

TOWARDS eBUSINESS SUPPORT POLICY DEVELOPMENT: LITHUANIA PERSPECTIVES

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Abstract

The evolution of e-business or the uptake of e-business practices has become popular to depict as a process involving transitions toward increasing use of ICT coupled to organizational change and sophistication which can impact business performance. This process should not be interpreted as a generic or deterministic process of adaptation that can be replicated across institutional contexts. Instead, there are many 'environmental' elements, ranging from policy frameworks, supporting public administrations, competitiveness/collaboration frameworks, levels and quality of education, entrepreneurial culture and ICT infrastructure, among others), that condition the evolution of e-business. The main policy directions derived from the analysis of EU and EU countries experience in eBusiness development are presented in the paper. The developed framework for e-business support policy parameterizes on following key areas - Business environment, Skills upgrading, Network infrastructure, Trust infrastructure, Digital products and information services, Intangible investments and assets, Information, Government on-line.

Keywords: eBusiness, SMEs, policy.

Introduction

In 1997, IBM coined the term 'e-business' to refer to the increased utilization of information and communication technology (ICT) in business processes. In 2001, the European Union launched its ambitious *eEurope* program, aimed at pushing Europe at the global forefront in e-business uptake, among other things. Ever since, e-business policy has been at central focus on regional, national, and European level. E-business support policy is usually targeted to encourage and assist small and medium size enterprises (SMEs), to use Information and Communication Technologies (ICT) in a way that will maximize their competitive advantage. Effective use of ICT across all sectors of the economy can act as a driver to increase competitiveness. ICT connectivity is very widespread in businesses of all sizes. As is the case with all technologies, SMEs are slower than large firms to adopt new ICT. Potential SME benefits and firm and sector-specific strategies drive the adoption and use of ICT. Furthermore, sectors are increasingly global and dominated by large firms and the structure of their values chains and operations shape opportunities for SMEs.

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Principal reasons for non-adoption are lack of applicability and little incentive to change business models when returns are unclear. SMEs also face generic barriers to adoption including trust and transaction security and IPR concerns, and challenges in areas of management skills, technological capabilities, productivity and competitiveness. The issues for governments throughout the European Union (EU) are to foster appropriate business environments for e-business and ICT uptake, and target programs to overcome market failures to the extent that they are needed in particular areas (*e.g.* skill formation, specialized information). Governments have a range of SME e-business and internet use programs. However commercial considerations and potential returns are the principal drivers of SME adoption and profitable use.

The object of research – eBusiness support policy.

The main objective of this paper is to elaborate eBusiness support areas and empirically validate proposed eBusiness policy support framework.

The methods of research are systemic, logic and comparative analysis.

ICT impact

Empirical studies on the economic impact of ICT have been well-developed in relation to the US economy – mainly because of data availability. In recent years some work has been carried out also for the EU. The Groningen Growth and Development Centre (GGDC) collected data on a number of countries and a set of 56 industries. Recent empirical analysis based on this dataset compares the impact of ICT on the EU15 and the US labor productivity growth by decomposing it into (a) investment in ICT (second channel); (b) non-ICT related investment; (c) efficiency gains in the ICT sector (first channel); and (d) efficiency gains in the rest of the economy. It should be underlined, that the last category does not distinguish between efficiencies stemming from ICT use and other, non-ICT related, efficiencies. As a result, it is not possible to quantify the impact of ICT on the economy through the third channel described above. These measurement issues imply that the macroeconomic empirical analyses tend to underestimate ICT impact.

ICT contributed to 74% of productivity gains in the US at the end of the 1990s and reduced their contribution in the following period to 32%. In the second half of the 1990s ICT were an important determinant of the divergence between the EU and the US performance. However, in the period 2000-2004, it was the efficiency gains in the rest of economy that explained most of the divergence. It accounts for 50% of productivity growth in the US, whereas in Europe it is negligible (2%). More in-depth analysis shows that significant part of these gains is attributable to ICT spillovers. Outside the ICT-producing sector, the industries that contributed most to productivity growth in the US are concentrated in trade and finance: wholesale trade, securities trade, retail trade, banking and other business services. These large market service industries are in the upper range of ICT users. It is not surprising that substantial investment in ICT carried out in the US in the second half of the 1990s has translated into sizeable efficiency spillovers in the market service industries (eBusiness Watch, 2007).

Evidence on the efficiency gains from ICT use has been further gathered through firm-level studies. Microeconomic analysis finds positive spillovers and supports the link between investment and use of ICT and companies' performance. For example, research undertaken in the UK demonstrates that firms with higher investment in IT, higher use of computers, telecom services and e-Commerce also feature higher productivity rates. A Danish case study of 700 enterprises demonstrates that e-Business oriented firms have higher productivity, are more innovative, employ more skilled labor force and more often involve themselves in the R&D activities. Surveys of the literature carried out by the OECD confirm these conclusions for a number of non-European countries. These studies show that a number of factors influence firms efficiency or an efficient use of ICT: the size of the company, the activities of the sector, the firm skill endowment etc. Implementation of different information technologies also affects companies' efficiency to different degrees.

Factors determining the economic benefits of ICT: The EU has not been able to exploit ICT for productive purposes – both as a user and as a producer – to the full extent. The EU invests less in ICTs, the ICT sector is less efficient, and the performance has been disappointing in ICT-using sectors. Reaping benefits from ICT is not straightforward. Policy should aim at the creation of a favorable environment to seize gains from ICT production and use. An 'enabling framework' is made of a complex range of factors. Factors may concern both structural features of the wide economy and ICT-specific elements. All factors play important and interlinking roles in shaping the overall productivity environment. The contribution of ICT to productivity points to the importance of *structural change aimed at boosting the production and adoption of new and knowledge-intensive technologies* (EC, 2007). Enabling structural factors include:

Flexibility of the product market, including light product market regulation (not to limit the exploitation of new technologies nor growth of efficient firms), low entry and exit costs, and a general competitive environment that provides the necessary incentives for companies to invest, adopt innovative technologies and enhance innovation.

Innovation systems are a key underlying factor driving EU-US productivity differential. The US innovation system has better linkages between different players, better quality and funding of its knowledge sector, and more favorable framework conditions. This system has been able to direct resources towards the newer high technology (often high productivity growth) industries.

Entrepreneurial culture is an essential component of an efficient innovation system. To be innovative, a firm must be able to recognize market opportunities, respond innovatively and have a large knowledge base.

Flexibility of the labor market is essential in the presence of technological change. Inadequate employment legislation may hamper the capacity of firms to reorganize and experiment with the new

technologies, may limit the migration of skilled labor and the flexibility in working hours. To facilitate migration between jobs, flexible labor markets should involve life-long learning solutions and ensure the upgrade of skills.

ICT skills are crucial both to the ICT industry and to the rest of the economy. The ICT industry relies on well educated scientists and engineers, while companies in all sectors need to implement new technologies and rely on a skilled labor force. In the last decade, the share of the labor force with ICT skills has steadily increased. It has been estimated that around 20% of total employment in modern economies can be classified as ICT-skilled employment. Educational and vocational training systems are hence necessary factors to successfully exploit the advantages of ICT.

Organizational change: Closely linked to human capital is the role of organizational change. Studies typically find that the greatest benefits from ICT are realized when ICT investment is combined with other organizational changes, such as new strategies, new business processes and practices, and new organizational structures. The common element among these practices is that they entail a greater degree of responsibility of individual workers regarding the content of their work and, to some extent, a greater proximity between management and labor.

Finally, more *flexible financial markets*, making venture capital finance available to innovating firms, is key to an enabling innovative environment (IANIS+, 2007).

ICT-specific factors: ICT-specific features of the economy also contribute to the profitable adoption of ICT. Some of these factors are inherently linked to the structure of the ICT sector, while others are shaped by public policies. ICT-specific factors include:

- The *ICT sector* contributes to productivity growth through technological change. The sector is innovative and undertakes significant amounts of knowledge investments, with *R&D* shares largely exceeding the average shares of most other industries. ICT R&D effort in Europe is 25% of total R&D in the business sector, well above the weight of the sector in the economy amounting to 5% of GDP. Stimulating R&D in ICT is therefore crucial to the productivity revival.
- The fragmentation of the European market does not facilitate the creation of a large European ICT producing sector. The *Single Market* matters. The exploitation of economies of scale and a large market size facilitate ICT diffusion. The regulatory framework for electronic communications plays a fundamental role in the creation of a truly European single market for ICTs. But fragmentation might also come from the lack of cross-border interoperability or the multiplicity of regimes in fields such as intellectual property rights, standardization or trust and security.
- SMEs make up a large part of Europe's economy and represent 99% of all enterprises. SMEs are therefore a major source of jobs, entrepreneurial skills, innovation as well as of economic and social cohesion in the EU. However, SMEs lag behind in terms of ICT adoption. An integrated e-business policy should stimulate the productive use of ICT by SMEs, targeting the specificities of the European industrial structure.
- Finally, *ICT adoption by governments and availability of modern online services* may stimulate the use of ICT and enhance productivity gains by reducing start-up time and cutting red tape.

Facilitators and barriers of eBusiness

In the context of this paper, "facilitators" have been defined as factors that gave momentum to the implementation and enhanced the impact of a e-business support policy. Facilitators can be related to general trends in the business environment, to framework conditions in which a policy is implemented, or stem from access to specific resources. While policy initiatives cannot always have a direct influence on these factors, it is important to anticipate them and make use of them as good as possible (Damaskopoulos, Gatautis, Vitkauskaite, 2008).

Facilitators

The most common facilitator for e-business initiatives is the *commitment and support of industry associations*, in particular in sectoral initiatives. In fact, this is one of the strongest arguments in favor of a sectoral e-business policy approach, as it tends to make it easier to gain the commitment of associations if specific sectors are addressed. Without the active involvement of associations and /or other intermediaries, it is difficult to effectively reach a large number of SMEs. *SME e-business support policy initiatives are*

therefore well advised to actively seek the cooperation of trade and employers' associations (Damaskopoulos, Seppa, Gatautis, 2007).

Another important facilitator is the ability to *exploit synergies* by having access to resources from other initiatives or organizations. This is often the case if information society programs are designed in a systemic way, with specific initiatives (e.g. on e-business) being linked with each other. An example is the VERSO initiative (Finland), where participating companies could use the services and infrastructure of Tekes' international network and of other stakeholders involved in the policy.

A typical external facilitator, although with some ambivalence, is the increasing *competitive pressure* on SMEs to streamline their processes. In this situation, the motivation to introduce ICT-based innovation is high, if there is plausible evidence of the return-on-investment. Pressure can be exerted from two sources. First, "peer pressure" results from moves of competitors, e.g. if the rivalry in the marketplace increases and competitors start to adopt e-business. Second, the request of customers that their SME suppliers should use standardized data exchange tools can be the source. Many of the initiatives reported that market pressure has been an important driver of the active participation of SMEs in the activities.

However, even if there is market pressure, the *ease of participation* is another important facilitator mentioned by several initiatives, in particular when working with SMEs. The administrative requirements for companies to submit a project proposal must be reasonably low, as otherwise many companies shy away right from the start (Gatautis, 2007).

Barriers

A commonly found impediment for sectoral e-business initiatives is the issue of *competition* among companies in the target group. The sectoral focus and the involvement of companies that are part of the same sector or community inevitably leads to competition issues with possible conflicts of interest (Gatautis, 2008).

Lack of awareness, often combined with *mistrust* regarding ICT and ICT service providers (and their potential for improving SMEs' performance) is quite a common problem, not only in this kind of initiative. This may represent a significant barrier in the initial phase. Smaller companies can be hardly convinced about the efficacy of introducing new business practices and tools unless these are very simple and benefits can be proved.

Another issue frequently reported as a challenge are *costs*. Different approaches were adopted by the policy initiatives regarding the financial contributions requested from the SMEs for the service delivery. A few initiatives did not foresee any financial support for SME that were thus expected to sustain the full cost.

It is quite difficult to assess to what extent the financial support effectively contributed in convincing the SMEs to participate in the initiatives or, conversely, if the lack of any direct contribution should be considered as an indication of commitment from the participants. On the one hand, budgetary and financial constraints are regularly quoted as relevant barriers for many initiatives. On the other hand, the "*grant trap*", i.e. the participants' interest in money rather than in the initiative itself, tends to compromise initiatives.

Internal ICT and management knowledge: SMEs generally lack the human technological resources needed for ICT and e-commerce, because they focus on day-to-day operations and lack the time to understand the benefits of new technologies. Even when they are aware of the potential benefits of adopting e-business, they require know-how or qualified personnel. SMEs may also lack managerial understanding and skills for e-business. Successful integration of e-business requires many firms to restructure their business processes, to change organisational structures and to redefine their core competence and positions in the value chains. So, e-business tools cannot be successfully introduced and implemented without the visionary power and strategic decisions about how to apply ICT technologies for their business processes.

Network infrastructure issues: access and interoperability: The availability of a wide range of Internet connections and other communication services, preferably at competitive prices, is important in that it allows small businesses to choose different and appropriate services according to their specific needs and (initial) expectations from on-line activities. Fixed telecommunication networks are likely to continue to serve as the primary means of Internet access for many SMEs because of their relatively lower cost. However, as use of e-business increases, barriers related to network infrastructure seem to be higher for SMEs than large firms. Challenges include how to ensure interoperability with a range of different e-commerce systems and how to improve ICT management and organizational skills (Damaskopoulos, Gatautis, Vitkauskaitė, 2008).

Legal uncertainties: Most Internet e-business transactions are domestic rather than cross-border. Although there may be other reasons, such as the use of a common currency, differences in legal and

regulatory environments are one of the most important. Legal uncertainties and conflicting regulatory environments for cross-border transactions, especially B2C, may affect SMEs particularly strongly. There is neither a harmonized legal framework with rules pertaining to the determination of jurisdiction and applicable law nor mechanisms that ensure the cross-border enforcement of legal rulings. Small businesses can risk being sued in multiple jurisdictions under a number of inconsistent laws. More generally, the lack of a satisfactory redress mechanism in the event of a dispute may strongly discourage both B2B and B2C on-line transactions. Unlike large firms, which can afford to maintain a legal department, the cost of keeping abreast of developments in the target market's legislation and regulations and the cost of tackling the complex legal issues involved in cross-border transactions may be too high for many small businesses.

Barriers to the adoption of e-business are also changing over time and may vary along the adoption ladder. For some SMEs sophisticated in the use of e-commerce, the barriers mentioned above may be unimportant. But they may face other challenges as they change their management and organizational structures and restructure business processes to make better use of the internet and the potential of e-business.

Key support areas for eBusiness

The Lisbon Summit in March 2000 set the goal of making Europe the most dynamic knowledge based economy in the world by 2010. With European productivity growth rates fluctuating between 0.5% and 1%, the low uptake of ICTs by enterprises outside of the ICT sector in Europe is a contributing factor to the failure to catch up on the US. The relatively low levels of ICT usage (as distinct from ICT investments or ICT production) by European companies has also been identified by the Economist Intelligence Unit as the main differentiating factor in the US advantage over Europe in productivity growth. It also notes Europe's weaknesses are most acute among SMEs and that success in encouraging innovation and effective ICT usage by SMEs across all sectors of the economy will have a large impact on the EU economy's ability to remain competitive.

The European Commission has identified 3 factors that make it difficult for SMEs, in particular, to engage more fully with ICT and develop sustainable business practices (EC, 2006):

- 1) the relatively high costs associated with investments in ICT
- 2) the lack of technical and managerial skills and
- 3) reluctance on the part of SMEs to network with other enterprises.

Action by policy makers to entrench ICT-related managerial skills in the workforce has also been identified as one of the key imperatives for European policy makers and business leaders in creating a business environment where innovation can thrive and where the benefits of ICT are readily available at all levels of the economy.

The Commission's action lines are shaped by continuous technological advances with unpredictable economic and business consequences. *New software and service architectures are emerging that allow not only the integration of business processes within companies but also the networking of companies and totally new collaborative environments.* Key technologies enabling these advances are computer Grids and service-oriented architectures. Both are areas where the EU has demonstrated excellence and leadership in the related research (EC, 2007).

ICT can have a disruptive impact on companies and markets, thus driving innovation. Disruptive change is already evident in manufacturing (e.g. through *personalization / customisation*, i.e. inserting a service into a product), in retailing (through e-business, diffusion of RFID / electronic labeling, automation of points of sale and supply chains, and mobile commerce), and more recently in service industries (through radical improvements in the automatic creation and personalization of e-services, their support for physical services, and consequent improvements in productivity).

Leading trends in the EU suggest that further disruptions to companies and markets caused by advances in ICT in the coming years will most likely be threefold (EC, 2007):

- The emergence of an *"Internet of Things"* where everyday objects can make simple communications on-line, enabling for example detailed and timely knowledge of product location and life cycles to be compiled, as well as individual and dynamic prices for goods.
- The creation of *"innovation ecosystems"*; for example taking the form of SME networks which cooperate globally; dynamically exchanging resources, applications, services and knowledge.

Based on computerized representations of the world's economies and related business opportunities, such ecosystems will support radically new forms of business activity that respond very rapidly to market changes.

- *New forms of flexible and mobile teamwork; dynamic and agile communities of people working in new collaborative environments supported by the Internet.* To meet these challenges, enterprises have to reach key targets: increased flexibility, economies of scale and scope, cost reduction, shorter timelines, access to technologies, improved quality, and improved operational efficiency. A major effort will be required to achieve enterprise interoperability especially where the market fails to find solution.

Technological developments can translate into greater efficiency gains if investment in ICT is accompanied by reorganization of business processes. However, *skills shortages are an important constraint*. Between 2000 and 2004, ICT skills in the labor force did not significantly increase: the share of ICT specialists remaining constant around 3% and people with more general IT-skills remaining at around 18%. Yet competition, technological and organizational changes are also changing the occupational profile of the ICT sector itself, and the mix of skills it now requires. For example, digitization and related changes in electronic communications have reduced the need for traditional skills in maintenance and repair, and at the same time boosted demand for computer and electronic engineering professionals.

The following eBusiness support areas derive from EU and EU members states analysis:

- *Business environment:* A healthy business environment is fundamental for firms to thrive and benefit from ICT use. This includes a transparent, open and competitive business framework, clear independent rule of law for all firms, easy set up and dissolution of businesses, transparent, simple and accessible corporate regulation, and equal and stable legal treatment for national and cross-border transactions (Vitkauskaite, Gatautis, 2008).
- *Skills upgrading:* Lack of ICT skills and business skills are widespread impediments to effective uptake once adoption decisions are made. Governments have major roles in providing basic ICT skills in compulsory schooling, and an important role in conjunction with education institutions, business, and individuals in providing the framework to encourage ICT skill formation at higher levels, in vocational training and in ongoing lifelong learning.
- *Network infrastructure:* Encourage rollout and use of quality infrastructure at affordable prices. Broadband connectivity is a key component in ICT development, adoption and use. It accelerates the contribution of ICT to economic growth, facilitates innovation, and promotes efficiency, network effects and positive externalities. The development of broadband markets, efficient and innovative supply arrangements, and effective use of broadband services require policies that: promote effective competition and continue to stress liberalization in infrastructure, network services and applications across different technological platforms; encourage investment in new technological infrastructure, content and applications; and technology neutrality among competing and developing technologies to encourage interoperability, innovation and expand choice. Public financial assistance to expand coverage for under-served groups and remote areas could complement private investment where appropriate, provided it does not pre-empt private sector initiative or inhibit competition.
- *Trust infrastructure:* Get the regulatory infrastructure right for trust, security, privacy and consumer protection. Essential are a culture of security to enhance trust in the use of ICT, effective enforcement of privacy and consumer protection, and combating cyber-crime and spam. Strengthened cross-border co-operation between all stakeholders is necessary to reach these goals. Of particular relevance for small firms are low-cost on-line dispute resolution mechanisms among firms and between firms and consumers.
- *Digital products and information services:* These are an increasingly significant part of economic activity and they offer important opportunities to small firms. Government and the private sector have key roles in facilitating content availability across all platforms and encouraging local development of new content, including content from public sources.
- *Intangible investments and assets:* Firms increasingly rely on intangible investments and assets (skills, organization, software, networks) for competitiveness and growth. However common frameworks to identify, measure and report intangible investments and assets still need to be developed and be widely accepted. There is a significant role for governments in conjunction with

business associations and accounting bodies to encourage business to develop and use systems which recognize and report intangibles in ways that can be reliably used by investors, valued by capital markets and guide better management practices.

- *Information:* SMEs may lack objective information regarding the benefits and costs of adoption of ICT. The private sector (*e.g.* business associations) and government have a role, and can provide information about service available and when necessary improve coordination of government information on the benefits of adoption and use of ICT, for example case studies and good-practice demonstrations to tackle market failures in information supply.
- *Government on-line:* On-line provision of government information and services can increase the efficiency and coverage of public service delivery to small firms, and act as a model user and standard-setter for ICT adoption by small firms. As model users of broadband, government can demonstrate the potential of broadband-based services and content, provide demonstration and “pull-through” mechanism for small firms. Government demand aggregation to provide services can help spread new services more widely. Education, general government information and services, and provision of government services to businesses and citizens can all potentially benefit from the use of new high-speed infrastructure and services, and should be given priority in government strategies.

Proposed eBusiness support framework

The mentioned areas covers wide range of directions and initiative needed to support eBusiness development. The presented framework is detailed by objectives at different levels.

1 table. eBusiness support objectives at different levels

eBusiness support objectives	Micro level: enterprise level	Meso level: networks and regions level	Macro level: national level
Business environment		Competitiveness/collaboration framework Administration reform	Competitiveness/collaboration framework Regulatory framework Administration reform Tax reporting procedures
e-skills	Measuring and mapping existing and emerging e-business management skills	Measuring and mapping existing and emerging e-business management skills Measuring and mapping existing and emerging e-business skills Measuring and mapping the impact of ICT on business along functional, sectoral and regional dimensions Designing e-business skills development programs Intensive training courses Best practice dissemination portal E-business handbooks Specific targeted training	Measuring and mapping existing and emerging e-business management skills Measuring and mapping existing and emerging e-business skills Measuring and mapping the impact of ICT on business along functional, sectoral and regional dimensions Designing e-business skills development programs Intensive training courses Best practice dissemination portal National e-business skills support program

eBusiness support objectives	Micro level: enterprise level	Meso level: networks and regions level	Macro level: national level
		programs	
Network infrastructure	Network services and applications Open source solutions: Software development Training Collaboration platforms	Government investment in e-business development: Digital Business Ecosystems Networking infrastructure Clustering programs Open source solutions: Software development Training Collaboration platforms	Government investment in e-business development: Digital Business Ecosystems Networking infrastructure Clustering programs Open source solutions: Software development Training Collaboration platforms
Trust infrastructure	IPRs Security Privacy	Collaboration and knowledge sharing across SMEs Trust across SMEs and SMEs and public policy makers	Collaboration and knowledge sharing across SMEs IPRs Security Privacy
Digital services and products		Provision of digital content relevant to SMEs by business associations	Provision of digital content relevant to SMEs by government
Intangible investments and assets		Assessment of intangible assets on a regional basis Methods for measuring intangible assets on a regional basis	Assessment of the role of business associations and government
Governmental services		The quality of government digital information available to SMEs The quality of government digital information available to SMEs such as e-procurement	The quality of government digital information available to SMEs The quality of government digital information available to SMEs such as e-procurement

Conclusions

Most of SMEs still lack behind eBusiness adoption. Principal reasons for non-adoption are lack of applicability and little incentive to change business models when returns are unclear. SMEs also face generic barriers to adoption including trust and transaction security and IPR concerns, and challenges in areas of management skills, technological capabilities, productivity and competitiveness. The issues for governments throughout the European Union (EU) are to foster appropriate business environments for e-business and ICT uptake, and target programs to overcome market failures to the extent that they are needed in particular areas (e.g. skill formation, specialized information). Governments have a range of SME e-business and internet use

programs. However commercial considerations and potential returns are the principal drivers of SME adoption and profitable use.

The proposed eBusiness support framework identifies key areas of policy support - Business environment, Skills upgrading, Network infrastructure, Trust infrastructure, Digital products and information services, Intangible investments and assets, Information, Government on-line. These areas the key objectives of eBusiness support policy are mapped and addressed around key dimensions of e-business (functional, sectoral, and regional/spatial) on three distinct levels (micro: the level of the firm, meso: the level of the region, and macro: national/international).

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