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Americas Conference on Information Systems
(AMCIS)

8-15-1997

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Abstract

Interorganizational systems (IOS) have become a required business practice for many companies with the partner relationship being an important factor in the effectiveness of the IOS. The establishment of trust between the partners of an IOS is often mentioned, yet, never examined when IOS research is reported.

Using organizational theory as a foundation, this paper takes a macro approach in exploring the nature of the various IOS roles and discusses the significance of uncertainty, trust and communication on these roles. A model of the relationships between IOS role, uncertainty, trust and the choice of communication media is proposed.

Introduction

The selection of a partner is a critical issue for organizations involved in interorganizational systems (IOS) relationships. While the strategic use of linking through electronic media have been carefully examined, the relationship management issues of IOS are just starting to be studied (Porter & Millar, 1985; Rockart & Short, 1991; Bensaou & Venkatraman, 1995). The need for relationship management is evident by trade journals stressing the need for divorce agreements when entering into business partnerships ("Succeeding at...", 1990; Serapio, Jr. & Cascio, 1996). Entering into business with partner relationships increases the uncertainty faced by an organization, yet, the formation of trust between partners helps reduce the uncertainty.

Interorganizational systems (IOS) using modern technology enhance the operations of business partnerships, but only up to a point. Managers must realize there is more to the IOS relationship than the technology used to electronically connect partners. The need for effective communication between partners is important when an organization is involved in IOS relationships, such as, virtual partnerships, electronic commerce and outsourcing. Managers trying to build relationships and establish trust must know how to communicate effectively with their counterparts.

This paper explores the nature of the various IOS roles and discusses the significance of uncertainty, trust and communication in these roles. We propose that the specific role of IOS determines the level of uncertainty/equivocality involved, which in turn, determines the choice of communication media having an appropriate richness level. Level of trust between partners and time constraints are proposed as mediators of the uncertainty/equivocality relationship. Finally, we propose that media choice determines

the effectiveness of the partners and the IOS in reducing uncertainty/equivocality. A model of these relationships is given in Figure 1.

The Roles of IOS

The scope of electronic integration involves the roles of transactions, inventory, process and expertise (Venkatraman, 1991). Current use of lower-level IOS, transactions and inventory, tend to focus on the support of highly structured systems such as electronic data interchange (EDI). Many EDI systems execute electronic payments and orders without human intervention. Human intervention is only required when difficult or unpredictable conditions arise (Kimbrough & Moore, 1992).

Holland (1995) illustrates an IOS used in a process role with a computer aided design (CAD) system being created to shorten the manufacturing design cycle and provide better service to the customer. The creation of a virtual business network of this nature relies on the exchange of relatively unstructured information (Venkatraman, 1991). Virtual intellectual networks spanning across physical and organizational boundaries to share specialized skills and expertise illustrate an IOS in the expertise role. The information exchanged is unstructured with partners being carefully selected through specialized cooperative network agreements.

Various degrees of uncertainty and equivocality are associated with an IOS depending on the characteristics of the role. Emery and Trist (1965) observed the uncertainty associated with the process and knowledge-based roles in their disturbed, reactive and turbulent causal texture classes. So, it is proposed that:

P1: As an IOS is extended from a transaction role to a knowledge-based role, the amount of uncertainty and equivocality experienced in the system will increase.

The Levels of Trust

If a business relationship is to be sustained, trust is a critical success factor (Lewicki & Bunker, 1996). The reliance on electronic relationships as replacements for face-to-face contact requires organizations to nurture the development of trust with its partners (Kanter, 1989; Bleeke & Ernst, 1995; Rockart & Short, 1991; Handy, 1995).

When parties have no past history and uncertainty exists about the specific relationship there are three transitional stages in developing trust (Lewicki & Bunker, 1996). First identified by Shapiro, Sheppard, and Cheraskin (1992) in their framework, the stages include deterrence-based trust, knowledge-based trust, and identification-based trust.

Trust developed over time through repeated ties is influential in the contracts chosen in alliances (Gulati, 1995; Ring & Van de Ven, 1992). The role of the contract between partners has been proposed to be dependent on the past relationship between the partners (Madhok, 1995). However, U.S. organizations involved in alliances have an average staff tenure of five years which inhibits the development of trust in alliance partners (Lei &

Slocum, Jr., 1992). Time, personalization, and consistency required for the development of trust are lacking in short-term policies and rotating executives (Quinn, 1992). Thus, the following proposal is made:

P2: As an IOS is extended from a transaction role to a knowledge based role, the amount of trust between the business partners must be increased. This requires sufficient time periods to move from deterrence-based trust to the knowledge- and/or the identification-based trust stage.

Communications Between Partners

Communication is necessary between partners to coordinate response when information is exchanged (Williamson, 1965). Yet, many EDI transaction are handled by the system and require no human interaction. This is congruent with the systematized pattern of unit operation hypothesized by Van de Ven (1976) where communication among players is minimized in task-related information flows since the system is standardized and communication is only required for exceptions.

As the role of the IOS becomes more unstructured, the amount of human interaction required for the business requirements to be accomplished increases. A summary is shown in Table 1. The reliance on electronic linkages to conduct business does not eliminate the need for human communication between the partners. As the task uncertainty and equivocality becomes greater, an increased amount of communication and information processing is required of decision makers during task execution in order to achieve a given level of performance (Daft & Lengel, 1986; Galbraith, 1974; and Tushman and Nadler, 1978).

The information needs of the transaction role are reflective of the low equivocality, low uncertainty described by Daft and Lengel ((1986). Managers operating in this environment require few answers and collect routine objective data. Yet, knowledge-based systems on the other end of the continuum operate in an environment of high equivocality and high uncertainty. Managers working in this environment rely on exchanging opinions, asking questions, seeking feedback and objective data gathering when making decisions. The other roles, inventory and process, function in environments of low uncertainty/ equivocality and moderate uncertainty/ equivocality, respectively.

The foregoing discussion implies a relationship between effective communication needs and the role of the IOS. Thus, it is proposed that:

P3: As the role of an IOS is extended from a transaction system to a knowledge-based system the need for effective communication will increase.

Table 1. Summary of the Levels of Uncertainty, Trust, Communication Media and Decision Making in the Roles of an IOS.

ROLE	UNCERTAINTY	TRUST	COMMUNICATION	DECISION MAKING
Transaction	Low	Low	Possibly None	Highly Structured

Inventory	Low-Moderate	Moderate	Low	Structured
Process	Moderate	Moderate-High	Moderate	Semi-structured
Expertise	High	High	High	Unstructured

Trust, Time, and Communication as Mediators of IOS Effectiveness

Figure 1 diagrams the factors influencing the communication media choice in an IOS. The choice of media is reflective of the environment determined by the specific role of the IOS. Characteristics embedded in the IOS environment determine the level of uncertainty equivocality associated with the role. Berger and Calabrese (1975) state in their uncertainty reduction theory that people are motivated to communicate by the desire to reduce uncertainty in initial dyadic encounters. The level of trust which is influenced by the role of the IOS is also influenced by how long the partners have known each other. If there has been a significant employee turnover for the business partners then trust may be negated. All these factors in combination influence the communication media choice. Media choice in turn determines the effectiveness of the partners and their IOS in reducing uncertainty and equivocality, and therefore, overall performance effectiveness or ineffectiveness.

Daft and Lengel (1985) proposed that rich information helps reduce the equivocality and uncertainty in an organization's environment. The richness of communication media is decided by characteristics such as feedback, capability, communication channel utilization, and language (Bodensteiner, 1970). Daft and Lengel (1985) listed the media classifications, in decreasing richness as face-to-face, telephone, personal documents, impersonal written documents, and numeric documents. These classifications were later modified to include electronic messaging systems (email) as the third richest media (Trevino, Lengel, Bodensteiner, Gerloff, & Muir, 1990). Fact-to-face communication is the richest communication medium since immediate mutual feedback is received, multiple cues are used to convey meaning, natural language is utilized, and emotions are conveyed.

The model of Figure 1, as well as the observations of Daft and Lengel (1986) suggest two additional propositions.

P4: The level of trust between partners and sufficient time to develop trust beyond the deterrence-based stage are mediators of the relationship between uncertainty/ equivocality and their choice of rich media.

P5: Overall performance effectiveness of a process or knowledge-based IOS is determined by its ability to use the rich communication media to reduce uncertainty/ equivocality.

Conclusion

If a business relationship is to be sustained, trust is a critical success factor (Lewicki & Bunker, 1996). The reliance on electronic relationships as replacements for face-to-face contact requires organizations to nurture the development of trust with its partners

(Kanter, 1989; Bleeke & Ernst, 1995; Rockart & Short, 1991; Handy, 1995). The conceptual model proposed presents a theoretical foundation upon which a future research agenda can be based for examining the issue of IOS effectiveness. With the strategic use of outsourcing, electronic commerce and virtual teams, examination of the communication needs of IOS will give insight into the sustenance of these relationships.

References Available Upon Request from Vicki McKinney.
Figure 1. Factors in Influencing the Choice of Communication Media in IOS