Information Quality, the Information Infrastructure, and Emergent E-Commerce in Russia 2000

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Abstract

This paper contrasts opportunities in e-commerce in Russia with constraints, particularly those that are related to information quality (IQ). Like most of Europe, but more severely, Russia lags behind the United States in e-commerce for three reasons: a lack of capital investment in information technology (IT), inflexible labor markets, and the lack of domestic computer manufacturers (*Economist*, February 5, 2000). However, Russia suffers from additional disadvantages: the lack of stable financial products, an immature telecommunications infrastructure, an egregious lack of data security, endemic fraud, and especially, a poor information environment. The literature in this area is sparse, and research challenges are explored.

The author includes an analysis of twenty-four 1998 interviews in the Rostov-Taganrog area about IT plans and prospects for e-commerce and e-business (which were synonymous for the subjects at that time). Three cases will be presented: external "angels", partners from the European Union, improved IQ through ongoing projects in medical research, shipbuilding, and a campaign for a free-trade zone. The author discusses the concept of an information infrastructure and its seminal importance for IQ and for economic development. In an emerging economy, as in mature economies, the information consumer seeks intrinsic, contextual, representation, and accessible data quality, as defined by Strong and Wang (1994). In an emerging economy, however, the information consumer cannot realistically demand or develop robust information within a short time frame with these characteristics. However, in both the long and the short run, IQ may be more decisive for competitive advantage than in developed economies precisely because it is rare and problematic.

The author identifies a number of areas in which the topic may be developed. Researchers may investigate where and how IQ is most critical in an emerging economy, and in which services and industries. Also, models can be developed for strategies and tactics that not only develop IQ, but also compensate for deficiencies.

Introduction: research questions

The dual criticality of both IQ and also of a communications and business infrastructure which promotes IQ, are more acute for electronic markets than for bricks and mortar enterprises. However, IQ and its infrastructure must develop in traditional markets across Russia at the organizational and local level before e-commerce is possible,

and significant advantages are found in Western urban centers. Moscow and St. Petersburg contain not only a plethora of competitive service providers and reliable telecommunications networks, but also numerous external partners, or "angels", who often enhance IQ.

However, to assess the challenge of the incipient development e-business and e-commerce, the relationship between IQ and these following domestic factors are paramount: endemic market inefficiencies, a predilection for prudence and secrecy in a politicized economy, a culture-based reluctance to disclose minimal business information, and the absence of reliable financial and legal institutions.

What are the prospects for improved IQ and successful e-commerce in Russia? Can the nation leapfrog stages in market development and technology transfer to compensate for systemic information poverty? Should managers address infrastructural improvements beyond telecommunications to improve IQ? What is the significance of poor data quality and a fragmented information-sharing environment for competitive advantage through e-commerce? Does the Russian experience offer any models or strategies for other emerging economies?

Scholarly significance

Few events in modern economic history are as monumental as the three confluent but incomplete revolutions which began to transform Russia from 1986 to 2000: the transition from a command to a demand economy, the utilization of commercial information, and the spread of information technology (IT), especially telecommunications. Electronics retailers, board designers, software authors, pirates and IT partnerships have spread across Russia in the past decade, yet the post-Soviet market for IT and connectivity has been investigated only tangentially.

The emergence of the computer as a global communication device has fostered unprecedented cosmopolitanism, fueling Russians' growing self-image as members of a worldwide wired community. However, the resources to exploit information systems and to improve data quality are limited in 2000: economic failures reduced the GDP by half from 1992 to 1998, and left Russia with an economy smaller than that of the Netherlands by 1999, and an information infrastructure which resembles numerous developing economies.

Literature (and the lack of literature) Review

Information quality and information mismanagement literature

Although, no field studies of connectivity have yet appeared on Russian information systems, numerous authors have examined related topics, such as the legacy of information scarcities and information mismanagement from the Soviet era (Brand, 1995; Zisk, 1998; Chepaitis, 1996; Gustafson, 2000). Aslund (1995) discusses the problem of data integrity and e-commerce in numerous areas: official statistics, commodity prices, commercial journals, and Russian research institutes.

Business practices and economic conditions literature

From 1994 to 1999, foreign studies and online resources flowed *into* Russia; data communications facilitated cooperative research, partnerships, and commercial studies.

Nonetheless, primary data on business practices and economic conditions in Russia is scarce and problematic, particularly for comparisons with other emerging economies. For example, in the 1998 Global Benchmarks Comprehensive Measures of Development, Yeung and Mathieson omit Russia from the 108 countries studied since reliable data, even indicators such as GDP or indebtedness, are unavailable. However, a consistently reliable picture of overall conditions and challenges is available through continuously updated references such as Russia: A Country Study (Curtis, 1998), which offers a cogent view of the direction and magnitude of change during the past decade. Anecdotal evidence and "war stories", about endemic problems such as miscommunication, misinformation, and unethical information behaviors are ubiquitous (Aslund, 1995; Smith, 1993,1995; Handelman, 1995). Zisk's insightful study (1998) of the behavior of former Soviet enterprises in the new Russia describes systemic obstacles to information sharing. An outstanding petroleum industry study by Yergin and Gustafson (1995) describes with some depth the volatility, lack of credibility, and Byzantine complexity in the post-Soviet information environment, as do frequent exposes in the Wall Street Journal (Whalen and Bahree, 2000). Gustafson published a broader, definitive description and analysis of the Russian economy in 2000.

Management strategies, business trust and global competitiveness literature

A spate of research on management strategies and global competitiveness includes insightful discussions of anomalies in market formation germane (Boycko, Schleifer, and Vishny, 1998; Zisk, 1998). Finally two broad studies are insightful for a redefinition of information infrastructures: Fukiyama's (1995) material on business trust and Castells' (1998) study of degrees of memberships in a networked society of circulating information, capital, and commodities. The author worked in Russia in 1991, 1992, 1994, and 1998, as a consultant and a Fulbright Fellow, and is expanding previous research on Russian information management and information poverty (1994), data quality (1996), and IQ and information ethics (1997, 1999).

IQ and economic development literature

Avgerou (1991) and Wilson (1998) emphasize the need to assign top priority to improvements in data quality in economic development, to provide a foundation for robust information systems infrastructures. A growing body of literature has emerged on information environments and data quality. Davenport's Information Ecology presents research on the critical components of enriched information environments within organizations, and provides portable models and strategies for emerging economies also. Tapscott and Caston claim that information technology (IT) cannot be exploited unless more open, extended, integrated, and flexible organizations are constructed. Paquin's and Turgeon's promotion of a customer-centered approach links quality IS and quality service, and their thesis dovetails neatly with the article by Evans and Wurster (1999) which provides a sound analysis of competitive advantage in the second generation of e-commerce. They focus on the seminal importance for IQ of a synergy between a healthy information environments, elegant navigation tools, and continuous value reengineering; their thesis is not encouraging for Russia.

Russian sources: literature

Unfortunately, little research has been conducted by Russian scholars, although the popular press in Russia discusses issues such as electronic crime and external information

frequently. Investigative journalism in a few periodicals such as the *Moscow Times* features reliable studies of changing business practices and IT, such as a 1998 study of the scope and the affects of software piracy. At the turn of the century, scholars, academic journals, learned societies, and libraries suffer from lack of funding. From 1994 to mid-1998, the author found no relevant publications in the few academic journals housed in the Lenin Library in Moscow or regional repositories in Rostov and Kemerovo.

Research Methods

In the following sections, the author analyzes interviews, case studies, and current data on the telecommunications infrastructure (Perov and McHenry, 2000). The interviews conducted two years ago were robust, particularly in regard to long-term strategies. The author found significant plans for information systems, and pent-up demand for e-commerce in twenty-four interviews that were conducted in 1998 (Table 1). The participants are identified by their titles, occupations, attitudes toward information management and connectivity, and also ranked according to their anticipation of the direction in which Russia is heading politically ((forward toward a mature demand-economy, sideways toward socialism, or backward toward communism). All twenty-four subjects expressed discontent with the quality of information resources needed to pursue business strategies, but they were enthusiastic about the promise of connectivity in the long run (Table 1). Twenty subjects agreed that linkage was critical, for a variety of purposes: the capacity for electronic data interchange (EDI), information discovery, marketing analysis, and the acquisition of knowledge-based systems. The subjects ranked six problems as pressing, out of a list of eight, in the following order: information access, price, reliability, service providers, content, and flexibility. Security and control were ranked last, by a wide margin.

The data from 1998 included the answers to numerous simple but germane queries. The participants were asked initially about four areas: business conditions in Russia, the goals of the organization, their information needs, and their information resources. A follow-up study sought to discover how the information infrastructure is affected by the Soviet legacy and by economic decline, and what strategies managers adopt to compensate for the lack of business data, access, interpretability, and appropriate format. Most of all, IQ and the shifts toward service industries, localization, increased customer awareness, and the perceived urgency of connectivity must be assessed.
The author will consider this question: how have domestic data stores, business alliances, external data resources, know-how, plans for connectivity affected IQ at the turn of the century?

Tools

Questionnaires would have been the preferred method of data collection for this project, and in 1998 they would have facilitated the task of refreshing the data. However, questionnaires are unwelcome and suspect in Russia, and inhibited open and ongoing communication, since they attract attention and leave a paper trail which discomforts Russians. Recordings are also suspect. In fact, most Russians distrust and fear research that identifies individuals by name. The author remains in touch with many subjects by e-mail, and Russians actually seem to prefer interviews at arms length. In the future, the

author will assess the information infrastructure by different occupations, geographic bases, generations, and degrees of cosmopolitanism.

Cases

Three projects in the Rostov region illustrate the benefits of sustained connectivity and global alliances for IQ. After Chernobyl, teams of German research arrived with massive medical relief and funding for cancer research. The project evolved into a hugely successful program to increase the longevity of victims of childhood leukemia, and features an ongoing transfer of know-how and other support (Andrenkova, 1998). Second, a Technical Assistance to the Commonwealth of Independent States (TACIS) team, based in the Netherlands, is transferring a knowledge-based system on shipbuilding to Taganrog. The contact began as a sister city project, now funded by the European Union (EU). Third, TACIS representatives visit Taganrog frequently and have co-authored Taganrog's applications to create a free trade zone on the Sea of Azov; TACIS's major contribution has been to provide well-documented projections of regional economic benefits (Baalen, 1998).

Firm/Occupation/Global Partners	Future	Connectivity
TRTU President/G	2	1
Hyundai factory/management/G	1	1
Novotel Manager/G	1	1
Lombard insurance and finance manager	1	1
Ec. Development mayor's office/G	1	1
CEO insurance agency	2	1
EC consultant, shipyard partnership (TACIS)/G	2	1
Taganrog in these	2	2
municipal library, operations management		
Rostov regional library, acquisitions	2	1
Chief Pediatrics, Royal College of Surgeons, Rostov/G	2	1
Georgian émigrés/ restaurateurs	3	3
Owner,Samuel Clothes manufacturing and sales	1	3
West computer retail/G	1	1
Chief, Nokia robotics lab/G	2	1
Intourist travel, Rostov manager/G	3	1
DIMIR electronics	2	2
Manager, MSU joint venture/G	1	1
Lobbyist/economist for FTZ in Taganrog/G	2	1
Doninvest/banking-currency exchange/G	1	1
Dean, School of Economics/Business/ G	1	1
Canadian aid workers CLS/G	2	1
Environmental engineer/G	2	1
Medical management software, author	1	1
International liaison, TRTU/G	1	1

Connectivity: 1= critical; 2= somewhat important; 3 = not very important		
Future: 1 = forward; 2 = toward socialist 3 = return to Communism forecast		
G= Global partnerships		

Table 1. 1998 Interviews (24)

Lessons and Perspectives

The data will be used primarily for an assessment of the relationships between the information infrastructure, IQ, and e-commerce. Which cultural, political, economic, and social factors are relevant to the quality of electronic data in addition to the material infrastructure? Factors which must be analyzed include global networks, external business partnerships, the transfer of knowledge based systems, the telecommunications infrastructures, the spread of wireless communications, and the maturation of domestic business, particularly in the service sector. Undoubtedly, lessons can be gleaned from the Russian experience for other emerging economies, but they must be tailored to fit new contexts and challenges.

Conclusion

As the August, 2000 Kursk tragedy illustrated, both the material and the cultural information infrastructure constrain the development of IQ in Russia. Information was instinctively delayed, and hoarded: when the submarine sank, whether explosions on board were detected, who was on board, the extent of the damage, the presence of a foreign vessel. As a result, rescues, reportage, and credibility were impaired.

Without quality information resources, the two salient market imperfections--imperfect information and imperfect competition, cripple economic development in Russia. These not only compromise product quality and restrict consumer choice, but also entrepreneurs and managers must "work around" these imperfections: waste must be tolerated, efficient business models cannot be developed and enhanced, and optimal relationships often are foregone.

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