

December 2003

Agile Government and Global Market-Driven E-Commerce: The Cases of Denmark, France, and Germany

Kim-Viborg Andersen
Copenhagen Business School

Roman Beck
Johan Wolfgang Goethe University

Rolf Wigand
University of Arkansas, Little Rock

Eric Brousseau
University of Paris X

Eske Gunge
Copenhagen Business School

Follow this and additional works at: <http://aisel.aisnet.org/icis2003>

Recommended Citation

Andersen, Kim-Viborg; Beck, Roman; Wigand, Rolf; Brousseau, Eric; and Gunge, Eske, "Agile Government and Global Market-Driven E-Commerce: The Cases of Denmark, France, and Germany" (2003). *ICIS 2003 Proceedings*. 15.
<http://aisel.aisnet.org/icis2003/15>

This material is brought to you by the International Conference on Information Systems (ICIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ICIS 2003 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

AGILE GOVERNMENT AND GLOBAL MARKET-DRIVEN E-COMMERCE: THE CASES OF DENMARK, FRANCE, AND GERMANY

Kim Viborg Andersen
Copenhagen Business School
Copenhagen, Denmark
andersen@cbs.dk

Roman Beck
Johann Wolfgang Goethe University
Frankfurt, Germany
rbeck@wiwi.uni-frankfurt.de

Rolf T. Wigand
University of Arkansas, Little Rock
Little Rock, AR USA
rtwigand@ualr.edu

Niels Bjørn-Andersen
Copenhagen Business School
Copenhagen, Denmark
nba@cbs.dk

Eric Brousseau
University of Paris X
Paris, France
eric@brousseau.info

Eske Gunge
Copenhagen Business School
Copenhagen, Denmark
eg.inf@cbs.dk

Abstract

This paper analyzes the nature of e-commerce policy actions in three European countries. Compiling the European Union and national policy instruments into four groups (regulation and legislation, knowledge diffusion, economic incentives, and e-government), France is viewed as a front-runner with early Minitel applications but losing steam during the e-commerce rush. Germany is the European e-commerce powerhouse with a late entry as an adopter. Denmark is an example of the early adopting Nordic countries. The palette of European e-policy topics includes industry networks, efficiency of existing business operations, and digital integration among companies, citizens, government, and peer-to-peer use following a demand-driven roadmap to e-commerce diffusion.

Keywords: E-government, e-commerce, national comparison, market drivers

Introduction

Governments and business associations have recognized the significance of information technologies (IT) for businesses and public administration. This has led to institutional initiatives aimed at supporting the diffusion of information technology among businesses and public agencies (e.g., Damsgaard and Lyytinen 2001). The Singapore NII initiatives (Neo et al. 1995; Wong 1996) and the Malaysian Information Rich Society Plan (Raman and Yap 1996) are recent highlights of governmental interests in IT.

Yet, our knowledge of the nature of the policy actions and the impacts of these remains unfocused. In this paper, we aim to open up the European e-commerce policy black box and reveal the nature of policy actions taken by three European countries in response to the challenges brought forward by the widespread introduction of e-commerce.

Germany is the largest economy in Europe, and by most observers is considered the economic locomotive in the European Union. France is a natural representative of southern Europe as one of the largest economies in the European Union having a very early start in the early 1980s with the advanced Minitel electronic communication system. Finally Denmark has been chosen as representing one of the Scandinavian/Nordic countries that have been among the early adopters of e-commerce worldwide.

However, Denmark, France, and Germany have different demand drivers (industry structure, information infrastructure, financial and human resources, as well as social and cultural factors) but are united in experiencing an increased productivity gap (Farrell et al. 2003), lacking in e-commerce readiness and having a lower diffusion rate (Kraemer and Dedrick 2000; Kraemer et al. 2000) comparison to the United States (Colecchia and Schreyer 2002; Gordon 2000). The cases of Denmark, France, and Germany were chosen to illustrate the differences in policy based on demand changes brought forward by e-commerce. Since European e-commerce policies have different impacts at the national level, a comparison of the two largest economies (France and Germany) on continental Europe with a leading e-commerce country (Denmark) enable us to identify such differences. From the U.S. policy perspective, one might expect a common approach governed by the European Union attempting to distance itself from its U.S. counterpart as much as possible. While this to some extent is true, there are also very different national policy responses to many e-commerce challenges.

Our Framework

Our research on the environmental drivers and the role of policy encompasses e-commerce in its broadest possible sense. The framework (see Figure 1) analyzes the role of governance initiatives vis-à-vis the diffusion of e-commerce. The environmental demand drivers are in the outer circle and they determine the potential magnitude of e-commerce diffusion (see Figure 1). We have placed the four sets of governance initiatives influencing e-commerce adoption in the inner circle to illustrate the facilitating role policy might play on e-commerce adoption.

The underlying premise for our analysis is that institutions facilitate or retard processes of technical and structural change, coordination, and dynamic adjustment (King et al. 1994). Those institutions influencing innovation in organizations are, therefore, of great significance in relation to the diffusion process. Analogously, a recent study suggested that “technology vendors should work closely with government sponsored IT councils, EDI standards bodies, and industry associations on promotional programs” (Teo et al. 2003, p. 42).

Within the economics literature, one of the most fundamental research issues is the importance of the market as the key driver for ongoing economic development and the role of the government within economic cycles (Keynes 1936; Smith 1776; Williamson 1975). In our analysis of how policies and environmental demand drivers play out, our research framework separates environment demand drivers from e-commerce policies and actions, even though we acknowledge the key role of government actions in the overall shaping and regulation of society. Methodologically it is indeed challenging but also potentially enlightening to separate the governmental e-commerce action from other policy actions, since they might be motives for or even indirectly part of overall economic policies.

We have used the term governance rather than government, since the former stresses the difficulty in distinguishing between government e-commerce policies and other policies, and since the three national cases encapsulate challenges in separating government actions from actions initiated and/or implemented jointly with the private sector including business associations. Although various authors have pointed to the role of institutions in IT diffusion (Chatfield and Bjørn-Andersen 1996; Damsgaard and Lyytinen 2001), the unwrapping of the content and instrument of institutions in the diffusion of e-commerce is largely unexplored in the mixed economies. Thus, we focus on the *activities in which government is involved (governance) rather than formal government*. The methodological implication is that our data collection is not limited to formal bills from government. Instead, our framework proposes four sets of governance initiatives promoting e-commerce diffusion: knowledge diffusion, economic incentives, regulation and legislation, and electronic government (Andersen et al. 2003):

- Knowledge diffusion includes dissemination of information, development of skills, and alliances with business associations designed to create a positive dialogue on e-commerce.
- Economic incentives involve the provision of favorable pricing for network services and tax breaks to help facilitate the purchase of home PCs, as well as direct government subsidization of e-commerce activities.

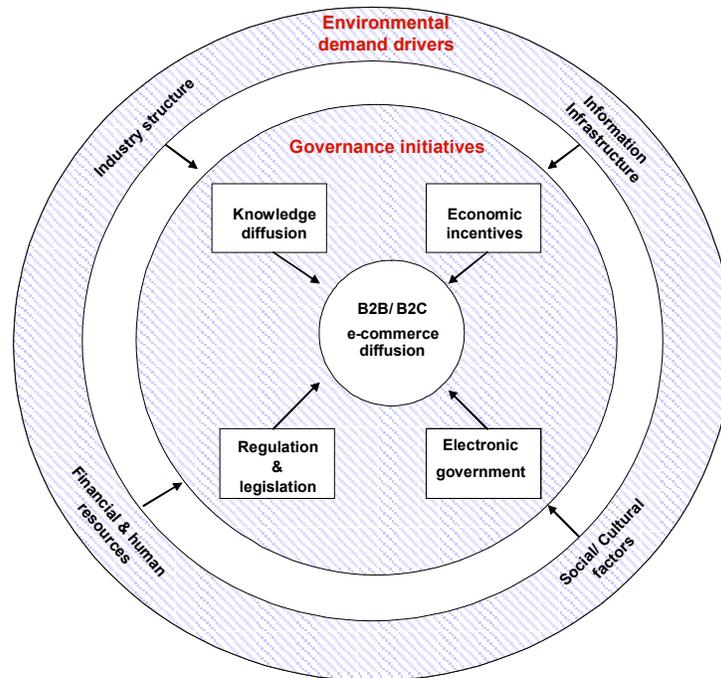


Figure 1. Framework for Analyzing Environmental Drivers and the Role of Governance Initiatives in the Diffusion of E-Commerce

(Source: K. V. Andersen, N. Bjørn-Andersen, and J. Dedrick, "Governance Initiatives Creating a Demand-Driven EC Approach: The Case of Denmark," *The Information Society* (19:1), 2003, pp. 95-105.)

- Regulation and legislation include directives and legislation on (de)regulation, privatization, and/or liberalization of the telecommunications market, including various technical standards utilized in business transactions such as encryption and provision of certification measures.
- Electronic government focuses on the work processes within the public sector's own organizations, as well as service provided to the public.

European Union Policies

As pointed out by Mann et al. (2000), one of the central e-commerce policy difficulties in Europe has been between those advocating a strong positioning in the global e-commerce universe and those who primarily see the European communities as a European community and aiming to secure jobs within Europe. The fundamental ideas from the Rome Treaty from 1957 (the European Community's first "constitution") focus on free movement of persons, goods, services, and capital within (the expanding) European Community. The main e-commerce focus of the European Taxation Commissioner's work pointed out that "Tax regimes whose advantages are granted only to non-residents or that are intended to attract only capital and not real economic activity—known as 'letter-box' companies—cannot be considered as fair" (Bolkenstein 2000). However, the commissioner has also stated that taxpayers should be able to take advantage of the increasing opportunities presented by globalization and technological developments.

Three important general European Union policy documents are the "European Initiative on Electronic Commerce" (1997), the "eEurope Initiative: An Information Society for All" (1999), and the more recent initiative from the European Commission on "The European e-Action Plan" (2001). The latter deals extensively with e-commerce initiatives promoting (1) a cheaper, faster, and more secure network for the Internet, (2) investment programs in people and skills, and (3) e-acceleration programs plus transportation media to stimulate the use of the Internet (European Commission 2001). Furthermore, adoption of European Union

legislation on copyright, e-marketing, e-money, and jurisdiction are key priorities for the Commission. All in all, there is a remarkable emphasis on co- and self-regulation within the e-commerce area in close cooperation between the Commission and various business groups such as the Global Business Dialogue (GBD).

Table 1. European Union E-Commerce Governance: Point-of-Departure and Initiatives

Governance Aspects	Point-of-Departure	Governance Initiatives
Regulation and legislation	Lacking fast Internet, broadband Distrust and lack of confidence	<ul style="list-style-type: none"> • Proper and timely implementation of European Union legislation related to information and network security • Reinforce international dialogue and cooperation • Develop and support means of action at European Union-level • Safe Harbor
Economic incentives	U.S. dominated supply of domains, content, sales	<ul style="list-style-type: none"> • Supporting high-tech industry/SMEs • Promote free public Internet access points • Stimulate competition among platforms • Accelerate investments in broadband
Knowledge diffusion	Digital divide	<ul style="list-style-type: none"> • SME, geographically less-favored areas get priority for knowledge programs • Promote attractive content for all Europeans; content in mother tongue • European Union top-level domain
E-government	Inaccessible, noncompetitive, and lacking best practices	<ul style="list-style-type: none"> • Provide public services online

National Policy Objectives and Actions

Danish E-Commerce Policies

At the national level, public and private sector policies and initiatives have been formulated: “the world’s leading IT nation,” “be among the world top five countries with regards to e-commerce revenue,” “minimize the digital divide,” and “use e-commerce to ensure sustainable economic growth.” As in the French and German cases, e-commerce governance initiatives have a high focus on bridging the so-called digital divide. Regardless of the fact that Denmark has one of the highest penetrations of computers and Internet connections in the world, it still has a high policy priority to give full access to all citizens.

Three major knowledge diffusion initiatives have been launched specifically intended to diffuse e-commerce: the EDI-strategy in 1996, the e-commerce initiative in 1999, and the e-commerce action plan in 2002. In the following three sections, the content of these initiatives are described briefly. The major shift in policy focus is from standardization of the messages and the technologies (in 1996) over diffusion of the technologies (in 1999) to innovation of the business models and processes (in 2002).

The Danish government has aggressively promoted educational efforts in the area of IT and e-commerce since 1995 (Ministry of Information Technology and Research 2000). There is also a very well organized system of vocational training for employees, organized by employers in collaboration with local vocational training centers. We assess the results of knowledge diffusion initiatives as having positive impacts on the diffusion of e-commerce by increasing enrollment in IT-education although there is a long timeframe for this strategy to have any impact. We also assess the knowledge diffusion initiatives as having increased the awareness and discourse on e-commerce, helping stimulate the adoption of EDI and Internet-based e-commerce especially in the business-to-business segment.

With regard to economic incentives, wrong timing as well as lack of consistency and momentum makes the economic initiatives weak and inadequate in coping with the serious structural problems in the economy. When considering research and development, public sector-financed activities were increased for a while after 1992, but in policy programs since the mid-1990s, they have again been reduced (Research Council 2001). This is in spite of the fact that part of the revenue obtained from the third-generation

wireless auctions is destined to be transferred back into IT research. In assessing the total R&D funds available, it is also worth mentioning that the European Union-grants from the different R&D framework programs have enjoyed more or less the same level of funding as the national research grants program.

Within the telecommunication sector, annual investments have increased substantially since 1992, with a minor drop in 2000. In 1992, €69 million was invested in telecommunications. In 1996 the investment had increased to €635 million and in 1999 to €876 million. The deployment of the Fixed Wireless Access (FWA) technologies and 3G Net, including broadband technology, is expected to rapidly increase investment (National Telecom Agency 2000). Investment in the development of broadband and other telecommunication investments will primarily come from the private sector. In 1997, the government introduced a bill that allowed companies to provide their employees with a tax-free PC at home with the provision that the employee took a number of PC courses (PC-driver's license). The consolidated effects of these economic initiatives are difficult to isolate from the effects of the other initiatives and market forces. However, there is no doubt that the investments made in the telecommunication infrastructure have been necessary in order to further the diffusion of Internet use. This has been a significant stimulator of industrial growth in the business-to-business and business-to-consumer e-commerce sectors.

General liberalization of the telecommunications market has increased the number of companies operating in the market and reduced prices. On average, telecommunications prices have decreased annually by 2.5 percent since 1984. However, it is important to note that increasing the number of players in the market does not necessarily result in lower prices for all services, or in better services. In the broadband market for ADSL, the new entrants are all buying cable access from one telecommunications provider, namely the former state monopoly company. As a result, the price level and price structure for broadband from an end-consumer point of view has not been radically reduced despite of the increase in the number of market players on the supply side. The digital divide may also remain a problem, as service providers do not want to be required to meet universal access goals (Skogerbø and Storsul 2000).

With regard to the e-government part, e-procurement is of particular relevance for e-commerce diffusion. The government launched a blueprint in its EDI-action plan (in 1996) for expanding public electronic commerce in general and the procurement function in particular. This included plans to provide technical capabilities by 1998 and guidelines for electronic commerce at all levels of government by 2000. By the end of 2002 all public procurement, which amounts to about 10 percent of the GDP, was expected to be carried out digitally. Although few e-procurement projects have been successful, the aggregated impact has been an early uptake of e-procurement, digital streamlining of work processes within government, and improvement of government-business-citizen communication.

Table 2 summarizes the findings in the four areas of governance initiatives analyzed. For each area, we summarize the point-of-departure, the governance initiatives, and the outcome. We have rated the outcome in five categories: very successful (++), successful (+), neutral/unclear impacts (0), unsuccessful (-), very unsuccessful (--).

In summary, the Danish e-governance situation is negatively influenced by environmental drivers like a large, expensive public welfare system with high taxes and an industry structure with few locomotive and many small and micro companies. On the other hand, social and cultural factors are positive with a high level of education, and relatively effective government institutions. The governance initiatives on knowledge diffusion, liberalization of the telecom industry, incentives for distribution of PCs to the home, a very active e-procurement policy for the public sector, and a very high focus on digitalization of government is placing Denmark as one of the highest adoption rates globally.

German E-Commerce Policies

The Federal Government of Germany regards the active support of e-commerce diffusion in all parts of public and private life as a mandatory and key requisite to be globally competitive in the future. Like the prior government under Chancellor Kohl, Chancellor Schroeder pronounces especially the action program "Innovation and Employment of the Information Society in the 21st Century" as the most important measurement catalog of the Federal Government which started in 1999. A set of predefined goals were formulated which should be fulfilled until 2005 or earlier (cf. Table 3). In order to strengthen the public efforts, the German government involved early on the private sector as an important counterpart by establishing private-public partnerships such as the D21 initiative to mention the most important one. A non-profit association, D21 involved approximately 300 German enterprises with the objective of fostering the change from an industrial to an information society to transform the industrial society and create an information society.

Table 2. Danish E-Commerce Governance: Point-of-Departure, Initiatives, and Outcome

Governance Aspects	Point-of-Departure	Governance Initiatives	Outcome
Regulation and legislation	<ul style="list-style-type: none"> • Monopoly • Restrictive data protection 	<ul style="list-style-type: none"> • Liberalization • Digital signature • E-commerce directive • Data protection directive 	<ul style="list-style-type: none"> • More competitive market dynamics in the telecommunication market (new players, lower prices, and new services) (+) • High diffusion of access points but low use of Internet and of high-speed connections (0) • Low diffusion of digital signature and encryption certificates beyond the banking sector (–) • Reduced sales barriers within the European Union (0)
Economic incentives	<ul style="list-style-type: none"> • Need for IT replacement and more social balanced diffusion of IT in households • Low R&D expenses 	<ul style="list-style-type: none"> • Home PC tax relief • Increased R&D telecommunication • Subsidy of e-commerce projects 	<ul style="list-style-type: none"> • High diffusion of PCs in households (++) • 100% digitalization of phone lines and access points (++) • High CATV and WebTV take-up (++) • Low impact of investments and few start-ups (–)
Knowledge diffusion	<ul style="list-style-type: none"> • Low enrollment in/supply of higher science education • Digital divide • EDI-centered discourse 	<ul style="list-style-type: none"> • New IT-education institutions • EDI and annual IT-action plan • IT Ministry • Project E-government focus on e-commerce 	<ul style="list-style-type: none"> • Increased enrollment in IT-education (++) but long time to impact (0) • Increase awareness and discourse change toward e-commerce (++) • Continuous increase in EDI-use (0) and simultaneous uptake of Internet-based B2B e-commerce (+)
E-government	<ul style="list-style-type: none"> • Lack of strategies for e-commerce • Primarily inter-governmental IT-use • Widespread red-tape 	<ul style="list-style-type: none"> • Mandatory e-procurement 	<ul style="list-style-type: none"> • Early adoption of e-procurement (+) although limited to few items and lacking focus on CB and strategic impacts (–) • Digital streamlining of internal public sector processes (+) • Digital access and services for business and citizens (+)

Aside from programs and legislation of the Federal Government, Germany's federal structure, with 16 states that may act independently in certain policy fields such as education, is solely in the sphere of influence of each single state based on the Basic Law (Germany's equivalent to a Constitution). Due to this, standard guidelines for IT-education vary from state to state.

The local states, along with the German Federal Government, launched a series of initiatives to increase the number of IT specialists (undergraduate education, redirect training programs) and attract high-profile IT specialists from Europe and the rest of the world, especially India. The Federal Employment Office launched a program to help the young unemployed enhance their IT capabilities and their attitude toward self-employment.

Regional projects in the local states provide support for SMEs interested in IT and e-business, as well as help for young start-ups with IT training and subsidies. Most federal states run their own IT Competence Center Network in addition to or together with federal ones to enable SMEs not only in urban but especially in rural regions of the state. The Federal Government provides subsidies, especially to industries having structural problems, or regions with few high quality and state-of-the-art industrial facilities, such as the former East Germany. The European Community offers investment incentives together with subsidies for eastern Germany. These incentives, in turn, should attract foreign MNCs to build up subsidiaries in these regions. In the long run, this should provide favorable conditions and a strong economic incentive to start or expand e-commerce businesses.

Table 3. German Governance Point-of-Departure, Initiatives, and Outcomes

Governance Aspects	Point-of-Departure	Governance Initiatives	Outcomes
Regulation and legislation	<ul style="list-style-type: none"> Publicly owned telecommunication monopoly Insufficient legal framework for e-commerce and online security 	<ul style="list-style-type: none"> De facto deregulation in 2001 Fast deregulation since 1998 The e-business law and electronic signature law Improvements of yet existing laws in the fields of data security, customer- and property-rights protection A private-public partnership was established to be able to react fast onto IT endangering attacks 	<ul style="list-style-type: none"> More carriers and more free choices (++) Prices for Internet access declined over 90% in the last three years. (++) Significant lowering of local Internet connection costs (++). German customers are less often afraid to use online services because of possible lack of security reasons or inadequate legal protection as customers in Denmark or France. (++) An all-embracing legal protection together with a close interlocking with the private sector in the field of protecting systems from Internet attacks lead to positive results as the recent love letter virus attack has shown. (++)
Economic incentives	<ul style="list-style-type: none"> Digital divide between large enterprises and SMEs Lack of adequate high speed data lines and infrastructure 	<ul style="list-style-type: none"> Local IT competence centers all over the country to support SMEs by implementing IT and e-business applications Faster diffusion of new technologies among SMEs even in rural regions of Germany German Research Network Infrastructure (year 2000) to provide, e.g., German universities a 2.5 gigabit per second Internet access. A 50 terrabyte per second communication network is projected 	<ul style="list-style-type: none"> The German so-called Mittelstand has adopted e-commerce technologies very fast in comparison to SMEs in other countries but overall had not yet reached the same level of diffusion as large firms. (++) Public programs and subsidies had no significant impact on the IT adoption decision of SMEs. (-) Horizontal and vertical high diffusion of DSL and ISDN connections in private households and firms. (++) Schools and public bureaus are not yet sufficiently equipped with high speed internet access. (0)
Knowledge diffusion	<ul style="list-style-type: none"> Social and gender gap in the usage of the Internet. Insufficient IT knowledge transfer on all educational levels 	<ul style="list-style-type: none"> Several programs and campaigns advertising the advantages of the Internet for female, seniors and handicapped person; following the Lisbon European Union e-society program several projects were started €63 million invested in new IT infrastructure and education programs on all levels of the education system Private-public partnership D21, in addition large German industry partners gave PCs and free Internet access to schools amounting to approximately €45 million in 2001; in the last three years, on average 	<ul style="list-style-type: none"> Number of female, as well as the proportion of seniors using the Internet increased. (+) The potentials and useful services of the Internet were investigated by these groups due to the omnipresence of the Internet in daily life. (-) Governmental and private initiatives strengthen IT education, but investments are still too low. (-) E-learning is far behind state-of-the-art possibilities. (- -) In the field of adult IT education no sufficient program is in place to enable older employees without computer knowledge. (- -)

E-government	<ul style="list-style-type: none"> • Obsolete business processes and equipment in the public sector 	<p>€56 per student for additional IT equipment, education and software licenses were spent by federal states</p> <ul style="list-style-type: none"> • BundOnline 2005 campaign to support the implementation of online services in all areas of administration • Since 2000, the online submission of private tax declarations is possible • Pilot projects implement e-procurement; standardization initiative Media@Komm • Federal Government forces the development of standardized online services and processes 	<ul style="list-style-type: none"> • Germany ranks last in European comparison in the field of e-government services available online. (– –) • With the exception of online tax declaration only few services really exist today. (–) • While a couple of cities perform better in their online services, others have often only a non-interactive homepage. (– –)
--------------	--	--	---

E-commerce firms are, by German law, required to pay the German value-added tax (VAT), if the firm’s plant is located in Germany (has *nexus*) or if the product’s origin is Germany. Therefore, both traditional catalog sellers and new e-commerce traders have to follow the same standards. In order to protect Internet suppliers from criminal or technical procedures, German federal law provides some protection and relief. If the Internet merchant or business has taken every prudent precaution, occurrences that are out of the control of the merchant or business (e.g., technical problems such as the breakdown of a server or criminal undertakings like hacking by outsiders), are protected by the law, and the Internet merchant or business cannot be held accountable. Together with the initiatives on digital signature, the trade law, and the phasing out of the rebate law, which regulated merchants rebate patterns, the German government has improved e-commerce trade conditions to be competitive on global markets.

The e-government initiatives are centrally coordinated by the Federal Ministry of the Interior, in contrast to the private e-commerce initiatives led by the Federal Ministry for Economic Affairs. Therefore, the e-government projects in Germany are run uniformly at the federal level, but vary from state to state and from city to city administrative units. An important hindering reason for a fast and standardized diffusion of e-government services is the federal structure of Germany with nearly independent public bureaus on national, state, and municipal levels. Due to relatively low IT penetration in those governmental facilities, services provided are at a fairly low level in comparison to other European countries, especially in rural regions. Many document- and paper-bound processes are not yet prepared and designed for electronic transmission. Short of funds and mostly lacking IT skills, public servants are hampering the improvement in of public administration, which often is an inhibitor for private business. Larger trade firms with completely integrated EDI systems are still required to supply paper-based transactions to cope with customs (König et al. 2002).

In summary, the German e-governance situation may be characterized by trust in market competition instead of governmental regulation and (de)regulation, as well as simplification of e-commerce-related laws in Germany. While e-commerce has performed in an internationally competitive manner in the B2B and B2C sectors, the public and administrative sector itself may be characterized by significant time-lags and insufficiencies in adopting and implementing e-commerce applications successfully. Corresponding to the framework depicted in Figure 1, Germany has environmental difficulties in the human resource area (outer demand drivers circle) and even more problems on the governance initiatives layer in the field of knowledge diffusion and e-government-capability itself. Nevertheless, until now societal as well as industrial factors were strong enough to push along on the path toward an e-society.

French E-Commerce Policies

France’s level of development in e-commerce today reflects a “middle of the road” standing that characterizes the use of the Internet in France. Statistics on French digitalization and e-commerce are around the European average but clearly lacking magnitude and drive compared to the U.S.-level (Brousseau and Kraemer 2002) and to Denmark and Germany. This seems to reflect the peculiar nature of France sharing characteristics both with northern European countries (level of development, skill

levels of the population) and Mediterranean countries (low digital literacy, less intensive urbanization). This also reflects the digital divide characterizing France that also seems to be an important inhibitor to the wider digitalization of the country.

France had a relatively late adoption of Internet technologies, which is partly due to the strong involvement of France in the development of two preexisting technologies: the Minitel (principally dedicated to B2C) and EDI (dedicated to B2B). Both technologies provided users with a sufficient level of service to support their business processes, but hindered their propensity to switch to other new Internet-based technology.

Until the very late 1990s, most governmental and business decision makers did not identify the new digital revolution as a priority, because France had to modernize its economy before going digital. Although investment in IT was not neglected, the priorities were clearly to deregulate, to go international, and to reengineer the business process and organizations.

While France launched a decentralization policy in the 1980s, it remains a highly centralized country. Cities and regional governments have quite limited power on economic affairs, technological policy, education, and public infrastructure. While the economy was considerably liberalized in the 1980s and 1990s, the national state continued to have a deep influence on the behavior of businesses. Consequently, the *central government* is the principal designer of e-policy.

Facing the liberalized environment (European Union Antitrust Policy, the World Trade Organization) and the intrinsic nature of the digital revolution favoring decentralized innovation, the French government implemented a policy that in principle is based on the design of an appropriate institutional (legal) framework and incentives rather than on direct intervention in the economy. Such a policy is efficient if local governments, businesses, and citizens use the tools provided by the government to leverage their own efforts. A part of the French policy is also performed at the diplomatic level when the French government negotiates the making of European Union policies in Brussels.

Since the state played a strong role in an economy that was not widely open to foreign competition, a large set of reforms have been implemented. Since 1998, the government has been furthering the deregulation of telecommunication services, reshaping the legal framework to adapt to digital technologies, promoting IT training and innovation, and developing e-government. Thus, recent French history is one of progressive removal of barriers to the implementation of new methods of work and commerce. Indeed, over the last 20 years, the French industry and innovation system have been totally reshaped. Moreover, a deep process of liberalization and internationalization of the market and the industry have been performed.

The French economy was deeply restructured from the mid-1980s to the late 1990s. In 20 years, this country, whose industry was dominated by large state-owned companies (National Champions), where businesses were coordinated by very powerful administrative services managing national plans, and whose economy was heavily regulated, was turned into a country in which most of the markets are now competitive and open to foreign competitors. Most of the former public monopolies (except for railroads, gas, and electricity) have been privatized and deregulated and the respective industries are now global and open to competition.

Because French industry was more oriented to traditional telecommunication technologies than to computer-in-network technologies, French decision makers did not identify the Internet revolution early enough in the 1990s. This led France to underinvest in computers and digital networks for the first part of the decade. When the Internet took off, France had to invest in the development of new applications and hardware, and the lack of an installed base was an inhibitor to the early development of the Internet. Since voluntary national plans were launched, France began to take off in this area in the late 1990s.

The most profound recent institutional initiative came in 1998 in the shape of the government launch of the PAGSI program (Government Action Program for the Information Society). The objective was to “build an information society for all” to prevent a widening of the digital gap and to help France catch up with other countries in terms of Internet use.

In 1997, while the French telecommunication market was largely open to competition (EITO 2001, pp. 117-118), access to the Internet was scarce and costly. Dial-up on the telephone network was costly because of time metering of local calls. In 1998, the government implemented a special regulation aimed at suppressing metered time access to Internet servers. In addition, it resolved the conflicts among cable operators and telecommunications operators that delayed the deployment of cable access to the Internet. It also promoted the development of ADSL and wireless access to the local network. The French government promoted competition among telecommunication operators and ISPs to multiply the channels and decrease the costs of access. The major act in that respect was the Decree of 12 September 2000 breaking up the monopoly on local loops and allowing private operators access to France Telecom’s local networks.

Table 4. National French Governance Point-of-Departure, Initiatives, and Outcomes

Governance Aspects	Point-of-Departure	Governance Initiatives	Outcomes
Regulation and legislation	National Innovation System organized around large National Champions and governmental planning considered as no longer appropriate	<ul style="list-style-type: none"> • Total or partial privatization of National Champions • Further deregulation of the financial industry and public support to business angels and venture capital firms • Incentives to develop spillovers between public and private research 	<ul style="list-style-type: none"> • Increased globalization of large French firms (+). Many of them, however, launched costly merger and acquisition policies to try to catch up. This burned a lot of capital, resulting in fewer funds available for innovation. After the crash of the dot-com market, assets had to be sold to reduce the private debts of firms, bringing some firms back to the initial situation (-). • Due to the weakness of French banks and capital markets, the venture capital capability remains weak (-), especially because it was unable to resist to the collapse of the dot.com bubble. However, many new companies emerged and were created in 1999 and 2000 (+). • Better coordination between public and private research due to cooperation contracts and spin-offs. However, strong barriers to the movement of researchers between public and private research remain (+).
	Due to the early development of e-commerce, an existing legal framework was in place, but it needed to be adapted to the specifics of the Internet	<ul style="list-style-type: none"> • Project to pass a comprehensive “Law for the Digital Economy” to re-organize consistently the various legal frames of the digital and information society • Since most aspects of the digital activities have global consequences, strong involvement in the building of appropriate frameworks at the global (e.g., WTO) and European levels 	<ul style="list-style-type: none"> • Due to the complexity to prepare such a law addressing economic, political, and ethical issues and many legal domains, the law remained a bill until 2002 (- -). • Its most sensitive aspects (e.g., liberalization of encryption) were separately passed between 1999 and 2002 and the legal framework should be completed by 2004. This too-long implementation process generated uncertainties that delayed investment and adoption (-). • The French and the European approaches to the legislation of on-line activities show quite considerable differences with comparable U.S. on-line activities. This gap still prevents the development of consistent frameworks in the areas of privacy, network security, etc. (0).
Economic incentives	High cost of access to the Internet in 1995 plus low availability of the services	<ul style="list-style-type: none"> • From 1997 to 2002 complete deregulation of the telecom market to the local loop • Local governments have been authorized (since 2001) to subsidize the development of local broadband network 	<ul style="list-style-type: none"> • The French telecom is one of the most deregulated worldwide. Competition led to a strong decrease of prices, an enhancement of the availability and increase in quality of the service. While remaining France Telecom had to respond to new entrants and is one of the most aggressive competitors on the market (++) • Broadband access remains scarce in France (outside major cities), mainly due to the low level of the demand (linked to the low level of the demand for Internet access in general) (0).
	Too few services in French prevented	<ul style="list-style-type: none"> • Public subsidies to sustain the 	<ul style="list-style-type: none"> • French contents developed, but the impact of public subsidies remains in question (0). Moreover, it did

	adoption of households and SMEs	development of French contents <ul style="list-style-type: none"> • Political support to the emergence of (private) national champions in the content industry (TF1, Vivendi, Canal+, Hachette) 	not really boost the adoption of the Internet. It is a necessary, not a sufficient, condition for adoption (0). <ul style="list-style-type: none"> • French National Champions rushed into the dot.com market too late and often paid a too high price for the company they bought. This led them to divest in 2002-2003 (see above) (0).
Knowledge diffusion	Low diffusion of the Internet identified as a major barrier since it delay potential adoption due to shortness of potential demand and reduce spillovers due to generalized adoption and innovation	<ul style="list-style-type: none"> • Development of IT training in schools and universities • Governmental communication in favor of ITs and cooperation between the government and business associations to develop awareness and training 	<ul style="list-style-type: none"> • Generalization of IT training has been delayed by the costs of equipment, the time lag necessary to develop appropriate software and Websites, the shortage of necessary skills by teachers (0). • French households and business began to catch up in 2000 and 2001 (+), but the collapse of the Internet bubble washed enthusiasm. There are still digital divides in four areas: (1) between most and less educated, (2) between Paris and the other regions, (3) between large firms and SMEs, and (4) between modern and archaic industries. (– –).
E-government	E-government application identified both as a way to demonstrate the potential impacts of ITs and as a mean to modernize the state	<ul style="list-style-type: none"> • Funds and incentives to promote the raise of an e-administration plus government initiatives in favor of on-line services to the business and the citizens 	<ul style="list-style-type: none"> • Most branches of the government developed on-line information services. Major government-to-consumer applications are now available online (tax declaration, reply to call for tender, hiring processes, etc.) (++)). • The short-term (demonstration) effect on governmental services quality and on efficiency is still hardly identifiable since it requests organizational changes that will be performed in the long run. Moreover, the protection of civil liberties often prevents the integration of the information systems of the various branches of the government (0).

Discussion and Implications

The European countries display a small variance in the policy arsenal applied, although e-government is playing a vital role in all countries. Possibly the most remarkable shift in the role of government has been in France, a country that has withdrawn from centralized regulation to a more decentralized and incentive-based regulation. The strong dominance of government in the three economies seems to have led to a structural lock-in of the companies in the sense that their market orientation has been getting very domestic and not globally competitive. This is most prevalent in the cases of Denmark and France. In the German case, governmental policies are not as important for IT diffusion of e-commerce, aside from the deregulation efforts, such as in the telecommunications sector.

At the European scene, e-commerce policies have been linked very closely to liberalization and increased competition through taxation policy, improvement of the internal market, customer concerns, increasing employment, support for SMEs, and concerns for the local language. These policies have been actively competing against policy goals of globalization and ensuring manufacturing and supply-push strategies. At the European Community policy scene, R&D efforts focused on e-commerce supply are limited. Much more focus has been given to the exploitation of e-commerce among the SMEs and public sector units. The argument is that the benefits from exploiting the technologies could be many times larger than producing them. However, the statistics on the productivity gap do not support that the European strategy has been successful (Farrell et al. 2003).

Figure 2 displays the shift in policy in the three countries on two dimensions. The vertical dimension pictures the responsiveness to the challenges posed by the global e-commerce diffusion as either dormant or agile. The horizontal dimension labels the implementation speed of policies as either slow or swift. The figure is drawn for three eras of e-commerce: the initial stages (before 1995), the hype of e-commerce (1996 through 2000), and the post-hype of e-commerce (2001 and beyond).

Among the three countries, France had a very swift start and a high degree of responsiveness to the technologies developed during the pre- and early days of e-commerce. EDI and Minitel fit well into the policy regime configuration in France. In contrast, Germany reacted slowly both to the challenges and the implementation of the policies. Denmark had a more agile responsiveness to the nature of the problems through national initiatives on standardization and low-cost software. Yet, the implementation speed of the policies was very slow. During the hype of e-commerce (1995-2000), Germany took the lead with regard to responsiveness and implementation speed. During the post-hype days of e-commerce, our proposition is that the roles changed with Denmark and Germany taking pole position and France with a slower implementation speed.

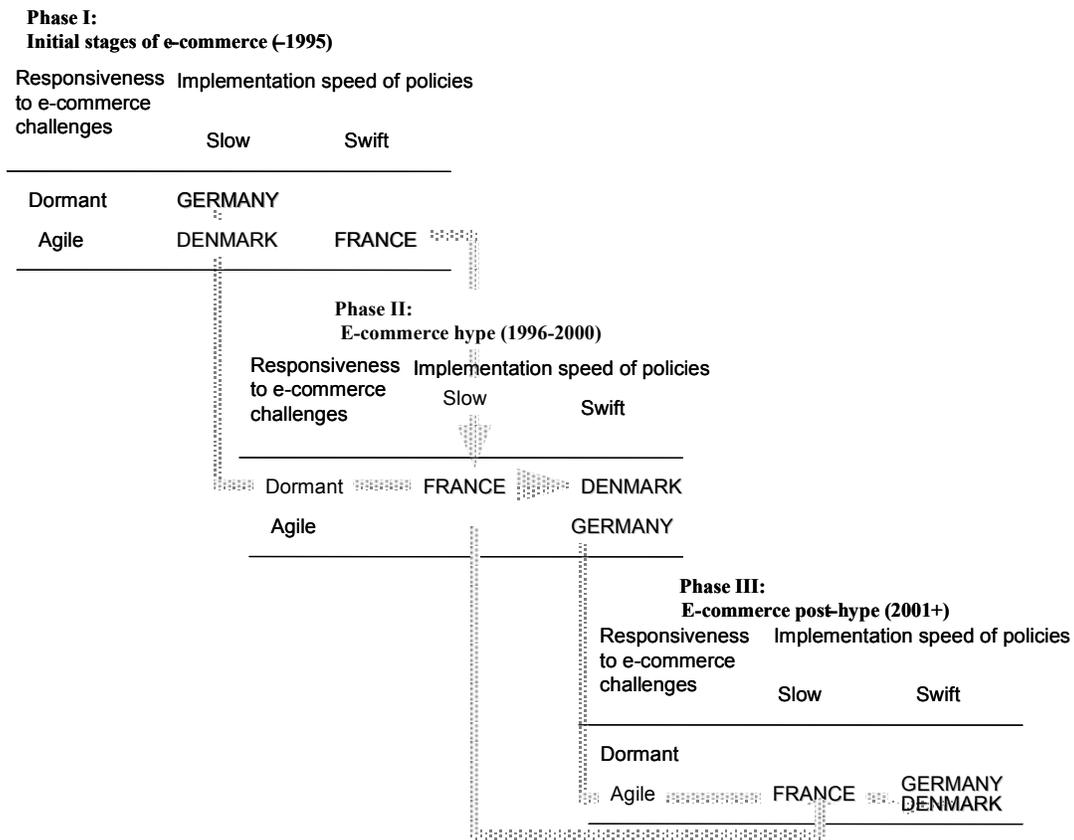


Figure 2. Agile and Swift versus Dormant and Proactive Government

A common picture is that the three European countries are all lacking the global e-commerce momentum and that countries are competing on domestic and intra-European market, rather than global markets. From this perspective it is merely redistribution from other sectors to those exploiting IT most effectively in Europe, namely the banking and B2B distribution sectors. The heavy reliance on e-government seems to reinforce this tendency, making all three countries worse-off than prior to the e-commerce era.

Furthermore, Figure 2 shows that the policy responses to the challenges posed by variance in e-commerce diffusion will take different routes. One route of e-commerce is globalization with keywords as economics of scale, productivity targets, and restructuring of business operations and integration. The European route seems to be more regional with key phrases such as industry networks, efficiency of existing business operations, digital integration between companies, citizens and government, and peer-to-peer use. The two routes of e-commerce policies have very different implications for the development of a new generation of hardware and software and the need for policy makers to regulate. Perhaps the single most surprising finding is the lack of heavy, coordinated actions within and among the European countries. Structural reforms and policy initiatives that effectively support and stimulate the European route seem to lack determinism and are being caught between institutions. Although the telecommunications and the financial sectors have been deregulated and the mobile sector is successful, the tangible impacts on supply of labor, GDP growth, and innovation scheme are less successful in Europe.

References

- Andersen, K. V., Bjørn-Andersen, N., and Dedrick, J. "Governance Initiatives Creating a Demand-Driven EC Approach: The Case of Denmark," *The Information Society* (19:1), 2003, pp. 95-105.
- Bolkenstein, F. "A Changing Approach to Taxation with the Development of Electronic Commerce," speech by European Commissioner Frits Bolkestein, Vereniging voor Belastingwetenschap in the Netherlands, The Hague, September 14, 2000.
- Brousseau, E., and Kraemer, K. L. "Globalization and EC: The French Environment and Policy," Center for Research on Information Technology and Organizations. University of California, Irvine, 2002 (available online at http://www.crito.uci.edu/publications/pdf/GEC2_France.pdf; accessed May 2, 2003).
- Chatfield, A., and Bjørn-Andersen, N. "Reengineering with EDI: A Trojan Horse in Circumventing Non-tariff Barriers to Trade," in *Proceedings of the Fourth European Conference on Information Systems*, Lisbon, Portugal, July 2-4, 1996, pp. 1197-1211.
- Colecchia, A., and Schreyer, P. "The Contribution of Information and Communication Technologies to Economic Growth in Nine OECD Countries," *OECD Economic Studies* (34), 2002, pp. 153-170.
- Damsgaard, J., and Lyytinen, K. "The Role of Intermediating Institutions in the Diffusion of Electronic Data Interchange (EDI): How Industry Associations Intervened in Denmark, Finland, and Hong Kong," *The Information Society* (17:3), 2001, pp. 195-210.
- EITO. "European Information Technology Observatory 2001," European Economic Interest Grouping, Frankfurt, 2001 (available online at <http://www.eito.org>; accessed October 3, 2003).
- European Commission. *The European eAction Plan*, European Commission, Brussels, 2001.
- Farrell, D., Fassbender, H., Kneip, T., Kriesel, S., and Labaye, E. "Reviving French and German Productivity," *The McKinsey Quarterly* (1), 2003, pp. 40-47.
- Gordon, R. J. "Does the New Economy Measure Up to the Great Inventions of the Past?," *Journal of Economic Perspectives* (14:4), 2000, pp. 49-74.
- Keynes, J. M. *The General Theory of Employment, Interest and Money*, MacMillan, London, 1936.
- Kraemer, K. L., and Dedrick, J. "European EC Report," Center for Research on Information Technology and Organizations. University of California, Irvine, 2000 (available online at <http://www.crito.uci.edu/git/publications/pdf/european-EC-report2.pdf>; accessed May 1, 2003).
- Kraemer, K. L., Dedrick, J., and Dunkle, D. "EC in the United States: Leader or One of the Pack?," Center for Research on Information Technology and Organizations. University of California, Irvine, 2000 (available online at <http://www.crito.uci.edu/publications/pdf/GIT/GEC/USsnapshot.pdf>; accessed May 2, 2003).
- King, J. L., Gurbaxani, V., Kraemer, K. L., McFarlan, F. W., Raman, K. S., and Yap, C. S. "Institutional Factors in Information Technology Innovation," *Information Systems Research* (5:2), 1994, pp. 139-169.
- König, W., Wigand, R. T., and Beck, R. "Globalization and EC: Environment and Policy in Germany," Center for Research on Information Technology and Organizations. University of California, Irvine, 2003 (available online at http://www.crito.uci.edu/publications/pdf/GEC2_Germany.pdf; accessed May 2, 2003).
- Mann, C. L., Eckert, S. E., and Knight, S. C. *Global Electronic Commerce: A Policy Primer*, Institute for International Economics, Washington, DC, 2000.
- Ministry of Information Technology and Research. *Satsninger og tal - bilag til netværksredøgørelse 2000*, Danish Ministry of Information Technology and Research, Copenhagen, 2000.
- National Telecom Agency. "Tele Statistics," National Telecom Agency, Copenhagen, 2001 (available online at <http://www.tst.dk>; accessed May 2, 2003).
- Neo, B. S., King, J. L., and Applegate, L. "Singapore TradeNet (B): The Tale Continues," Harvard Business School Case (No. 9-193-136), Harvard Business School, Boston, 1995.
- PAGSI. *Government Action Program for the Information Society*, Premier Ministers Office, Paris, 1998 (available online at <http://www.internet.gouv.fr/>; accessed May 2, 2003).
- Raman, K. S., and Yap, C. S. "From a Resource Rich Country to an Information Rich Society: An Evaluation of Information Technology Policies in Malaysia," *Information Technology for Development* (7:3), 1996, pp. 109-131.
- Research Council. *Grundlaget for vidensamfundet smuldrer - udsigt til stort fald i de offentlige forskningsbevillinger*. Ministry of Information Technology and Research, Copenhagen, 2001.
- Skogerbø, E., and Storsul, T. "Prospects for Expanded Universal Service in Europe: The Cases of Denmark, the Netherlands, and Norway," *The Information Society* (16:2), 2000, pp. 135-146.
- Smith, A. *The Wealth of Nations*, 1776; Reprinted 1937, Random House, Inc., New York.
- Teo, H. H., Wei, K. K., and Benbasat, I. "Predicting Intention to Adopt Interorganizational Linkages: An Institutional Perspective," *MIS Quarterly* (27:1), 2003, pp. 19-49.
- Williamson, O. E. *Markets and Hierarchies: Analysis and Antitrust Implications*, The Free Press, New York, 1975.

Wong, P.-K. "Implementing the NII Vision: Singapore's Experience and Future Challenges" Working Paper. Center for Research on Information Technology and Organizations. University of California, Irvine, 1996 (available online at <http://www.crito.uci.edu/git/publications/pdf/pac-097.pdf> ; accessed April 29, 2003).