



Myths and Reality of Electronic Commerce Barriers for SMES?

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ABSTRACT

In this paper we look into earlier empirical research on the barriers to electronic commerce (EC) for small and medium sized enterprises (SMEs). We look into research conducted in the context of information and communications technologies (ICT) in general, as well as EDI and Internet based EC. We divide the barriers, inhibitors or factors slowing down the diffusion of new technologies found in literature into those internal to an organization, and those imposed by external forces. The basic premise of this paper is, that technologies advance or change, but the barriers for SMEs to adopt them do not.

INTRODUCTION

SMEs have undoubtedly an important role in most economies and are fundamental especially in less developed countries and peripheral European regions. For example, in UK SMEs represent over 95% of all businesses registered for VAT, employ 65% of the work force and produce 25% of gross domestic product (Ballantine et al., 1998).

Electronic commerce in SMEs is becoming an important subject both in policy formulation and in electronic commerce research. For example OECD (1998) believe that the adoption and diffusion of electronic commerce among SMEs could contribute to increasing substantially their competitive advantage. Therefore electronic commerce or electronic business is seen almost as the latest "miracle cure" for SME's. Various national and regional (e.g. EU) projects on "SME awareness" to facilitate SME involvement in electronic commerce are becoming more and more common on national and regional political agendas. Research studies on this subject are increasing as well (see e.g. Chen and Williams, 1998).

It is feared, however, that because of a number of barriers and inhibitors, SME's are left out of the developments in the information society. According to OECD (1998), the most significant barriers of e-commerce for SMEs in the OECD countries are: lack of awareness, uncertainty about the benefits of electronic commerce, concerns about lack of human resources and skills, set-up costs and pricing issues, and concerns about security.

In this paper we look into earlier empirical research on the barriers to EC for SME's. What we are interested in is whether these barriers are something new created by the new Internet based EC technologies. Our grounding argument is, that these barriers have remained the same ever since SME's got involved in IS/IT and are not particularly specific to new technologies.

The study looks at adoption and diffusion barriers of different information technologies in SMEs, with the focus on information and communications as well as electronic commerce technologies, including different interorganizational systems (IOS), EDI and Internet-based solutions. Adoption in this article is defined as the decision to invest the necessary resources to make a change effort (Kwon & Zmud, 1987) and the process leading to that decision. Diffusion refers to the spreading of ICT and EC among SMEs.

The rest of the article is structured as follows: in the next section we discuss EC in SME context, including a brief reflection on the differences between larger and smaller organizations, and the expected

benefits of EC for SMEs. In section 3 we look at the factors inhibiting or slowing down the adoption of EC by SMEs, dividing these factors into internal and external issues. In the last section we summarize the findings and offer some conclusions.

ELECTRONIC COMMERCE AND SMES

Much confusion surrounds the definition of electronic commerce. Some see EC as Internet based activities only, while others include any kind of business or exchange of information on any type of network. Our approach is closer to the latter one: we define EC as a process, where electronic connections facilitate economic transactions between various parties in the value chain. This wide definition includes the usage of different types of information and communication technologies and systems, trade in both physical and digital products, and different types of services (Tuunainen, 1999). Even though this definition of EC includes a range of technologies from proprietary IOS and EDI to Internet based solutions and mobile or wireless technologies, for the purposes of this study, we distinguish between the different technologies when so has been done in the reviewed literature.

SMEs

There are different definitions of what SMEs are. The number of employees and turnover are two factors used to categorize businesses. The European Parliament divides SMEs into different sub-groups based on the number of employees, for instance small undertakings with 10 to 50 employees and medium-sized undertakings with 50 to 250 employees (European Parliament, 2000).

A long debated issue is whether SMEs substantially differ from larger ones. Company size has been found to be a critical factor to adoption of e-commerce technologies (Premkumar & Roberts, 1999). While small businesses are under increasing pressure to use information systems to stay competitive or simply to survive, they also face more barriers due to the high capital investment and need of skilled manpower (Thong, 2001). Welsh and White (1981) describe the special condition that distinguishes SMEs from their larger counterparts as "resource poverty". The results of a longitudinal study of small-firm computing shows that the most inhibiting factors for IT growth in small businesses were lack of IS knowledge, lack of managerial time, poor support and limited financial resources (Cragg & King, 1993). Small businesses also have a less organized technological watch and they modernize their equipment in a more incremental, less planned,

way using more intuitive methods for obtaining technological information (Julien, 1995). Organizational theories and practices used in large businesses may not be appropriate for small businesses (Thong et al., 1996).

In small businesses the CEO is often the same person who owns the company. This makes his or her vision and commitment to the innovation essential, especially in the smallest businesses, to get the adequate resources and support to implement an innovation (Premkumar & Roberts, 1999). Results from another study (Thong et al., 1996) indicate however, that external expertise and support could be as important for small businesses as top management support.

Opportunities Offered by EC to SMEs

Advantages of early EC technologies such as EDI are typically listed to include reductions in transaction costs and delays, higher quality service, and improved operations management (Raymond and Bergeron, 1996). Newer communication technologies such as the Internet are claimed to have opened up new markets and made geographic locations irrelevant (Premkumar & Roberts, 1998). This brings interesting opportunities to small companies, as well as additional risks (ibid). Electronic commerce is driven on both buyer and supplier sides by a number of factors: access to an affluent customer base; lower information dissemination costs; lower transaction costs; broader market reach; increased service; additional channels for customer feedback; consumer and market research (Auger & Callaugh, 1997). Electronic commerce applications, whether external or internal, are expected to improve coordination with trading partners or internal business units, and facilitate information exchange within organizations as well as market creation to reach new customers (Riggins & Rhee, 1998).

One way to increase the potential benefits for the small players is believed to be different kinds of cooperative arrangements between a number of SMEs. For instance Kettinger and Hackbarth (1997) claim that to the extent that small firms can leverage their limited resources with other small firms via cooperative network connections, they may achieve economies of scale and create new sales opportunities that were not available prior to electronic commerce. Network members are believed to often have complementary resources that make the total benefits from being a network member larger than the sum of the individual parts (Poon, 2000). Evidence has also been found that Internet commerce is increasing the competitive advantage of small businesses and the quality of information support but the benefits largely depend on the percentage of customers that participate in Internet commerce (Poon, 2000). This is due to the fact that success of e-commerce and other inter-organizational systems depend on its participants, while with internal IT systems, the success depends on internal users.

BARRIERS TO EC

In the literature concerning barriers or inhibitors to implementing and adopting EC technologies by SMEs the issues discussed fall into two categories: internal and external issues. Internal or organizational issues relate to lack of awareness and knowledge in SMEs and resource limitations. External issues, that is, those more clearly outside the sphere of influence of the SMEs, include technical questions and the topic of external influence or support.

Internal Issues

Regarding information and communication technologies (ICT) in general, Chapman et al. (2000) found that there are a number of barriers that prevent SMEs from adopting them and exploiting them for inter-organizational purposes. Many of them relate to lack of understanding, regarding both the opportunities available from EC to small businesses and on how to implement these techniques (Chapman et al., 2000). Also, in a study on SMEs attitudes towards EDI, Iacovou et al. (1995) note that many SMEs lack both an awareness of the potential benefits of the technology and the organizational readiness needed for the development of integrated EDI systems. Lately the lack of recognizable or measurable financial gains for SMEs has been

also related with Internet based commerce (Vassilopoulou et al., 1999; Walczuch et al., 2000).

Several studies describe lack of IT-knowledge and technological expertise as a major hurdle to the adoption of different electronic commerce technologies and procedures by SMEs (Iacovou et al, 1995; Damsgaard & Lyytinen, 1998; Bennett et al., 1999; Kuan & Chau, 2001). In a study among Finnish SME's supplying automotive industry Tuunainen (1998) found that particularly the smallest subcontractors rarely have the sufficient IT knowledge to fully utilize EDI. This is found to be still true in a more recent study by Chau (2001). Again, in the Internet usage context, the lack of knowledge of technology has been cited as a major factor differentiating SMEs from larger firms (Haynes et al., 1998). In other studies this has been expressed as unfamiliarity with the Internet (Walczuch et al., 2000), lack of understanding of the EC medium (Vassilopoulou et al., 1999), and limited knowledge of how the web pages could contribute to the organizational strategy (McCue, 1999).

Regardless of the technology in question, the technological development in SMEs is claimed to suffer from poor ability to manage technology as a strategic weapon, negative attitudes and limited human resources as of in-house expertise (Poon & Swatman, 1997; McCue, 1999; Buratti & Penco, 2001; Chau, 2001). SMEs are found to suffer from lack of staff and time to investigate new technologies and systems (Bennett et al., 1999) as well as reluctance to dedicate time and resources to resolving their lack of understanding and skills (Chapman et al., 2000). Also findings of Chen and Williams (1998) among UK small businesses were that SMEs tend to lack resources and experience, and seem to have difficulties in planning, designing or implementing EDI systems. This is in line with a study by Poon and Swatman (1999) who found that among the major barriers for SMEs not using Internet for their financial transactions is the fact that traditional transaction ways are perceived as robust and sound.

A weak financial position of SMEs and their resistance to invest in sophisticated systems involving complex telecommunications has been found as a major barrier in several studies (Tuunainen, 1998; Bennett et al., 1999; McCue, 1999; Chapman et al., 2000). The investment in innovations can represent a disproportionately large financial risk for small firms (Rothwell & Dodgson, 1991). Saunders and Clark (1992) found that perceived cost has been a significant barrier to EDI-adoption among small vendor firms. This result is consistent with findings of Iacovou et al (1995) on SME EDI-adoption. A recent study (Kuan & Chau, 2001) on EDI-adoption shows that cost is still an important consideration for small businesses. Also adoption and use of Internet technologies is hindered by cost and speed of Internet access, as well as cost of the start-up investment (Deschoolmeester & Hee, 2000; Walczuch et al., 2000).

External Issues

Empirical investigations (e.g. Iacovou et al., 1995) have suggested that a major reason that small companies become EDI-capable is due to external pressure, especially from trading partners. Insignificant influence by the industry, and poor promotion campaign by the EDI vendor is still found to play a role in slow diffusion of EDI (Chau, 2001) as well as Internet technologies (Poon & Swatman, 1997). Low volumes of EDI transactions (Tuunainen, 1998) or messages received over the Internet (Poon & Swatman, 1997), and concerns that suppliers and customers are not on-line (Walczuch et al., 2000) are all problems created by external players adding to SMEs unwillingness to invest time and money to new technologies.

Furthermore, lack of security or perceived security hazards have been and still are a major concern by SMEs, whether in EDI, Internet or other ICT context (Tuunainen, 1998; Poon & Swatman, 1999; Vassilopoulou et al., 1999; Deschoolmeester & Hee, 2000; Walczuch et al., 2000). Other factors contributing to slow adoption of different EC technologies are related to legal issues (Deschoolmeester & Hee, 2000), lack of standards (Robertson & Gatignon, 1986; Tuunainen, 1998), still experimental payment systems, and limited services offered on the Internet (Poon & Swatman, 1999).

External consultants and IT-vendors could play an important role in assisting small businesses to successfully adopt IS (Thong et al,

1996). However, lack of impartial advice (Vassilopoulou et al., 1999) and access to expert help (Bennett et al., 1999) has been identified as inhibiting the adoption of new technologies for SMEs. While there often is a general lack of IS expertise in SMEs, small companies are unfortunately also less inclined to use external advice-giving services (Thong et al., 1996).

SUMMARY AND CONCLUSIONS

We do not claim to have conducted an exhaustive literature review on barriers to EC for SMEs. We believe, however, that we have produced a representative sample of a wide range of often cited pieces of research on the topic. What can be deduced from our analysis is, that whether we are talking about ICT in general, EDI or lately Internet based electronic commerce, the barriers to adoption and use of them for SMEs have largely remained the same.

We divided the barriers or inhibitors found in earlier empirical studies into internal and external issues. Barriers created or maintained by external factors, such as weak industry influence, lack of standards and secure transaction methods, as well as legal questions, are essentially areas where ICT vendors, industrial partners or associations, as well as authorities and policy makers can have an impact. Nevertheless, much more factors were found to fall into the internal or organizational category, including issues such as lack of awareness or understanding, lack of knowledge and skill, and lack of financial resources to invest into the ICT technologies. Level of awareness can be influenced by external players, and maybe the significance of many of these organizational problems will diminish as the more computer literate generations take over the SMEs, but then again, the pace of technological development is unlikely to slow down, creating all new possibly hurdles particularly for non-IT professionals.

What can we then conclude from all this? Certainly *not* that industry players, authorities and researchers should drop the topic of looking into barriers of EC for SMEs. The implication is, rather, that we have to stop reinventing the wheel, so to speak, in form of creating new lists of old barriers. What we have to do is to move on, and develop new tools for SMEs to bring them into a mutual information society.

REFERENCES

- Auger, P. & Gallaugher, J.M. (1997). Factors Affecting The Adoption of An Internet-Based Sales Presence For Small Business, *The Information Society*, Vol. 13, No. 1, 1997.
- Ballantine, J., Levy, M. & Powell, P. (1998). Evaluating Information Systems in Small and Medium-sized Enterprises: Issues and Evidence, *European Journal of Information Systems*, 7, 241-251.
- Bennett, J., Polkinghorne, M., Pearce, J. & Hudson, M. (1999). Technology transfer for SMEs. In *Engineering Management Journal*, April 1999, 75-80.
- Buratti, N. & Penco, L. (2001). Assisted technology transfer to SMEs: lessons from an exemplary case, *Technovation*, 21, 35-43.
- Chapman, P., James-Moore M., Szczygiel, M. & Thompson D. (2000). Building Internet Capabilities in SMEs, *Logistics Information Management*, Vol. 13, No. 6.
- Chau, P.Y.K. (2001). Inhibitors to EDI Adoption in Small Businesses: An Empirical Investigation.
- Chen, J. & Williams, B. (1998). The impact of EDI on SMEs: Summary of Eight British Case Studies, *Journal of Small Business Management*, 36: No. 4, 264-278.
- Cragg, P.B & King, M. (1993). Small-firm computing: Motivators and inhibitors, *MIS Quarterly*, 1993.
- Damsgaard, J. & Lyytinen, K. (1998). Contours of diffusion of electronic data interchange in Finland: Overcoming technological barriers and collaborating to make it happen, *Journal of Strategic Information Systems*, 7, 275-297.
- Deschoolmeester, D. & van Hee, J. (2000). SMEs and the Internet: On the Strategic Drivers Influencing the Use of the Internet in SMEs. In *Proceedings of the 13th International Bled Electronic Commerce Conference*, edited by Stefan Klein, Bob O'Keefe, Joë Grier and Mateja Podlogar, 754-769.
- Haynes, P. Becherer R., & Helms, M. (1998). Small and Medium sized businesses and Internet use: unrealized potentials? *Internet Research: Electronic Networking Applications and Policy*, Vol. 8, No. 3.
- Iacovou, C.L., Benbasat, I & Dexter, A.S. (1995). Electronic Data Interchange and Small Organizations: Adoption and Impact of Technology, *MIS Quarterly*, 19(4), 465-485.
- Julien, P.A. (1995). New Technologies and Technological Information in Small Businesses, *Journal of Business Venturing*, no. 10, 459-475.
- Kuan, K.K.Y. & Chau, P.Y.K. (2001). A perception-based model for EDI adoption in small businesses using a technology-organization-environment framework, *Information & Management*, 38, 507-521.
- Kettinger, W. J. & Hackbarth, G. (1997). Selling in the era of the "Net": Integration of electronic commerce in small firms," *Proceedings of the Eighteenth International Conference on Information Systems*, Atlanta, Georgia, USA, 1997, 249-262.
- Kwon, T.H. & Zmud, R.W. (1987). Unifying the fragmented models of Information systems implementation, in Boland Jr, R.J & Hirschheim, R.A (eds) (1987). *Critical Issues in Information Systems Research*, John Wiley & Sons Ltd., New York.
- McCue, S (1999). Small Firms and the Internet: force or farce? *International Trade Forum*. Geneva.
- OECD (1998). SMEs and electronic commerce, *Ministerial Conference on Electronic Commerce*, Ottawa, Canada, 7-9 October 1998.
- Poon, S. & Swatman, P. (1997). Small Business Use of the Internet: Findings from the Australian Case Studies. *International Marketing Review*, Vol. 14, No. 5.
- Poon, S. & Swatman, P. (1999). An exploratory Study of Small Business Internet Commerce Issues, *Information and Management*, 35.
- Premkumar, G. & Roberts, M. (1999). Adoption of new information technologies in rural small businesses, *Omega International Journal of Management Science*, 27, 467-484.
- Raymond, L. & Bergeron, F. (1996). EDI Success in Small and Medium-Sized Enterprises: A field Study, *Journal of Organizational Computing and Electronic Commerce*, No. 6, Vol. 2, 161-172.
- Riggins, F. J. & Rhee, H.-S. (1998). Toward a Unified View of Electronic Commerce, *Communications of the ACM*, Volume 41, Number 10, Oct., 1998, 88-95.
- Robertson, T. & Gatignon, H. (1986). Competitive Effects on Technology Diffusion, *Journal of Marketing*, vol. 50, July 1-12.
- Rothwell, R & Dodgson, M (1991). External linkages and innovation in small and medium-sized enterprises, *R&D Management*, 21, 2.
- Saunders, C. S. & Clark, S. (1992). EDI adoption and implementation: a focus on interorganizational linkages, *Information Resources Management Journal*, vol. 5, no 1.
- Thong, J.Y.L., Yap, C.-S. & Raman, K.S. (1996). Top management support, external expertise and information systems implementation in small businesses, *Information Systems Research*, vol. 7, no 2, 248-267.
- Thong, J.Y.L (2001). Resource constraints and information systems implementation in Singaporean small businesses, *Omega*, no 29, 143-156.
- Tuunainen, V.K. (1998). Opportunities of Effective Integration of EDI for Small Businesses in the Automotive Industry, *Information & Management*, 1998, 36:6, 361-375.
- Tuunainen, V.K. (1999). *Different Models of Electronic Commerce – Integration of Value Chains and Business Processes*, Helsinki School of Economics and Business Administration, A-153, 1999.
- Vassilopoulou, K., Keeling, K. & Macaulay, L. (1999). E-commerce – Barriers and Facilitators for SMEs: A study in the North west region of England. In *Proceedings of the 2nd International Conference IeC'99*, Manchester, 269-274.
- Walczuch R., Van Braven G. & Lundgren, H. (2000). Internet Adoption Barriers for Small Firms in the Netherlands, *European Management Journal*, Vol. 18, No. 5, 561-572.
- Welsh, J.A. & White, J.F. (1981). A Small Business is not a Little Big Business, *Harvard Business Review*, 59(4), 46-58.
- The European Parliament (2000), http://www.europarl.eu.int/dg4/factsheets/en/4_14_0.htm (01/12/2000).

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