Introduction

The world today is characterized by its fast-pace, rapid transformations, and multiple forces that affect all organizations. These forces are a shorter product’s life cycle, a demand in personalized quality products and services, the free trade which facilitates the circulation of goods and capital, the use of information and production technologies that are flexible and allow the creation of new processes, and finally the production of a wide range of products in small quantities, rapidly and at a lower cost.

To remain competitive and relevant, organizations must innovate, control the new technologies, mobilize and motivate their human resources and place customers’ expectations first. Thus, economical success and competitiveness will not be based anymore only on nations’ natural, material, and financial resources abundance, which are disappearing with the advent of globalization. It will be based on knowledge, how to, how to be, how to live together and will be determining factors in the conquest for greater market shares.

These realities impose on today’s organizations to organize themselves differently and project management is emerging as a new way for them to do so. This structure allows, better than any other, to achieve goals and objectives with effectiveness and efficiency. Quality management in project environments is playing a significant role as a tool for the decision-maker (project manager) to constantly face the world’s competition.

Quality Management Theories within the Context of Project Management

One of the most problematic issues confronting the researcher in quality management is the search for an appropriate definition (Fynes 2000). Quality is a multifaceted construct difficult to define given the number of factors available. This creates an ambiguity and makes it difficult to differentiate between the different definitions of quality known to date.

The differences among frameworks proposed by writers such as Deming, Juran, and Crosby have no doubt contributed to this confusion (Dean & Bowen 1994). Deming’s (1986) framework emphasizes the systemic nature of organizations, the importance of leadership, and the need to reduce variation in organizational processes (Anderson, Rungtusanatham & Schroeder 1995). Juran’s (1989) framework involves three sets of activities—quality planning, control, and improvement—and emphasizes the use of statistical tools to eliminate defects. Finally, Crosby (1979) focuses on reducing cost through quality improvement.

Beyond these differences, the variety and continuing evolution of techniques being practiced under the rubric of Total Quality (TQ) makes it difficult to maintain a clear conception of its meaning (Dean & Bowen 1994).

Garvin (1984) was one of the pioneer researchers to introduce the first classification of differentiation between definitions of quality. He presented five dimensions:

1. Transcendental, excellence of the highest standard
2. Product-based, dependent on the attributes
3. User-based, satisfying or exceeding the wants of customers
4. Manufacturing-based, conformance to requirements
5. Value-based, value for money.

Ten years later, Reeves and Bednar (1994) concluded that the different quality definitions revolve around a four-way classification, which are excellence, value, conformance to specifications, and meeting and/or exceeding customer requirements. In our opinion, all this leads to one conclusion: “the quality construct space is so broad and includes so many components that there would be little utility in any model that tried to encompass them all” (p. 441). There lies one of the main challenges in quality management research: the search for a universal definition and the formulation of propositions describing the relationship of explanatory variables of the quality construct. Therefore, each existing definition known up-to-date must be understood as being contextual.

Feigenbaum (1983) defined quality management as: “The combination of characteristics from marketing, engineering, production, and maintenance through which the products or services, in the consumption process, meet the customer’s expectations” (p. 56). In other words, quality can be defined as the understanding of who are the consumers and what are their needs.

A project, by definition, is a complex and nonrepetitive task requiring time and resources (human, material, financial, etc.). It is divided into interrelated or parallel activities, each having a beginning and an end and involving resources. Ménard (1994)
defines project management as “a set of interdependent activi-
ties leading to the delivery of new services or products, under
constraints of performance, quality and cost, and taking place
within a complex and dubious context, which involves many par-
ticipants” (p. 128).
In this context, several implications fall from these two defi-
nitions of the quality management and project management:

1. Satisfaction, and consequently quality depend on the eval-
uations made by people external to the organization who pro-
duce the goods and/or the services.
2. All structures within an organization play a role in satisfy-
ing and meeting the consumer’s needs.
3. Satisfying the consumer’s needs is directly linked to long-
term consumption of products or the results of a service. Eval-
uation is therefore based on a comparison over a consider-
able amount of time between the consumption and the percep-
tion of competitive offers by the consumer.
4. Quality is a dynamic concept and an evolutionary objective.
The products and services must be improved over time along
with the competition improvement.
Excellent papers have been published and are available on
project management where its virtues and positive influences on
the overall organizational performance are presented. As Laszlo
(1999) points out, when being considered in its generic form,
project management can also be applied to any set of activities,
and in this context it is no less than a universal management tool.
Projects just like any organization face the same challenges of
performance and success. These challenges can be translated into
the quality improvement of their deliverables and services to con-
tinue compete in highly competitive environments. By competi-
tive environment we mean a knowledge-based society where the
need for knowledge improvement precedes the competition. In
such a context, the key toward quality is the production of goods
and services meeting the consumer’s needs. Quality, within proj-
ects, can be defined as meeting consumer’s needs from the point
of view of the project cost and timeline and also from the perfor-
mance of technical requirements. It goes without saying that qual-
ity projects are closely related to the capacity of project managers
to successfully manage it. This capacity rises from their own
knowledge of the quality principles, methods and success factors
on the basis of experience gained from several projects. The gained
experience in the context of project management seems to be re-
lated to the concept of continuous improvement in quality man-
agement. The concept comes with the intention of stimulating the
organization efficiency, to increase its competitive advantage on
the market as well as providing a better response to the customer’s
needs and expectations. Looking back through history, knowledge
management was always an important driving force within civili-
zations, from the Egyptian era (3000 BC) to the new millennium
(2000 AD). The progress and the prosperity of mankind have up
until now been propelled by the learning capacity of gained ex-
perience, from the construction of the pyramids to the launching
of rockets. Knowledge management is part of our reality and is a
significant success factor within our organizations.

Traditionally, project management has been regarded as an ex-
clusive management process of scientific nature. It is character-
ized by a range of specific techniques developed for planning,
monitoring, and controlling of project performance and qual-
ity of project work. It is now being increasingly accepted as an
inclusive concept integrated into general organizational en-
deavor to provide better quality to customers through effective
intra-organizational integration and optimal utilization of scarce
resources (Cicmil 2000). Quality in this context can be seen as
an extension of scientific management. Unfortunately, very lit-
tle empirical research exists to demonstrate the link between
quality management practices and a better project management
performance. Several authors though note the importance of in-
tegrating quality management principles and practices into the
project management process.

In many cases, project management has been used to imple-
ment a total quality management culture or to ensure the qual-
ity of the project outcomes and deliverables (Orwig & Brennan
2000). A review of the literature shows that several authors es-

tablish a link between quality management and organizational
performance. It is often linked with the methodologies, the prac-
tices, and the techniques of project management. For example,
Kotnour (2000) incorporated the concept of organizational
learning to the project environment to explain how it could im-
prove knowledge and organizational performance. He joins
Orwig and Brennan (2000) who suggests the implementation of
management techniques and tools to allow the retention of in-
formation collected within projects. This is in order to constitute
a form of “organizational memory” (organizational learning ac-

cording to Kotnour), thus providing the basis of any long-term
continuous improvement within the organization, continuous
improvement being one of the fundamental principles sup-
porting quality management.

Recent research in quality management shows several rea-
sons regarding the relevance and the actuality of these two com-
petitiveness key components, which are quality management
and project management:

• Firstly, the concept of quality management in the organiza-
tional environment is complex. As Laszlo (1999) explains, it is
relatively easy to capture top management’s attention with re-
gards to quality management but it is difficult to get and sustain
its commitment and support for such an initiative within the or-

ganization. Managerial commitment is certainly an essential
factor to the success of any kind of initiative related to quality
management but certainly not unique.

• Secondly, there seems to be a growing interest toward the knowl-
edge of tools and techniques available in quality management. We
are still looking for some miraculous formula, which would guar-
antee the success and ultimately the survival of our organiza-

tions. Much progress has been made, thanks to quality man-
agement, reengineering, and process management. The chal-
genue though remains to comprehend and integrate these concepts.

• Thirdly, it seems difficult to define the concept of quality
management as it applies within organizations. It seems even
more difficult to dissociate it from project management. The new designation of quality management system being used emphasizes the fact that quality must be an integral part of the management activities and systems within an organization (Laszlo 1999).

• Fourthly, a great number of project reports state that the project was delivered “on time, to budget and at the required quality” whereas “approximately 63% of all information systems projects encounter substantial budget overrun” (Gardiner & Stewart 2000). This creates a disillusion and consequently a loss of the project stakeholders’ confidence. To try and eliminate this disillusion requires the redefinition of the concepts of performance and quality project.

The concept of quality has always been and continues to be a topic of interest today. Quality is presently addressed in numerous academic and trade publications, by the media and in training seminars; it is perhaps the most frequently repeated mantra among managers and executives in the contemporary organizations (Reeves & Bednar 1994). Quality management has also been the purview of operations management for repetitive processes. Project management has been applied to temporary endeavors to create unique products and services (Project Management Institute 1996). Any convergence of thought between project management and quality management has been focused on using project management to implement a total quality management culture (Gupta & Graham 1997; Sink 1998), or on assuring the quality of the project outcomes and deliverables (Shenhar & Al 1997). For project-based organizations where the project is the basic form of organization for its operations, project management is in itself an ongoing repetitive operation to which at least some of the quality management practices could apply. By considering both disciplines in terms of the fundamental principles of customer focus, teamwork, and continuous improvement, it can be shown that by instituting a formal project management methodology and instituting basic project management techniques, project-based organizations are fulfilling the principles of quality (Orwig & Brennan 2000). There is no doubt that these two disciplines are complementary. In addition to the number of similarities shared by the two disciplines, we can mention the interaction of many participants as well as the performance constraint, often described as meeting the customer’s needs. Quality management and project management also seem to be perceived, in many cases, as “holistic” approaches, or in other words magical potions prescribed for better management of the organizations.

As presented to date, quality management and project management share several similarities, with regards to their definitions as well as their implementation. On that basis, it is possible to adopt quality management tools proven to be very efficient in manufacturing area to the generic quality needs of project management. As Barad and Raz (2000) says, this avenue seems more promising to better understand the synergy and the interactions implied with the application of quality management to specific areas such as project management. This is why it is very interesting and appropriate, within this research, to look into the elements contributing to this similarity. They can be described in the same way. Each one has its own language and its own set of practices and techniques that makes possible the establishment of a boundary between the two bodies of knowledge. However, these two disciplines share three common principles: customer-focus, teamwork, and continuous improvement. From these three principles derive the following duality: for a project-based organization, formal project management means quality management (quality being an important outcome of a project); on the other hand, quality management principles applied to project management lead to the same deliverables. Therefore, the same results can be obtained one way or the other. In our opinion such similarity cannot exist without the existence of common explanatory factors.

Establishing the link between quality management and project management has become a topic of interest. Orwig and Brennan (2000) concluded that quality management and project management can be described as Churchill described the United Kingdom and America, as “two great countries divided by a common language.”

The duality previously defined proves that quality management practices are far from being in conflict with those of project management. In fact and without exaggeration we assert that the two disciplines are converging. Such a convergence is an obvious sign of the contribution of quality management to project management. Kélada (1999) reinforces this idea by saying that “the concept of total quality transcends the singular quality of the products or the processes, it extends to the economical, social, commercial, technical, and political performances. This is carried out by a joint effort of all the people within the organization and its external partners such as its human, material and financial resources providers, its subcontractors, its distributors, its conveyors, and its after-sales service. This is not anymore the responsibility of a few specialists. It is a continuous process involving everyone, at any time and everywhere inside and outside the organization.” This assertion concurs with project managers who have, as a global objective, to make quality a key component in the organization culture, a value shared and considered important by all its members. Organizations which will reach the economical, social, commercial, technical, and political performances to which Kélada (1999) refers are those that will have known first to design and deliver products and services having the customer in mind. These organizations will also have understood that there are two types of customers to satisfy within the production process, external and internal customers. External customers are individuals or companies who buy the products and/or services, generating revenues and profits. Internal customers are employees or internal working units carrying out the next task in the production line.

Quality is therefore a team effort. It is not the responsibility of one department within the organization. Quality must be part of the goods and services as they are produced and delivered and get built step by step. It must also be embedded within the project management process.
Quality Principles and Key Success Factors in Quality Management

The fact is that a global and universal definition of quality does not exist. The many definitions offered to date by different authors are adapted according to various circumstances and are contextual. According to Reeves and Bednar (1994), continued inquiry and research about quality and quality-related issues must be built upon a thorough understanding of different definitions of the construct. Knowing how difficult it is to come up with an appropriate definition suitable for all contexts, it is then advisable to consider quality such as Reeves and Bednar (1994) conceives it, as a philosophy or as a management approach which can be characterized by its principles, its practices and its techniques.

Within our research framework, we adopted the approach proposed by Flynn, Schroeder and Sakakibara (1994). It is particularly difficult to formulate propositions describing the relationship with quality explanatory variables and that the key issue in quality theory development resided in the articulation of the distinction between quality management practices (input) and quality performance (output). To date this has been blurred under the broad heading of quality. We resolutely agree with Flynn, Schroeder and Sakakibara (1994). Operating within that framework, we will define the principles and key success factors on which quality management can rely, within the context of project management. By factors, we refer to the criteria or attributes against which we will evaluate the success of any quality initiative in the context of project management. This is based on the three common principles shared by the two disciplines, which are customer-focus, teamwork, and continuous improvement.

Three research teams, Adam (1994), Flynn, Schroeder and Sakakibara (1994), and Voss and Blackmon (1994) greatly contributed to the conceptualization of quality management practices and quality performance and to the development of reliable measurement scales. Today this research constitutes a breakthrough for the establishment of relationships between quality management practices and quality performance. Merit of the initial identification of a core set of quality management practices and the design of a set of valid and reliable measurement scales can incontestably be attributed to Saraph, Benson and Schroeder (1989). They identified eight critical factors of quality management (quality practices) from the existing quality management literature, namely: the role of management leadership and quality policy, the role of the quality department, training, product/service design, supplier quality management, process management, quality data reporting, and employee relations. On the basis of these eight criteria, Flynn, Schroeder and Sakakibara (1994) developed and validated an instrument that assessed both quality practices and quality performance. This instrument categorizes quality management practices into seven key dimensions whereas quality performance is measured on the basis of percentage of product shipped without rework and perception of the contribution of the quality program to the organization’s competence. These dimensions could be used in our research as a reference framework. This is why it is important to define them in a greater detail:

1. Top management support relates to actions and behaviors of senior management with respect to setting goals and objectives, communication, performance measurement/appraisal, and encouraging employee involvement.

2. Quality information relates to the high visibility on defect rates, compliance, and schedule adherence to the plan, feedback to employees on their performance, the use of the tools and techniques such as statistical process control (SPC) in order to provide useful information on quality management issues to top management as well as to other operational levels of the organization.

3. Process management is a core issue in quality management. It is the clarification of process ownership and boundaries, documenting process management procedures, and cleanliness/or- ganization (transparency) of the workplace.

4. Product design includes the simultaneous use of engineering, cross-functional project teams, frequent design reviews, value analysis, design for manufacturability, reliability engineering and the systematic identification of customer requirements.

5. Workforce management consists of a systematic and careful approach to recruitment, the use of teamwork and group problem solving, equitable work structures, commitment to training, and performance and recognition systems.

6. Supplier involvement means fewer supplier dependencies, confidence in their processes and quality control, strong buyer-supplier interdependence, an emphasis on quality rather than price, and joint product development.

7. Customer’s involvement implies a high level of customer interaction, the maintenance of a close relationship with them, and a proactive approach to customer’s feedback.

The eighth dimension relates to quality performance as defined earlier.

Over the last few years, there has been a growing interest in performance measurement and management. Organizations are seeking new ways to assess their performance. Neely and Adams (2000) offers an interesting contribution to the quality performance concept as they take a step back and ask a fundamental question, namely: Which perspectives on performance matter?

Neely and Adams (2000) identified five distinct and interlinked perspectives on performance along with five key questions for measurement design:

1. Stakeholder Satisfaction: Who are the key stakeholders and what do they want and need?

2. Strategies: What strategies do we have to put in place to satisfy the expectations and needs of these key stakeholders?

3. Processes: What critical processes do we require if we are to execute these strategies?

4. Capabilities: What capacities do we need to operate and enhance these processes?

5. Stakeholder Contribution: What contributions do we require from our stakeholders if we are to maintain and develop these capacities?
Neely and Adams (2000) shows these five perspectives on performance in the form of a prism to illustrate the complexity of performance measurement and management and their multidimensionality. Their work offers an interesting prospect, which could very well contribute to our research.

Finally, Fynes (2000) observed that Quality Awards such as the Baldrige Award and the European Foundation for Quality Management (EFQM) Award are also based on similar sets of practices as those identified by Flynn, Schroeder and Sakakibara (1994). The Baldrige Award is scored on nine areas, which are leadership, information, and analysis, strategic quality planning, human resources utilization, quality assurance of products and services, quality results, and customer satisfaction. The EFQM Award is assessed on 10 areas, among which are leadership, resources, policy and strategy, people management, people satisfaction, customer satisfaction, impact on society, and business results. To add to Fynes (2000) who said that these elements closely mirror the seven quality management practices identified by Flynn, Schroeder and Sakakibara (1994), the Canada Award for Excellence presented annually by the National Quality Institute is also based on quality principles and criteria that are quite similar. This management framework is assessed on seven elements, which are leadership, planning, client focus, people focus, process management, supplier/partner focus, and organizational performance.

Quality Management Practices and Project Management

The contribution of quality management practices to project management is obvious. This recognition is ineluctably a positive and necessary step but insufficient. To be satisfactory, our research will have to provide a graduation of the extent of its scope by studying the contribution range of the quality management principles, methods and key success factors in the establishment of the fundamentals and techniques of project management and subsequently and specifically answer the following question: How significant (what is the measure) are quality management principles, methods and key success factors in the establishment of the fundamentals and techniques of project management? These are the key elements of our research.

A question must be raised with regards to the feasibility and the practicality of quality management principles, the methods and the key success factors applicable to project management. Before assessing such measurement, it is essential first to understand how the eight critical factors of quality management (quality practices) apply specifically to project management. By taking into account each critical factor’s definition previously selected and against which the quality management practices can be assessed, an analogy can be established between quality and project management. Thus, it is appropriate to review each of these factors to understand how a quality management approach can be applied to project management:

1. **Top management support** relates to actions and behaviors of senior management with respect to setting goals and objectives, communication, performance measurement/appraisal, and encouraging employee involvement. At the project management level, this factor mostly relates to managers who must clearly communicate the goal and objectives to those who contribute to its implementation. This criteria is particularly important at the planning phase of a project since all participants must have the same understanding of what needs to be accomplished. Such knowledge makes it possible for the project manager to get the support, cooperation and trust of the team. His active involvement, such as top management, demonstrates his integrity and credibility, and by the fact positively influences and motivates the team toward the goal. As the members of an organization share the responsibility, the commitment, and the leadership with regards to continuous improvement, project participants can put forward their recommendations at any stage of the project in order to achieve the project objectives. A shared vision sets the stage for learning to occur.

2. **Quality information** relates to the high visibility on defect rates, compliance, and schedule adherence to the plan, feedback to employees on their performance, the use of the tools and techniques such as SPC in order to provide useful information on quality management issues to top management as well as to other operational levels of the organization. As Laszlo (1999) explains, this can easily be applied to the basic principles of project management if the requirements are viewed at their basic level and if the project manager can demonstrate the relevancy of the project by linking its success within the context of the organization as a whole. Specifications and customer expectations have to be communicated and measurements, tools and techniques have to be put in place for each stage of the project to ensure compliance. Quality project information relates also to the gathering of all the lessons learned by the project team. Project knowledge documentation contributes greatly to organizational learning.

3. **Process management** is a core issue in quality management. It is the clarification of process ownership and boundaries, documenting process management procedures and cleanliness/organization (transparency) of the workplace. It is sometimes confused with project management. There are distinctions to be made between the two methods but it is possible to manage a project as one complex process although there are more opportunities and benefits to manage a project as a collection of processes (Laszlo 1999). Process management within a project consists in identifying the key activities as well as input/outputs to apply process control and optimization for each of them. Process indicators are used to monitor the progress of the project and solutions are incorporated to ensure customer requirements are met. Lastly, any changes made to the existing processes or the implementation of a new process has to be documented in order for the organization to offer the same uniform products and services quality during future projects.

4. **Product design** includes the simultaneous use of engineering, cross-functional project teams, frequent design reviews,
value analysis, design for manufacturability, reliability engineering, and the systematic identification of customer requirements. Product design can represent a phase in itself within a project and requires an excellent understanding of all other project dimensions, such as the customer’s needs and expectations. Those are directly linked to the project goal and objectives. This criteria is also directly related to performance criteria, which also affects all the working units within the organization (e.g., research and the development, marketing, production and finance).

5. Workforce management consists in of systematic and careful approach to recruitment, the use of teamwork and group problem solving, equitable work structures, commitment to training, and performance and recognition systems. The organization has to undergo the necessary efforts to create and support a structure, which encourages its members to reach their full potential. Employees are valuable resources and using the appropriate approach may make the difference between project success and failure. As Romme (1997) pointed out, teams are key learning units, which can innovate whereas the hierarchy most ensures the documentation, retention, and communication of the learning to the other working units within the organization. Laszlo (1999) suggests that project managers are to control the processes, not people; project managers are to manage people, they (people) control the processes. It is therefore important to select the appropriate resources for the right processes. It also implies providing with the tools they need and the freedom required (leadership) to make the necessary adjustments if needed. A participatory environment in all phases of the project brings further benefits as well as timely feedback on participants’ performance. This can be a significant factor for a successful project.

6. Supplier involvement means fewer supplier dependencies, confidence in their processes and quality control, strong buyer-supplier interdependence, an emphasis on quality rather than price and joint product development. At the project level, inputs from the project’s external resources are almost mandatory. Even though providers are outside the core project team, they can provide precious and useful information that guarantee the success of the project. It is also an opportunity to establish solid links with them as well as ensuring continued support beyond the project scope. This kind of collaboration in the end contributes to improving the quality of the organization products and services.

7. Customer’s involvement implies a high level of customer interaction, the maintenance of a close relationship with them, and a proactive approach to customer’s feedback. This concept of customer involvement can be applied to project management in the form of communication of the customer’s needs and explicit/implicit expectations to all project participants. These needs must be accurately reflected in the project plans and objectives to enable the team to focus on the ultimate goal, which is the customer satisfaction. Any changes with regards to these needs or expectations during the course of the project have to be documented and communicated as they have an impact on the measures and controls established at the beginning of project.

8. Performance, within quality management, refers to the results from the overall efforts for improvement and their impact on the organizational overall performance. It is within the same context that this factor can be translated at the project management level. Performance is based mainly on the quality of the deliverables and customer satisfaction, to which we can add the delivery performance and costs. The ultimate success criteria for a project are undoubtedly profit and lessons learned, which have a long-term impact on all other projects undertaken within the organization.

Conclusion

A lot of resources are being deployed by organizations toward implementing quality management and other improvement initiatives. Quality management tools have been proven effective in manufacturing areas but there are very little empirical researches that demonstrate the link between quality management and better project management performance. The main objective of our research is to quantify this link between quality management and project management performance. It represents a difficult and complex challenge but we know that certain elements already exist to help us progress toward the resolution of this problem.

We regard project management as a specific and promising application area of quality management tools and practices. The identification of project key success factors is still a managerial concern and there is a definite need for a wider awareness of those factors determining project performance. Through our work, we want to make a contribution to the growing endeavor of practitioners and facilitate improvements in the performance of projects.

References


