The Role of the Information Systems Organization in ISO 9000 Registration

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This study explores the role of Information Systems (IS) personnel in US firms in the ISO 9000 registration process. ISO 9000 quality standards have been adopted by thousands of firms worldwide; registration to one or more of these standards is widely regarded to be a competitive necessity for foreign trade. Implementation of these standards involves considerable investment in time and money, and involves employees in many departments. IS personnel have unique knowledge of cross-functional processes and the information infrastructure. Managers who ignore the potential benefits of IS participation in the ISO 9000 registration process may lengthen the registration process time and increase costs. We found that a majority of registration activities are completed without significant IS involvement but there are many areas in which greater IS involvement is desired by ISO quality managers. Another finding of this study is that, where information systems are up-to-date, information systems personnel are seen to play a greater role in the ISO 9000 registration process.

ISO 9000 registration is being pursued by firms for a variety of reasons: to meet customer expectations, to achieve quality benefits, to obtain market advantage, and/or to meet foreign trade requirements (Peach, 1994). ISO 9000 registration demonstrates that a facility is adhering to well-defined quality processes. Published in 1987 by the International Standards Organization (ISO), the ISO 9000 family of standards has evolved from a European initiative to a global quality standard. ISO 9000 standards have now been adopted in approximately 80 countries (Mohler, 1994). In late 1994, about half of the 40,000 worldwide registrations were in the United Kingdom (UK) (Golomski, 1994). However, many companies in Mexico, South America, Canada, and the Pacific Rim have achieved or are investigating registration (Campbell, 1994; Golomski, 1994). Approximately 4,500 US facilities have embraced this standard (Campbell, 1994).

The decision to obtain ISO registration is driven by customer demand, and it drives suppliers of these firms to also seek registration (Campbell, 1994; Hayes, 1994). For example, companies like Eastman Kodak Co. and E.I. du Pont de Nemours & Co. are not only ISO compliant, they are demanding compliance from their suppliers (Dover, 1993). The development of multinational and transnational corporations has broken down barriers of miles and borders when buying components and selling finished products (Florino, 1993). Conformance to international quality standards is necessary for competing in today’s global marketplace (Batra, Singh, and Willborg, 1993; Cater and Pasqualone, 1995; Cook, 1992).

Preparing for registration is a business-wide process that involves many employees in many departments (Garver and Lucore, 1994). Implementation involves substantial employee commitment as well as a considerable investment in time and money. Many of the internal costs stem from the extensive documentation and document control requirements of ISO 9000, suggesting at least one key area for IS involvement. The focus of this study is the role of Information Systems (IS) personnel in the ISO 9000 registration process in the US. To the best of our knowledge, no other studies have been published regarding either the desired or actual contribution of IS organizations, in the US or elsewhere.

Historically, IS departments have operated on the periphery of quality initiatives (Dover, 1993). Lack of IS involvement and commitment to the ISO 9000 registration process may result in additional costs to corporations. IS professionals need to become knowledgeable about the impact of these standards on their facilities as early as possible.

A survey of quality managers, conducted by the authors, provides strong evidence that IS personnel in the US currently do not play an important role in the ISO 9000 registration process. This study is without significant IS involvement but there are many areas in which greater IS involvement is desired by ISO quality managers. Another finding of this study is that, where information systems are up-to-date, information systems personnel are seen to play a greater role in the ISO 9000 registration process.
process. This finding has global implications. Included in the study are facilities belonging to firms whose home countries are not the US. Clearly, there is a basis for generalization of the conclusion to US firms operating abroad. Furthermore, this raises questions about the level of IS involvement throughout western and advanced countries.

The survey further identifies many ISO 9000 registration activities in which more IS involvement is desired, including providing education/communication and sharing knowledge of cross-functional processes. At facilities where information systems are up-to-date, information systems personnel play a greater role in the ISO 9000 registration process. This suggests that the perceived contribution of IS departments is beyond the mere support of hardware and software.

The remainder of this paper is divided into six major sections. Section II describes the conditions that motivated us to investigate this issue. Section III describes the ISO 9000 standards and discusses adoption trends and benefits. Section IV provides a framework for the study. Section V discusses the research method used to analyze the impact of IS involvement. Section VI presents the results of the survey conducted. Section VII provides a discussion and recommendations.

Background

The World of Business

Businesses today operate in an environment of global markets, operations, and competition. This globalization is a result of dramatic political and economic changes and is fostered by the development of improved transportation and communication. Virtually every firm in the US competes with foreign counterparts in its domestic business, and many compete in foreign markets as well (Tapscott and Caston, 1993).

Global operations require sophisticated information networks; information needed for making decisions has become physically dispersed. Experts indicate that wealth is now created by organizations that can move information as well as physical goods (Kamman, 1990). Global communication has also heightened competition by allowing customers to shop in a worldwide marketplace, and such competition forces firms to increase quality, productivity, and responsiveness. Even the definition of quality has broadened to include not only the quality of physical goods but also that of information resources. IS departments must create systems that support quality improvements and manage the operation of sophisticated information networks.

Total Quality Management and the Information Systems Department

The global environment has helped to popularize W. Edwards Deming’s concept of “total quality management” (TQM). TQM was first implemented in Japan and involves giving responsibility for quality directly to the workers in an organization. A fundamental requirement in organization-wide quality is the creation of a quality management system. Development of such a system involves establishing the mission of the organization, defining the current environment, analyzing current performance, establishing metrics and controls, and determining roles, responsibilities, and accountabilities. ISO 9000 registration is often seen as a subset of this overall TQM strategy (Mahoney and Thor, 1994). Results of our survey, described in this paper, indicate that 44.83% of ISO 9000 registered facilities subscribed to a TQM program at the time of their ISO registration.

While often underutilized, the information systems department can contribute specific skills to the development of TQM systems. IS professionals specialize in analyzing processes, they are experienced in measuring and quantifying procedures, and they are skilled in managing tasks and projects (Laudon and Laudon, 1994). Other tasks for which IS assistance is typically sought include making necessary information available in a timely manner and in a useful format, sharing unique knowledge regarding the relationships between departments, and helping to determine the fit between technology and quality issues.

History of the European Union and ISO 9000

A significant force in the worldwide drive for quality has come from the European Union, formerly referred to as the European Community. The European Union (EU) is a consortium of countries formed to establish economic unification, embracing free movement of goods, services, and capital among the 12 member nations. In 1987, the EU drafted the Single European Act, which established a five-year goal to create the desired internal market and to establish uniform product standards.

Over this five-year period, the EU adopted a series of standards, published by the International Standards Organization (ISO). The ISO is a federation of many standards-producing organizations worldwide. The ISO standards, collectively known as ISO 9000, focus on documentation of quality (Perry, 1994). ISO 9001 is the most comprehensive standard, covering design, development, production, installation, and service of products.

ISO 9000 Series

Overview of Standards

There are a host of resources available for studying ISO 9000 standards and their equivalents. Available are on-line databases, hotlines, consulting services, newsletters, software, and registration information from registrars. Therefore, only a brief summary of the six documents/standards is included here: ISO 9000, ISO 9001, ISO 9002, ISO 9003, ISO 9004, and ISO 9000-3 (Peach, 1994).

ISO 9000—Quality management and quality assurance standards explains fundamental quality concepts and objectives. It serves as a guideline to the ISO 9000 series. It
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