

A Few Suggestions for the Canadian Agenda on E-Commerce

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The assumption underlying the suggestions formulated in this note is that IT integrates all business functions and provides opportunities for new business strategies and models. While much research has been undertaken within different individual disciplines, an interdisciplinary and problem-oriented research is called for.

1. Extending traditional business activities to virtual markets and integration of its functions

The e-business differs fundamentally from the traditional. The differences are a direct result of IT acting as conduit, enabler and facilitator for different business functions, and they include: (1) the globalization of businesses of all types and sizes; (2) the integration of the back-office and front-office systems; and (3) the integration of all business functions with their ability to impact customers, employees and organizations faster, more directly and with more visibility than ever before.

IT plays multiple roles in e-commerce and its penetration requires reconsidering the conduct of traditional business functions. New business activities include, for example, one-to-one marketing, production and costing of digital products, and management of virtual organizations. IT also brings service functions (e.g., accounting, finance, human resource management) directly to the front-office with the requirement that they are conducted in real-time. This leads to the following postulate:

The research agenda in e-commerce needs to include studies of:

- *The use of IT within every business function;*
- *Evolution of business functions caused by IT, virtual organizations and markets; and*
- *Integration of different business functions enabled by IT.*

All of the above lead to research on new forms of organizations, business strategies and models.

2. Mixed markets and mixed organizational forms

In the foreseeable future both physical and virtual markets will co-exists. One may expect firms to be active on both types of markets using different models of their activities. They may range from duplicating all activities on both markets to dividing one business function into its virtual and physical components (e.g., a virtual catalogue and newspaper advertisements). One may expect that different businesses would require different strategies and models.

Within an industry value chain some firms may operate only on a physical market, others on virtual and yet others on both. Notwithstanding their presence on one or both markets they all face global competition. These complex configurations and a variety of the competitive forces that businesses face require studies on the possible meta-organizational structures, on new types of organizations facilitating vertical integration and new types of industry-wide core competencies; all in the IT intensive environment.

The research agenda in e-commerce needs to include studies on:

- *Inter-organizational forms for mixed markets; and*
- *Intra-organizational forms for mixed markets.*

3. Producers and consumers roles in e-commerce, and decision making

Globalization, e-commerce and network economy increase the economic power of businesses. Their abilities to attract and influence consumers are increased with the new IT methods and tools. For example, data mining, software agents, personalization and customization allow for customer profiling, and the adaptation of advertisements, products and services to individual customers. These tools diminish the ability of most consumers to make informed decisions.

Businesses have significantly more resources than customers to cope with information overload; obtain and effectively use information and knowledge. Despite the consumers' increasing ease of access to virtual stores they ability to learn about companies and make wise choices may actually decrease. These issues require ethical and legal studies. What is, however, also required is to develop systems that would allow customers to obtain information and knowledge about companies and products, and make informed decisions with very little effort. The existing solutions like comparative shopping systems and Web-based consumer support systems are cumbersome and often tied to the producers' sites.

Auctions became one of the most popular forms of purchasing on virtual markets by both individual and organizational customers. Simple auctions have limited applicability in business-to-business commerce as well as purchasing of big-items. Research on, and development of, multiattribute auctions is required.

Although auctions are efficient in many purchasing activities they cannot be used in situations where companies need to jointly define the attributes of a venture, product or service or determine the division of core competencies. Auctions are not suitable for firms that are interested in the establishment of a business relationship or are already in a partnership and need to establish effective communication and negotiation facilities.

Business negotiations often involve both integrative and distributive actions while auctions support only distributive and for a priori defined set of attributes. Therefore systems are required to facilitate and support negotiations. We have been conducting a three-year long study on Web-based negotiations (see <http://interneg.org>) and over 70% of the 2,000 users of the INSPIRE system would like to use such a system to conduct real-life business negotiations. AI-based systems are needed that are capable of suggesting integrative moves and independently engaging in a mixed negotiation (despite claims no negotiation software agents are capable of such negotiations).

The research agenda in e-commerce needs to include studies on:

- *The multiple forms of decision making by businesses and customers;*
- *Organizations, knowledge and information systems that provide consumers with means for making informed decisions;*
- *Agents and systems for integrative and mixed negotiations; and*
- *New IT tools and systems for information- and knowledge-intensive collaboration and co-operation between organizations and individuals.*

4. Information, knowledge, and cultural issues

E-commerce technologies facilitate manufacturing, marketing and sale/dissemination of information of digital products. These technologies include software, information- and knowledge-based systems. The dominant position of the US-based developers and producers led to "aculturalization" of software with the underlying assumption that software internationalization (locale) that adapts the interface to specific markets is sufficient for the adoption and effective use of IT. There are, however, decision support systems, consumer support systems as well as Web sites which differ not only in their interfaces but also in their core; they are based on different culturally-based assumptions, methods for

decision problem representation and solution.

Software is being developed that is suitable for some organizations and not for others. For example, the existing ERP systems are not suitable to the organizational structure and/or culture of many businesses. There seems to be no reason why "culturally-sensitive" ERP systems cannot be designed that meet these organizations' needs and matches their operational requirements.

Some consumers use a holistic approach to product evaluation while other use an analytic one. There are also reported gender differences in the informational requirements. The Canadian approach to software development and the provision of information may recognize these differences and transfer the cultural and behavioural sensitivities used by the Canadian employers and employees from the physical to the virtual workplace and marketplace. The key issue here is whether transactions conducted on the Web are acultural and have purely economic character. If they are not, that is if they involve new partnerships, the creation of ad-hoc interest groups and collaboration, then the cultural and personal sensitivity may play even more important roles for effective and satisfying activities and deals in virtual marketplace than in the physical one.

A significant part of the mundane and time consuming activities will be taken over by intelligent software agents. They will act on behalf of their principals and one may expect that an organization or an individual would want that these agents employ their principals' norms and rules of behaviour.

It has been assumed that information can be equated with knowledge or that it can be used to produce knowledge irrespectively of the national and organizational culture of knowledge providers and recipients. This assumption has been proven false in the physical marketplace and there is no reason to assume its validity in the virtual marketplace.

The above points lead to the last postulate suggested here, namely:

The research agenda in e-commerce needs to include studies on:

- *National, organizational and group sensitivity of software technologies beyond their interfaces;*
- *The roles of the intelligent systems in their representation of the principals on whose behalf they make decisions; and*
- *The different facets and meanings of information and knowledge, and their use in organizational and individual decision-making.*

Background material can be found at:

<http://commerce.concordia.ca/interneg/research/papers/> or
<http://interneg.org/interneg/research/papers/>.

"The Software for Cultures and the Cultures in Software", G.E. Kersten, S. Matwin, S.J. Noronha and M.A. Kersten, INR10/99.

"Learning Organizations in the 5th Long Wave: Management, Innovation, Knowledge, and IT", G.E. Kersten, INR09/99.

"Are All E-Commerce Negotiations Auctions?", G.E. Kersten, S.J. Noronha and J. Teich, INR08/99.

"Cultural Influences in Anonymous Business Negotiations", G.E. Kersten, S. Köszegi and R. Vetschera, INR07/99.

"Negotiation in Electronic Commerce: Integrating Negotiation Support and Software Agent Technologies", G. Lo and G.E. Kersten, INR03/99.

"Negotiations in Electronic Commerce: Methodological Misconceptions and a Resolution", G.E. Kersten and S.J. Noronha, INR02/99.

"Negotiation and the Internet: Users' Expectations and Acceptance", E. Kersten and S.J. Noronha, INR01/98.