

# Chapter XIV

## Quality Assurance with Project Management

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### **ABSTRACT**

*Project management is a carefully planned, organized effort to manage the resources in order to successfully accomplish specific project goals and objectives. It involves the entire life cycle of a project right from the feasibility study of the project, project planning, implementation, evaluation, support, and maintenance of the project. Each phase of the project is a vast topic within project management. The topic of interest for this chapter is quality assurance and its relationship project management. By defining quality and situating the concept within the frame of project management, the authors' scope and understanding of project completion will be improved.*

### **INTRODUCTION**

Project management is carefully planned, organized effort to manage the resources in order to successfully accomplish specific project goals and objectives. Project management covers the entire

life cycle of a project right from the feasibility study of the project, project planning, implementation, evaluation, support, and maintenance of the project. Each phases of the project is a vast topic within project management. The topic of interest here is the quality assurance in project management.

Although it seems that there is not a unique definition for the term quality, in general, quality is referred to as the degree to which the customer is satisfied with the service/product provided. In this regard, Quality Assurance (QA) is an important portion in any business organization and is a universal term which includes the quality policy, quality management, and quality control functions. The quality assurance is the assurance that is given to the client that the product or the services is delivered at the right condition, right time, and also the ability to satisfy the given needs. QA can be considered as a part of Total Quality Management (TQM) philosophy which is geared towards the excellence of the entire organization.

### WHAT IS QUALITY?

When the term “quality” is used, one often thinks about excellent performance of a product or service. In general, when the product/service exceed one’s expectations, he/she consider that quality (Besterfield, 2004). Therefore, one may define quality as:

$$Q = \frac{P}{E}$$

Where P is performance and E is expectations. P and E may not be necessarily quantitative variables. In addition, these are most likely to be based on perception; the customers determine expectation while the organizations determine performance. Quality and quality tools, such as statistical tools, are often considered as a part of a bigger, more general concept, called *Total Quality Management* (TQM). TQM is simply the application of quantitative methods and human resources to improve all the processes within an organization to meet and/or exceed customer needs now and in the future ((Besterfield, Besterfield-Michna, & Besterfield-Sacre, 2003)

### QUALITY AND DESIGN

Product design and design methodologies have a direct impact on the quality of the product. The design process historically has been implemented in isolation from other functions of the enterprise such as manufacturing, sales, etc. There are some disadvantages in this form of implementation in terms of longer cycle time, higher costs, and products designs not being optimal. For instance, due to the sequential nature of traditional design practices, the manufacturing engineers do not have a voice in the conceptualization phase where as much as 90% of the production cost may have already been specified (Chang, Wysk, & Wang, 1998).

Companies are challenged to increase their product quality and shorten the lead time for developing new products, while lowering their production costs, all of which are rooted in the quality and timeliness of the design solutions (Suh, 2001). Singh (1996) states that several studies have suggested that most of a product’s cost become fixed in its early life cycle stage before the original design cycle is completed. A typical characteristic curve that indicates the cost incurred and committed during the product life cycle is shown in Figure 1 (Singh, 1996, p. 106).

As seen in Figure 1, the majority of the product development cost occurs in the conceptual and detailed design phase. Also, the overall design change is easier in the earlier phases.

Poor design practices lead to higher production cost and longer lead time due to extensive use of materials and parts as compared to well-designed products and, furthermore, poorly designed products are more difficult to manufacture and maintain (Suh, 2001). Therefore, considering the fact that approximately 40% of the sale price is the manufacturing cost (DeGarmo, Black, & Kosher, 1999), it seems that the design stage is the most significant stage of product development. Quality Function Deployment, Taguchi Method, Design for Six Sigma, and Design for Manufacturing are

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