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# Project quality management adoption in Greek enterprises – survey, results and recommendations.

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**ABSTRACT**

Quality is often determined as one of the four main determinants of a project's success and constraints, but not always receiving the same attention as the other three- scope, time and cost. However, all main project management methodologies and standards include quality as one of the key attention areas. Not much focus has been given either in theory or in practice, or in both, regarding the degree of adoption of project quality management in organizations. As a first attempt to shed some light on that, a research was designed to run a survey on what is really happening on project quality management practice among Greek enterprises, in three sectors. The results demonstrate a mixed picture and they are analyzed against exiting literature; some recommendations are also provided, based on the drawn survey conclusions.

**KEYWORDS:** Project quality management; quality management adoption in projects; quality methods in project management

## 1. INTRODUCTION

Quality management is mainly a concern for those running standard operating procedures in organizations, while project management is a focus for those running once-off, new organizational endeavors. "Superior quality and project management optimize the performance excellence of organizations, so every quality practitioner needs to be able to manage project quality effectively. Unfortunately, the combined leverage of quality and project management is often underutilized due to inadequate experience in both fields, time pressures and budgetary cutbacks." (Kloppenborg & Petrick, 2004) Despite the explicit reference to project quality management made by all main project management methodologies, standards and approached – see next chapter, formal quality management practices and procedures are rather neglected within the project management context. "Quality is often claimed as the 3rd dimension of any project: the success of a project depends on the management of time, cost and quality. However, quality is a much more elusive substance and its management can be problematic." (Flett, 2001) As expected, those organizations that actively pursue total quality management approaches are more "customer-focused in their project management practices than those in organizations with no TQM programme". (Bryde & Robinson, 2007). This explains why an integrated view of project and quality management for project-based organizations has been proposed by Orwig and Brennan (2000). However, the situation is different in real-life organizations, where project quality is not always actively managed. Quality has been identified by relevant research literature as one of the key challenges in contemporary project management (Bakara et. al, 2021; Bete, 2019; Tabassi et al., 2019) and, also, has not been thoroughly researched in the project management literature.

According to Kloppenborg and Petrick (2002), project quality is based on four pillars: customer satisfaction, process improvement, fact-based management and empowered performance. According to ISO (2015), the seven quality management principles are: Customer focus, Leadership, Engagement of people, Process approach, Improvement, Evidence-based decision making, Relationship management. One way to research the degree of applicability and usage of project quality management in organizational practice would be to look for evidence of the existence and adoption of those quality pillars or principles or elements – whatever can be called, within specific organizations. Another way to look for project quality management adoption is to run a survey among professional project managers in order to reveal the picture of what is really happening in organizations. To this end, a survey was designed to collect data from enterprises mainly related to technology, in three sector of the Greek economy in order to be as broad as possible. The analysis of the results enabled the drawing of useful conclusions and recommendations for the management of those organizations.

In the next chapter, the concept of project quality management is briefly presented through methodologies and standards, in the third chapter the survey is described along with its main results and in the fourth one, analysis of the outcomes and management recommendations are provided.

## 2. LITERATURE REVIEW – QUALITY IN PROJECT MANAGEMENT

All major project management methodologies and standards include project quality management as an integral part of their recommendations and best practices. Three of them (ISO 21502, PMBOK and $PM^2$) will be reviewed quickly with regard to quality management.

ISO 21502:2020 is an international standard entitled Project, programme and portfolio management — Guidance on project management. Chapter 7 of this standard describes management practices for a project and specifically, clause 7.11 is devoted to quality management in project execution. It outlines practices for ensuring that project deliverables meet the required standards and satisfy stakeholder expectations. Key guidelines include:

- Establishing quality objectives aligned with project goals.
- Implementing quality assurance processes to monitor and control quality throughout the project lifecycle.
- Conducting regular quality reviews and audits to identify and address issues proactively.
- Engaging stakeholders in defining quality criteria and ensuring their involvement in quality-related decisions.

In Project Management Institute's Project Management Body of Knowledge (PMBOK), quality management is one of the ten main knowledge areas for project managers. The project quality management area is decomposed into three processes: plan quality management (that mainly includes definition standards and quality metrics), manage quality (that mainly includes quality assurance processes, regular quality audits and reviews and use of tools from the quality management literature) and control quality (that mainly includes tasks such as monitoring, measurement, identification of deviations and corrective actions and lessons learnt at the project closure phase).

The new European standard, the $PM^2$ methodology, refers to the Quality Management Plan as a necessary deliverable of the planning phase, to quality assurance activities (according to the quality management plan) as part of the part of the project execution phase and to quality management activities, as part of the monitoring and control phase of the project. The predetermined and ready-to-use list of $PM^2$ artefacts includes the quality management plan and the quality review checklist.

Finally, another popular approach is to integrate into the organizational procedures both project management and ISO 9001, the general quality management standard, methods, elements and tools, in an integrated management system for project and quality management at the same time.

## 3. RESEARCH METHODOLOGY

The approach to this research follows a systematic methodological approach that includes a combination of qualitative and quantitative analysis.

Initially, a literature search is carried out with the aim of identifying issues related to the subject of study. The literature includes scientific articles, books, reports and other authoritative sources that allow the formation of a theoretical basis and the identification of critical issues to be investigated.

Subsequently, interview questions are formulated, which are addressed to specialized individuals, of different backgrounds, who possess knowledge or experience in the field. The responses collected are analyzed qualitatively, with the aim of highlighting central issues. These issues concern both methodological aspects and practical applications, while at the same time indicating areas that require further investigation.

The qualitative analysis leads to the formulation of a questionnaire, which is designed to delve deeper into the issues that have been highlighted. The questionnaire is distributed to individuals with specific characteristics and profiles related to the subject of study.

The questionnaire responses are subjected to quantitative analysis through statistical processing. This analysis allows for understanding points of convergence and divergence in opinions, the emergence of new issues and the evaluation of practices that work or not. The results are interpreted in relation to the bibliography and interview data, offering a comprehensive picture of the topic under study.

## 4. THE SURVEY AND THE RESULTS

The purpose of the questionnaire is to examine how professionals perceive and apply quality in project management. It aims to collect information about their perceptions of quality, the tools and methodologies they use to ensure it, the challenges they face, as well as the strategies for managing risks and conflicting expectations. In addition, it aims to understand the relationship between quality and project success and the contribution of the various roles, with the aim of developing best practices and enhancing quality in project management.

The selection of questions was made in combination with the answers given during the interviews. These gave the impetus for the creation of appropriate questions addressed to a larger number of professionals, from different sectors.

The survey was fully completed by 35 people, university graduates, of whom 74.3% hold a postgraduate degree. Partially completed questionnaires have not been taken into consideration. 57% work in organizations that employ more than 500 employees. The most common employment sectors are services, technology and defense.

The top 3 answers per category of questions are listed below:

a. Use of quality tools
   - Exclusively ISO 9001 32%
   - Company methodology based on Total Quality Management Total Quality Management and/or Total Quality Management Total Quality Management 29%
   - Combination of the above 23%

b. Frequency of quality assessment:
   - Continuously 20%
   - Regularly 23%
   - Periodically 42%

c. Use of Key Performance Indicators (KPIs) in project quality management (PQM):
   - Customer satisfaction 11%
   - Project completion rate 11%
   - Combination of the above 43%

d. Monitoring of PQM KPIs:
   - Project completion 34%
   - Monthly 26%
   - Weekly 23%

e. Using the results of the PQM KPIs:
   - Progress monitoring 20%
   - Strategy definition 14%
   - Combination of the above 66%

## 5. ANALYSIS OF THE RESULTS AND RECOMMENDATIONS

**Conclusion 1: Use of quality management tools and methods**

Based on the results of the survey, there is a significant level of awareness regarding the application of quality management methods in project management, with companies mainly choosing standards such as ISO 9001 or a corporate methodology based on Total Quality Management (TQM). The survey reveals that the use of quality management tools such as ISO 9001 is particularly widespread, with 32% of participants choosing it as the exclusive method. This indicates that organizations choose to either follow established international quality standards or create customized approaches, depending on their needs. International quality standards (such as ISO 9001) are often the main method for project management due to their recognition and the standardized approach they provide (Gibson & Gibbs, 2009). The use of TQM in applying quality to project management is also widespread and encouraged to enhance continuous improvement and customer satisfaction (Oakland, 2003).

However, the adoption rate for a combination of quality methods in project management remains relatively low (23%), suggesting that full integration of these tools into daily project management is not as common as it could be. This leads to the conclusion that there is room for improvement in holistic quality planning. The use of combination methods is critical to enhance integrated project management and the incorporation of hybrid models that combine standard models and best practices is suggested (Oakland, 2014).

**Recommendation 1:** The combined use of international quality standards and customized methods should be encouraged, in order to result in a more integrated and flexible project management mechanism that responds to the different challenges and needs of each company. Organizations can benefit from the coexistence of the universality of ISO with the flexibility of TQM, integrating quality management from design to delivery, using tools and methodologies such as Six Sigma and Lean Management. It has been shown that the combination of these approaches leads to better results in project quality and customer satisfaction (Juran, J.M., & Godfrey, A.B. 1998). An important role in the success of this effort is played by the adoption of Quality Assurance procedures to integrate quality throughout the project management life cycle and the use of Quality Control to identify and correct problems before delivery to stakeholders.

**Conclusion 2: Quality assessment periodicity and KPI monitoring**

Quality assessment appears to occur at varying frequencies, with 42% of organizations performing it periodically, while 23% report regular assessment and 20% continuously. Continuous assessment, however, is a key feature of modern proactive quality and Agile approaches to project management. Organizations are urged to re-examine their processes, incorporating continuous improvement tools, such as the PDCA cycle and the Six Sigma approach, to enhance flexibility and immediate adaptation to project changes (Deming, 1986; Pande et al., 2000). At the same time, the use of KPIs to assess project quality and progress seems to be largely focused on project completion and customer satisfaction. The fact that most participants choose to assess KPIs on a monthly or weekly basis indicates a comparatively proactive attitude towards monitoring project performance. The study by Meredith & Mantel (2012) shows that most companies do not assess the quality of each project continuously, but prefer more periodic or regular reviews to assess results. The tendency for periodic quality assessment, as recorded in the survey, is reinforced by the rationale that this does not increase bureaucracy and achieves a better focus on the strategic objectives of the project (Kerzner, 2017). However, the low frequency of continuous assessment leads to limitations in fully integrating quality tools into daily processes. However, communication and analysis of stakeholders' needs must be continuous to manage expectations and avoid changes that affect quality, time and cost.

**Recommendation 2:** Organizations should adopt more systematic and regular monitoring of KPIs to ensure better project quality and to address potential problems immediately. More frequent review of KPIs can help in early detection of weaknesses and immediate corrective action, as pointed out by the research of Deming (1986) and Kaplan & Norton (1996) on the strategy of monitoring the performance of organizations through KPIs. The application of previous experiences for better planning and avoiding mistakes through the lessons learned from previous similar projects plays a role in improving project performance.

**Conclusion 3: Using KPI results for strategic management**

A striking percentage (66%) reports using KPI results to monitor progress and define strategy. This demonstrates that KPIs are not only used to assess quality, but also to shape and revise company strategies in relation to project completion. Continuous monitoring and linking results to strategic decisions contribute to continuous process improvement and consistent customer satisfaction.

The use and monitoring of KPIs is a key factor in the success of quality management. The preference for combined indicators such as customer satisfaction and project completion (43%) shows a positive trend, while the focus on project completion as the most frequently monitored indicator (34%) highlights a functional approach. The use of KPIs to monitor project quality and progress is common and it is often reported that KPIs are closely linked to customer satisfaction and project completion within schedule and budget (Schwalbe, 2015). In Smith's (2016) research, organizations invest more in developing KPIs related to project efficiency and customer satisfaction, enhancing monitoring and taking corrective measures during the project (Atkinson, 2006).

However, more systematic and frequent monitoring, such as weekly or even in real time, to the extent feasible, can provide a clearer picture of the progress of projects and prevent delays or deviations (Kerzner, 2017).

The survey shows that 66% of participants use KPI results to set strategy and monitor progress. The use of indicators for strategic planning reflects mature quality management and allows management to make informed decisions. Kaplan & Norton (2001) point out that KPIs must be directly linked to the company's strategy to achieve its objectives, and that their use in the decision-making process is critical for the effective implementation of the strategy.

**Recommendation 3:** The combined use of KPIs to monitor progress and determine strategic decisions should become a key tool in daily project management. It is recommended that KPI findings be systematically integrated into the strategic planning cycle to create a continuous feedback loop that enhances organizational learning (Kaplan & Norton, 1996), e.g. through their connection to the corporate Balanced Scorecard. The use of these indicators is essential for evaluating project success and continuous process improvement, although it is necessary for organizations to develop more differentiated and specialized KPIs to address specific problems that arise during project execution.

**Conclusion 4: Specialized training**

The use of quality management methods in project management is clearly important, but the fact that their application in combination with other methods is relatively limited indicates that companies may not be fully utilizing the potential of the tools at their disposal. This observation inevitably leads to the need for training and capacity building of project managers. Providing training to project managers and key project team members on quality management and the use of appropriate tools and frameworks appears to be absolutely essential. In particular, the need for specialized training and ongoing awareness of best practices in quality and project management is crucial for enhancing project quality.

**Recommendation 4:** It is necessary to develop education and training programs for project management executives to integrate best quality methods into each phase of the project. In addition, promoting a culture of continuous improvement and developing skills in the application of quality methods can lead to greater efficiency and effectiveness in the completion of projects, as proposed by Deming (1986) in the context of Total Quality Management.

## 6. EPILOGUE

Little attention has been given so far to project quality management and "future research should continue to investigate the symbiotic relationship between project management success or failures related to project quality management implementation" (Baker, 2018). This research aimed that investigating some adoption aspects for project quality management at organizations coming from three different sectors of the Greek economy. The main theme revealed is an overarching recommendation for applying an integrated framework for project quality management, organization-wide. Since project quality management is inextricably interwoven with project success as mentioned in the literature, e.g. Akewushola, et. al, (2012), it is imperative that organizations should either follow very carefully the project quality provisions in project management methodologies and standards, or create their own models to incorporate quality management principles, methods and tools into every stage of the project life cycle, in order to ensure project success. There is an intension to further analyze the results to arrive at more focused conclusions and recommendations that would also relate to project's success and failure rates.

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**APPENDIX**

The questionnaire of the survey

1. Demographics, educational level
2. Organization details
3. How many employees does your organization have?
4. What are the main activities of your organization? (select all that apply)
5. How many projects do you usually manage at the same time?
6. What quality methods do you apply in your organization? (select all that apply) ISO 9001, Six Sigma, Total Quality Management, PMI / PMBOK Quality Management, Corporate methodology based on Total Quality Management, Other
7. How often do you perform quality assessments on your projects? Never, Rarely, Periodically, Regularly, Continuously
8. What KPIs do you use to assess the quality of your projects? (select all that apply). Customer satisfaction, Project completion rate, Delivery time, Project cost, Rework/revision rate, Other
9. How often do you monitor your KPIs? Daily, Weekly, Monthly, At project completion, Never
10. How do you rate the effectiveness of the KPIs you use? Very effective, Effective, Moderate, Ineffective, Very ineffective
11. What challenges do you face in monitoring and analyzing KPIs? (select all that apply) Lack of data, Difficulty in interpretation, Lack of appropriate tools, Resistance from staff, Other
12. How do you use KPI results for decision-making? To define strategies, To monitor progress, To improve processes, Other
13. What are the biggest challenges you face in quality management? (select all that apply) Lack of resources, Resistance from staff, Inadequate training, Lack of support from management, Other
14. How do you rate the performance of your projects regarding quality? Very good, Good, Average, Poor, Very poor
15. What are the main sources of information on quality management? (select all that apply) Training/Seminars, Internal procedures, External consultants, Literature, Other
16. What are the main impacts of quality management on your projects? Increased customer satisfaction, Reduced costs, Improved delivery time, Other
17. What improvements would you suggest to your organization's quality management process?