Embedded Relationships in Information Services: A Study of Remote Diagnostics

Katrin Jonsson, Umeå University, Sweden

ABSTRACT

Information technology (IT) is increasingly used in the production of services, enabling a self-serve channel that challenges the embedded relationship in services. To examine the implications of IT for embedded relationships, we undertook an interpretative case study of a remote diagnostics service in the mining industry. Our analysis suggests that the combination of IT and social efforts by the participants can support embedded relationships to a larger extent than has been shown in previous research. [Article copies are available for purchase from InfoScience-Demand.com]

Keywords: Business-to-Business (B2B); Information Services Organization; Issues of IT; Remote Work; Social Qualitative Research

INTRODUCTION

In the contemporary economy, services are gaining interest as a way to provide unique value and improved revenues (Toivonen & Tuominen, 2007). Because services are performed through a series of activities where the customer is involved in the production (Grönroos, 2000), the interactions and relationships between the customer and service provider representatives are a crucial part of the service delivery (Gutek, 1995). While human actions traditionally have been an essential part of service interactions, the development of IT has facilitated services and interactions provided by combinations of IT and people, a type of service referred to as information services (Mathiassen & Sørensen, 2008).

Depending on the specific technology and configuration, customer interaction may be facilitated in many different ways in service production. The technology may serve as a producer of “face-to-screen” in-
teractions as well as a facilitator of “face-to-face” interactions (Froehle & Roth, 2004). Research on the role of IT for mediating interactions in service relationships has shown how IT is insufficiently sophisticated to enable interpersonal ties, but also how electronic media are rich enough to facilitate interpersonal exchanges (Schultze & Orlikowski, 2004). Kraut et al. (1999) suggested that the use of IT in interfirm interactions requires established personal relationships and trust, as these may not be developed through technology. Bensaou (1997) argued that IT can reduce physical, spatial, and temporal boundaries that have traditionally hindered interorganizational cooperation. Schultze and Orlikowski (2004) found that self-serve technologies negatively influenced service relationships while electronic media such as e-mail, phone, and fax supported communication in such relationships. Due to the contradictory findings in the literature, Schultze and Orlikowski (2004) argued for the need for further empirical studies of the role of IT in service relationships. Moreover, most of the existing research in this area (e.g., Bensaou, 1997; Grover, Teng, & Fiedler, 2002; Kraut et al., 1999) has left customers’ perceptions unexamined.

Remote diagnostics services are a type of information service provided using ubiquitous computing environments. These services are used to monitor the machines used in the process lines in industrial companies (Hibbert, 2000). Previously, these companies relied on human skills and the use of the senses to monitor the equipment’s conditions (Westergren, 2007). Today, they are more likely to be monitored through IT applications such as remote diagnostics systems that can automatically monitor performance, diagnose problems, and request attention from service technicians for any detected problems (Biehl, Prater, & McIntyre, 2004). The monitoring is increasingly being outsourced to remote service providers where experts use the IT infrastructure to access data from the customers and perform analysis. With remote diagnostics systems, no direct user involvement is required in the data collection, as sensors are embedded into the machines to log their condition, and the subsequent data analysis often takes place at remote service centers by experts. The diagnostics service provided by the remote service center is a long-term focused service aiming at detecting upcoming problems in the equipment. The service also requires close cooperation with the customer staff as they are making decisions about upcoming repairs and maintenance activities. Moreover, they can complement the remotely collected information with information about environmental issues that the sensors cannot detect.

Encounters and relationship services are distinct service types that capture two opposing interaction forms in service production (Gutke, 1995). Encounters can be described as arm’s length relationships while embedded relationships are a deepened form of service interaction (Uzzi, 1997), which best picture the remote diagnostics service. However, in contrast to embedded relationships, which are based on close cooperation between the actors, remote diagnostics services raise challenges because the technology reduces the need for human interactions in service production, similar to self-serve technologies (Schultze & Orlikowski, 2004). The technology thereby supports impersonal and arm’s length linkages, rather than close human interactions, which are essential in embedded relationship services. To examine the effects of IT on embedded relationships in information services, we undertook an
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