Global Information Systems Quality: Key Issues and Challenges

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The application of quality principles to information systems is a strategic necessity as customer perceptions of a company’s quality frequently depend on the way information systems perform their function. Quality management in global companies becomes much more complex because of the competing pressures for adaptation to the local environment versus those for consistency within the global firm. To organize the literature and to present an integrated view of the concept of global IS quality, a comprehensive framework is introduced which yields five dimensions of IS quality: data quality, information quality, IT quality, people, and organization. These dimensions are used to identify and examine the key issues and challenges that arise from the distinct national and cultural characteristics of a global company’s subsidiary nations. Finally, the issues are drawn into a taxonomy and empirical research questions and hypotheses are posed for further research.

"Quality is essential to support the global enterprise. One of the challenges in going global is that processes get ‘stretched’ between continents, which affects the ability to work cross–organizationally as well as cross–functionally. That’s a big change when the traditional way of thinking has been on a smaller scale, with a small team and local participation. I think we can use many of the quality fundamentals in this new global context, but the situations will be much more complex." Dick Le Vitt, Hewlett Packard (Powell, 1995).

Information technologies enable companies to operate globally independent of time and space. Global computer networks which link units in different countries are not only used to transfer financial and operating data across international borders, they are also an important strategic and competitive tool (Steinbart & Nath, 1992). Customer perceptions of a company’s quality which ranked first in a study of quality management in global manufacturing (Powell, 1995) frequently depend on the way information systems perform their functions. Achieving quality in information systems through application of quality management principles such as quality assurance or TQM should be a strategic necessity. Quality systems are the foundation of successful companies: recently, thirty global corporations including American Express Co., Federal Express Corp., and United Services Automobile Association formed a Benchmark Consortium to compare and benchmark IS functions and business processes against one another (Hoffman, 1993).

Kriebel’s (1979) survey of the literature shows that the notion of information systems quality in terms of effectiveness, efficiency, and user satisfaction is not new. Also the role of information systems for product and service quality has been well recognized. What is new and not widespread is the explicit application of quality concepts to information systems and attention to IS quality in the context of a corporate quality culture (McLeod, 1995). A recent survey showed that while 81% of IS managers had heard of TQM, only 38% had been involved with TQM in organizations that had been implementing TQM for three or more years (Pearson, McCahon & Hightower, 1995). Few IS departments have formal IS quality systems.
assurance programs in place or make use of formal, objective metrics to improve the quality of their product and service (Pearson & Hagmann, 1996). Often quality programs are initiated only after a major disaster occurs (Ragozzino, 1990). The management of software quality remains in its infancy (Phan, George, & Vogel, 1995). Many software development projects are characterized by missed deadlines and cost overruns. Often they fail to meet user expectations and requirements. Poor software documentation remains an Achilles heel in many systems development efforts (Lehner, 1993). Data quality is another area where improvements are needed (Laudon, 1986; Redman, 1995; Pearson & Hagmann, 1996). Managerial concerns for information quality are growing with the massive increase in the quantity and availability of information sources for knowledge workers (Marchand, 1990). The costs associated with poorly performing or failing systems can be significant, and considerable cost savings may result from an effective quality assurance function (Ragozzino, 1990).

These issues take on additional importance and become considerably more complex as companies extend their business and quality efforts worldwide. The overriding concern of global companies is achieving seamlessness in environments that are not seamless. Pressures for consistency within the global enterprise compete with pressures for conformity with the local environment (Rosenzweig & Singh, 1991). Differentiated customer requirements across countries and markets present quality challenges not only in the systems development process, but also in developing and comparing global quality measures. Similarly, differences in systems life cycle stages across markets and countries are likely to impact the relative importance of quality criteria (Perry, 1991). Cultural differences in value systems between customers across countries affect their perceptions of quality (Willborn & Cheng, 1994). The socio–economic strength and development stage of a country influences conceptions and practice of quality management (Willborn & Cheng, 1994) and the relative importance of quality–related IS issues (Palvia & Palvia, 1996).

To date, little research exists in the area of global information systems quality and a systematic framework for its study is still missing. The objective of this paper is to present a comprehensive framework that provides a more integrated view of the concept of global IS quality. From a theoretical perspective, the framework can serve as a basis for systematically identifying and examining the issues and challenges encountered in the management of global IS quality. From a practical perspective, the framework shows that global IS quality management is a complex undertaking that cannot be implemented in a piecemeal fashion. Rather, a comprehensive approach requires attention to five intertwined dimensions: data, information, information technology, people, and organization. The following discussion of global information systems quality begins with defining the concepts of global information systems and information systems quality, identifying its major dimensions, and presenting an integrative framework for analyzing global IS quality issues. The next sections identify key issues and challenges within each of the dimensions. The paper concludes with a summary of key points and poses questions and hypotheses for further research.

Global Information Systems Quality

Global Information Systems

Following Ives and Jarvenpaa (1991, p. 34), the following definition serves a basis for discussing information systems quality and deriving its dimensions:

A global information system contributes to achieving a firm’s global business strategy by using integrated information technology platforms to collect, store, transmit, and manipulate data across cultural environments.

Firms pursuing a global business strategy treat the world as a single, linked resource. Unlike international or multinational firms which have scattered and unconnected or minimally linked operations they invest tremendous resources in systems integration projects to make operations as seamless as possible (Baatz, 1995; Maglitta, 1995; Emmett, 1995). Strong pressures for consistency within the global firm are competing with pressures for isomorphism with the local environment across the global firm’s diverse national and cultural environments (Rosenzweig & Singh, 1991).

Information Systems Quality

A universal definition of information systems quality does not exist. Kriebel (1979) describes the notion as ?ambiguous, although pervasive in the literature? (p. 29). Ragozzino (1990) defines it as ?having information systems meet IS objectives and standards in place and support the goals of the company? (p. 15). Applying the concepts of quality management to information systems, Zahedi (1995) distinguishes traditional from quality information systems based on an organization’s commitment to total quality and the premise of building quality into the system from its inception.

Difficulties with defining information systems quality stem from the multidimensionality of the concept of information systems. First, information systems represent both a tangible product and a more intangible service component. For tangible products, user–based definitions of quality focus on meeting the expectations of the customer (Feigenbaum, 1991), while product–based definitions focus on conformance to requirements (Crosby, 1984) or fitness for use (Juran, 1992). Applied to IS, measures may gauge the performance of an information system in terms of the effectiveness and efficiency of the information processing system or the number of errors in the source code of a program. Service quality on the other hand is solely defined by its customers (Zeithaml, Parasuraman, & Berry, 1990) and is in the broadest sense what customers perceive (Grönroos, 1990). Customer satisfaction,