Chapter 8.21
Knowledge Management Metrics:
A Review and Directions for Future Research

A. Kankanhalli
National University of Singapore, Singapore

B. C. Y. Tan
National University of Singapore, Singapore

ABSTRACT

Metrics are essential for the advancement of research and practice in an area. In knowledge management (KM), the process of measurement and development of metrics is made complex by the intangible nature of the knowledge asset. Further, the lack of standards for KM business metrics and the relative infancy of research on KM metrics points to a need for research in this area. This article reviews KM metrics for research and practice, and identifies areas where there is a gap in our understanding. It classifies existing research based on the units of evaluation such as
user of knowledge management systems (KMS), KMS project, KM process, KM initiative, and organization as a whole. The article concludes by suggesting avenues for future research on KM and KMS metrics based on the gaps identified.

INTRODUCTION

Knowledge management (KM) has become an accepted part of the business and academic agenda. Organizations have high expectations for KM to play a significant role in improving their competitive advantage (KPMG, 2000). Measuring

the business value of KM initiatives has become imperative to ascertain if the expectations are realized.

Metrics are measures of key attributes that yield information about a phenomenon (Straub, Hoffman, Weber, & Steinfield 2002). Metrics are key to advancement of research and practice in an area. In research, they provide comparability of studies between individuals, time periods, organizations, industries, cultures, and geographic regions (Cook & Campbell, 1979). They also provide a basis for empirical validation of theories and relationships between concepts. Measures that are reliable and valid enable accumulation of research in a topic area, and free subsequent researchers from the need to redevelop instruments (Boudreau, Gefen, & Straub, 2001).

For practitioners, metrics are a way of learning what works and what does not. In fact, measuring business performance is the focus of the entire field of management accounting. In KM, performance measures serve several objectives including securing funding for KM implementation, providing targets and feedback on implementation, assessing implementation success, and deriving lessons for future implementation. Measures can assist in evaluating the initial investment decision and in developing benchmarks for future comparison.

Measurement is typically a complex process fraught with errors. What is easy to measure is not always important and what is important is often difficult to measure (Schiemann & Lingle, 1998). KM metrics are particularly distinct from other metrics due to the intangible nature of the knowledge resource (Glazer, 1998). Something such as knowledge that is difficult to define and has multiple interpretations is likely to be difficult to value and measure. Due to such considerations and the complexity of assessing organizational initiatives in general, research (Grover & Davenport, 2001) and practice (Bontis, 2001) on the assessment of KM initiatives and knowledge management systems (KMS) is not well developed.

In light of the above motivations, this study seeks to review metrics in practice and research and identify areas for further investigation. Previous research on metrics for KM and KMS is classified based on the elements of evaluation such as user of KMS, KMS project, KM process, KM initiative, and organization as a whole.

In the next section, some basic definitions of metrics and KMS are provided. This is followed by the review of practice KM metrics, classification of research on KMS and KM metrics, and finally a discussion of areas for further investigation.

DEFINITIONS

Metrics and Measures

At the outset it is important to distinguish what is meant by a metric and a measure. The IEEE standard glossary of software engineering provides the following definitions of measures and metrics. A measure is a standard, unit, or result of measurement (IEEE, 1983). A metric is a quantitative measure of the degree to which a system, entity, or process possesses a given attribute (IEEE, 1990). An example of a measure is a patient's temperature value of 99 degrees Fahrenheit. Without a trend to follow or an expected value to compare against, a measure gives little or no information. It especially does not provide enough information to make meaningful decisions. A metric is a comparison of two or more measures, for example, body temperature over time. It allows a trend or pattern to be seen in the measure. Therefore, a measure by itself doesn't provide much understanding unless it is compared with another value of the measure—that is, it becomes a metric. Hence the focus of our review is on metrics for KMS and KM initiatives.

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