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# MEDIA RICHNESS AND THE VALUATION OF ONLINE DISCUSSION SUPPORT SYSTEMS

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## Abstract

*Online Discussion Support Systems (ODSS) are supported by a variety of communication technologies that arguably exhibit different levels of media richness. The paper proposes a conceptual model and a research instrument for the selection of a valuation model applicable to ODSS technology. The conceptual model is based largely on the Technology Acceptance Model, which it modifies and extends to include media richness as a characteristic of the communication medium involved. The paper develops a research question, reviews relevant literature, and describes a framework for research. Such research will compare key factors that influences how valuation models are selected for valuing ODSS technology projects.*

**Keywords:** Online Discussion Support Systems, Information Technology Valuation, Media Richness

## Introduction

The concept of “media richness” refers to the ability of communication media to convey information that is rich in content. In general, richness is higher for video and lower for text communication (Daft, 1986).

Online Discussion Support Systems (ODSS) involve a number of technologies that support effective exchanges of information online. A non-exhaustive list would include bulletin boards, instant messaging, online chat, newsgroups, teleconferencing, videoconferencing, web conferencing, webinars, Wiki, and of course, email. Arguably, WebCT would qualify as another possible ODSS application.

The email was the first “killer” application developed for the ARPANET in the early 1970s (Campbell, n.d.). It arguably affords low media richness to the user. Bulletin boards offer an online environment where people can interact, post messages, upload/download files, etc. Bulletin board systems have been available for quite some time. More recent technology involves Instant Messaging software that allows users to conduct online real time conversations. The software affords a richer communication media by means of emoticons - a way of using standard punctuation marks and special characters to help express human emotion. Online Chat software allows multiple participants to engage in online, text-based discussions. Conferencing technology offers a richer media for communication of non-verbal cues. Newsgroup software allows authenticated participants to access message folders where they can read existing messages, post their own, or share files with other users. Discussion threads are possible where users may develop “threads” centered on specific topics. The Wiki is simply a web site designed by users through consensus. The users may change the entire web site, and its content, as they find fit.

## Related Research

The value of an ODSS is difficult to assess due to its inherent complexity and the multitude of factors that must be considered: organizational, managerial, technological, economical, behavioral, etc.

Valuation issues related to Information were introduced in the work of Ahituv, which recognizes three valuation models: realistic, perceived, and normative (Ahituv, 1998).

Normative valuation is more suitable for simple systems, as it requires an actual system. Pilot or test systems are acceptable to be built in order for the evaluation to proceed. It is usually expressed in monetary or operational terms, which have a quantitative nature. Realistic valuation requires assessment of the very system in operation. Performance measures may be expressed in monetary or operational form. It is appropriate for systems that affect measurable parameters. Perceived valuation is the easiest one to use. However, its value is somewhat questionable due to its reliance on subjective assessments. It involves monetary or operational performance measures and is suitable for systems with intangible outcomes, or highly unstructured problems.

## Research question

The characteristics of the technology considered may affect the choice of a valuation model. Specifically, the medium richness – arguably a qualitative measure – may affect the decision process to select a realistic, normative, or perceived valuation model. Is one valuation model/technique (realistic, normative, perceived) more prevalent in assessing ODSS value? To what extent does the richness of the media associated with the ODSS technology considered determine the choice of a valuation model to use?

## Preliminary review of literature

Eskow (1990) argues that the value of an information system can be evaluated in terms of performance, productivity and quality. With performance being the main attribute, he argues that performance measurements should be part of every project

A practitioner article argues that it was possible to measure the value created by information technology investments despite the overall lack of understanding of how that value was being created. Several principles are advanced supporting a structured approach to measurement (Lane, 1989).

Banker, Kauffman and Morey (1990) argue that it is difficult to make decisions about Information Technology (IT) while lacking performance measures. However, the authors find a great deal of the organizations reviewed did not have a formal evaluation system for IT.

Evans (1993) finds widespread interest in valuation of IT, with its expression in monetary terms stemming from traditional finance-based methodologies. However, practitioners indicate the need for measures operating at strategic and financial levels of the organization to include management and stakeholders in the equation.

Valuation of information assets becomes the driver behind firms becoming information-intensive organizations. Measuring the value of information is context-dependent. Fundamentally, the valuation of IT has long-range implications for how organizations perceive their internal IT department and for IT professionals as well. Jaillet (1993) argues that “the fate of the information profession rests upon its ability to participate effectively in the corporation.” Again, developing a clear understanding of how IT benefits the organization involves precise value measurements.

A study conducted at CONOCO yields a methodology for measurement of the costs and benefits of an information system. Research indicates that benefits should be quantified realistically, costs should include direct and indirect components, and benefits should be measured at the application level or lower. Furthermore, the assessment should be conducted while focusing on the objectives for the system in question (Belcher, 1993).

McKague (1994) argues the complexity of information pricing and the subtle relation between information price and availability. Inherently, valuation measures are present. Metheny (1994) argues that productivity measurements alone will result in misleading measurements of IT value. Some of the factors influenced by IT that organizations must acknowledge are improved quality, convenience, responsiveness, reliability and safety, and timeliness.

The complexity of technology and the inherent implementation difficulties make it advisable to consider IT in conjunction with the other systems within the organization. The impact of IT cannot be measured in isolation. Furthermore, rigorous scientific

methods should be employed in order to assess benefits derived from investing in IT (Mukhopadhyay, Kekre and Kalathur, 1995).

It appears that most of the managers are unable to value information technology in a satisfactory manner due to lack of adequate techniques, and subjective evaluations (Harvey, 1991). As the typical company continues to see failed projects, a general feeling of resignation to the inability to measure the real value of an investment is apparent among practitioners (Axson, 1996).

Skinner (1998) argues that financial analysis techniques are more appropriate methods for forecasting IT value. Benefits, expressed in monetary terms, may be included in budgets at the time of the investments. While the IT contribution may not lend itself to easy measurement, its costs are still expected to be recovered from overall increases in business performance. Rau and Bye (2003), Boer (1998), Leibs (2002) make similar arguments.

As large IT projects tend to have larger risk components, the value of information that can be derived early in the projects should help the decision making process and the justification of the projects undertaking (Eeckhoudt, 2000).

The measurement part of the valuation is arguably a difficult step. Bansal (2002) found the criteria used to be dependent on the organization. A large number of the respondents surveyed indicate they did not prepare business cases for IT projects.

Blake (2000) has found that web sites attempt to manage the changing value of information through what can be assimilated with Ahituv's normative valuation approach.

More comprehensive business cases must be made at the initiation of IT projects, but preparing a good business case involves participation among IT, users, and management. Among the variables that determine the selection process of the measurement method are "knowledge of the value purpose, the type of project, and an understanding of the decision management structure of the organization." Quantification of the intangible benefits is especially important, given some organizations' use of financial thresholds such as internal rate of return or payback period (Turisco, 2000).

Van Der Zee (2002) argues that it is extremely difficult to separate IT from other aspects of the business process, when conducting a measurement. Furthermore, the apparent lag between IT investments and their results make the measurement process even more problematic.

On the issues of information value and measurement, Jobson and Korkie (1998) argue that performance measurement is "of greater importance to the informed relative to the uninformed."

Sweat (2000) takes the argument even further by quoting a CIO saying that "the value of information about an asset is even more important than the asset itself."

Glaser (2003) recognizes that weighing an investment in IT can be particularly challenging, given the diversity of the infrastructure and application components.

## Conceptual Model

Figure 1 presents the conceptual framework proposed to facilitate this research study. The framework was developed based on the Technology Acceptance Model (Davis, Bagozzi and Warshaw, 1989) and the Media Richness Theory (Daft and Lengel, 1986). The model draws on prior work published by Shin (2002).

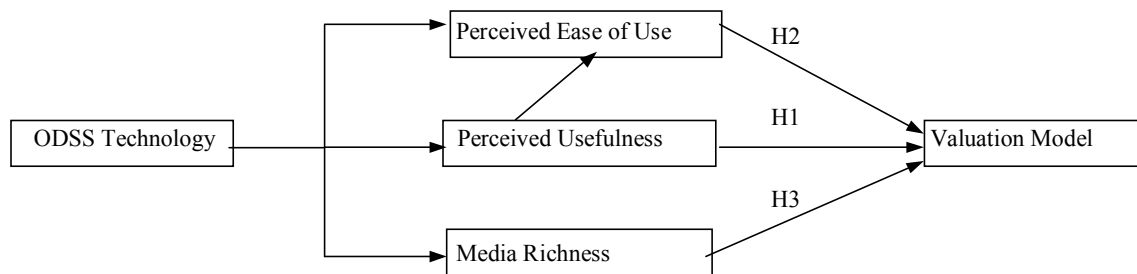
The Technology Adaptation Model (TAM) involves a technology's usefulness and perceived ease-of-use as indicators of a user's likelihood to adopt and use the technology (Davis, Bagozzi, Warshaw, 1989). TAM has been widely used by IS researchers.

Daft and Lengel's (1986) Media Richness Theory refers to the ability of communication media to convey information that is rich in content. In general richness is higher for video and lower for text communication.

The model proposed by Shin (2003) for researching e-commerce customer satisfaction modifies and extends TAM to include media richness and responsiveness as independent variables.

For the purpose of this study, the choice of a valuation model constitutes the independent variable. Among the factors that affect the selection process (independent variables) are perceived usefulness and perceived ease of use of the technology, and the media richness afforded by the technology.

Figure 1. Research Model



The variables present in the model are as follows:

**Independent Variables:**

Perceived Ease of Use

Perceived Usefulness

Media Richness

**Dependent Variables:**

Valuation Model (Normative/Perceived/Realistic)

The relationship can be expressed in mathematical terms:

$$Y = X_1 + X_2 + X_3,$$

with Y the dependent and  $X_i$  the independent variables. Forthcoming statistical analysis methods involve multiple regression analysis as it affords for predictive and explanatory power.

Based on the conceptual model, the following hypotheses are advanced:

The perceived usefulness of the technology contemplated to support ODSS affects the choice of a valuation model:

H1: Technology that is perceived to be useful will tend to be associated with less precise valuation models (perceived or normative).

ODSS technologies that are perceived as having a low ease-of-use level tend to be associated with realistic valuation techniques:

H2: Realistic valuation methods are associated with low perceived ease-of-use

The perceived degree of media richness affects the choice of a valuation model by requiring increasingly more precise models for decreasing levels of perceived media richness:

H3: Higher media richness is associated with increasingly precise valuation methodology

## Research Design

The operationalization of the conceptual model involves survey techniques. The research instrument consists of a questionnaire that will be administered to participants sampled from a population of working professionals involved in ODSS assessment and implementation activities.

The instrument will be validated through a test pilot phase to identify limitations, address possible respondent bias and to increase the reliability and validity of the instrument.

The data collected will be processed using statistical analysis methods to determine whether any correlation can be identified in the data set. The results of the survey are intended for publication

## Further Research

A number of possible future research questions may be of interest to researchers: To what extent are valuation models utilized in a mixed approach (e.g., realistic/normative, realistic/perceived, normative/perceived)? What other variables may affect the decision to select a specific model? When attempting the valuation of an ODSS, is one valuation model better than the others?

## Limitations

Given the research question, the survey instrument should be administered to as large a population sample as possible. However, it is conceivable that practical limitations will impact the size, diversity, and relevance of the sample.

## Conclusion

This paper investigates how media richness affects the choice of the valuation method used for ODSS implementation. A review of the academic literature related to the research question topic is followed by a proposed research design. Further work involves data collection and analysis to be conducted in the very near future.

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