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Adoption of Electronic Commerce by Small Businesses

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INTRODUCTION

The role played by small business in economic growth and development in the world is officially recognized, in both the economic literature and in official documents (e.g., Organization for Economic Cooperation and Development, European Commission, U.S. Department of State).

Information and communication technology connectivity are widespread in all sized businesses, but small businesses seem slower than larger ones to adopt and use ICT and electronic commerce.

SMEs (small- to medium-sized enterprises) are independent firms that employ less than 10 (micro), 50 (small), and 250 (medium) employees (European Commission, 2003); the United States includes firms with fewer than 500 employees in the definition of an SME (OECD, 2000a).

In Europe, SMEs contribute up to 80% of employment in some industrial sectors (e.g., textiles, construction, furniture), and they are defined as "a major source of entrepreneurial skills, innovation and contribute to economic and social cohesion" (European Commission, 2005, p. 3); in the U.S. economy, small businesses represent 99.7% of all employers and "broaden a base of participation in society, create jobs, decentralize economic power and give people a stake in the future" (U.S. Department of State, 2006, p. 2).

To synthesize: more than 95% of OECD enterprises are SMEs, accounting for 60-70% of employment in most countries (OECD, 2000a).

The same proportion is indicated by the United Nations Conference on Trade and Development; in fact, SMEs account for 60-70% of all employment in developing countries (UNCTAD, 2002).

BACKGROUND

Research interests in e-commerce utilization in SMEs have been driven by a basic hypothesis that this type of technology can offer new opportunities to counterbalance disadvantages of size, resources, geographic isolation, and market reach (Wymer & Regan, 2005).

Several different disciplines (management, organizational behavior, communications, computer science, information systems, marketing, work, and social psychology) are involved in research on incentives and technology adoption barriers. In this regard, different theoretical and applied models already exist:

- The *Theory of Reasoned Action (TRA),* and its extension, the *Theory of Planned Behavior (TPB)* (Ajzen & Fishbein, 1980; Chau & Hu, 2001; Harrison, Mykytyn, & Riemenschneider, 1997) are based on assumptions that a person's intentions are the best guide to behavior, and that there is a link between attitudes and behavior.
- The *Technology Acceptance Model (TAM)* (Straub, Limayem, & Karahannaevaristo, 1995), defines models as to how users come to accept and make use of technology.
- The *Adoption, Innovation and Diffusion Theory* (Rogers, 1995) defines adopter (of any new innovation or idea) categories as innovators, early adopters, early majority groups, late majority groups, and laggards.
- *Social Cognitive Theory* (Bandura, 1996) defines human behavior as a triadic, dynamic, and reciprocal interaction of personal factors, behavior, and the environment.
- The *Unified Theory of Acceptance and Use of Technology (UTAUT)* (Venkatesh, Morris, Davis, & Davis, 2003) uses performance expectancy, effort expectancy, social influence, and facilitating conditions as direct determinants of usage intention.

Table 1 presents a synthesis of the numerous factors influencing adoption of e-commerce adoption from the literature.

As we can see, adoption of electronic commerce by SMEs is influenced by different factors. Grandon and Pearson (2004) identified and synthesized four factors that have statistically significant effects on e-commerce utilization: *organizational readiness* includes financial and technological resources and compatibility of e-commerce with company's culture, values, and preferred work activity; *external pressure* is defined by competing, social factors, dependency on other firms already using e-commerce, the industry, and the government; and *perceived ease of use* and *perceived*

Table 1. Factors influencing decision to adopt e-commerce/e-business/Internet technology (adapted from Wymer & Regan, 2005, p. 442)

Factor Name	Description
Environmental Factors	
Competitive Pressure	Competitive pressure from other Internet adopters within the industry
Government	Government rules and regulations
Market	Viable market or customer base for e-commerce
Partners/Vendors	Availability of the right partners
Supplier Readiness	Readiness of suppliers for electronic business
Knowledge Factors	
Change Experience	Employee experience with making major changes
Executive Experience	Experience of top executives with computers and the Internet
Innovativeness	Company's willingness to adopt new technology
Models	Successful models of use in the industry
Need	Perceived need for change or implementation of Web and Internet technologies
Prior Experience	Company's prior experience with new technology implementation
Trust	Trust or confidence in Web and Internet technologies
Understanding	Understanding of available opportunities and options with e-commerce
Value	Perceived value or relevance to the business
Organizational Factors	
Capital	Access to capital for start-up
Employee Reduction	Resulting reduction in number of employees
Priority	Priority relative to other projects that require existing resources and time
Profitability	Projected profitability of e-commerce
Technical Expertise	Availability of technical staff or consultants with Web skills
Technological Factors	
Cost	Cost to setup and maintain
EC Technology	Technology for selling products or services online
Infrastructure	Access to network services or infrastructure to support Web and Internet technologies
Reliability	Reliability of Web and Internet technologies
Security	Security issues
Technology Availability	Availability or adequacy of existing technology and tools

usefulness. In particular, the last two factors turned out to be most influential in adoption of electronic commerce by top managers of SMEs, while compatibility emerged as a partial factor that highly influenced e-commerce adoption, as opposed to financial and technological resources.

The benefits of e-commerce are for all sized businesses, and even SMEs could reap advantages. Studies in numerous counties reveal that SMEs have been slower to adopt e-commerce than their larger counterparts, however information technology use by SMEs is increasing (Drew, 2003).

Moreover, many studies define and analyze e-commerce and small businesses through different points of views with images and concepts that are not of help in understanding the phenomenon (Ngai & Wat, 2002).

Small business have many reasons for selling or buying over the Web. They can receive benefits from this type of commerce—that is, "adding distribution channels, increasing overall sales, expanding their reach beyond local markets, or gaining greater exposure in existing markets [in] building an Internet storefront for a retail shop" (Mehta & Shah, 2001, p. 88).

SMEs use e-commerce in three different ways:

Internet start-ups' are inventing new ways of creating value added, new service and new business models… 'Established

Table 2. Percentage of small European enterprises (10 to 49 employees) that use e-commerce for purchasing and sales (data in parentheses refer to large enterprises: more than 250 employees) (adapted from Eurostat, 2006)

ELECTRONIC COMMERCE	EU	DE	ES	IT	CY	LV	HU	PL	SE	UK
Purchase	22(40)	40(52)	4(7)	4(15)	14(20)	1(1)	4(8)	9(11)	40(57)	48(72)
Sales	10(31)	14(40)	2(15)	2(13)	2(29)	1(1)	4(6)	4(14)	21(45)	22(45)

small firms' are developing their own e-commerce strategies to expand their business by entering new markets, often internationally…'Existing SMEs' are entering into electronic partnership with large corporate customers. (OECD, 2000b, p. 17)

Studies on adoption of electronic commerce by SMEs focused on different aspects:

- The benchmark on the use of the Internet emphasizes that SMEs need to think both globally and strategically, and that they must learn from competitors (Webb & Sayer, 1998).
- A learning organization style oriented to upgrade competencies and to acquire new knowledge (defined *high-order* by Argyris & Schon, 1978) is more involved in the use of the Internet and e-commerce (Chaston, 2001).
- There are significant differences in frequency and type of use, related to company size: four or more employees represents the critical dimension for more frequent and sophisticated use (Dandridge & Levenburg, 2000).
- The greater the usage of Internet technology is among entrepreneur-led family business, the more it is possible to find ties between entrepreneurial profile and growth (Davis & Harveston, 2000).
- The analysis of strategic use of the Internet and e-commerce in SMEs shows that they are opportunistic in their adoption and that the communication requirement has been a motivating factor of implementation (Sadowski, Maitland, & van Dongen, 2002).
- SMEs present different sequences of e-commerce adoption: in the early stages they use the lowest levels of e-commerce service; in the second, e-mails are used to communicate with customers, suppliers, and employees; the third level of adoption includes information-based Web sites operating and developing online ordering services; and the most advanced adopters use online ordering and are developing online payment capabilities (Daniel, Wilson, & Myers, 2002).

FOCUS: SPECIFIC DIFFICULTIES FOR SMALL BUSINESSES WITH E-COMMERCE ADOPTION

Some problems to understanding the barriers faced by smaller firms are due to the fact that they are a not uniform group and that their characteristics vary by sector:

High technology, knowledge-intensive small firms are more likely to use e-commerce than other small firms and there are differences between industry sectors in terms of e-commerce use and strategy development. (Fillis & Wagner, 2005, p. 607)

Non-adopters show some characteristics that differ from SMEs that adopt e-commerce. In fact, they present high scores related to barriers/impediment and tend to be slower in detecting changes in technologies that might affect their business, whereas the adopters are more aware of opportunities afforded by technology, are more costumer oriented, and are more sensitive to changes in their customer/competitive environment (McCole & Ramsey, 2005).

It is interesting to see the adoption of e-commerce in different areas of the world.

In European Union (EU) countries, the use of an internal computer network and intranets is progressing well, but there is space for improvement, especially among smaller enterprises (10 to 49 employees). Internet and Web sites are not enough of a support system for e-business. Enterprises need to use more of their technological potential in order to reap maximum benefits. E-commerce can be difficult to start up, and generally, enterprises tend to prefer to purchase than to sell online. According to Eurostat (2006), only 10% of EU small firms engaged in e-commerce sales activity.

Table 2 shows the most significant data from the EU.

In the United States, there were slight differences in e-commerce attitudes and experience between small/medium-sized enterprises and large establishments. This difference in e-commerce experience suggests that a considerable population of small establishments (less than 25 employees) may be less prepared for e-commerce. Routine use of e-commerce

Table 3. Mean percent of total commerce conducted online by SMEs (25-250 employees) in the U.S. (data in parentheses refers to large enterprises: more than 250 employees) (adapted from Fomin, King, Ljjtinen, & McGann, 2005)

ELECTRONIC COMMERCE	SMEs
Purchase	73.5(79.8)
Sales	5.1(4.0)

lags behind more traditional forms of commerce (Fomin, King, Ljjtinen, & McGann, 2005).

Table 3 shows the most significant data from the United States.

In many developing countries, no statistical indicators on e-business have been collected and considerations are more difficult due to the very significant differences among SMEs in different regions and countries.

The general conclusion (UNCTAD, 2004, p. 52) on the adoption of e-business in developing countries are:

"…for SMEs is that it is relatively easy to start using PCs, then connect to the Internet using e-mail, and then set up a Web page. However, the introduction of the Internet into their business activities (…including e-commerce) does not follow straightaway, and larger companies are more likely to automate their business processes (and to do so earlier) than smaller companies. One explanation for this is that most SMEs have no defined e-business strategy."

The specific difficulties in different countries by small firms in e-commerce adoption are the object of various studies (Fomin, King, Ljjtinen, & McGann, 2005; Cubico, Venturini, Russo, & Favretto, 2005; Fillis & Wagner, 2005; Jones, Beynon-Davies, & Muir, 2003; OECD, 2004; Walczuch, Van Braven, & Lundgren, 2000), and from these, we can draw a basic synthesis of the factors involved.

The most cited barriers related to smaller-sized enterprises in e-commerce adoption are:

- Concern about privacy of data or security issues,
- need for face-to-face customer interaction,
- implementation costs of e-commerce sites,
- lack of financial resources and high costs,
- customers do not use the technology
- applicability to enterprises
- finding staff with e-commerce expertise and uncertainty on how to implement,
- insufficient education/information about benefits,
- level of ability to use the Internet as part of business strategy,
- prevalence of credit card use in the country,
- taxation of Internet sales,
- making needed organizational changes,
- inadequate legal protection for Internet purchases,
- cost of Internet access, and
- business laws do not support e-commerce.

The following specific elements are limited factors: awareness of SME access to infrastructure and skills, critical mass among business partners, confidence in legal and regulatory framework/security, and adaptation of business processes.

FUTURE TRENDS

The first steps to understanding the phenomenon of e-commerce adoption in SMEs are to define their characteristics and to know the specific needs of these types of enterprises.

Furthermore, it would be interesting to understand more about specific patterns related to decisions and choices in e-commerce adoption through different disciplines. For instance, important psychological aspects that inform decisions to work with electronic markets seem to be reliability, security, confidence building, and the legal framework (selected cultural differences have been demonstrated in recent cross-cultural research by Dinev, Bellotto, Hart, Russo, Serra, & Colautti, 2006), or the effect of a specific organizational culture that impedes SMEs' decisions (Feltham, Feltham, & Barnett, 2005; Schein, 1983).

Another way could be to identify specific skills, knowledge, attitudes, and aptitudes necessary and distinctive to e-commerce adoption by SMEs.

CONCLUSION

Work on SMEs and different levels of e-commerce adoption shows that firms needs to improve specific skills (Taylor, Mcwilliam, England, & Akomode, 2004), in order to develop existing processes or to introduce new processes and to integrate their new Web-based systems (with existing internal systems and with external systems for customers and suppliers) (Jeffcoate, Chappel, & Feindt, 2000).

Help to SMEs and an increase in different types of commerce (especially in electronic commerce, which represents the future in a global market) are important to the improvement of their chances of survival and for the longevity of economic systems based on these types of enterprises.

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KEY TERMS

Electronic Commerce (E-Commerce): Transactions conducted over Internet protocol-based networks and over other computer-mediated networks. Goods and services are ordered over those networks, but payment and final delivery of goods or services may be conducted on or off-line. Orders received via telephone, facsimile, or manually typed e-mails are not counted as electronic commerce (Eurostat, 2006).

European Union (EU): Family of democratic European countries. The six founders (on March 25, 1957, with the Treaty of Rome) are Belgium, France, Germany, Italy, Luxembourg, and The Netherlands. The European Union acts in a wide range of policy areas—economic, social, regulatory, and financial—through solidarity policies (also known as cohesion policies), regional, agricultural, social affairs and innovation policies, which provide state-of-the-art technologies to fields such as environmental protection, research and development, and energy. Currently, the EU embraces 27 countries and 490 million people (*http://europa.eu*). EU countries include: Austria-A, Belgium-BE, Bulgaria-BG, Cyprus-CY, the Czech Republic-CZ, Denmark-DK, Estonia-EE, Finland-FI, France-F, Germany-DE, Greece-EL, Hungary-HU, Ireland-IE, Italy-I, Latvia-LV, Lithuania-LT, Luxembourg-LU, Malta-MT, The Netherlands-NL, Poland-PL, Portugal-PT, Romania-RO, Slovakia-SK, Slovenia-SL, Spain-ES, Sweden-SE, and the United Kingdom-UK.

Entrepreneur: An individual who sets up a business and heads a firm.

Family Business: Organizations where two or more extended family members influence the direction of the business (through kinship ties, management roles, ownership rights) (Tagiuri & Davis, 1982).

OECD (Organization for Economic Cooperation and Development): Established in 1961, one of the world's largest and most reliable sources of comparable statistics, and economic and social data. The OECD monitors trends, analyzes and forecasts economic developments, and researches social changes or evolving patterns in trade, environment, agriculture, technology, taxation, and more (*http://www.oecd.org*). OECD countries include: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, The Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic,

Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States.

Organizational Culture: A pattern of basic assumptions invented, discovered, or developed by a given group as it learns to cope with problems of external adaptation and internal integration, which has worked well enough to be considered valid and therefore is to be taught to new members as the correct way to perceive, think, and feel in relation to those problems (Schein, 1990).

Small- to Medium-Sized Enterprises (SMEs): Independent firms that employ less than 10 (micro), 50 (small), and 250 (medium) employees (U.S. SMEs include firms up to 500 employees).