



Critical success factors of Six Sigma implementations in Italian companies

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ABSTRACT

The present paper discusses the results of a research project going on at Politecnico di Milano, aiming at analysing the idiosyncrasies of Six Sigma implementations in Italian companies. In particular, the project addresses the following research questions, regarding the approach of Italian companies towards Six Sigma: are Italian companies implementing Six Sigma exactly as it was originally conceived at Motorola or, rather, is there an Italian way to Six Sigma? do Italian companies which implemented Six Sigma recognize the same set of critical success factors singled out in the international literature?

Bibliographic analysis showed a lack of literature concerning Six Sigma implementation in Italian companies. The research was then based on the study of real life application of Six Sigma in an Italian company and on discussion through a set of workshops organized at Politecnico di Milano with Six Sigma experts. In particular, we will concentrate on a set of case studies and on one workshop specifically addressing the second research question.

The insights coming from the analysed case studies and discusses with industry experts – if further explored, validated and reorganized – could constitute a Road Map for Six Sigma implementation in Italian companies; the validation and re-organization process is still on-going and its completion could constitute a further research objective.

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1. Introduction

The present paper describes the results of a research project focused on Six Sigma implementation process, with a particular attention to understand which is the situation of the enterprises operating in Italy and, consequently, which are the managerial implications of a Six Sigma implementation in the typical Italian company.

As it is well known, the Six Sigma methodology, born at the end of the 80s in Motorola, is strongly oriented to measurement, and in particular to the adoption of statistical techniques, since long used in other quality philosophies and approaches, and now encompassed in a comprehensive framework advocating the adoption of some basics quantitative tools for the resolution of the most common problems which characterize the organizations.

The objective of the present research work consists in proposing a reference model for Six Sigma implementation in Italy, based on four macro-areas considered as critical, following the analysis of some cases of implementation:

- sponsorship;

- approach towards training;
- number of staff involved in the project;
- performance measurement.

The paper is structured as follows:

Section 2 is devoted to a brief overview of the literature on Six Sigma, both from an international and an Italian perspective, showing the lack of bibliography, describing Italian implementation case histories.

Starting from this simple finding, the research going on at Politecnico di Milano along with its research questions are then presented in Section 3.

In Section 4, a selection of the most significant case studies will then be presented, in order to highlight with practical examples the peculiarity of the Italian context and how managers and entrepreneurs are trying to adapt an original Six Sigma approach for a better fit with the idiosyncrasies of an Italian company.

In Section 5, the results of a workshop with Six Sigma experts are presented, in terms of critical success factors of an implementation of Six Sigma in an Italian SME, as compared with the set of factors singled out in the international literature.

In the concluding section, the authors argue that such insights could serve as a basis to build a road map for Six Sigma implementations in Italy.

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2. Scientific background

2.1. TQM, the “father” of Six Sigma

It is here interesting to devote a short paragraph to the main concepts of total quality management (TQM), since it can be considered as the father of Six Sigma: many of the principles constituting the basis of TQM are also paramount in Six Sigma.

TQM is a management philosophy originated in the 50s and has steadily become more popular since the early 80s. Total quality is a description of the culture, attitude and organization of a company striving to provide customers with product and services satisfying their needs.

Total quality control was the key concept of Armand Feigenbaum’s 1951 book “Quality Control: Principle, Practice and Administration” – a text that was lately revised under the title “Total Quality Control” – and many other quality gurus, like Deming, Juran and Ishikawa—also contributed to the body of knowledge now known as TQM.

The International Standards Organization (ISO), TQM is “a management approach. For an organization centered on quality, based on the participation of all its members and aiming at long-term success through the customer satisfaction, and benefits to all members of the organization and to society”. TQM seeks to integrate all departments (from marketing to finance, to design, engineering, manufacturing, customer service, etc.) to focus on meeting customer needs and company-wide organizational goals. TQM views an organization as a collection of processes, arguing that every company should strive to continuously improve these processes by exploiting the knowledge and the experience of every worker in the organization.

Albeit originally applied to manufacturing operations, TQM is now becoming recognised as a generic management tool, just as applicable in service companies and in the public sector.

The key principles characterizing TQM in its most general conception are (Hashmi, 2006):

- Management commitment: in TQM, management should be the driver of change.
- Employee empowerment, through training, measurement and recognition (for both the teams and individuals), and teamwork.
- Fact-based decision making tools.
- Focus on the customer.
- Continuous improvement.

Lately, TQM also received strong criticisms because it provides only very broad guidelines for implementation. As Pydzek reports, “true, solid research showed that organizations which succeeded in successfully implementing TQM, reaped substantial rewards. But the low probability of success deterred many organizations from implementing TQM. Instead, many organizations opted for ISO 9000, since this promises not world-class performance levels but standard performance, and provide clear criteria and a guarantee that meeting these criteria will result in recognition. In contrast, TQM offered a generic set of philosophical guidelines and no way to prove that one had accomplished their quality goals” (Pydzek, 2006).

2.2. The Six Sigma revolution

As it is well known, the Six Sigma programme was first launched at Motorola in 1986, thanks to the joint efforts of some key figures, among which Mikel Harry (Senior Engineer of the Government Electronics Group), Bill Smith (VP and Senior Quality

Assurance Manager) and Bob Galvin (CEO). “Motorola invented the Six Sigma quality improvement process in 1986. Six Sigma provided a common worldwide language for measuring quality and became a global standard.” (source: www.motorola.com; other sources frequently report that the official launch of Six Sigma took place in 1987). This allowed Motorola to become the first American company to win the Malcolm Baldrige Quality Award, in 1988.

The Six Sigma methodology, originally conceived as an approach to improve manufacturing processes, has been then utterly revised by General Electric, in the mid-90s, first in the form of a Total Quality programme, to be then promoted to the rank of “managerial approach” by which to manage the entire organization.

Any Six Sigma implementation aims at improving customer satisfaction, by mean of improved processes capability. This, in turn, is made possible by focusing on “Critical to Quality” (CtQ) characteristics and implementing improvement actions seeking to continuously reduce processes variability in terms of CtQ. These actions are carried out by involving every employee.

Most successful implementation of Six Sigma methodology have common characteristics:

- Six Sigma embeds quality in the company’s functions and departments, rather than maintaining it as a separate entity. The idea of a Six Sigma implementation being a private affair of the Quality Management Department is a profoundly distorted one: the Quality Management VP could not bear the responsibility of a companywide implementation of Six Sigma.
- In most successful implementations, the Six Sigma program has been extended to all company’s processes. It would have been a big mistake to limit the implementation only to the most relevant areas.
- Six Sigma takes management involvement and support for granted. It is paramount that the company board places quality as the first priority.
- Six Sigma focuses on well defined, measurable goals. Often the finance Department is involved, being in charge to validate economic savings resulting from the various improvement actions.
- The organizational structure of a Six Sigma implementation is based on precisely specified roles (e.g. Green Belts, Black Belts). A key driver of success of Six Sigma is the possibility to recruit the best resources in the company; linking career paths of the staff to personal achievements within the Six Sigma programme and to contribute to its success, is often useful to increase motivation and commitment.

It is then apparent that Six Sigma has been inspired by TQM, being based on a pretty similar list of principles. Among the main differences, it is worthwhile noticing that:

- while TQM is oriented to the final result of a process, Six Sigma aims at preventing errors, reducing the variability of the processes;
- TQM mostly provides broad guidelines for quality management, while Six Sigma commends precise applicative methodologies (DMAIC for existing processes and DFSS for new ones) and focuses its attention on numeric certification of improvements and associated savings;
- in Six Sigma, top-down management leadership plays a critical role in enabling the successful deployment of tools and techniques – much less in TQM – and this, in turn, ensures alignment of projects with strategic goals of the organization.

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