

Chapter 11

Knowledge-Based Intermediaries

Levent V. Orman
Cornell University, USA

ABSTRACT

A new generation of intermediaries is predicted to flourish in the emerging electronic markets. They rely on new information technologies such as the semantic web, rule-based triggers, and knowledge-based constraint maintenance systems. These technologies do not automate or reduce intermediation, but inspire new types of intermediaries that rely on the technologies and complement them with human organizations. An inter-organizational architecture based on multiple levels of intermediation is described, and arguments are presented for its usefulness in emerging electronic markets.

INTERMEDIARIES

There have been many predictions and prescriptions for reduced intermediation in electronic markets. These predictions are based on the assumption of increasing reliance on information technologies to connect economic agents directly, in lieu of intermediaries (Bakos, 1998; Malone, 1989). These predictions, by and large, have not materialized, except for isolated instances of limited disintermediation in some information-intensive industries. In fact there is some evidence that there may be an increasing role for intermediaries in electronic markets, as

compared with traditional markets (Andersen & Andersen, 2002; Sarkar et al, 1995). Intermediaries are third parties that facilitate economic transactions between the primary economic agents. As such, intermediation is an information-intensive activity. It requires considerable information about buyers and sellers to be collected, organized, processed, and distributed. The predictions for reduced intermediation are often based on the assumption that information technologies could completely automate intermediation, or so fundamentally simplify it that it can be absorbed into the operations of buyers and sellers. Information technologies are designed to reduce the cost of information-based activities, and hence they are poised to reduce the

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cost of intermediation, but not necessarily capable of automating them completely or even substantially. Since reducing the cost of a vital economic activity is likely to increase the utilization of that activity, it is reasonable to expect an increase, not a decrease, in intermediation in electronic markets, as compared with traditional markets. We will present four hypotheses in favor of substantially increased intermediation in electronic markets. Moreover, we will argue that the new intermediaries will need to be significantly different from the existing intermediaries, and they need to be explicitly designed to take advantage of the new technologies. We will take a design perspective and present a specific architecture for the new intermediaries.

1. Information Technologies favor markets and outsourcing. Markets and outsourcing can benefit from intermediation: Markets and hierarchies are often presented as two opposing organizational structures, and information technologies have been claimed to favor markets at the expense of hierarchies (Bichler, 2001; Malone, 1989). The argument is based on the inherent advantage of markets in creating specialization, and economies of scale, by outsourcing various activities to specialized businesses that perform them for all who need them. However, these advantages come at a cost of extensive communication and coordination required by markets. As information technologies reduce the cost of communication and coordination, increasing reliance on outsourcing and markets is expected, to take advantage of specialization and economies of scale. Yet, such outsourcing is not a trivial exercise, and it is not likely to be a simple shift from hierarchies to markets. It may require extensive intermediation to alleviate the control and coordination problems arising from extensive outsourcing and market orientation, since control and coordination are not mere communication problems, but require extensive information processing and analysis. Intermediation can reduce the cost of information

processing and analysis through specialization (Sarkar et al, 1995).

2. Markets and outsourcing lead to inter-organizational structures. Inter-organizational structures can benefit from intermediation:

There is considerable evidence that new information technologies led to increased outsourcing, but not necessarily a larger number of business partners, contradicting theoretical predictions of extensive outsourcing with more business partners through market transactions (Clemons, 1993). It is possible that this observation reflects merely an intermediate stage in the ongoing adaptation to new technologies, and fragmentation of outsourcing may yet to develop. Increased outsourcing creates a control and coordination problem with outside business partners, and the lack of new inter-organizational structures to deal with the increasing control problem might be limiting the fragmentation in the short term. New inter-organizational arrangements and further refinement of technologies would allow finer fragmentation of outsourced activities with many interchangeable parts, since that would create new efficiencies, if the control problems can be resolved effectively. These new organizational arrangements are likely to involve extensive intermediation, since that would allow indirect access to many business partners through intermediaries, and would provide the necessary control efficiently, without direct contact with each and every business partner (Waldfogel & Chen, 2006).

3. Inter-organizational structures may require explicit design. Explicit design can benefit from intermediation: Complex organizational structures do not always emerge spontaneously from evolution and incremental change encouraged by market forces, but they may need to be designed through a deliberate and prescriptive design process, involving radical redesign and extensive cooperation from many participants. Evolutionary and incremental changes do not always lead to optimum solutions, since market

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