

eBusiness Policy Support Framework

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SMEs are slower than large firms to adopt new ICT unless effective use of ICT and performing operations electronically (eBusiness) across all sectors of the economy can act as a driver to increase competitiveness. 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. 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 eBusiness 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 eBusiness and internet use programs. However, commercial considerations and potential returns are the principal drivers of SME adoption and profitable use.

The key drivers for enabling eBusiness development are commitment and support of industry associations, in particular in sectoral initiatives, synergies by having access to resources from other initiatives or organizations, competitive pressure and ease of participation.

The key barriers slowing ICT adoption are competition among companies in the target group, Lack of awareness, often combined with mistrust regarding ICT and ICT service providers, costs, lack of internal ICT and management knowledge, Network infrastructure issues: access and interoperability, Legal uncertainties.

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:

- 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.*

The proposed framework summarizes the main policy directions derived from the analysis and the key areas of eBusiness support - Business environment, Skills upgrading, Network infrastructure, Trust infrastructure, Digital products and information services, Intangible investments and assets, Information, Government on-line.

Finally the paper maps proposed key eBusiness support areas around key dimensions of eBusiness (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).

Keywords: eBusiness, ICT impact, SMEs, support policy framework.

Introduction

The evolution of eBusiness or the uptake of eBusiness 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 eBusiness (Vitkauskaite, 2009).

In 1997, IBM coined the term 'eBusiness' 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 eBusiness uptake, among other things. Ever since, eBusiness policy has been at central focus on regional, national, and European level. eBusiness support policy is usually targeted to encourage and assist small and medium size enterprises (SMEs), to use Information and Communication Technologies 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.

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 (Gatautis, 2008a). The issues for governments throughout the European Union (EU) are to foster appropriate business environments for eBusiness 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 eBusiness and internet use programs. However, commercial considerations and potential returns are the principal drivers of SME adoption and profitable use (Gatautis, 2008b).

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.

eBusiness impact

The effects and impact of eBusiness can be mapped along three dimensions: business functions, the structure and composition of sectors, and regional or spatial aspects of economic and business processes.

ICT impact on business functions: Economic research has confirmed the impact of ICT on firms' productivity. A common observation is that this effect has been larger among US enterprises over the past 10-15 years than in EU enterprises. This has been a major concern of EU policy for years. In 2006, *eBusiness W@tch* asked companies across the EU to assess the impact of ICT on their own business. The "efficiency of business processes" and "work organization" are the areas where most companies have experienced positive effects (see Exhibit 2). This confirms, once again, that ICT is a key instrument to optimize linkages in the internal value chain and across enterprises. As a result, 55% of the firms interviewed report positive productivity effects. Customer service is another area where many companies (52%) observe positive effects from ICT; in telecommunications, the figure rises by as much as 75%. Interestingly, even in manufacturing sectors, more companies report positive ICT effects on customer service than on reducing procurement costs. Only a minority of a report (or admit) negative effects in any of the business areas surveyed. The remainder have not observed any effect from ICT, or are undecided.

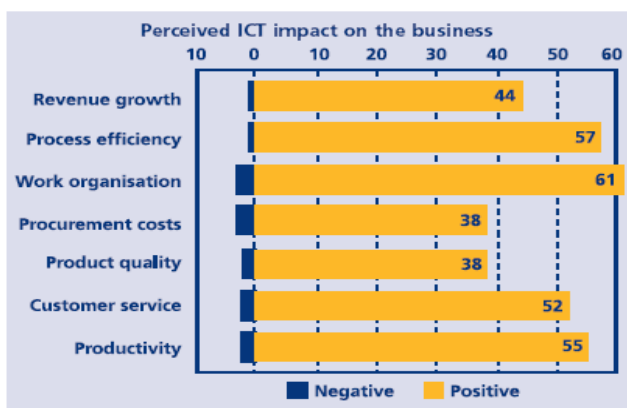


Figure 1: Perceived ICT impact on the business Source: *eBusiness W@tch* (2006).

Companies expect that ICT will have a "high impact" in the future particularly for management and accounting, as well as for marketing and customer service (see exhibit). The anticipated impact depends, of course, on the industry and the size of a company. For example, ICT effects on production processes will be more significant for manufacturing companies. In fact, firms representing about 60% of the pulp and paper industry, ICT manufacturing and shipbuilding expect a high or medium impact on production, compared to about 40% in construction or tourism. The same applies to effects on logistics.

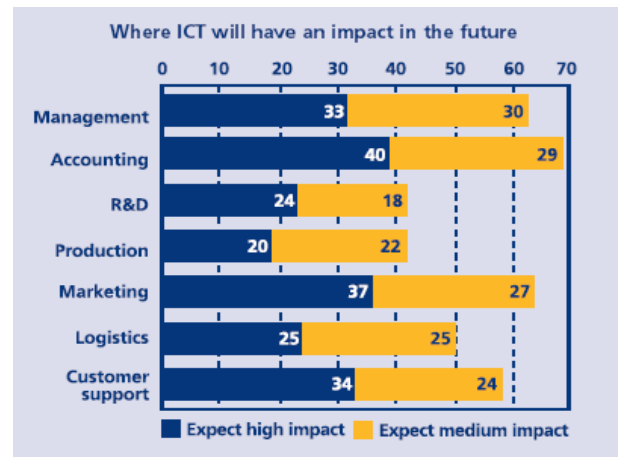


Figure 2: Where ICT will have an impact in the future Source: *eBusiness W@tch* (2006).

Firms expect that ICT will continue to have a significant impact on how they do their business in the future. In particular, they believe that ICT will become even more important as a tool to support planning, decision making and controlling. Management and controlling functions in an enterprise depend critically on ICT systems. They provide information faster, more flexibly and more concisely than would otherwise be possible. In larger enterprises, many of the regular management reports (e.g. from controlling) are automatically generated from ICT based information systems. It is interesting that marketing and customer support have overtaken production and logistics as primary application areas for ICT in the scenario of large firms. This applies not only to service sectors such as tourism and telecommunications (obvious for these industries), but increasingly also to manufacturing sectors.

A more detailed picture of prevailing eBusiness practices emerges when we look at the specific functions of business and the uses of ICT. Connectivity and basic ICT uptake have visibly progressed since 2005: By 2007, 77% of all businesses had a broadband connection (97% of large enterprises and 77% of SMEs) and 77% were using the Internet for dealing with banks. In addition, enterprises started making significant use of e-government services, stimulated by progress in the greater availability and sophistication of online public services (Eurostat, Survey on ICT use in EU enterprises).

As it has been highlighted earlier, the uptake of ICT by businesses yields important economic benefits as long as it is accompanied by investment in business reorganization. However, evidence of the potential impact of ICT on the

efficiency of enterprises is mixed: while progress has been made in the use of applications for the automatic exchange of information inside enterprises the use of ICT for transactions with business partners is still limited to a small subset of enterprises (Seltsikas, Curry, 2002). Only 15% of all enterprises are selling online and slightly fewer have established automatic links with their business partners. *The challenges hampering electronic linking beyond enterprise boundaries are interoperability and standards issues as well as legal concerns*, and are particularly burdensome for SMEs (Charalabidis, Askounis, 2007).

Sectoral Differences in eBusiness Adoption: The intensity, focus and impact of eBusiness depend on the business activity of companies, and on the configuration of the value system in which these companies operate. In manufacturing sectors, companies focus on procurement processes, optimising supply chain management, and integrating with retail and distribution. In a project-oriented business such as construction, applications supporting project management have a high potential (Gatautis, Vitkauskaitė, 2008). In tourism, online information and reservation services have become a commonplace. In telecommunications, it is hardly possible to make a clear distinction between the use of eBusiness by telecom firms themselves and the provision of related services to (business) customers. Hospitals aim at improving the efficiency of their internal processes as well as document exchanges within the health system by means of ICT, thus cutting costs (Figure 3). In this section we highlight these differences.

Application	e-Sourcing & procurement	e-Logistics/ SCM	e-Design & planning	e-Marketing & sales	ICT use for innovation	Perceived ICT significance
Sector						
Food & beverage	••	••••	••	••	••	••
Footwear	•	•	•	••	••	•
Pulp & paper	•••	•••	••	••	••	••
ICT manufacturing	••••	•••	•••	••	••••	•••
Cons. electronics	••••	••	•••	••	••••	•••
Shipbuilding	••	••	••••	•	••	••
Construction	••	••	•••	•	••	••
Tourism	•••	••	••	••••	••	•••
Telecoms	••••	••	•••	••••	••••	••••
Hospital activities	•••	••	••	•	•••	•••

* = below average relevance / diffusion; ** = average relevance / diffusion; *** = above average relevance / diffusion; **** = high relevance / diffusion; * = applies only for some sub-sectors / types of firms

Figure 3: The relevance of ICT and eBusiness in 10 sectors in 2006 (overall assessment based on survey results, desk research and case studies) Source: *eBusiness W@tch* (2006).

ICT related industries: ICT industries (ICT manufacturing, telecommunications) not only provide the equipment and services which other industries need for their eBusiness. They also make intensive use of these technologies as part of their own business processes. Both in supply-side and customer facing eBusiness activities they are forerunners. The telecommunications industry in particular sets standards for the use of ICT in marketing, sales and customer care. Even small telecommunications companies use eBusiness tools for this purpose in a way that could serve as a role model for activities by their counterparts in other industries.

Alignment among manufacturing industries eBusiness and SMEs: Among many of the non-ICT manufacturing industries, the pattern of sectoral eBusiness evolution has

been similar. Large companies drive the development, with supply-chain integration as a key objective. The 'digital divide' between the large players and the small companies is very pronounced in these industries. Examples from the sectors studied in 2006 are the food & beverages, the pulp & paper and the shipbuilding industry. In the footwear industry, ICT and eBusiness are generally used much less than in the other manufacturing industries. The sector is dominated by mostly small craft and trade companies, most of whom do not see ICT as a useful instrument to enhance their business.

Manufacturing: In general, large companies drive eBusiness development in manufacturing industries. Supply-chain integration is a key objective for many eBusiness initiatives. In parallel, innovative ICT-based forms of customer service are rapidly gaining momentum, even in B2B oriented sectors. However, the 'digital divide' between large and small companies is still very pronounced, for example in the food & beverage, pulp & paper and shipbuilding & repair industries. Among the six manufacturing sectors surveyed in 2006, electronic business activity has reached the highest level of intensity in the ICT-related industries, i.e. in ICT manufacturing and consumer electronics. In these industries, the prevalence of large companies, intense competition, frequent product changes and production dispersion drive eBusiness adoption. More than in other industries, companies feel a major impact from ICT on relations with business partners and on the entire value chain.

By contrast, in the footwear industry, ICT usage appears to be much lower than in other manufacturing industries. This applies even to larger firms from the sector. To some extent, the delayed ICT adoption in this industry could be a case of a 'chicken-and-egg' dilemma: on the one hand, the crisis of the footwear (and textile) industries in Europe makes companies feel that eBusiness is a secondary goal, as there are more pressing issues to be dealt with. On the other hand, a low level of investment in new technology creates opportunity costs, e.g. in form of lower productivity growth. This means it will be even more difficult for firms in Europe to compete with low-wage countries.

In the pulp and paper industry, the main impact of ICT is as a driver and enabler of process innovation in supply chain management and B2B trading processes. Large companies from the sector use ICT quite intensively in all application areas along the value chain: for procurement processes, in production, inbound and outbound logistics, and in marketing and customer service. In the food and beverages industry, supply chain management is likely to remain a key point of focus for the leading players in the future. The objective is not only to reduce costs. The globalisation of supply chain sourcing and intensified safety concerns have added important new links to the supply chain: the issues of food supply safety and traceability. A key application area for ICT in the shipbuilding and repair industry is the integration of engineering and production processes along the value chain. This integration has effects on the competitiveness of individual shipyards, as well as on the industry as a whole.

Construction: At first sight, eBusiness activity in the construction industry appears not to have the same intensity as in advanced manufacturing sectors. However, emerging technologies beyond ICT are likely to have a major impact on the sector. Technologies such as project web and 3D visualization tools are bound to have significant economic potential for the industry. For example, project oriented technologies such as project web and 3D visualization tools carry significant economic potential for this industry. Although they are not yet widely deployed in the sector, there are examples demonstrating that companies can benefit from using these technologies (Vitkauskaite, Gatautis, 2008).

Service sectors: e-Tourism is one of the most dynamic areas of eBusiness, with a major impact for nearly all players involved. ICT usage enables service providers to interact directly with customers, which puts severe pressure on traditional intermediaries such as travel agencies and tour operators. Telecommunications companies have a forerunner position as intensive users of ICT and eBusiness in almost all application areas. Moreover, the wide diffusion of eBusiness technologies among smaller enterprises too distinguishes this sector from most other industries. Almost all European hospitals have at least an electronic system for patient data and financial administration. However, few of them use more sophisticated systems, and departmental information systems are often not integrated with each other. Core drivers of eBusiness in hospitals include cost containment, improvement of quality of care, and state regulations, for example the implementation of Diagnosis-Related Groups.

Regions: geographic dimensions of eBusiness. Differences in ICT take-up and eBusiness practices across Member States are becoming increasingly evident. In international comparisons, EU enterprises are – on average – level with their counterparts in other advanced economies in their use of ICT. There are differences within the EU, however, particularly with regard to the average ICT maturity of smaller companies. In general, firms in Northern European countries are more advanced than companies in Southern European countries and from most of the new Member States in linking their business processes internally and with business partners (Figure 4).

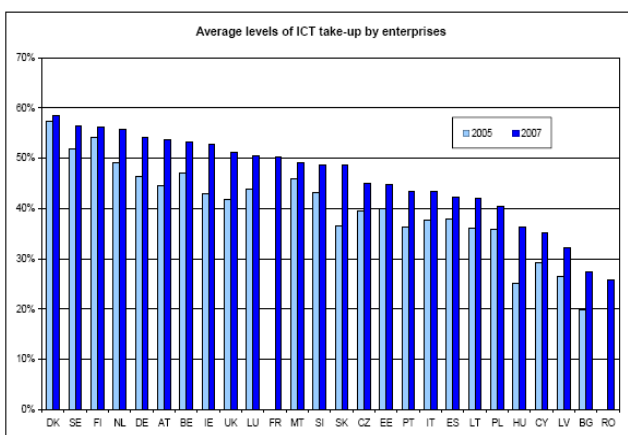


Figure 4: Average ICT take-up by enterprises (across countries) Source: Commission estimates based on the Eurostat Community Survey on ICT use in EU enterprises. Data refer to all the enterprises, excluding the financial sector.

With the possible exception of the Nordic countries, the location of a company is by no means a reliable predictor of its level of eBusiness activity. This may be due to structural characteristics. In Italy, for example, sectors dominated by small firms are much more prevalent than in other countries. Since large firms are more advanced in electronic business, aggregated data may point at a lower level of eBusiness activity in Italy. This reflects, at least to some extent, the structure of the economy rather than the overall e-maturity of firms. In contrast to Italy, the relative performance of French and Dutch companies is significantly better if the emphasis is on larger firms. These benchmarking results suggest a pronounced digital divide between small and large firms in these countries (European Commission, 2006).

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 eBusiness 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 eBusiness 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 eBusiness 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 eBusiness 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 eBusiness) 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 (IANIS+ eBusiness Work Group, 2007).

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 eBusiness. 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 (Davidaviciene, 2008).

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 eBusiness 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 (Gatautis, Neverauskas, 2005).

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 eBusiness, they require know-how or qualified personnel. SMEs may also lack managerial understanding and skills for eBusiness. Successful integration of eBusiness 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, eBusiness tools cannot be successfully introduced and implemented without the visionary power and strategic decisions about how to apply ICT technologies for their business processes (Gatautis, Gudauskas, 2006).

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 eBusiness 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 (Snieska, Simkunaite, 2009).

Legal uncertainties: Most Internet eBusiness 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 eBusiness 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 eBusiness.

Leading trends in eBusiness support practises at EU level

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 (Melnikas, 2008).

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 (European Commission, 2006a):

- 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 (European Commission, 2006a).

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.

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 eBusiness, 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) (Virvilaite, Saladiene, 2009).

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 (European Commission, 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 (EC, 2006).

The growth of ICT has always been marked by fluctuations of activity and there has been an element of boom and bust. It is estimated that there are 4.2 million ICT practitioners within the EU and that approximately 180 million people are using ICT at work. A study on the supply and demand of e-skills over the period 1998-2004 reported an increase in the estimated number of employed IT practitioners during this period of about 48 %. After a peak in 2001 a low point was reached in 2003. There is some evidence of a cycle, and the European e-Skills Forum warned that significant e-skills gaps will again appear and called for the preparation of a long-term e-skills agenda. A 2005 industry report predicted that there would be a shortage in 2008, across Europe, of up to half a million people with advanced networking technology skills.

ICT is one of the most global and pervasive technologies. ICT products and services and the corresponding jobs are broadly the same everywhere, and the ICT industry is operating on a world-wide basis. The ICT Task Force complains that Europe is still a patchwork of countries functioning under different regulatory systems. In addition, the adoption of best practice is too slow and an EU-wide approach is still lacking. The European e-Skills Forum has identified solutions bringing added-value at EU level, but these have so far not been implemented. For example, developing and retaining skills required for business success is a necessity to ensure that enterprises have employees with the right skills in the right jobs at the right time. For this purpose, many of them are developing ICT competence catalogues, processes, tools and strategies. Several countries have already set up ICT competence frameworks. Many enterprises operating in these countries have developed their competence inventories on them. Efforts to establish and update these proprietary inventories and systems are costly and could be shared for the benefit of enterprises and especially SMEs. Using a European e-competence framework would represent a useful solution in line with the ambitions of the single market.

The need to maintain and continuously upgrade e-skills stems from technological change and increasingly from internet-enabled global sourcing. New sources of ICT talent in emerging economies, especially India and China, imply the need for the adaptation of the EU workforce. Software programmers face commoditization of their skills, and some low- and middle-income workers face increasing risks to their jobs. The OECD estimates that around 20% of total employment could potentially be

affected by offshoring. *At the lower end of the qualification spectrum, de-skilling of workers often takes place as their know-how becomes codified making it relatively easy to outsource. Higher-level e-skills cannot be so easily encoded, which puts a premium on these skills in a EU workforce context.* This issue is debated in the media as the emergence of a significant restructuring of the labor market. Several sources report a deterioration of the image of the ICT sector and ICT work, which is reflected in the decline in the number of students starting ICT courses. Adding to the concerns related to the demographic decline, young people seem less and less interested in studying mathematics, sciences and technology, and the gender issue still remains. There is a need to communicate better with the public, especially young people, parents, teachers and women, and to adopt measures to facilitate the adaptation of the workforce.

The continuous development of ICT and changes in the corresponding e-skills requirements provides a complex, moving target for policy-makers. National educational and professional training systems are facing a huge challenge to deliver the skills needed by our economy and society. Despite their efforts, they still find it difficult to cope with the situation, and lifelong learning is still far from being a reality. New forms of partnerships and flexible approaches (such as those based on e-learning) need to be much more actively promoted (Kumpikaite, 2008). Industry complains *about growing gaps and mismatches between the supply and the demand of specific e-skills.* The European e-Skills Forum and the ICT Task Force has warned against the rise of “parallel universes” between industry-based and government-supported education in ICT. The experience of embedding ICT industry e-skills certifications within the national qualification framework, such as pioneered in the United Kingdom and some new Member States, provides interesting case-studies that should be reviewed and shared between Member States. The Commission has stressed that qualifications should increasingly be defined in terms of expected learning outcomes to encourage education and training providers to focus on the competence needs of individuals and employers, and not on the duration, location or organization of the institutions.

The traditional notion of literacy needs to embrace the complete set of e-skills and media competences required in a knowledge-based economy and society. Eurostat figures indicate that 37 % of the EU population has no computer skills whatsoever and that more than 60 % of people not educated beyond lower secondary level have no basic e-skills. A lack of e-skills will prevent these people from using e-commerce and e-government applications and participating fully in the information society. Furthermore, the lack of e-skills exacerbates social and educational disadvantages, inhibiting lifelong learning and up-skilling. The market on its own cannot close the digital divide. *Innovative public measures and multi-stakeholder partnerships* are at the heart of both the Recommendation of the European Parliament and of the Council on key competences for lifelong learning and also of the Riga Declaration which was adopted at the Ministerial Conference on e-Inclusion in June 2006.

Innovation requires a regulatory environment that is predictable, accommodates and even encourages new developments in goods and services, protects intellectual property and provides open, interoperable standards. This needs the **enhancement of the regulatory environment and ensuring of an effective IPR framework.** Progress has already been made on Better Regulation at both European and national level. Reducing the administrative cost of regulation of enterprises, will be a significant contribution to innovative activities. At the same time, the regulatory environment should also reinforce consumer confidence by ensuring that protection measures that exist are applied effectively to innovative products in the same way as to existing products. The assessment of the impact of regulation on innovation needs to be enhanced. Regulation should be predictable, flexible, simple and effective. Regulations that focus on the policy goal, rather than on the technical solution through which it is achieved, leave space for innovative solutions. The Commission will continue to encourage this type of legislation, as it has done through its “New approach” to product regulation. Furthermore, it will encourage the timely adoption of ambitious standards that focus on performance rather than technology.

A clear priority for the EU is to close the important gaps in the Single Market, particularly in services, and this includes: streamlining of procedures, reduction of administrative burdens, and promoting transborder market access in particular for public procurement. Applications would include: interoperable provision of pan-European eGovernment services and the crossborder recognition of eSignatures. The legal framework governing the information society and the sometimes fragmented implementation in the Member States can make it difficult to exploit the potential of ICTs on a European scale, risking increasing barriers to cross-border online trade. It is necessary to address overlapping requirements, gaps or inconsistencies in implementation and to keep pace with technological change to ensure the efficient functioning of the “e- Internal Market”. For example, eInvoicing will be addressed during 2008 and 2009 by an Expert Group that will identify regulatory shortcomings and eInvoicing business requirements, and will propose to the Commission by end-2009 a framework to promote full recognition of e-invoices in cross-border transactions.

The Commission will act to improve the institutional framework of *European standardisation*. In particular, it will seek to speed up the adoption of open, interoperable standards and to better integrate SMEs and consumers into the standards-setting process. In fast-moving technology fields, such as ICT, private company specifications can easily become *de-facto* industry standards. If this happens, it is important that they should not become a barrier to market access. Further, as demonstrated in the area of mobile communications, the rapid setting of open, interoperable standards is key to global success for European companies. The Commission will continue to work with the European Standards Organisations and societal stakeholders to achieve this result. It will ensure that European legislation facilitates the use of such standards.

Promoting cooperation between stakeholders: Being part of a cluster is an important competitive strength for

business. *Clusters* help to close the gap between business, research and resources, thereby bringing knowledge faster to the market. Successful clusters promote intense competition along with co-operation. They enhance productivity, attract investment, promote research, strengthen the industrial base, and develop specific products or services and become a focus for developing skills. World-class clusters attract brilliant minds that sustain innovation – Silicon Valley is the best-known example. That is why “cluster policy” has become an important element of Member States' innovation policies as reflected in the National Reform Programs, and also why cluster policies are supported by Community instruments. The new generation of European regional policy programs for 2007-2013 promotes an approach based on regional innovative clusters, not just in developed urban centres but also in poorer or rural regions (Snieska, Bruneckiene, 2009). It is at the level of the region that many businesses, especially SMEs, interact with one another and with centres of learning and technology. This makes proximity a key factor in the innovation process and increases the effectiveness of innovation policy if tailored to regional and local needs (Rees, 2008). The new State aid Framework for Research, Development and Innovation, to be adopted by the Commission before the end of this year, should help Member States better target their existing support budgets to promote, *inter alia*, innovative clusters (Damaskopoulos, Gatautis, Vitkauskaitė, 2008).

At the same time, for Europe to tap the full potential of its clusters, they must also achieve a critical mass and strategic orientation through ***more and better trans-national European cooperation***, across national borders. This raises the prospect of generating world-class European clusters. To support this process, the Commission will in particular map the strengths of national and cross-border clusters and stimulate practical cooperation between regional authorities and relevant economic actors or associations, supporting co-operation between cluster initiatives.

The knowledge economy relies on the transfer of knowledge from those who generate it to those who use it and can build on it. The transfer of knowledge between public research organizations and third parties (including industry and civil society organizations) needs to improve and the Member States are invited to take this into account in their innovation policies. Doing so will help to build new market opportunities on research. Public research organizations, which account for about one third of the total R&D activity in Europe, have a particularly important role to play in this. All of the many forms of knowledge transfer - contract research, collaborative and co-operative research, licensing, publications and exchanges of skilled researchers between the public and private sectors - need to be further developed and better managed.

Furthermore, the Commission will streamline its ***business support and information networks***. This will encourage and facilitate the uptake of new ideas and their transformation into marketable products and services, especially by SMEs. In particular it will help ensure that the Innovation Relay Centres and Euro Info Centres provide top class business services to SMEs.

Financial boost to research and innovation: Innovation requires excellent research, planned and carried out in two-way communication between researchers and business (Banyte, Salickaite, 2008). The European research activities have already become more focused through the *European Technology Platforms* which, led by industry, bring together stakeholders including the research community and the financial world. Although not an instrument of the Framework Programme for Research and Technological Development, the large majority of research agendas defined by the platforms have been taken into account in formulating the Commission's proposals for the Seventh Framework Programme. Also, at the European Council in March 2006, all Member States have set national targets for research which, if met, would raise the level of R&D investment in the European Union from 1.9% of GDP to 2.6% by 2010. This is a step in the right direction, but the key challenge now lies in creating an environment conducive to private investment in research, development and innovation.

The role of governments: The public sector itself must lead the way by adopting innovative approaches and exploiting new technologies and procedures in public administration. This will enable it to better address the needs of citizens and increase the quality of public service, including by improving productivity.

Improved *public procurement* practices can help foster market uptake of innovative products and services, while raising the quality of public services in markets where the public sector is a significant purchaser. The Contracting Authorities can do this by making sure that they describe their needs in a broad and performance based way, which allows the bidders to propose better and a wider variety of solutions to the problem to be solved. Public purchasers need to become “intelligent customers”, who plan what to buy, how to buy it and who will buy it (Charalabidis, Askounis, 2006).

As suggested by the Aho report, they should also take into account costs incurred during the whole life of a product or service and not simply focus on the costs at the time of purchase. Public purchasers could also join forces to exchange expertise and ideas and to reach a critical size of the order. This would stimulate demand for innovation, while allowing public authorities to acquire higher quality products and services. The so-called pre-commercial procurement is a yet untapped opportunity for public authorities in Europe. The procurement Directives¹³ adopted in 2004 offer scope for innovation-oriented tendering. Furthermore, these Directives also include provisions expected to have a positive impact on facilitating the access and participation of SMEs in public procurement markets. Public entities should use these opportunities. Member States are also encouraged to take concrete measures to stimulate innovation and research through improved public procurement practices in their Lisbon National Reform Programmes, as proposed in the Integrated Guidelines for Growth and Jobs. A Handbook on the possibilities the public procurement directives offer for commercial and pre-commercial innovation-oriented tendering is being prepared by the Commission services (EC, 2006).

e-Government: Europe continues to make progress in the supply of online public services and thereby is making major steps towards the goals of the Lisbon Strategy and the *i2010 e-Government* action plan. Businesses are well served and suitably engaged. Citizens are generally less well served despite the fact that they are increasingly exposed to and versed in web services. This has the effect of widening the gap between the public and commercial online worlds. The challenge is to close this gap, delivering an experience that is attractive to citizens and meets their needs efficiently, consistently and economically.

Basic services in all Member States are available online, and there has been a significant increase in the level of sophistication. However, there is a variation of around a 50 percentage points between the most and least advanced countries. The gap between the leader (now at 100%) and the worst performer is 85 percentage points. This variation reflects the inherent difficulty in ensuring the full delivery of integrated ('front-to-back-office'), interoperable services, particularly in large and decentralized countries. Among the top ten performers, only three (UK, FR, DE) are large Member States.

There is a strong correlation between the sophistication and availability of e-government services. This emphasizes that achieving fully-online availability requires front-office and back-office integration, and a real change in approach to service delivery. Since this typically requires consequent investments and political resolve, it will typically take sustained effort and time to close the gap. Centralized governance structures therefore may typically have an advantage in making swifter change (Gatautis, Kulvietis, Vitkauskaite, 2009).

e-Inclusion: The *i2010* initiative has succeeded in bringing more and more people online: 2007 was the first year when over half of the EU population used the Internet regularly (51% of EU citizens accessed the Internet at least once a week, up 8 percentage points over 2006). Regular Internet usage has risen across the whole EU27, albeit at different rates. Yet, 40% of the EU population has never used the Internet. This issue is addressed by the *i2010 e-Inclusion* initiative. A Communication adopted in 2007 measured progress since 2005 on the various e-Inclusion targets set by the Riga Ministerial Declaration, which include halving the disparities in Internet use and digital literacy levels between disadvantaged groups and the EU population as a whole by 2010. To monitor disparities in Internet use and digital literacy over time, two penetration rate ratio indexes were used to measure the difference between potentially disadvantaged groups and the EU average, which has been shown to be the most appropriate way to track and analyze such disparities over time. These show that there remain large disparities in Internet use and digital literacy levels between the overall EU population and the various disadvantaged groups. Comparison of Internet use by socio economic group between 2005 and 2007 shows there has been some reduction in disparities.

Leading eBusiness trends at micro-level:

- *Supply chain integration is key:* Increasingly, competition occurs not only within a company's value system, but between entire networks. Optimising the supply chain by means of ICT, e.g. by integrating with

distribution networks, is a key factor in achieving competitive advantage.

- *Better solutions for SMEs:* Until recently, the ICT industry was often criticised for failing to provide adequate eBusiness solutions for small and medium-sized firms. This is changing. Driven by market requirements, and enabled by technological advances, ICT companies are increasingly addressing the SME market. They are developing affordable, smaller-sized solutions (e.g. ERP and CRM suites) that can be connected with the more powerful systems of large firms.

- *ICT for customer service:* eBusiness is not just about cutting costs: service companies have always used ICT for marketing purposes and customer service. Now, manufacturing companies are increasingly devoting attention to using eBusiness for better service to their customers, with the strategic goal of creating sustained relationships with them.

- *Growing maturity of new technologies:* Applications based on RFID technology, the use of Voice-over-IP, and mobile eBusiness applications using wireless technology have gained maturity. Although still not widely diffused, these emerging technologies have started to influence eBusiness.

Emerging eBusiness and new trends & issues ahead:

- *The "missing link":* eBusiness activities of large companies are maturing. They understand the benefits, and are steadily improving ICT tools to their own advantage. They have connected their systems to many of their major tier-1 suppliers for eBusiness. But supply chain integration often comes to a halt at that point: many of the small supply firms still cannot cope with system requirements, and they risk exclusion from the value network. Policy and industry initiatives are increasingly addressing this issue.

- *ICT outsourcing, out-tasking etc:* Spectacular, large-scale ICT outsourcing projects will be the exception in the future. New and more flexible arrangements with external service providers (e.g. for specific tasks, or for maintenance services) will often be preferred.

- *Open source and software as a service:* Business models for software service provision could change in the future. Rather than just selling a product, the service component is becoming increasingly important. Growth in the use of open source (OS) software components is reinforcing this trend. These changes can be a challenge for business advisors; the range of products and service models from which companies can choose has increased.

- *Information management:* The role of information management (IM) in companies may further increase in importance. IM will take on the role of intermediaries between the traditional ICT department, the management and the operational departments of a company (i.e. the internal ICT users) (EBusiness W@tch, 2006).

eBusiness support framework

The above mentioned areas cover wide range of directions and initiative needed to support eBusiness development. The summary of these directions is presented in proposed eBusiness support framework which is detailed by objectives at different levels.

Table 1

eBusiness support objectives at different levels

eBusiness support objectives	Micro level: enterprise level	Meso level: networks and regions level	Macro level: national level
<i>Business environment</i>		Competitiveness/collaboration framework Administration reform	Competitiveness/collaboration framework Regulatory framework Administration reform Tax reporting procedures
<i>E-skills</i>	Measuring and mapping existing and emerging eBusiness management skills	Measuring and mapping existing and emerging eBusiness management skills Measuring and mapping existing and emerging eBusiness skills Measuring and mapping the impact of ICT on business along functional, sectoral and regional dimensions Designing eBusiness skills development programs Intensive training courses Best practice dissemination portal EBusiness handbooks Specific targeted training programs	Measuring and mapping existing and emerging eBusiness management skills Measuring and mapping existing and emerging eBusiness skills Measuring and mapping the impact of ICT on business along functional, sectoral and regional dimensions Designing eBusiness skills development programs Intensive training courses Best practice dissemination portal National eBusiness skills support program
<i>Network infrastructure</i>	Network services and applications Open source solutions: Software development Training Collaboration platforms	Government investment in eBusiness development: Digital Business Ecosystems Networking infrastructure Clustering programs Open source solutions: Software development Training Collaboration platforms	Government investment in eBusiness development: Digital Business Ecosystems Networking infrastructure Clustering programs Open source solutions: Software development Training Collaboration platforms
<i>Trust infrastructure</i>	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
<i>Digital services and products</i>		Provision of digital content relevant to SMEs by business associations	Provision of digital content relevant to SMEs by government
<i>Intangible investments and assets</i>		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
<i>Governmental services</i>		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 eBusiness 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 eBusiness 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:* 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.

- *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 is 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. Low-cost on-line dispute resolution mechanisms among firms and between firms and consumers are of particular relevance for small firms.

- *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.

The proposed eBusiness support key areas are mapped and addressed around key dimensions of eBusiness (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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References

1. Damaskopoulos, T., Gatautis, R., & Vitkauskaitė, E. (2008). Extended and dynamics clustering of SMEs. *Inžinerine Ekonomika-Engineering Economics*(1), 11-21.
2. I2010: Innovation and Investment in R&D, Adoption of Information & Communication Technologies (ICT) by Business, European Commission, Brussels 2006.
3. IANIS+ eBusiness Work Group: eris@ Guide to Regional eAdoption Initiatives for Business & Communities. 2007
4. Gatautis, R. (2008). The Impact of ICT on Public and Private Sectors in Lithuania. *Inžinerine Ekonomika-Engineering Economics*(4), 18-28.
5. Gatautis, R. (2008). Barriers of eCommerce development for SMEs: Lithuania case. *Information Management in the Modern Organizations. Trends & Solutions*, 1(2), 1062-1068
6. Communication from the commission to the council, the European parliament, the European economic and social committee and the committee of the regions: e-skills for the 21st century: fostering competitiveness, growth and jobs, Brussels, 2007.
7. Communication from the commission to the council, the European parliament, the European economic and social committee and the committee of the regions: Putting knowledge into practice: A broad-based innovation strategy for the EU, Brussels, 2006.
8. Sectoral eBusiness Policies in Support of SMEs: Innovative approaches, good practices and lessons to be learned, eBusiness Watch, European Commission, Bonn, 2006.
9. Seppa, M., Damaskopoulos, T. et al. (2007). Evolution of eBusiness policy in Europe: From technology-push to digital business ecosystems, innovation partnerships, and living labs. *Changes in Social and Business Environment*, Proceedings, 228-234.
10. Vitkauskaitė, E.; & Gatautis, R. (2008). E-procurement perspectives in construction sector SMEs. *Journal of civil engineering and management*. 14(4), 287-294.
11. Gatautis, R., & Vitkauskaitė, E. (2008). External web services for construction sector SMEs. *25th International Symposium on Automation and Robotics in Construction – Isarc*. 465-469
12. Gatautis, R., & Neverauskas, B. (2005). E-commerce adoption in transition economies: SMEs perspectives in Lithuania. *Seventh International Conference on Electronic Commerce*, 1(2), 109-113
13. Gatautis, R., & Gudauskas, R. (2006). E-business development in Lithuania: Problems and perspectives. *Fifth Wuhan International Conference on E-Business*, 1(3), 176-183
14. Davidaviciene, V. (2008). Change Management Decisions in the Information Age. *Journal of Business Economics and Management* 9(4), 299-307.
15. Rees, C. J. (2008). Organisational Change and Development: Perspectives on theory and practice. *Journal of Business Economics and Management* 9(2), 87-89.
16. Kumpikaite, V. (2008). Human resource development in learning organization. *Journal of Business Economics and Management* 9(1), 25-31.
17. Melnikas, B. (2008). The Knowledge-Based Economy in the European Union: Innovations, Networking and Transformation Strategies. *Transformations in Business & Economics* 7(3), 170-192.
18. Virvilaite, R., Saladiene, V., & Skindaras, D. (2009). The Relationship between Price and Loyalty in Services Industry. *Inžinerine Ekonomika-Engineering Economics*(3), 96-104.
19. Gatautis, R., Kulvietis, G., & Vitkauskaitė, E. (2009). Lithuanian eGovernment Interoperability Model." *Inžinerine Ekonomika-Engineering Economics*(2), 38-48.
20. Snieska, V., & Simkunaite, I. (2009). Socio-Economic Impact of Infrastructure Investments. *Inžinerine Ekonomika-Engineering Economics*(3), 16-25.
21. Banyte, J., & Salickaite, R. (2008). Successful diffusion and adoption of innovation as a means to increase competitiveness of enterprises. *Inžinerine Ekonomika-Engineering Economics*(1), 48-56.
22. Vitkauskaitė, E. (2009). *Kultūrinių skirtumų įtaka tinklapių turiniui*. Economics and management = Ekonomika ir vadyba [elektroninis išteklius] Kaunas university of technology. Kaunas, Technologija., 14, 541-552.
23. Snieska, V., & Bruneckiene, J. (2009). Measurement of Lithuanian Regions by Regional Competitiveness Index. *Inžinerine Ekonomika-Engineering Economics* (1), 45-57.
24. Seltsikas, P., W. Currie, L. et al. (2002). Strategic alliances in application service provision. *Issues and Trends of Information Technology Management in Contemporary Organizations*, 1(2), 726-730.
25. Charalabidis, Y., Askounis, D. et al. (2007). A model for assessing the impact of enterprise application interoperability in the typical European enterprise. *Enterprise Interoperability: New Challenges and Approaches*, 287-296
26. Charalabidis, Y., Askounis, D. et al. (2006). Organising municipal e-government systems: A multi-facet taxonomy of e-services for citizens and businesses. *Electronic Government*, Proceedings 4084: 195-206.

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e. Verslo plėtros paramos strateginės gairės

Santrauka

E. Verslo plėtojimas arba e. verslo praktiku panaudojimas tapo populiarus. Tačiau skirtingu įmonės gyvavimo laikotarpiu yra pritaikomi skirtingi IRT pagrįsti sprendimai. Šie sprendimai yra siejami su organizaciniais pokyčiais ir suvokimu, kaip IRT gali paveikti įmonės veiklą. Šis procesas neturėtų būti interpretuojamas kaip bendras ar deterministinis adaptacijos procesas, kurį galima pakartoti instituciniame kontekste. Vietoje to yra daug „aplinkos“ elementų: politikos, valstybinio valdymo, kompetentingumo / bendradarbiavimo galimybių, švietimo lygio ir kokybės, IRT infrastruktūros ir kt. veiksnių, sąlygojančių elektroninio verslo plėtimąsi.

Šiame straipsnyje nagrinėjamas *objektas* yra e. Verslo paramos politika. Straipsnio *tikslas* yra išanalizuoti e. Verslo koncepciją, e. Verslo plėtrą skatinančius ir stabdančius veiksnius, įvertinti vyraujančias e. Verslo rėmimo praktikas Europos Sąjungoje ir remiantis atlikta analize pateikti e. Verslo plėtos skatinimo strategines gaires. Tyrime taikyti sisteminės, loginės ir lyginamosios analizės *metodai*.

Svarbiausi rezultatai. SVĮ lėčiau nei didelės įmonės savo veikloje pritaiko IRT, taip pat kitas technologijas, nepaisant to, kad efektyvus IRT naudojimas visuose ekonomikos sektoriuose gali veikti kaip katalizatorius, didinantis tiek paties sektoriaus, tiek atskirų įmonių konkurencingumą. Toks IRT poveikis juntamas ne tik vienoje specifinėje pramonės šakoje ar sektoriuje, bet ir nacionalinėje ekonomikoje.

Elektroninis verslas, arba e. verslas – terminas, kurį 1997 pasiūlė kompanija IBM. Šis terminas pirmiausia apibūdino izoliuotą reiškinį, specifinę organizacijos vykdomą funkciją. Per tam tikrą laiką plačiai tapo priimtina, kad verslas ir verslo aplinka, remiantis e. Verslu išsiplėtoja iš elektroninės komercijos į IRT pagrįstą tinklo ekonomiką (e. ekonomiką). Šiame kontekste e. Verslas nesudaro atskiros ir izoliuotos funkcijos, apsiribojančios specifinėmis elektronikos sritimis, bet, sudaro esminio verslo proceso dalį. Kitaip tariant, šiandien e. Verslas yra verslas, nors jis apėmė aiškias dislokacijas besivystančioje pasaulinio masto skaitmeninėje ekonomikoje.

E. verslo poveikį galima įvardyti trimis dimensijomis: verslo funkcijomis, sektorių struktūra ir sandara, regioninių ar erdvinį ekonominių bei verslo procesų aspektais.

ES vyraujančios tendencijos rodo, kad kliūtys įmonėms ir rinkoms, kuriuos sukels IRT pažanga, ateinančiais metais bus trejopos:

- „*Daiktų interneto*“ atsiradimas, kuriame galės „*bendrauti*“ kasdieniai daiktai, taip padėsiantys laiku sužinoti detalią informaciją apie produkto vietą ir gyvavimo ciklus ir nustatytis individualias ir kintančias prekių ar paslaugų kainas.

- „*Inovacijų ekosistemas*“ sukūrimas; pavyzdžiui, SVĮ tinklų, per kuriuos galima bendradarbiauti pasauliniu mastu, kūrimas; dinaminiai išteklių, paslaugų mainai ir žinių pritaikymo galimybės. Remiantis kompiuteriniais pasaulio ekonomikų ir su jomis susijusių verslo galimybių pristatymais, tokios ekosistemas radikaliai parems naujas verslo veiklos formas, sparčiai prisitaikančias prie rinkos pokyčių.

- *Naujos lankstaus ir mobilus komandinio darbo formos; dinamiškos ir energingos žmonių, dirbančių naujose bendradarbiaujančiose aplinkose, kurias remia internetas, bendruomenės*. Norint įveikti šiuos iššūkius, bendrovės turi pasiekti pagrindinius tikslus: padidėjusį lankstumą, masto ir apimties ekonomiką, kainų mažinimą, galimybę naudotis technologijomis, pagerėjusią kokybę ir padidėjusį veiklos efektyvumą. Didžiausių pastangų reikės siekiant bendrovių sąveikumo, ypač tais atvejais, kai rinka nepasiūlo sprendimo.

Atlikta užsienio šalių patirties analizė leidžia teigti, kad pagrindinės IRT nepritaikymo priežastys yra sugebėjimų stoka (žinių apie e. verslą trūkumas) ir menkas suvokimas kokią įtaką IRT adaptavimas darys įmonės pelningumui. SVĮ taip pat susiduria su tokiais bendromis kliūtimis kaip pasitikėjimo trūkumu ir sandorių saugumu bei intelektualinės nuosavybės teisių (INT) problemomis, sunkumais valdymo įgūdžių srityje, technologiniais sugebėjimais, produktyvumu ir konkurencingumu.

Nors įvairių šalių vyriausybės turi daugybę SVĮ elektroninio verslo plėtos ir interneto naudojimo paramos programų, vis dėlto komerciniai sumetimai ir galimas pelnas yra pagrindiniai IRT pritaikymo ir pelningo naudojimo SVĮ veiksniai.

Toliau pateikiami atliekant analizę nustatyti pagrindiniai veiksniai, sąlygojantys e. Verslo plėtrą. Šie veiksniai nustato pagrindines sritis, kuriose turėtų būti koncentruojamos pastangos plėtoti e. Verslą:

- *Verslo aplinka*. Palanki verslo aplinka yra esminė, kad įmonės klestėtų ir gautų naudą iš IRT naudojimo. Verslo aplinka apima skaidrius, atvirus ir konkurencingus verslo modelius, aiškią, nepriklausomą įstatyminę aplinką visoms įmonėms, galimybės lengvai įsteigti ir likviduoti verslą, skaidrų, paprastą ir prieinamą korporacinį reguliavimą ir vienareikšmišką bei stabilų nacionalinių ir tarptautinių sandorių traktavimą.

- *Įgūdžių atnaujinimas*. IRT įgūdžių ir verslo įgūdžių stoka yra plačiai paplitusios IRT efektyvaus panaudojimo kliūtys. Vyriausybė vaidina pagrindinį vaidmenį, suteikdama pradinis IRT įgūdžius vykdant privalomą mokymą, ir svarbų vaidmenį, bendradarbiaudama su švietimo institucijomis, verslu ir pavieniais asmenimis, pateikdama gaires, kaip skatinti IRT įgūdžių formavimąsi aukštesniu lygiu, vykdant profesinį mokymą ir tolesnį visą gyvenimą trunkantį mokymą.

- *Tinklo infrastruktūra*. Infrastruktūros plėtra sudaro prielaidas įmonėms naudoti technologijas prieinamomis kainomis. Plačiajuosčio interneto ryšio plėtra yra pagrindinis IRT vystymo, pritaikymo ir naudojimo komponentas. Jis paspartina IRT prisidėjimą prie ekonominio augimo, palengvina inovacijų plėtrą ir skatina efektyvumą.

- *Pasitikėjimo infrastruktūra*. Klausimai susiję su pasitikėjimu, privatumu, saugumu ir vartotojų teisių apsauga yra labai svarbūs. Saugumo kultūra yra esminis dalykas, didinantis pasitikėjimą IRT naudojimu, efektyviu privatumu ir vartotojo teisių apsauga, kovojant su kibernetiniu nusikalstamumu ir informaciniu šlamštu. Šie tikslai gali būti pasiekti tik stiprinant įvairių tarpininkų bendradarbiavimą tarptautiniu lygmeniu. Mažoms įmonėms ypač svarbūs nebrangūs įmonių ar įmonių ir vartotojų ginčų sprendimų mechanizmai.

- *Kompetencijos*. Kalbant apie konkurencingumą ir augimą, įmonės vis labiau remiasi tam tikromis kompetencijomis (įgūdžiais, organizavimu, programine įranga, tinklais). Tačiau vis dar reikia plėtoti ir bendrai priimti metodus ir būdus, kaip nustatyti, įvertinti ir skleisti informaciją apie šias kompetencijas. Tai reikšmingas vyriausybės bei verslo asociacijų ir organizacijų vaidmuo, įpareigojantis skatinti verslo plėtojimąsi ir kurti sistemas, nustatančias ir skleidžiančias informaciją, kurią gali naudoti investuotojai, vertindami rinkas ar ieškodami geresnio valdymo praktikos pavyzdžių.

- *Informacija*. SVĮ gali trūkti tikslinės informacijos, susijusios su IRT pritaikymo pranašumais ir sąnaudomis. Privatusis sektorius (pvz., verslo asociacijos) ir vyriausybė turi atlikti funkciją, kuri leidžia suteikti informaciją apie galimas paslaugas, o prireikus pagerinti vyriausybės informacijos koordinaciją apie IRT pritaikymo ir naudojimo pranašumus.

- *Vyriausybės e. paslaugos*. Virtualus vyriausybės informacijos ir paslaugų teikimas gali padidinti valstybinių paslaugų teikimo mažoms įmonėms efektyvumą ir apimtį bei padėti padėti skatinti įmones savo veikloje adaptuoti IRT.

Šios sritys yra pagrindinės, kuriose turi koncentruotis e. Verslo plėtos parama. Pasiūlytos e. Verslo paramos strateginės gairės aprašo šias sritis įvertinant tris e. Verslo dimensijas (funkcinę, sektorinę ir regioninę) trimis lygmenimis (mikro lygmeniu – įmonės lygmeniu; mezolygmeniu – regiono / tinklo lygmeniu; makro lygmeniu – nacionaliniu/tarptautiniu lygmeniu).

Raktažodžiai: *eVerslas, SVĮ, IRT poveikis, paramos strateginės gairės*.

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