Chapter 17

Software Development in Developing Countries: Framework for Analysis of Quality Initiatives

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A number of software quality enhancement approaches have been suggested and implemented. Over the last decade, software (SW) companies in developed countries have reported significant enhancements in productivity and quality by using various quality approaches. Software companies operating in developing countries have also undertaken quality initiatives in the recent years. This chapter presents a framework for analysis of quality initiatives. The need for considering customer and market aspects in assessing an organization's quality initiatives has been established. The notion of a market quality indicator (MQI) has been introduced for this purpose.

Information on the quality and process improvement initiatives at some of the leading software companies of Pakistan has been collected. The proposed framework is applied to analyze the quality initiatives of these companies. Based on the insights obtained from this analysis, some recommendations for companies interested in launching quality and process improvement initiatives are also presented.

INTRODUCTION

It has been generally realized that quality plays a very important part in the success of any business and many philosophies and approaches have been devised to guide organizations in their quest for quality (Deming, 1986; Juran, 1988).
Similarly several approaches have been proposed for handling the issue of enhancing software quality. It has also been highlighted that quality issues in software development are, in some respects, inherently different from those in manufacturing (Binder, 1997).

One approach to assess an organization’s ability and capability to produce quality software is the Capability Maturity Model (CMM). The main focus of CMM is on improving the processes involved in SW development. Total Quality Management (TQM) based model for quality improvements have also been suggested and followed by some software organizations with very promising results. Hollenbach (1997) presents the results of one such initiative at a specific company.

Over the recent years many organizations have adopted the CMM approach to quality improvement and the benefits achieved from CMM have also been documented (Herbsleb, 1997). On the other hand, several concerns have also been raised regarding the applicability and relevance of this approach for some types of software development organizations, especially small enterprises (Bach, 1994; Brodman, 1994). Work has also been done to tailor CMM to suit the needs of small business, small organization and small project situations (Johnson, 1999)

Earlier studies have also shown that the specific situation and the operating environment of a given organization also plays an important part in determining the most appropriate approach for a quality initiative at a given company (Hassan, 1997). Some of the factors that are of specific importance for companies operating in developing countries have also been studied before.

Most of the reported studies show significant improvement resulting from use of quality initiatives in the developed countries and in many cases the quantitative benefits have also been recorded (Arthur, 1997; Diaz, 1997). With increasing use of outsourcing and development of software industry in developing countries, it has become important to study quality initiatives undertaken by companies in these countries. Hassan (1997) presents a contingency based capability maturity model for developing countries based on the field data from a number of companies in Pakistan. A number of companies have launched extensive quality initiatives in the recent past, in Pakistan. An in depth study of these initiatives can provide useful insights on how companies in developing countries could potentially benefit from effective and relevant used of the quality concepts, techniques, and tools.

A framework for study of quality initiatives is proposed in the next section. Data has been collected from three software companies in Pakistan on their quality initiatives and is presented. This is followed by an in depth analysis of these quality approaches and some suggestions on how software companies in developing countries may configure a quality and process improvement approach that is appropriate for their own specific situation.
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