>2.79</b>

**Table 1:** Average responses to the 9 criteria of the EFQM excellence model.

The Wilcoxon test reveals that employee satisfaction with the operation of their department is significantly greater (p-value < 0.05) compared to their satisfaction with the operation of the overall university Institution. This is particularly evident in the dimensions of People, Collaborations-Resources, and Processes-Products-Services (Table 2).

	Department of employment		University of employment		p-value
	Mean	SD	Mean	SD	
PEOPLE	3.00	0.955	2.73	0.902	<0.001
PARTNERSHIP-RESOURCES	3.15	0.893	2.94	0.864	<0.001
PROCESSES-PRODUCTS-SERVICES	3.16	0.901	2.98	0.905	0.008

**Table 2:** Wilcoxon Test for comparing EFQM criteria means between two levels of assessment.

The analysis of the results indicates that job placements of university employees vary based on their educational level. According to the Mann-Whitney U test, graduates of Secondary Education and PhD holders tend to be less satisfied with the operation of the universities, departments, and the overall institution in most EFQM dimensions, compared to bachelor's and master's degree holders. (Table 3).

	Department of employment					University of employment				
	Secondary Education	Bachelor	Master	PhD	p-value	Secondary Education	Bachelor	Master	PhD	p-value
LEADERSHIP	2.38	3.43			.046	2.43	3.44	2.77		.022
PROCESSES-PRODUCTS-SERVICES		3.52		2.98	.049		3.40		2.77	.031
CUSTOMER RESULTS	2.46	3.42			.022					
PEOPLE RESULTS		3.11		2.41	.024					
SOCIAL RESULTS		3.19		2.20	.005		3.17	2.45	2.34	.026
BUSINESS RESULTS		3.21		2.37	.013	2.21	3.19			.049

**Table 3:** Mann-Whitney U test for comparing means based on educational level.

From the analysis of the correlations between the dimensions of the EFQM Model and the demographic characteristics of the participants, it emerges that the satisfaction of the employees with the operation of the universities depends on their level of education, the years of work experience, and the university Institution they work for. The Pearson coefficient having a value of moderate negative linear correlation  $r = -0.292$ ,  $p = 0.011$ , indicates that the higher educational level of the employees negatively affects their views on the effectiveness of the interaction of their work department with the wider social community, while those with lower educational levels perceive a more positive relationship between their service and the society. Employees with higher educational levels do not believe that the university collaborates with and positively influences the local community, whereas those with lower educational levels perceive this relationship as more effective according to the value of  $r = -0.256$ ,  $p = 0.027$ . As the participants' level of education increases, their satisfaction regarding the operation of the university decreases compared to social outcomes. The Pearson coefficient  $r = -0.251$ ,  $p = 0.030$ , suggests that the higher the educational level of the employees, the less satisfied they are with the services provided by their university workplace and the improvement processes followed for the Institution's operation and the satisfaction of all stakeholders. Job position shows a moderate negative linear correlation ( $r = -0.222$ ,  $p = 0.045$ ) with the dimension of Processes-Products-Services. This means that the advancement in job ranks is accompanied by a cautious attitude of the employees towards the effectiveness of the services provided in their work department. Administrators seem to be satisfied with the services they offer, while the teaching staff of the universities feel that their work department has room for improvement in its operation, the services offered, and the satisfaction of stakeholders. Finally, the university where the employees work seems to be related to their perception of interaction with the social community. The Pearson coefficient ( $r = -0.227$ ,  $p = 0.040$ ) indicates that employees at the university of Patras are more satisfied with the relationship between the university and the local community compared to employees at other participating universities in the study (university of Peloponnese, HOU) (Table 4).

Department of employment			University of employment		
Education Level	Job Position	Institution	Education Level	Job Position	Institution
PROCESSES-PRODUCTS-SERVICES	$r = -0.222$ $p = 0.045$		$r = -0.251$ $p = 0.030$		
SOCIAL RESULTS	$r = -0.292$ $p = 0.011$	$r = 0.225$ $p = 0.042$	$r = -0.256$ $p = 0.027$		$r = -0.227$ $p = 0.040$

**Table 4:** Pearson correlation analysis of satisfaction based on demographic characteristics.

## 5. Conclusions

The purpose of this research was to highlight the perceptions of employees in Greek universities regarding the implementation of TQM principles in their workplaces, as well as the factors influencing their attitudes towards the Departments and the broader university Institutions where the participants are employed. Participation in research provides data that reveal areas of weakness and strength and facilitate the identification of priorities for action (Lomas, 2004).

From the analysis of the data, it emerges that employees of Greek universities are more satisfied with the functioning of their particular work departments in the areas of Leadership, People, Partnerships-Resources, Processes-Products-Services, and People Results, compared to the functioning of the broader University Institution in the same areas, based on the criteria set by the EFQM Model for the implementation of TQM principles. The field of leadership, the utilization of human resources, and the partnerships formed with external stakeholders, and especially the services offered by the departments, are perceived by employees as more immediate, and they seem to trust more the work of the team to which they belong to. On the other hand, regarding the dimensions of Strategy, Customer Results, Social Results, and Business Results, their responses indicate that they tend to trust more the way the broader universities operate in their work areas compared to each individual department. They consider that the influence of the university on matters related to the broader social context, student satisfaction, and the professional development of employees is greater, as these depend on the general culture of the Institution and not on individual procedures of the departments. Statistically significant is, in particular, the expression of satisfaction by employees from their individual work departments compared to the Universities in the areas of working conditions, utilization of human resources, effective communication, proper use of resources, environmental awareness, appropriate use of technology, beneficial collaborations, and services provided (People, Partnerships-Resources, and Processes-Products-Services).

The factor that appears to significantly influence the attitudes of employees towards the functioning of universities is their level of education. Bachelor's and doctoral degree holders appear to be more dissatisfied. Specifically, Bachelor's degree holders believe that leadership performs its duties adequately, while master's degree holders are more cautious. Also, Bachelor's degree holders are more satisfied with the services provided compared to doctoral degree holders. Bachelor's degree holders are more satisfied with the department's effort to evaluate and assess student satisfaction compared to employees who are graduates of Secondary Education. Also, Bachelor's degree holders believe that significant efforts are made to evaluate employee satisfaction, increase their productivity, and reward them compared to doctoral degree holders.

Additionally, Bachelor's degree holders believe that their socialization is adequately supported, that interaction with the local community is systematically controlled, and that the social work of their department is enhanced, compared to master's and doctoral degree holders who express their distrust for this dimension. Furthermore, Bachelor's degree holders express more satisfaction with the evaluation of productivity and systematic measurement of entrepreneurship and innovation compared to doctoral degree holders or Secondary Education graduates.

By analyzing the correlations of the dimensions of TQM, it is revealed that all dimensions positively influence one another, which means that employees express a similar level of satisfaction with the functioning of the university in all areas.

Analyzing the correlations between the dimensions of TQM and the characteristics of the employees, it is revealed that the educational level of the employees, their job position, and the broader university Institution of their employment play a crucial role in their attitudes, particularly in how they perceive the functioning of universities, the interaction with society, and satisfaction with the services provided, as holders of high-level educational degrees indicate significant improvement areas, while those with lower levels of education appear to be more satisfied. Furthermore, the administrative staff is more satisfied with the procedures and services provided compared to the academic staff at universities. Conversely, the academic staff appears to be more satisfied with the university's outward orientation compared to administrative staff. Concluding, the employees at the university of Patras express more satisfaction with the social work of the Institution compared to employees at other Higher Education Institutions mentioned in the study.

Aside from the present research, it would be highly interesting for future similar studies to be conducted by the Academic Institutions of our country within a more systematic and organized framework and with a greater number of participants, in order to draw conclusions regarding specific university Schools or Departments. In this way, employees will have an objective view of the processes followed and more immediate access to data that will help them address corresponding questions. It is substantial that the first steps towards adopting a Total Quality Management approach have been taken by Academic Institutions, so that a tool such as the EFQM Model can be subsequently implemented, initially as an assessment tool of the current situation and later on as a broader management model.

In conclusion, university Institutions are complex organizations as their product has a complicated nature and the different stakeholders perceive differently the concept of quality. The differences among HEIs depend not only on the national framework or their size but also on their organizational structures, and all of the above must be respected. To improve the operation of universities, we should not have replication of successful practices of others parties, but rather a critical application of the practices in question in their own context (Loukkola & Zhang, 2010). The introduction of the Total Quality Management philosophy in Higher Education can contribute to addressing existing problems and turning towards innovation and continuous improvement.

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