Chapter XII

Measurement Issues in Decision Support Systems

William K. Holstein
The College of William and Mary, USA

Jakov Crnkovic
State University of New York at Albany, USA

ABSTRACT

After a brief discussion on the history of decision-making, this chapter focuses on metrics for justifying investment in information systems and technology and for measuring business and management performance. The discussion of metrics is linked to current practices in decision support systems and focuses on the needs for future systems. With several examples drawn from contemporary practice, we introduce implementation guidelines for DSS development incorporating new metrics that go beyond ROI and Balanced Scorecard-like measures. Suggested guidelines include simplicity, selectivity, a focus on research and learning, and benchmarking. These guidelines suggest that future metrics to support decision support systems should be grouped into meaningful categories and tied more closely to system architecture.

INTRODUCTION

The past decade has seen tremendous progress in systems for information support including flexible and adaptable systems to support decision makers and

to accommodate individual needs and preferences. These model- or data-driven or hybrid systems incorporate diverse data drawn from many different internal and external sources. Increasingly, these sources include sophisticated enterprise resource planning systems, data warehouses and other enterprise-wide systems that contain vast amounts of data and permit relatively easy access to that data by a wide variety of users at many different levels of the organization. Decision support and DSS have entered our lexicon and are now increasingly common topics of discussion and development in large, and even in medium-sized, enterprises.

Recent economic conditions, particularly the downturn in the fortunes of e-commerce, suggest that the road ahead for DSS may be fraught with problems. In our view, many of those problems have to do with inadequate procedures and metrics for measuring business and management performance. As this is written, in mid-2002, daily headlines about overstatement of revenues, and the recording of expenses as capital expenditures at collapsing companies such as Enron and WorldCom indicate that we clearly have problems with aggregate metrics on issues previously thought to be well understood (revenues, expenses, etc.), but the issue is also present at lower levels.

A SHORT DISCOURSE ON THE HISTORY OF DECISION-MAKING

Decision-making as we know it today, supported by computers and vast information systems, is a relatively recent phenomenon. But the concept has been around long enough to permit the methods and theories of decision-making to blossom into "a plethora of paradigms, research schools, and competing theories and methods actively argued by thousands of scientists and decision makers worldwide."[1]

The fundamental considerations of contemporary decision-making were enunciated almost 100 years ago by the French philosopher and statistician Jules Henri Poincaré. Here is a Poincaré quote from the source cited just above: "But of all these paths, which will lead us most promptly to the goal? Who will tell us which to choose? We need a faculty, which will help us perceive the goal from afar. This faculty is intuition ... Logic and intuition both have a necessary part to play. Both are indispensable. Logic alone can convey certainty: it is the instrument of proof. Intuition is the instrument of invention."[2]

Intuition … perceiving the goal from afar. Today we use different terms, such as judgment, experience, and soft data, but the ideas are the same as Poincaré's – we must find ways to combine logic (and technology) and the soft skills and experience of managers to support decision-making.

16 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/measurement-issues-decision-support-systems/6111

Related Content

Authentication Methods for Computer Systems Security

Zippy Erlichand Moshe Zviran (2009). *Encyclopedia of Information Science and Technology, Second Edition (pp. 288-293).*

www.irma-international.org/chapter/authentication-methods-computer-systems-security/13587

ICT, Education, and Regional Development in Swiss Peripheral Areas

Chiara Giorgiand Dieter Schürch (2008). *Information Communication Technologies: Concepts, Methodologies, Tools, and Applications (pp. 174-182).*

www.irma-international.org/chapter/ict-education-regional-development-swiss/22664

Business - Information Systems Professional Differences: Bridging the Business Rule Gap

David P. Hale, Shane Sharpeand Joanne E. Hale (1999). *Information Resources Management Journal (pp. 16-25).*

www.irma-international.org/article/business-information-systems-professional-differences/51064

Experiences from Using the CORAS Methodology to Analyze a Web Application

Folker den Braber, Arne Bjørn Mildal, Jone Nes, Ketil Stølenand Fredrik Vraalsen (2005). *Journal of Cases on Information Technology (pp. 110-130).*

www.irma-international.org/article/experiences-using-coras-methodology-analyze/3158

Novel PSSM-Based Approaches for Gene Identification Using Support Vector Machine

Heena Farooq Bhatand M. Arif Wani (2021). *Journal of Information Technology Research (pp. 152-173).*

www.irma-international.org/article/novel-pssm-based-approaches-for-gene-identification-using-support-vector-machine/274283