

Chapter 16

Learning to Innovate: Methodologies, Tools, and Skills for Software Process Improvement in Spain

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ABSTRACT

Using a large sample of Spanish organizations, in this chapter, the authors empirically reveal the state of health of the Spanish software industry in terms of software process improvement, both in the monitoring of working methodologies and the usage of tools, and they provide the necessary information in order to understand the real skills and efforts to improve the quality of products and end-user services. Having found that a significant number of organizations do not have specific training programs or their own software quality department, it is an essential point of departure for professionals to increase awareness of the need to implement quality processes to improve the competitiveness of the company. The state of knowledge of the methodologies aimed at quality and existing national and international standards shows that these are barely known by professionals in Spanish companies, especially among SMEs and micro-enterprises. However, most Spanish small businesses and large enterprises think the CMMI model best suits their needs, both business and technical. This growing interest is the main reason behind the fact that Spain has almost 38% of the European CMMI certifications, including 22 new certifications since 2010, and is the fourth country in the world in terms of number of CMMI appraisals.

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1. INTRODUCTION

There are many wide-ranging methodologies and tools, which may be involved in a software project, that are viewed as the entire project life cycle from its creation as a business necessity to its operation and maintenance.

The developing interest of organizations in cementing their relationship with customers and improving competitiveness and productivity is leading an increasing number of companies, both those with a demand for software products and services and those supplying this area, to make efforts to ascertain and monitor the quality of products and end-user services.

With the arrival of new working models and the heterogeneity of services, we are also seeing an increase in activities and complex processes, making it more difficult to monitor the quality of an organization.

In this regard, organizations maintain as their main initiatives the underpinning of basic tasks, intended to control costs, increase quality and reduce the time to market of software products.

In Spain, where the fabric of small and medium-sized enterprises (SMEs) amounts to 99% of all companies (94% of these being organizations with fewer than 10 employees), the situation is decidedly different from that of other industrialized countries, and particular attention and effort should therefore be focused on SMEs.

Within this context, the aim of our study has been to reveal the state of health of Spanish companies in terms of software process improvement, both in the monitoring of working methodologies and the usage of tools, and to provide the necessary information in order to understand their real skills and efforts to improve the quality of products and end-user services.

2. METHODOLOGY

For this study an online survey was conducted within Spain by the Spanish National Laboratory for Quality Software and the Observatory of the National Institute for Communications Technology¹ between July 2008 and December 2012. 2,925 company managers and professionals from across the country were selected on the basis of their position within the software products and services market (supply and demand) and by their sector of activity in accordance with the CNAE². In addition to the national sample, an oversample of 75 general managers, who are representatives of software factories located in Spain, were interviewed. Parallel documentary research and analysis were undertaken. These included previous works and studies, both national and international articles on software quality with particular reference to the knowledge and use of methodologies and tools in software projects.

The main reason behind this distinction is that business needs and objectives are believed to be different for organizations belonging to the supply side as opposed to the demand side and vice versa. In order to guarantee the representation of the study at a national level, *the following research focus strata are defined:*

- The geographical scope of the study extended to the entire national territory, divided into seventeen autonomous regions and the two autonomous cities of Ceuta and Melilla.
- The sectorial scope was defined by supply and demand with each of the following types of company included in accordance with the National Economic Activity Classification (CNAE):

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