



Design and Development of a Quality Management Information System

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ABSTRACT

Among all quality strategies, the quality information system (QIS) is the one which finds comparatively little recognition among the quality engineering professionals. The situation is different in the general management arena where management professionals are striving to attain core competence of organizations through the implementation of management information systems (MIS). On realizing this trend and anticipating tremendous benefits, a research project has been started with the objective of developing a QIS compatible to ISO 9001:2000. In this paper, the quality management information system (QMIS) that has been designed by referring to Clause 4 of ISO 9001:2000 has been reported. After designing this QMIS, its development in real-time environment was examined by conducting a study at an ISO 9001:2000 certified high technology-oriented company. Also, a validation study was conducted by gathering the opinions and assessment of the managing partner of the company on QMIS. These studies revealed the feasibility and possibility of implementing QMIS in ISO 9001:2000 certified companies. The details of this work are presented in this paper.

Keywords: ISO 9001:2000; management information system; quality information system; total quality management

INTRODUCTION

Due to the evolution of globalization (Benavent, Ros, & Moreno-Luzon, 2005), modern companies have been striving to compete with their competitors who are operating from different parts of the world. One of the methods

adopted by them for attaining this objective is the installation of quality systems by implementing ISO 9001:2000 standard (Williams, 2004). Since the introduction of this standard among the international community (Chin, Kim, & Kim, 2004), the companies implementing it enjoy

reputation in the global market. It is a common practice on the part of the major companies to insist on the supplier companies to install ISO 9001:2000 compatible quality systems. Because of this trend, more than 4,00,000 numbers of modern companies of different sizes and nature have installed ISO 9000 based quality systems (Gingele, Childe, & Miles, 2002). While this is an appreciable trend, it is to be noted that mere implementation of the ISO 9001:2000 standard does not enable the companies to acquire core competence. Hence, despite their effectiveness, suitable leveraging mechanisms are yet to be incorporated with ISO 9001:2000 compatible quality systems (Gotzamani & Tsiotras, 2001; Williams, 2004). One of the additional leverages to be included is the information system component (Tan, Lin, & Hung, 2003). Hence, it is high time that information system elements were incorporated with ISO 9001:2000 based quality systems. Presumably on realizing the information requirements, ISO 9001:2000 is incorporated with more information elements (Lari, 2002) than its previous version ISO 9001:1994 (Devadasan, Kathiravan, Sakthivel, Kulandaivelu, & Sundararaj, 2003). However, careful studies revealed that those information elements are not sufficient to install and manage quality information system (QIS) compatible to ISO 9001:2000. Considering this requirement, the research project reported in this paper has been carried out. The scope of this module of work was limited to the design and development of information system pertaining to Clause 4 of ISO 9001:2000 quality system. This information system is titled as quality management information system (QMIS). Subsequently, a validation study was carried out in a high technology-oriented job shop company to assess the penetration of QMIS. After noting the existing gap, the QMIS was developed in this company. The details of this work are presented in this paper.

MANAGEMENT INFORMATION SYSTEMS AND QUALITY INFORMATION SYSTEMS

Management professionals have been using information systems for more than five decades. Particularly, managers started to use computer-based information systems which today are known as management information systems (MIS). Since then, the scope of MIS (O'Brien, 2003; Oz, 2002) has been increasing and widening (Laudon & Laudon, 2002). In coincidence to MIS development, the world has been attempting to achieve continuous quality improvement in organizations. Yet, there has been no concrete effort by management professionals toward integrating continuous quality improvement projects with information systems (Forza, 1995). In fact, no major discussions have taken place in managerial conferences and seminars about extending support to enhance the effectiveness of continuous quality improvement projects through the application of MIS concepts (Peppard, 1995). At this juncture, it should be noted that a large number of companies have been benefitted by implementing total quality management (TQM) (Pearson, McCahon, & Hightower, 1995) and enterprise resource planning (ERP) systems (Themistocleous, Irani, & O'Keefe, 2001). ERP projects are incorporated with MIS elements (Subramanian & Hoffer, 2005). Presumably, due to lack of proper guidance, not many companies have invested on developing information systems for enhancing the efficiency of TQM projects. Some experts and researchers in the TQM field have advocated the need of developing information systems to support continuous quality improvement projects. The most noticeable is the contribution of Juran and Gryna (1995) who coined the term "quality information system (QIS)" (p.548). After they advocated the use of QIS, some researchers worked in the direction of developing QIS during the 1980s (Forza, 1995).

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