

# Government Intervention in SMEs E-Commerce Adoption



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## INTRODUCTION

Innovation and technological change has been considered an important factor for economic development. 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 given form to new communication and business forms as for example e-commerce.

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 (e.g., North, 1990). The external environment, and especially the role of government, has been very important in the adoption and diffusion of technological innovations such as telecommunications and more recently e-commerce (e.g., Tornatzky & Fleischer, 1990). 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). For example the American government has set up a set of guidelines to foster the diffusion of electronic commerce in SMEs and the European Union has approved a series of "Directives" aiming at guaranteeing free availability of products and services for electronic signatures, copyright protection, taxation policy, and so forth (<http://europa.eu.int/>).

This study provides insights into small and medium size enterprises' perception of government intervention in e-commerce adoption in Southern Italy. The research question addressed is: "How do SMEs 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. The research was designed as a case study (Yin, 1994) and was conducted in Southern Italy.

The chapter is structured as follows. The next section provides a background of the institutional roles in adoption

and diffusion of IT. The following section presents the research methodology. This is followed by the main thrust of the chapter that presents the major findings. Finally the last two sections discuss future trends and give some concluding remarks and suggestions for further research respectively.

## BACKGROUND

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., Scupola, 2003a; 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. King, Gurbaxani, Kraemer, McFarlan, Raman, and Yap (1994) identifies a series of institutions that influence IT adoption among which government authorities, international agencies and trade and industry associations.

Many studies have used institutional perspectives to study implications of information technology for organization and economic development (e.g., Corbitt & Al-Quirim, 2004; Gengatharen & Standing, 2005; Gibbs, Kraemer & Dedrick, 2002; Kraemer, Gibbs & Dedrick, 2002; Wong, 2003). Recent literature is addressing the disparity in local government readiness and community demand for e-commerce by investigating the tripartite relationship between State, local government and community in e-commerce adoption and diffusion. For example, Howell and Terziowski (2005) investigated adoption and diffusion of e-commerce in 12 local government councils in Australia funded by the Victorian e-Commerce Early Movers Assistance Scheme (VEEM). They found that the VEEM scheme was successful in raising awareness of e-commerce within the community; however there is a wide disparity in local government readiness for e-commerce and community demand for e-com-

merce emphasizing the importance of tripartite relationship between State, local government, and the community in e-commerce diffusion.

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 (2001) analytical framework encompassing the interactions among different factors and King et al. (1994) model of institutional actions.

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) classify 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. Institutions can affect IT adoption in several ways, for example

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

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

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) classify the forms of institutional actions into influence and regulation. Influential initiatives have the purpose of changing behavior of those under the institution's way, without direct use of force or exercise of command. Regulatory actions have the purpose of affecting the behavior of entities under formal institutional jurisdiction such as directives. 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 (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 for which the government is the most common supporter.

*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 most important form of knowledge deployment is the general provision of education to the population. Finally, knowledge deployment can also be achieved by stimulating the use of innovations through the training of a group of potential users.

*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 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.

*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.

*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) model has been the basis for the following analysis (Scupola, 2003).

## 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 2002; 2003a; 2003b). 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 3 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 forth are the same for all the sample companies.

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 (Table 2).

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

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

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						

those companies that satisfied the criteria mentioned previously. Many more companies were contacted by telephone, but only those in Table 2 were willing to participate to the study.

## 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 CEO. Semistructured 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. Notes were also taken during the interview. By following Iacovou, Benbasat, and Dexter (1995) to enhance validity summaries of the major findings of each interview were verified by the participants after the end of each interview session. To increase reliability an interview protocol was used and a case study database was developed (Yin, 2003). The interview protocol was first tested with one of the companies and successively adjusted

to make it more clear and comprehensive. By following Yin (2003) the data were analyzed by following the “general strategy of relying on theoretical orientation” of the case study. By following Miles and Huberman (1994, p. 58) a provisional “start list” of codes was created prior to the field work to guide the analysis. The coding was manual. This “start list” came from the conceptual framework and the research question.

### MAIN FOCUS OF THE CHAPTER

Being the focus of this chapter, 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 (see King et al., 1994). The demand-pull perspective deals, in fact, with influence and intervention regarding the use of technological innovations. The government actions that either are perceived to be taking place or are desired by small enterprises to foster e-commerce adoption are described in the rest of this paragraph.

**Knowledge Deployment.** Southern Italian SMEs believe 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 and more widespread knowledge of English. 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 also expressed the wish to increase the English language skills among the local population and SMEs employees in particular, similarly to what found by Madon (2000) in Latin America. It seems therefore that intervention aimed at increasing the knowledge of English among the nonEnglish speaking population would contribute to adoption and diffusion of e-commerce.

**Subsidies.** Direct or indirect subsidies were 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. Some companies 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 average 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). Another

type of subsidy mentioned by SMEs in this study is direct or indirect procurement support for e-commerce systems to small businesses such financial aid for the acquisition of the system and relative training, tax deduction or financial aid that totally or partially covers acquisition and installation costs. This kind of support existed at the time of the study; however some small and medium size enterprises were not aware of it.

**Mobilization.** Some companies 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). 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.

### FUTURE TRENDS

As the analysis has showed, small businesses wish government intervention, both in terms 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. Mobilization should aim at increasing awareness of the technology, related benefits, and ways of use (Poon & Swatman, 1999). In addition, 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 (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. 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. Direct subsidies such as financial support, tax deductions, and e-commerce pilot programs are also considered important and desirable. The study has not found evidence for standard setting, innovation directives and knowledge creation. Furthermore the study has found significant evidence for Conjecture 2 and 4 in King et al. (1994) framework stating:

Conjecture 2: “Significant (production or) use of IT innovation requires serious and sustained institutional interventions for knowledge deployment,”

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.”

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."

In fact, if it is true that financial subsidies such as tax breaks, and so forth 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.

## CONCLUSION

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. This study has showed that SMEs desire institutional intervention, both in term of influence and regulation. Such intervention should concentrate on three main different areas: knowledge deployment, subsidies, and mobilization.

The study has also found 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.

The study has also not taken into consideration whether the intervention was undertaken by the local, the regional or the national governments. 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 (e.g., Scupola, 2003c).

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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## KEY TERMS

**Adoption:** E-commerce adoption is here defined as the decision to use Internet technologies and the Web to share business information, maintain business relationships, and conduct business transactions.

**Diffusion:** It is the spread of the capacity to produce and/or use an innovation, and its use in practice.

**E-Commerce:** Is here defined as “the sharing of business information, maintaining business relationships, and conducting business transactions by means of telecommunications networks. Here e-commerce is equivalent to Internet commerce.

**Government Intervention:** Here it includes the set of policy measures and other actions and initiatives that governments and international organizations are taking to foster the adoption of electronic commerce in SMEs.

**Innovation:** It 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.

**Institutions:** It is any standing, social entity that exerts influence and regulation over other social entities by outlasting the social entities it influences and regulates.

**Small and Medium Size Enterprises (SMEs):** There are many definitions of SMEs. Here they are defined as companies with up to 500 employees according to the OECD (1999) definition.