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Global Electronic Business Research: Opportunities and Directions

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Chapter VIII

Government Intervention in SMEs' E-Commerce Adoption: An Institutional Approach

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Abstract

This study investigates the role of government in the adoption and diffusion of e-commerce in small and medium size enterprises. Institutional involvement, and especially the role of government, has historically been determinant in the adoption and diffusion of technological innovations. King, Gurbaxani, Kraemer, McFarlan, Raman, and Yap's (1994) framework of institutional factors in information technology innovation is used to analyze what is actually done and what SMEs would like to be done regarding government intervention to foster the adoption and diffusion of e-commerce. The findings show that the government could mostly influence adoption and diffusion through knowledge deployment, subsidies, and mobilization and that a convergence between companies' wishes and government initiatives is starting taking place.

Introduction

Innovation and technological change has been considered an important factor for economic development. Freeman (1990, p. 1) specifically states that “all schools of thoughts in economics have always recognized the importance of technological innovations and of organizational innovations for the competitive performance of firms and nations and for the long term growth of the world economy.” Innovation is characterized by three stages: invention, innovation, and diffusion. An invention is a new idea or product, which becomes an innovation when it starts diffusing in the society or move into a usable form. Diffusion is the spread of the capacity to produce and/or use an innovation, and its use in practice. Innovations are normally divided into radical and incremental innovations (Freeman & Perez, 1998; Pavitt 1984). The definition of innovation itself implies that dealing with innovation means dealing with management and reduction of uncertainty. Generally, the greater the changes introduced, the greater the uncertainty about technical performance, the market response and the ability of the organization to absorb and utilize the requisite changes effectively (Rosenberg & Kline, 1988).

Information technology has been among the fastest growing innovations in both production and use in the second half of the last century. In the last decade, a particular type of information technology, the Internet, has been changing business processes, organizational, and industrial structures and has given form to new communication and business forms as for example e-commerce (Zwass, 1996).

The institutional environment created by governments in the form of policies and interventions is very important for the economic development of developed as well as developing nations. Often the economic performance of a country is influenced by the promotional and proactive policies of governments (e.g., Coase, 1992; North, 1991; Teubal, 1979). Also the importance of social and institutional factors such as the involvement of government and the role of the single entrepreneur as enablers and stimulators of innovation have emerged (Sørensen & Levold, 1992). Furthermore, several authors have found that the external environment, including industry associations and the government, is very important in the adoption and diffusion of technological innovations such as telecommunications and more recently e-commerce (e.g., Tornatzky & Fleischer, 1990).

Especially government intervention has been historically important in creating economic growth and in fostering diffusion of technological innovations (North, 1991; Teubal, 1979). For example, Reinert (1999) highlights the role of the state as promoter of economic growth by getting the nation into the “right business,” creating a competitive advantage in “the right business,” setting standards, and

creating demand. The role of government has been fundamental in the diffusion of infrastructures such as telecommunication networks. In e-commerce diffusion, many studies are addressing the role of government intervention to avoid a digital division of poor and rich countries. For example, Madon (2000) in an analysis of the relationship between Internet diffusion and socioeconomic development in developing countries identifies three major areas of government intervention: creating knowledge, disseminating knowledge and human resources development.

Government intervention is and has been especially important at sustaining technological development in SMEs (Rothwell, 1994). Recently, many governments and international organizations are taking initiatives to foster the adoption of electronic commerce in small and medium size enterprises (OECD, 1999). These initiatives are also considered important to avoid a digital divide between small and large companies.

E-commerce is here defined as “the sharing of business information, maintaining business relationships, and conducting business transactions by means of telecommunications networks” (Zwass, 1997). SMEs are defined as companies with up to 500 employees according to the OECD’s (1999) definition. The telecommunication network under consideration is Internet; therefore here e-commerce is equivalent to Internet commerce. Furthermore, this chapter focuses on business-to-business e-commerce and small and medium size enterprises that operate in different sectors and specific geographical regions, even when their suppliers or customers are international. However the special case of specialized suppliers of big corporations is not taken into consideration.

The American government in 1997 has set up a set of guidelines in “The Framework for Global E-commerce” (<http://iitf.doc.gov/eleccomm/>) to foster the diffusion of electronic commerce. The European Community has approved a series of “Directives” aiming at guaranteeing free availability of products and services for electronic signatures, copyright protection, taxation policy, and so on (<http://europa.eu.int/>). For example, France, Germany, Great Britain, and Italy put great emphasis on technological aspects such as electronic signature and encryption, while Germany and Britain invest mainly in information for corporations, for example through “competence centers” (Timmers & Van Der Veer, 2002). Italy has been the first European country to endorse electronic signature, but not much has been done regarding human resources development and knowledge building.

Therefore the basic research question addressed in this chapter is: “How do SMEs in Southern Italy perceive government intervention in adoption and diffusion of e-commerce, and what do they believe government intervention should focus on?” This study does not however differentiate between different types of governments, such as local, regional, and national governments. An in

depth investigation of the European Union initiatives to promote e-commerce adoption among SMEs can be found in Scupola (2003c).

The article is structured as follows. The next section is a literature review of frameworks addressing institutional roles in adoption and diffusion of IT. The following section presents the research method, data collection and company profiles. The section "Government Intervention" analyzes the data and discusses the findings. Finally the last section gives some concluding remarks and suggestions for further research.

Literature Review

A fundamental approach to study the adoption and diffusion of new technologies is the diffusion of innovations (Rogers, 1995).

The literature on adoption and diffusion of innovations, especially that focusing on information technology, has mostly focused on the factors affecting adoption and diffusion. These factors have been classified into three main groups or other categories that can be reconnected to these three groups: technological context, organizational context and environmental context (e.g. Chau & Tam, 1997; Iacovou, Benbasat, & Dexter, 1995; Scupola, 2003a; Tornatzky & Fleischer, 1990).

The technological context includes technologies that are internal or external to the firm. The organizational context includes factors internal to the organization that constrain or facilitate adoption such as top-management behavior and organizational size. The environmental context includes the external actors and factors that affect a corporation's decision to adopt a technology, either directly or indirectly. These include the competitors, industry associations and the government (Tornatzky & Fleischer, 1990)

Within the environmental context, the institutional research has focused on the influence of institutions on adoption and diffusion of technological innovations. Institutions have been historically important in the shaping of organizational and economic life and their importance is always increasing (Pavitt, 1992). Also a number of authors have investigated the role of institutions in the relationship between technological change and economic development (e.g. Nelson, 1988; Nelson & Winter, 1982; Teubal, 1979). King et al.'s (1994) definition of institutions is adopted here according to which "an institution is any standing, social entity that exerts influence and regulation over other social entities as a persistent feature of social life, outlasting the social entities it influences and regulates, and surviving upheaval in the social order." This definition implicitly

considers institutions as boundaries between social entities such as organizations and firms on one hand and society and culture on the other. King et al. (1994) identifies a series of institutions that influence IT adoption among which: government authorities, international agencies such as the United Nations, research oriented higher education institutions, trend-setting corporations, professional, and trade and industry associations.

Contemporary institutionalism in sociology has argued that social action is powerfully shaped by the social context and in turn it shapes that context (e.g., Giddens, 1979; March & Olsen, 1989). In particular the work started by DiMaggio and Powell (1983) has taken the environment and institutions into serious consideration. Many studies have used institutional perspectives to study implications of information technology for organization and economic development (e.g., Kling & Iacono, 1989; Orlikowski, 1992; Yates, 1994). The research on the role of institutions in the adoption and diffusion of information technology is summarized here in three main frameworks: Andersen, Bjørn-Andersen, and Dedrick (2003) model of environmental drivers, Lal's (2001) analytical framework encompassing the interactions among different factors and King et al.'s (1994) model of institutional actions. The model by King et al. (1994) focuses specifically on institutions, while the model by Andersen et al. (2003) takes more broadly into consideration the environmental factors affecting adoption and diffusion of IT, among which the institutions' role.

Andersen et al. (2003) model for analyzing environmental factors mainly focuses on the demand drivers. Such drivers include industry structure (e.g., concentration, sectoral distribution, vertical integration, size of firms, etc.), information infrastructure (telecommunication, wireless and Internet infrastructure, technology acceptance, etc.), financial and human resources (e.g., venture capital, population, IT skills, education) and social and cultural factors (consumption patterns, consumer preferences, language, business culture, etc.). The second group of factors of the model includes initiatives taken by the government and private sector institutions to promote e-commerce. The model identifies four main initiatives: knowledge diffusion, economic incentives, regulation and legislation, and electronic government.

Lal (2001) proposes an analytical framework that encompasses the interactions among government policies, information infrastructure, the IT industry, and the markets. The framework shows that governments can influence the growth of an industry (in Lal's study the IT industry in India) by embarking on economic policies that affect supply-side and demand-side factors. Supply-side factors include telecommunications networks, power, transport, and human resources development, while demand-side factors include encouragement of the use of IT in domestic markets.

King et al. (1994) classifies the nature of institutional intervention in IT innovation on whether the desired changes are in production or use. Production concerns the actors that make innovative products, while use concerns the actors and ways in which innovations are used in the society. In the process of being used, innovations are often altered to fit the needs and characteristics of different users. King et al. (1994) claims that institutional intervention in IT adoption can be constructed at the intersection of the influence and regulatory powers of institutions and the ideologies of supply-push and demand-pull models of innovations. Institutions can affect IT adoption in several ways, for example by using legal forces or by stimulating demand through the creation of a need for innovative products and processes (Montealegre, 1999).

King et al. (1994) classifies the forms of institutional actions into influence and regulation. Influential initiatives have the purpose of changing behavior of those under the institution's way. This is achieved without direct use of force or exercise of command. Regulatory actions instead have the purpose of affecting the behavior of entities under formal institutional jurisdiction. These can be directives or actions that limit the choice of options (Damsgaard & Lyytinen, 2001). Furthermore, influence and regulation can play different roles depending on whether the innovation is driven by demand-pull or by supply-push. Supply-push forces for innovation come from the production of the innovative product or process. Demand-pull forces arise from the willingness of potential users to use the innovation. Whether the supply-push or demand pull forces dominate in the innovation process shapes institutional actions regarding innovations (King et al., 1994). Based on the categories of influence, regulation, demand-pull and supply-push, King et al. (1994) identify six types of institutional actions that can stimulate or retard IT adoption, summarized in Table 1. These six categories are knowledge building, knowledge deployment, subsidy, mobilization, and standard setting and innovation directives.

- **Knowledge building:** Knowledge building consists of the institutional actions undertaken with the purpose of providing the base of scientific and technical knowledge necessary to produce and exploit innovations. The most obvious form of knowledge building is sponsored research that can be either basic or applied. The government is the most common supporter of research, but it is not unusual that also private foundations and corporations sponsor research as well. The ESPRIT project of the European Commission is an example of a multinational cooperation for knowledge building.
- **Knowledge deployment:** Knowledge deployment involves institutional actions aimed at disseminating new knowledge, either in form of knowledgeable individuals and organizations, or in the form of repositories of knowledge as archives and libraries of scientific and technical facts. The

Table 1. Dimensions of institutional intervention (King et al., 1994)

	SUPPLY-PUSH	DEMAND-PULL
I	(I) KNOWLEDGE BUILDING	(II) KNOWLEDGE DEPLOYMENT
N	Funding of research projects	Training programs for individuals and organizations to provide base of skilled talent for use
F	KNOWLEDGE DEPLOYMENT	SUBSIDY
L	Provision of Educational Services	Procurement of innovative products and services
U	SUBSIDY	Direct or indirect provision of complementarities required for use
E	Funding Development of Prototypes	Direct or indirect suppression of substitute products or services
N	Encouragement of capital markets to support R&D activity	MOBILIZATION
C	Provision of tax benefits for investment in R&D (e.g., investment tax credits, rapid depreciation)	Programs for Awareness and promotion
E	INNOVATION DIRECTIVE	
	Direct institutional operation of production facilities for innovation	
R	(III) KNOWLEDGE DEPLOYMENT	(IV) SUBSIDY
E	Require education and training to the citizens	Procurement Support for products and processes that facilitate adoption and use
G	SUBSIDY	STANDARDS
U	Reduction in general liabilities for organizations engaging in innovative activity	Require particular products or processes to be used in any work for the institution
L	Modification of legal, administrative or competitive barriers to innovation and trade	Require conformance with other standards that essentially mandate use of particular products or processes
A	STANDARDS	INNOVATION DIRECTIVE
T	Establishment of standards under which innovative activity might be encouraged	Require that specific innovative products or Processes be used at all times
I	INNOVATION DIRECTIVE	
O	Establishment of requirements for investment in R&D by organizations	
N		

most important form of knowledge deployment is the general provision of education to the population. Another form of knowledge deployment is the encouragement of highly skilled labor force to come into a region or country. Finally knowledge deployment can also be achieved by stimulating the use of innovations through the training of a group of potential users. This is usually done by government agencies, but can be also performed by trade and professional associations.

- **Subsidy:** Subsidies have the purpose of defraying the otherwise unavoidable costs or risks to innovators and users in the process of innovation adoption and diffusion. They take different forms: funding of prototyping, institutional procurement of innovations and of locally produced goods and services containing those innovations, support for provision of necessary complements to be used with innovative products or processes.
- **Mobilization:** Mobilization refers to institutional actions aimed at encouraging decentralized actors to think in a positive or negative way about an innovation as for example through promotional and awareness campaigns. Higher education institutions and professional associations can mobilize their members (or significant members) interest to see innovation as necessary to organizational welfare.
- **Standard setting:** Standard setting comprises actions that regulate the operation of decentralized actors and institutions to bring them into line with

larger social or institutional objectives. Examples of standards are ISO open system standard.

- **Innovation directives:** Innovation directives are institutional actions aiming at producing innovations, using them, or engaging in some activities facilitating their production or use (King et al., 1994). One form is for institutions to produce their own innovations and/or use them as for example a government or industry is required to develop or use a particular technology.

King et al.'s (1994) model is here used to investigate government intervention in small and medium size enterprises e-commerce adoption in Southern Italy.

Methodology

The data used in this article are part of a larger research project on adoption and diffusion of electronic commerce in Southern Italian SMEs (e.g., Scupola 2003a, 2003b, 2003c). The research was designed as a case study (Yin, 1994) to understand issues in adoption and diffusion of e-commerce in small and medium size enterprises, including actual and desirable government intervention.

The Sample and the Sample Selection Process

Six interviews in six different companies were conducted. The companies have been chosen on the basis of representativeness and accessibility according to the following criteria:

- They should be a registered company and could be classified as SME according to the number of employees that should not exceed 500 according to the OECD (1999) definition.
- They should have been early adopters of Internet. Having had an Internet connection for at least three years was chosen as criterion of early adoption. This is based on the consideration that these companies with their experience are in a better position to identify and evaluate issues related to e-commerce adoption, including possible government intervention.
- The companies should be located in the same geographical region. This criteria should ensure that external factors such as government influence, average level of education of the population, availability of qualified labor force, and so on are the same for all the sample companies.

Table 2. Companies' description

Company	Type of Business	No. Of Employees	Year of E-Commerce Adoption
F1	IT Consultants	80	1996
F2	IT Consultants	1 (family driven)	1996
F3	Distributor of Watches	15	1996
F4	Intermediary in the Textile Business	2 (Family Driven)	1998
F5	Production and Commercialization of Textiles	300	1996
F6	Distributor of Car Parts	19 (family driven)	1998

As Table 2 shows, the sample includes two IT consulting companies, two distributors, one producer of textiles, and an intermediary in the textile business. They are all located in the Southern Italian region called Puglia according to the last selection criterion above.

The local yellow page directory and a directory of companies distributed by the Chamber of Commerce of the city of Lecce were the primary sources in the selection of the cases. One consulting company and the local chamber of commerce were very helpful to narrow down the sample to those companies that satisfied the criteria mentioned above. Many more companies were contacted telephonically but only those in Table 2 were willing to participate to the study. The interviews were conducted in spring 2001.

Company Description

The first company (F1) interviewed is a software house, offering consulting services to local government, banks, insurance, and to local SMEs. They have 80 employees. Having being one of the first companies to offer software services in the area, they are considered to have a very good knowledge of the local e-commerce situation.

The second company (F2) is a single consultant company, offering consulting services only to SMEs, and has been in business since 1990. He also has a very good understanding of the local situation, being in contact with SMEs attempting to get into electronic business on a daily basis.

The third company (F3) is a distributor. It employees 15 people, has a turnover of \$5 million per year. This company imports products from the Middle East and

resells them to 800 client companies located in Italy and other European countries.

The fourth company (F4) is a family-owned business. They are middlemen in the textile business. They do business mainly with abroad. They import the raw material from countries such as Turkey and export the finished products, produced by local SMEs mainly to European Countries such as France, Spain, Denmark and Belgium.

The fifth company (F5) is a producer and seller of textiles. The company has approximately 300 employees with a turnover of \$15 million per year. They sell both to Italian clients and to European clients, mostly located in Belgium and France. They are heavily users of electronic commerce applications.

Company number six (F6) is a distributor of car parts. They employ 19 people and have a turnover of approximately \$7 million per year. They presently import from all over Italy and distribute and sell to local small companies, mechanics and private individuals. After they started using Internet commerce they have been able to establish contacts with foreign companies. They are planning to start importing car parts from abroad and especially from Germany.

Research Process and Data Analysis

One person was interviewed in each company. The company has suggested the person to be interviewed on the basis of the author's requirement to talk with the employee responsible for and most knowledgeable about e-commerce. In all the cases this person has been the owner, often functioning as CIO. Semi-structured interviews were the main data collection method. The interview questions were formulated with the intention of understanding issues of adoption and diffusion of e-commerce in SMEs in this region, including government intervention. Specifically, the questions around government intervention were aiming at understanding what kind of intervention (if any) the companies had been getting from the government and what they believed future intervention should address. The questions did not address whether the intervention was coming or should be come from local, regional, or national government. It actually turned out that even though government intervention initiatives had been present in the region, small companies were not aware of their existence. Interviews also covered demographic data on each firm and informant.

The interviews have been conducted by the author at the company's site and have lasted between 1.5 and 3 hours each. Each interview was tape-recorded and the contents of the tape fully transcribed on paper within 24 hours to ensure

reliability of the data (Perakyla, 1997). Notes were also taken during the interview. The interview protocol was first tested with one of the two consulting companies and successively adjusted to make it more clear and comprehensive. The total data collected in the six different cases were analyzed intuitively by the author according to the theme of government intervention. The parts of the text relevant to this theme were then contextualized according to the categories of King et al. (1994) framework (Creswell, 1998; Wolcott, 1994). The transcripts and the results were sent to the companies interviewed to ensure validity (Creswell, 1998), but there was no reaction.

Government Intervention

Being the focus of this article government intervention in SMEs adoption and diffusion of e-commerce, it is natural to position the analysis in a demand-pull rather than a supply-push perspective in King et al. (1994)'s framework. The demand-pull perspective deals, in fact, with influence and intervention regarding the use of technological innovations, while the supply-push perspective deals mainly with influence and intervention regarding their production. In Italy influence and regulation have been used to stimulate the production of Internet related products such as development of encryption guidelines and digital signature (Timmers & Van de Veer, 2002). The OECD (2002) report also shows that in other OECD countries some initiatives have been taken to stimulate demand by for example increasing awareness of e-commerce in SMEs, but not much had been done in Italy at the time of the study yet. Furthermore, some types of financial subsidies existed at the time of the study, but many of the sample companies were not aware of them. This study gets some insights into the small

Table 3. Desired intervention by different companies

Company/ Desired Intervention	F1	F2	F3	F4	F5	F6
Knowledge Building						
Knowledge Deployment	X	X	X	X	X	X
Subsidy	X	X	X	X		X
Innovation Directive						
Mobilization	X		X			
Standards						

and medium size enterprises' perception of government intervention in Southern Italy and what they desire such intervention should address.

The government actions that either are already taking place or are desired by small enterprises to foster e-commerce adoption are described in the rest of this paragraph and summarized in Table 3.

Knowledge deployment. Southern Italian SMEs believed that state intervention to deploy knowledge is very essential for their uptake of e-commerce. This could take especially the form of e-commerce training programs (F1, F2, F3) and more widespread knowledge of English (F4, F5, F6). For example F1 acknowledged the importance of financial intervention for training programs directed to laggards companies as they might be unwilling to do it by themselves in first place:

The education to the good use of e-commerce is lacking...Government financial intervention for training could function...Leader companies are motivated by the novelty (of e-commerce...) to try it... The others need to be trained...

These training programs could be used for example to spread knowledge about potential benefits of e-commerce and increase first hand-on experience of the uses of e-commerce as similar studies also have found out (e.g., Poon & Swatman, 1999). Some support for this purpose was available at the time of the study, but small companies were not taking much advantage of it.

The companies dealing with suppliers and buyers located in foreign countries (F4, F5, F6) also expressed the wish to increase the English language skills among the local population and SMEs employees in particular. For example F5 said that:

Internet is not enough...it is important to know the foreign languages, especially English...especially for those companies conducting international business...We need more government intervention regarding this...

Madon (2000) also states that in Latin America the language is becoming a problem for the diffusion of e-commerce. All the indigenous information on Internet is in Spanish, but most of the foreign sources are in English. It seems therefore that intervention aimed at increasing the knowledge of English among the non English speaking population would contribute to adoption and diffusion of e-commerce in the region as well.

Subsidies. All the sample companies considered direct or indirect subsidies important both as influence and regulation mechanisms. Small businesses wished generally an increase in indirect subsidies such as procurement of e-commerce technologies and services by governmental institutions and an increase in direct subsidies such as procurement support to small companies for products and processes that facilitate adoption and use. Companies F1, F2, and F6 expressed especially the wish for government institutions and the public administration to procure and use Internet technologies and services both to the public and to the single citizen. By doing so, they believed that government institutions would contribute to decrease uncertainty about e-commerce, serve as role model for corporations and create the need for its use (Rogers, 1995). Some local municipalities already do this, but small companies in this area believe that e-commerce adoption and use by public administration should be much more spread. The few initiatives that already exist consist mainly of online one-stop government shops. This refers to a single point of access to electronic services and information offered by different public authorities to the single citizen and to businesses (Wimmer, 2002). For example F1 states that:

Right now many SMEs are reluctant to adopt e-commerce...the situation could change if the public institutions, for example the local municipalities, start using e-commerce and e-commerce services...There are some doing it, but they are too few...

Accordingly, F6 also says:

the use of e-commerce by the public administration could foster adoption among Smes... It could create the need for using it...

Another type of subsidy mentioned by SMEs in this study is direct or indirect procurement support for e-commerce systems to small businesses (F1, F3, and F4). The types mentioned are financial aid for the acquisition of the system and relative training, tax deduction for companies buying electronic commerce systems or financial aid that totally or partially covers acquisition and installation costs. This kind of support existed at the time of the study, as confirmed by F3 in the following statement:

the customers are requiring now a customization of the watches, which means I also need to change the system... I am applying for state subsidies for this...

- 5 Here we use Media Metrix's 200,000 minimum measurement as the benchmark for qualification as a major ecommerce Web site.
- 6 Data obtained from: http://www.nielsen-netratings.com/pr/pr_040223_us.pdf
- 7 Data obtained from: http://www.nielsen-netratings.com/pr/pr_040507.pdf
- 8 The current fee is \$29.95 per year though there is a free search, which is limited in 130 sponsor suppliers.
- 9 For details see: <http://www.ug.it.usyd.edu.au/isys1003/assignments/amazoncase.doc>
- 10 General information from their Web site: "Price Watch is a service that allows retailers to advertise their prices in real time, using our proprietary Price Watch Info-Link system. Price Watch presents advertisements to users sorted in ascending order by price. Price Watch was first presented on the Web in August 1995."
- 11 This list includes shopping.com, pricegrabber.com, mysimon.com, pricewatch.com etc.
- 12 Data obtained from: http://www.nielsen-netratings.com/pr/pr_040507.pdf
- 13 In addition, some CSPs may change their name, business model, and product coverage during their merger and growth stage; in this case, we will use their current status as selection criteria.
- 14 For those CSPs that provide comparison information for products ranging in multiple industries, we use "Multiple" as indication.
- 15 However, because we only consider currently existing CSPs, we will not include those CSPs that have ceased to exist, which actually includes a considerable number of CSPs adopting the BargainFinder model before 2000.
- 16 When more than 50% of CSPs adopt a certain business model in a certain time, we call the adopted model dominant at that time.
- 17 Actually Kelkoo is a French-based CSP for multiple product categories. It was launched in 2000 using a Pricewatch-Classic model. Now it is the biggest CSP in Europe.
- 18 For the convenience of demonstration, we assume they adopted the BargainFinder model, which means a CSP has no partnership relationship with online vendors. So there is zero cost to participate. However, this assumption does not affect the external validity of the result as long as the membership fee is the same for small and brand name vendors.
- 19 Here, we use * to indicate their revenue increase percentage when both parties participate in comparison-shopping and to differentiate from only one party participating in comparison-shopping.

However, even though some government initiatives already existed in this field, some small and medium size enterprises were not aware of them. For example F4 states that:

government subsidies could help...but I do not know of any.

Mobilization. Some companies (F1, F3) also expressed the wish for more programs aiming at increasing awareness of Internet technologies and e-commerce. This can be achieved through educational and informational campaigns aimed both to the larger population and to small businesses (Poon & Swatman, 1999). For example F1 said that:

small companies do not use e-commerce... Intervention from the government to inform them could improve the situation...

F3 also said that:

The main barrier...(for him to conduct e-commerce with his customers) is that many clients do not know what the Web is... We could need an informational campaign...possibly from the government.

However, these campaigns should also have the objective of informing small and medium size enterprises of the existence of government subsidies and other forms of intervention as they often are not aware of them. For example, F4 and F6 were not aware of state financial subsidies to SMEs buying an e-commerce system at the time of the interview, even though these programs did exist as explicitly mentioned by F3 and by the consulting company F1 that had a good overview of the laws regulating state funds for ICT and e-commerce adoption. The consulting company F1 also said that some funds (allocated from the state to IT) had to be given back by the local authorities to the state because not used by local small and medium size companies.

Discussion

The analysis has showed that small businesses wish government intervention, both in term of influence and regulation to foster adoption and diffusion of

electronic commerce. Such intervention should concentrate on three different areas: knowledge deployment, subsidies and mobilization. The companies interviewed have not referred to standards or innovation directives. This might be explained by the fact that the people interviewed are not IT or policy experts, but they only know those aspects of e-commerce that directly concerns their business operations.

Mobilization should aim at increasing awareness of the technology, related benefits, and ways of use (Poon & Swatman, 1999). The analysis has also shown that even when intervention initiatives exist, small and medium size companies might not be aware of them. Therefore mobilization initiatives should also aim at informing the companies of state and other institutions' e-commerce support programs and initiatives.

Knowledge deployment should aim at increasing knowledge of e-commerce and e-commerce systems (e.g., through targeted training programs), but also and especially at increasing knowledge of English among the population in general and small businesses employees in particular. It seems therefore that being knowledgeable in English is very important to successfully enter the information society.

Subsidies have emerged important both as influence and regulation mechanisms. The most important desired form of subsidy is indirect subsidies aiming at improving e-government, as SMEs believe that e-government is fundamental to their adoption of e-commerce. Direct subsidies such as financial support, tax deductions and e-commerce pilot programs are also considered important and desirable. However, some subsidies existed at the time of the study, but many companies were not aware of them. It was also the opinion of F1 that most small and medium size companies were ignoring financial subsidies as a serious possibility when considering e-commerce adoption.

From the analysis it can be concluded that the data have mostly supported the King et al. (1994) framework of institutional intervention in a demand-pull perspective, at least regarding knowledge deployment, subsidy, and mobilization. The study has not found evidence for standard setting, innovation directives and knowledge creation, which can also be explained by the nature of the type of businesses interviewed. Furthermore the study has found significant evidence for conjuncture 2 and 4 in the King et al. framework stating:

- **Conjecture 2:** "Significant (production or) use of IT innovation requires serious and sustained institutional interventions for knowledge deployment (p. 153)."
- **Conjecture 4:** "Mobilization efforts are important but not essential in stimulating (production and) use of IT innovation, and are useful mainly in conjunction with other institutional interventions (p. 156)."

The study has, in fact, found that knowledge deployment is considered by SMEs a very important type of intervention to increase adoption of e-commerce and that mobilization is also important, but not really essential and it would lead to some results mainly in conjunction with knowledge deployment and subsidy.

However the study has found only partial support for conjecture 3 stating:

- **Conjecture 3:** "Subsidies are often crucial but not always essential instruments of institutional intervention in both the production and use of IT innovation (p. 155)."

In fact, if it is true that financial subsidies such as tax breaks and so on are crucial, but not essential, SMEs believe that indirect subsidies in the form of government procurement of e-commerce and e-services are very essential to the adoption and diffusion of e-commerce among SMEs. This is also confirmed by the Andersen et al. (2003) study that states that one of the governance initiatives responsible for the uptake of electronic commerce in Denmark has been electronic government. The Danish state, in fact, has considered electronic government as a major driver both to create a big e-commerce market and to stimulate the private e-commerce sector. It is expected that by the end of year 2002 all major public procurement in Denmark should have taken place electronically.

A look at the Italian e-government scene also shows an increase in e-services offered by the government and public administration both to the single citizen and the small and medium enterprises. An analysis of a report published by the Italian Ministry for Innovation and Technology (Ministero per l'Innovazione e Tecnologie, 2002) shows that in many Italian regions the public administration has adopted e-commerce and offers a number of online services such as e-procurement, information regarding policies, and so on. However most of the e-government initiatives are taking place in Northern Italian regions and Sicily. In the region of Puglia, where this study has been conducted, there had started to be some e-government initiatives, such as the possibility to pay taxes online, but none was in the specific province where the companies interviewed were located. Recently also the European Union is undertaking a number of e-commerce initiatives to foster e-commerce adoption among European small and medium size enterprises, the most important of which might be the GoDigital plan (Scupola, 2003c, <http://www.eu.int>).

Conclusion, Limitations, and Suggestions for Further Research

The main contribution of this study consists in illustrating what are the types of government intervention presently offered to SMEs in Southern Italy, how much these companies know about them and what they desire government intervention should address. Most government directives believe that the diffusion of e-commerce should be driven by the private sector as for example stated in the ABAC Roundtable on e-commerce (ABAC E-Commerce Report, 1998) or by the European Community (Timmers & Van Der Veer, 2002). This study has showed that SMEs desire institutional intervention, both in terms of influence and regulation. Such intervention should concentrate on three main different areas: knowledge deployment, subsidies and mobilization.

The discussion has also pointed out that there is starting to be a convergence between what companies want and what the government does. This is especially happening regarding indirect subsidies such as deployment of e-services by the government and public administration.

Another contribution of the study is the application and validation of King et al. (1994) model in the specific context of Internet-based commerce and small and medium size enterprises. However, the application of the framework has been done only from a demand pull perspective, which represents a limitation of the study. It could be interesting to conduct a study from a supply push perspective to understand what interventional mechanisms are employed by the government to stimulate e-commerce demand among SMEs and eventually also investigate how much small companies are aware of them.

The study has looked at companies in different sectors. However the study has not considered the specific case of companies that are specialized suppliers of big international companies. It could be interesting to conduct the study with this type of companies, as the issue in question might be completely different.

The study has also not taken into consideration whether the intervention was undertaken by the local, the regional, or the national governments. This aspect might be very important as especially in continental Europe public administrations are highly regulated by legislation at national, regional, and local levels (Wimmers, 2002). It could be interesting to take this into consideration in future studies as different initiatives have been taken place at different levels within the same nation-state and at a pan European level as well as investigated in Scupola (2003c).

Another limitation of this study is the relatively small sample of interviews conducted (six interviews in six different small and medium size enterprises), on

which the analysis has been based. Therefore it is difficult to generalize from this study. However, the study provides some useful insights into actual and desired institutional intervention in Southern Italy and does provide some contribution to the validation of King et al. (1994) model in the context of e-commerce adoption in SMEs.

To conclude, more attention should be given to understand e-commerce related intervention initiatives at national, regional, and local government levels in different geographical regions and what SMEs believe that their needs for intervention are. An analysis of the convergence and divergence of such results could also be done to highlight the successes and failures of current government intervention initiatives.

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