A Conceptual Framework for Developing Quality Measures for Information Systems
(Research in Progress)

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Abstract
Recent studies of data quality suggest that data consumers evaluate data by using not only intrinsic attributes, but also quality categories such as accessibility, context and representation (Strong, Lee, & Wang, 1996; Wang, Strong, & Guarascio, 1997). These results show that data quality measures cannot be developed in isolation of the processes of data generation and the contexts in which data is utilized. The purpose of this article is to develop quality categories for information systems (IS). The premise of the paper is that the quality of IS cannot be or at least should not be considered in isolation of the data quality, work attributes and the processes involved during the utilization of data. The paper presents a hierarchical quality framework for IS.

Introduction
Information systems have become important tools of modern organizations. However, IS in themselves do not constitute the competitive advantage of an organization, rather the data and information that these systems produce constitute competitive leverage. The availability and speed of capturing, processing and transferring information have become strategic entities in organizations (Pasternack, & Viscio, 1998, 94). The strategic importance of information has led to the idea that managers should manage information as they would a product (Wang, Lee, Pipino, & Strong, 1998). To define a framework for developing quality measures for IS, the task has to begin with the needs that these systems serve, i.e. the production, management and processing of information and data. Furthermore, at least two steps are needed (Kovac, Lee, & Pipino, 1997) to create such a framework. First, one needs to clearly define what IS quality means to an organization. Second, one needs to develop dimensions for the categories of quality identified. The framework proposed here is conceptualized from the view of data consumers rather than that of data custodians or other stakeholders. The framework is also limited in scope. It focuses on data, work and Soft-/Hardware issues. It does not include issues like cultural issues (Garrity, & Sanders, 1999) nor does it extend to behavioral issues (Lau, 1999).

Defining a Framework for Information Systems Quality
As stated earlier, IS have primarily one purpose: to help managers and their workers generate, manage and process data and information. One could therefore evaluate the quality of an information system by assessing the quality of its output, i.e., data and information. There are three basic questions that would help consumers to describe the quality of data generated by an information system. First, what do the data permit consumers to know? Second, what do data permit the consumers to do? Third, what degree of effort and time is needed before the consumer could achieve desired outcome from data? Based on these three issues, an information system would be of high quality the more it yields relevant data, in the most accessible form to its customers. High

IS quality would also mean that the utilization of data by consumers would require minimal effort. To develop a useful framework for the quality of IS, one must identify key components of such systems. There are at least four components of IS, i.e., data, interface, work/task design and Soft-/Hardware system. Figure 1 is based on these components. In the framework, quality categories are derived from the relationship between IS components. For simplicity, the quality categories shown in figure 1 do not include the intrinsic quality category of each component. Examples of such categories include: intrinsic data quality, intrinsic software quality, and intrinsic hardware quality. Five quality categories are identified in figure 1. Three of these: representation, contextual and accessibility have been covered in literature (Wang, et al., 1997).

Figure 1: A conceptual framework for IS quality (Quality categories)
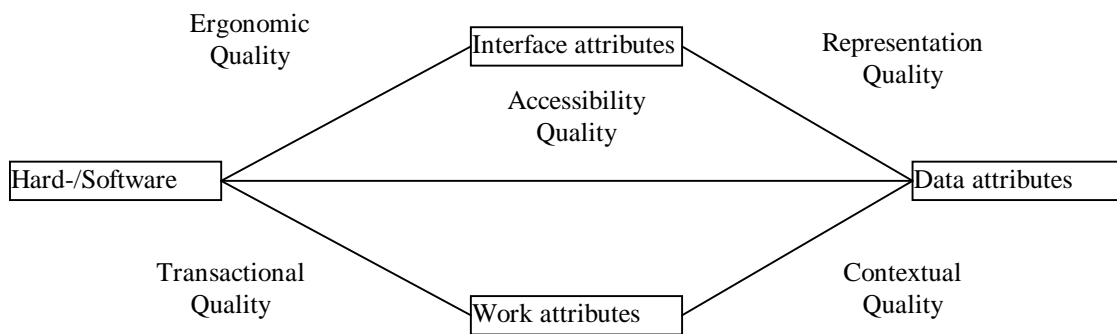
A fourth category mentioned is the ergonomic quality. This defines the degree to which the interface and the Soft-/Hardware system is designed to meet the needs of users. The transactional quality category evaluates the programming design of a specific work process (content and logic) within the software. Transactional quality would be high if the procedures of an information system meet the natural skills, expectations and work preferences of workers. Figure 2 shows these categories and examples of their quality dimensions.

Figure 2: A hierarchical framework for IS quality (Categories and dimensions)
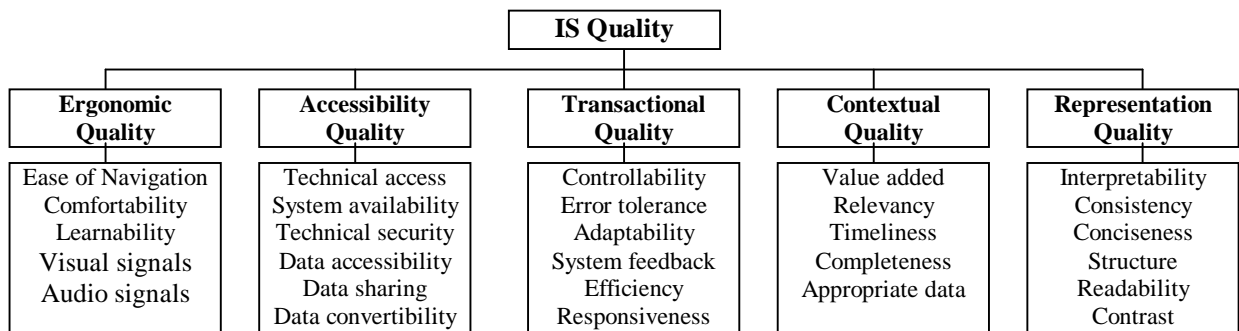
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