IDEA GROUP PUBLISHING
701 E. Chocolate Avenue, Hershey PA 17033-1117, USA
Tel: 717/533-8845; Fax 717/533-8661; URL-http://www.idea-group.com
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Chapter V

Measures of the Effectiveness of IT

Effectiveness of IT, although well researched (mainly under the label of "Quality of IT"), remains a confusing subject for many business managers in everyday life. This confusion is at least partly due to the lack of standard terms or definitions, a lack of generally accepted quality norms, and a proliferation of approaches to discussing the subject. A lot of "quality" might have been put into the IT applications built in many organizations, including features for extra durability, serviceability, reliability, and functionality, for which nobody actually asked, but which was included by the suppliers of IT to "anticipate possible future needs." But what actually is quality? And what is effectiveness?

Garvin has classified the various definitions of quality as follows:

- *Transcendent*: quality cannot be defined, "you know what it is."
- *Product based*: differences in quality amount to differences in the quantity of some desired ingredient or attribute.
- *User based*: quality is fitness for use.
- *Manufacturer based*: quality means conformance to requirements.
- *Value based*: quality means best for certain customer conditions.

Apart from the first definition, which is not helpful to deriving measures of IT effectiveness, this classification system can be used as a framework to discuss the different perspectives of IT effectiveness.

The effectiveness of IT should be related first to the role of IT in supporting and enabling the effective and efficient execution of business processes and business activities, and to the availability and characteristics of IT as perceived by the people who use it. These are the user-based and value-based dimensions of IT effectiveness. The more technical aspects, which stem from the architectural and infrastructure requirements of IT supplying functions, comprise the product-based and manufacturing-based dimensions of IT effectiveness.

In this section, the driving factors of IT effectiveness for each of these categories will be briefly discussed. The appropriate measures for IT effectiveness will be classified, based on business requirements of three perspectives:

- business products and services, processes, and business activities;
- users of IT;
- IT supply.

IT EFFECTIVENESS FROM A BUSINESS PRODUCTS AND SERVICES, PROCESSES, AND BUSINESS ACTIVITIES PERSPECTIVE

Research into the effectiveness of IT has focused predominantly on the quality attributes of IT, once it is installed and made available to users. With respect to the effectiveness of IT from a business products and services, processes, and business activities perspective, however, the first question to answer is whether IT is available in products and services, and to support business processes at all, and to what extent.

Techniques to measure IT availability (still) in use today were developed in the 1970s and 1980s mainly to measure the degree of data processing coverage of functionally organized business activities.

They measure, for each business function:

- The actual degree of automation, by first reviewing the output of the function, then estimating the amount of human work that would have been required to produce that output, and finally, estimating the part of human labor that has been eliminated by IT.
- The potential degree of automation, by estimating the maximum possible elimination of human labor by IT.
- Actual automation as a percentage of potential automation.

The result of this exercise is a picture of the aggregated level of automation, which is basically a balance sheet of opportunities for automation of business functions versus the actual degree of automation throughout the company, broken down into the levels of automation of each of the business functions. Note that automation in this context only refers to the elimination of human labor from a business function.

These basic concepts are still valid, albeit that under the realm of "digitized products and services," and "business process redesign," traditional products and services, as well as functionally organized business functions, have been (partly) replaced by digital products and services, and automated business processes. Also, traditional data processing has been accompanied by an array of other IT capabilities over time. Both aspects impact measurement issues of the level of automation, so that they must be discussed briefly here.

Business processes have become the primary organizational axis of today's networked organization. In definitional terms, a process is a structured set of