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LogOnBaltic

ICT SURVEY IN ESTONIA

Seren Eilmann and
Tomi Solakivi

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EXECUTIVE SUMMARY

The purpose of the current survey is to give an overview about the Information and Communication Technologies (ICT) situation, usage and developments among Estonian companies, covering both infrastructure and service areas. The respondents of the survey were mainly SMEs from manufacturing, trading and other industries, represented by senior management members.

As a result of the survey Estonia verified its position among the countries with well-developed ICT infrastructure - Internet access rate is high, broadband availability and access to company E-mail accounts good; also most of the companies have qualified IT-personnel available. On the other hand - according to the findings from the expert interviews – the lack of personnel is the main obstacle for further development of ICT in Estonia.

ICT resources are used everyday in the areas of Accountancy and Marketing/Sales; the biggest perspective is seen in production-related areas which are at the moment too much focused on cost-saving issues. However, the overall trend shows that companies are not that willing to invest, and expenses in ICT are rather low, focusing more on hardware than on personnel or software. Basic measures for data protection are available in the companies, but in some cases not used correctly – updating and usage control are the main problems. Most of the companies also regularly monitor ICT costs and performance internally, some on client-basis, but only a few benchmark data with competitors.

Most of the responding companies use their website for marketing purposes. Internet is mainly used to obtain information or complete/send online forms. Only a small percentage of the companies do not use Internet at all in communication with public authorities showing the companies are very willing to use all the opportunities ICT has to offer.

Regarding communication, the importance of modern channels has exceeded traditional means like visits and regular post. Also a strong pressure is felt for establishing new means of communication - online order tracking systems etc. There is an increase in both electronic business with suppliers and end-users/customers, although the latter is

at the moment of less importance. Companies see E-commerce to have a significant effect on several perspectives of doing business - e.g. helping to simplify the transactions, opportunities it offers to reach new customers or suppliers and improving the service quality.

The biggest barrier companies see for the use of ICT in general are security issues. From other results, most of the conclusions drawn based on expert interviews are confirmed by this survey, including lack of ICT personnel, lack of tailored solutions for the companies and from the positive side open-mindedness of Estonians for using ICT in their everyday work.

We thank the participants for the contribution in responding to the survey.

LÜHIKOKKUVÕTE

Käesoleva uuringu eesmärgiks oli anda ülevaade IKT vahendite kasutamisest ja sellega seotud arengutest Eesti ettevõtete hulgas. Uuringuga kaeti nii infrastruktuuri kui ka teenuste valdkonnad. Küsitlusele vastasid peamiselt mikro- ja väikeettevõtted töötlevast tööstusest ja kaubandusest; vastasid peamiselt juhtkonna esindajad.

Uuringu tulemusena kindlustas Eesti oma positsiooni hästiarenenud IKT sektoriga riikide hulgas. Ligipääs Internetile on laialt levinud, lairibaühendus kättesaadav, valdavalt on töötajatel võimalus kasutada ettevõtte e-maili; samuti on enamuses vastanud firmadest olemas kvalifitseeritud IT-personal. Samas on ekspertintervjuude põhjal IT-personali puudus IKT edasise arengu peamisi tõkkeid.

IKT pakutavaid võimalusi kasutatakse igapäevatöös kõige rohkem raamatupidamises ja müügi/turunduse valdkonnas; suurimat arenguruumi nähakse aga tootmisega seotud valdkondades, mis praegu on liigselt keskendunud allhankele ja odavaima hinna pakkumisele. Üldine trend näitab, et ettevõtted ei ole valmis investeerima ja kulud IKT-le on madalad. Kulutatakse pigem riistvarale kui personalile või tarkvarale. Elementaarsed infoturbe meetodid on enamuses firmadest kasutuses, kuid sageli ebakorrektselt – probleemiks on uuendamine ning järjepidev kasutamine. Enamus firmades jälgib ka pidevalt oma IT kulusid ja efektiivsust, kuid seda peamiselt sisemiselt või klientide lõikes, konkurentidega võrdlemist kohtab harva.

Valdaval enamusel vastanud ettevõtetest on olemas oma koduleheküg, mida kasutatakse turunduse eesmärgil. Interneti kasutatakse peamiselt informatsiooni hankimiseks või online-vormide täitmiseks ja saatmiseks. Märkimisväärselt väike hulk vastanutest ei kasuta üldse Internetti kohaliku võimu või riigiasutustega suhtlemiseks, mis näitab ettevõtete valmidust IKT pakutavaid võimalusi kasutada.

Kaasaegsete suhtlusmeetodite, nagu e-mail ja Internet, osatähtsus kasvab ning on juba ületanud traditsioonilisi viise (nt tavapost ja külastused). Tuntakse ka tugevat survet arendada veelgi uusi elektroonilisi infovahetusvõimalusi, nt kauba elektrooniline jälgimine jm. Elektroonilisi kanaleid pidi toimub äritegevus pigem tarnijate kui (lõpp)klientidega, kuid mõlemas sektoris nähakse selle osatähtsuse

kasvu. Ettevõtted näevad E-äril olevat tugevat mõju mitmele erinevale aspektile nagu näiteks vahendustegevuse lihtsustamine, uute klientide/tarnijate leidmine ja teenuste kvaliteedi tõstmine.

Suurima takistusena IKT kasutamisele näevad ettevõtted turvalisuse probleemi. Uuringu tulemused kinnitasid ekspertintervjuude põhjal tehtud järeldusi, kus enamlevinud takistusteks on IKT personali puudus, ettevõtetele vajalike erilahenduste kallidus ja vähesus ning positiivse poole pealt Eesti inimeste ja ettevõtete avatus uutele lahendustele IKT vallas, mida ollakse valmis oma igapäevatöös kasutusele võtma.

Täname uuringus osalenud ettevõtteid nähtud vaeva eest.

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1 INTRODUCTION

1.1 Project introduction – LogOn Baltic

The LogOn Baltic project was approved within the Baltic Sea Region (BSR) INTERREG III B Neighbourhood Programme, which is sponsored by the European Regional Development Fund (ERDF), as part of the Structural Funds, and co-financed by national project partners.

The purpose of LogOn Baltic is to present solutions to improve the interplay between logistics and Information and Communication Technologies (ICT) competence and spatial planning and strengthening Small and Medium-sized Enterprises (SMEs) competitiveness in the BSR. This is primarily done by the production and dissemination of information for regional development agencies on how to support enterprises in the participating regions in the field of ICT and logistics, thus improving regional development.

The following regions are participating in the project:

- South-West Finland
- Östergötland (Sweden)
- Denmark
- Southern Metropolitan Region of Hamburg (Germany)
- West-Mecklenburg (Germany)
- North-East Poland
- Lithuania
- Latvia
- Estonia
- St. Petersburg (Russia)

LogOn Baltic provides an overview of logistics efficiency and logistics information systems and their exploitation, in order to improve the interaction between SMEs and other public/private actors.

On the one hand, the empirical activities of LogOn Baltic compare the existing logistics services and infrastructure with the logistics needs in the participating regions, making it possible to develop perspectives and action plans for strengthening the logistics competence in the

regions. On the other hand it describes the existing ICT infrastructure and services, revealing up to what extent they meet with the companies' needs for further development. In this way, LogOn Baltic focuses on:

a. identifying development agencies and evaluating their performance in each region
b. evaluating the level of logistics and ICT efficiency
c. suggesting concrete actions for regional and local public sector bodies

Data are gathered in each participating region using four tools: Development Measure Impact Analysis (DEMIA), Logistics survey, ICT survey and Expert Interviews; each of these is presented in a separate report. These results together with secondary data is presented in a regional report, that will describe the state of affairs in the region, with recommendations on what and how the region needs to develop. The regional reports are used as a basis for making an interregional comparison which is reported in an inter-regional report. All reports are available on the project homepage, www.logonbaltic.info.

1.2 Regional partner introduction

The regional partners in Estonia are Tallinn City Government, Tartu Science Park and Estonian Logistics Union.

Tallinn, the capital of Estonia, is located in Northern Europe on the Baltic Sea and is a well-known Hanseatic Town. Tallinn is the largest city in Estonia and has developed into a major economical, political, cultural and social centre and tourist attraction of the country.

Tallinn City Government is the local government's executive body that is in charge of city departments, institutions administered by departments, and responsible for implementing policies and programmes. Tallinn City Government fulfils the assignments given to it by legislative drafting, economic activity, control and the involvement of the residents. One of the main aims of Tallinn City Government is to create economical environment to promote entrepreneurship, attract investments and modernise economical structure.

Tartu is the second largest city and the centre of Southern Estonia. **Tartu Science Park**, the oldest science park in the Baltic States, supports business innovation activities in the region by networking with universities, public and private sector. The technology incubator offers a variety of services to start-up companies and the ICT Centre

organises seminars, courses and contests for students and mediates several national and international ICT activities. Tartu Science Park also offers help to foreign companies in extending business to Estonia.

Estonian Logistics Association acts as an association for organisations, foundations and people who are involved in logistics. Estonian Logistics Association honours the principles of competitiveness of companies, co-operation, competition, development, professional skills and appreciation of human labour and the main goal is to promote national and international competitiveness in the area of logistics.

1.3 ICT survey introduction

This survey – part of the LogOn Baltic project - is one of the tools for primary data collection. It aims at reflecting the use of ICT as interface between the private and public sector. It is also intended to describe the existing ICT infrastructure and services in the participating regions, revealing up to what extent they meet with the companies' needs for further development.

The questionnaire consists of five modules. Each region has the opportunity to add one or two questions focusing on specific regional issues. These additional questions were added in an extra module (Module F). The same questionnaire has been used in all regions.

The survey is mainly conducted as a web-based survey, but mail surveys, phone surveys and interviews has also been used as a complement in some regions.

This is by far the largest survey conducted in the Baltic Sea Region in the field of ICT. In this report data and analysis will be presented for one region only.

The data are also used to make a cross-regional analysis, focusing on differences and similarities between the regions. The cross-regional analysis is presented in a separate report available at the project homepage www.logonbaltic.info.

2 SURVEY DESIGN

2.1 Target group and sample

More than half of the respondents represented micro-sized companies. 26% were small companies, 16% medium-sized companies and only 4 (3%) out of 117 respondents represented a large company. This illustrates very well Estonian economical landscape where micro- and small-sized companies are dominative but also means we cannot generalize the results to large-sized companies.

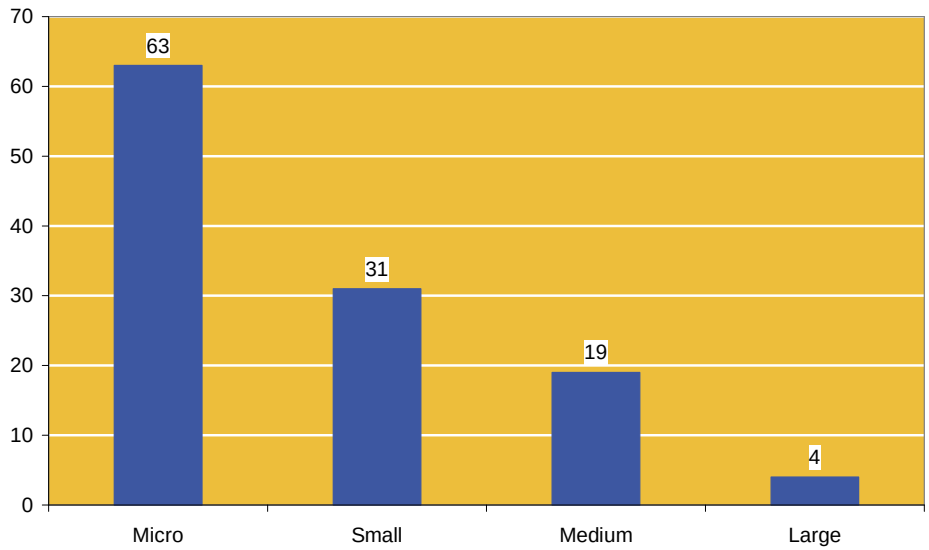

Figure 1 Number of respondents according to company size

An e-mail with a link to the questionnaire was sent out to approximately 3,000 companies from all the sectors, concentrating on logistics and ICT. Three reminders were sent via e-mail within a month from the original call. The response rate was approximately 4%, which can be considered good.

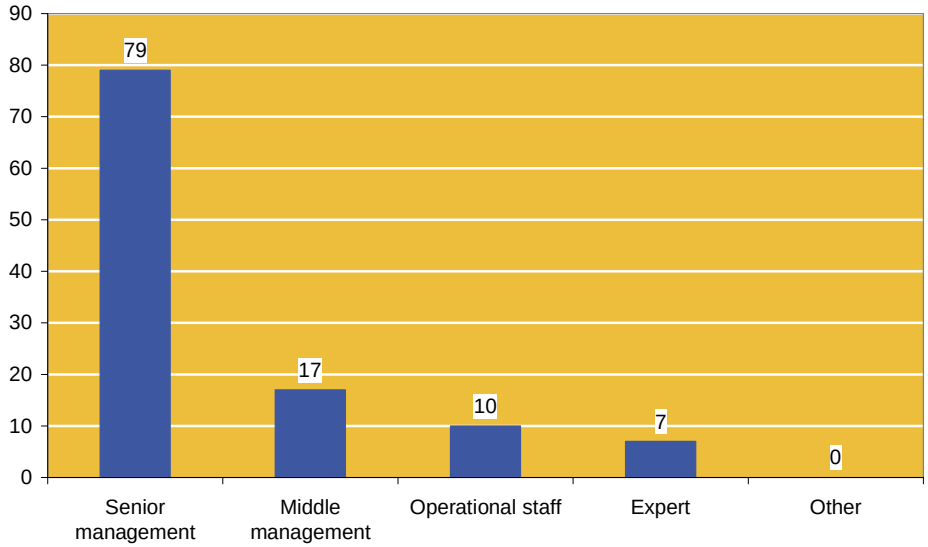

Figure 2 Number of respondents according to respondents' position in the company

70% of the respondents belonged to the senior management. Considerably fewer were working in the middle management (15%) or even lower position. The predominance of the senior management responds to dominative representation of micro-sized companies (Figure 1), where one of few employees is often owner or manager.

Figure 3 Number of respondents according to main industry

Manufacturing industry forms 44% of the responses; 25% are from trading and 23% from other industries. Logistics service providers form only 8%. The ICT survey was intended to cover more sectors/industries to have an overview about everyday use of ICT means and developments in the companies; therefore dominative and even representation of manufacturing, trading and other industries is an advantage.

2.2 Main themes of the survey

The ICT Survey consists of five mandatory modules (A – E), and an optional module for region-specific questions. The main themes of the survey are:

- General contact- and background information of the companies
- Use of ICT in the companies within the regions
- Use of the Internet in the companies within the regions
- E-commerce / E-business
- General assessment of the use of ICT in the regions
- Region-specific issues [optional module]

The ICT Survey is intended for the whole population of regional companies.

3 FINDINGS FROM THE SURVEYS

3.1 Use of ICT systems

60% of the respondents assure that most of the company employees (>75%) have access to Internet, but only 42% have accordingly provided most of their employees with company E-mail account. Less than half of the employees have access to Internet in 35% of the companies and a considerably large group (37%) of the companies has provided less than 25% of their employees with company E-mail account.

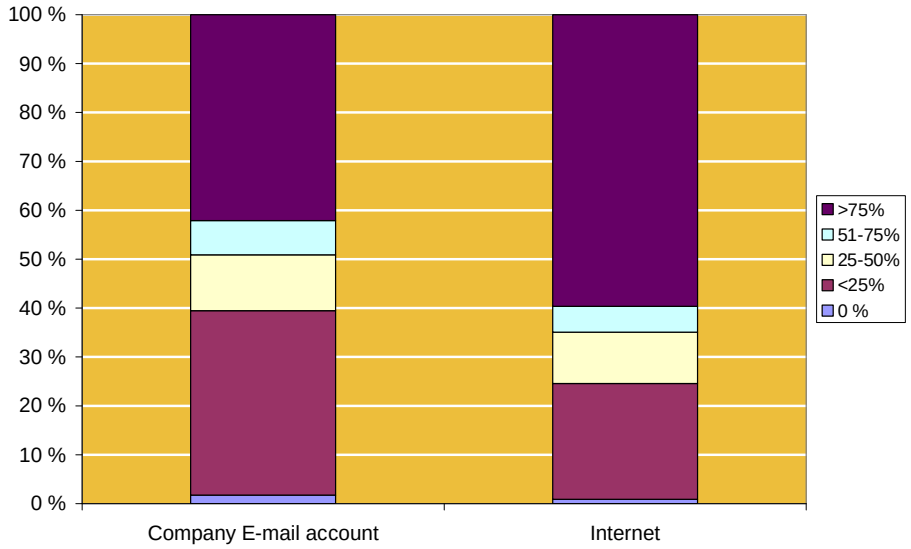

Figure 4 How many percent of employees have access to E-mail and Internet

ICT usage and Internet access is constantly monitored in Estonia and has been highly appreciated at an international level. According to EMOR (www.emor.ee), 90% of the companies in Estonia have Internet access and at least one computer, although the use of the possibilities

of e-commerce and e-business is not too common. Also 90% of the inhabitants live in the areas with possibility for immediate broadband connection. In 2006, 58% of the population aged 15-74 used Internet.

The relative contradiction between the high level of Estonian companies with Internet access and employees not having access to it can be explained by the division of industrial sectors shown in Figure 3. Both, manufacturing and trading industries form the majority of responding companies, but their specifics determine ICT means to be available mainly in the offices and among white-collar workers, not in the plant or next to the counter. Still, the rate of Internet access in the companies can be considered high, and the access to company E-mail accounts good.

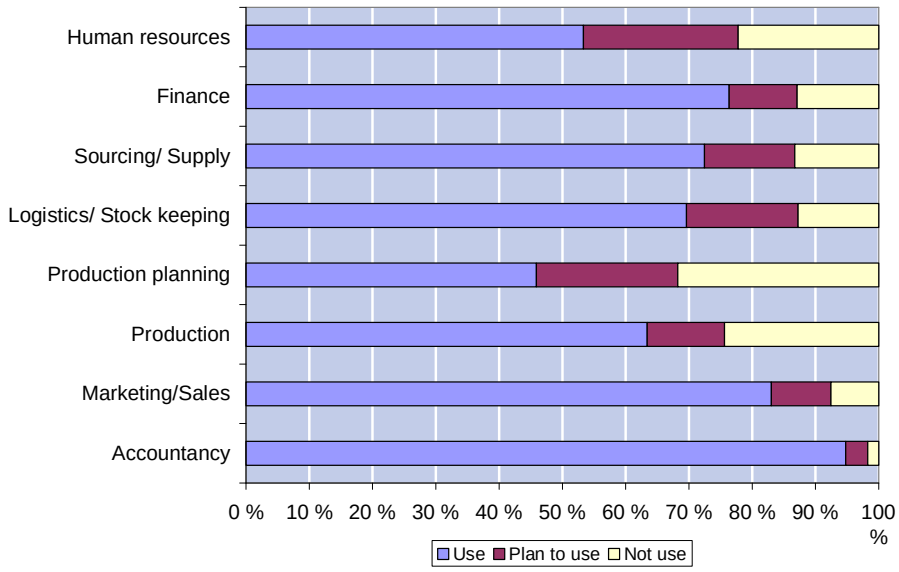

Figure 5 On which areas of business the companies are using ICT

The main business areas where ICT is used are Accountancy (close to 95%) and Marketing/Sales (over 80%). In Finance and Sourcing/Supply, ICT usage is also over 70%. Less then 50% of the companies use ICT means in Production Planning and just over 50% in Human Resources. But at the same time, these are the business areas in several companies where the plans to start using ICT is the highest.

The high usage of ICT means in the areas of Finance and Accountancy is not surprising, due to the high level of public services available via electronic channels in Estonia – especially concerning the report of taxes and other financial/economical data compulsory to the

companies. Also, the increasing usage of Internet in Estonia is a key factor in high-level Marketing/Sales activities done with the help of ICT. Companies have realized the importance of being visible in the Internet which is already a “MUST” in doing business on national level.

Low usage of new solutions in Production and its related areas is also very typical for Estonian manufacturing industry which is still based on subcontracting and low-price advantage, but the need for change is acknowledged. The low percentage in management of Human Resources is explainable by the lack of need for such means among SMEs. The number of companies planning to start using ICT in some of the areas is surprisingly high, which shows that companies are informed about the possibilities and are willing to use new solutions.

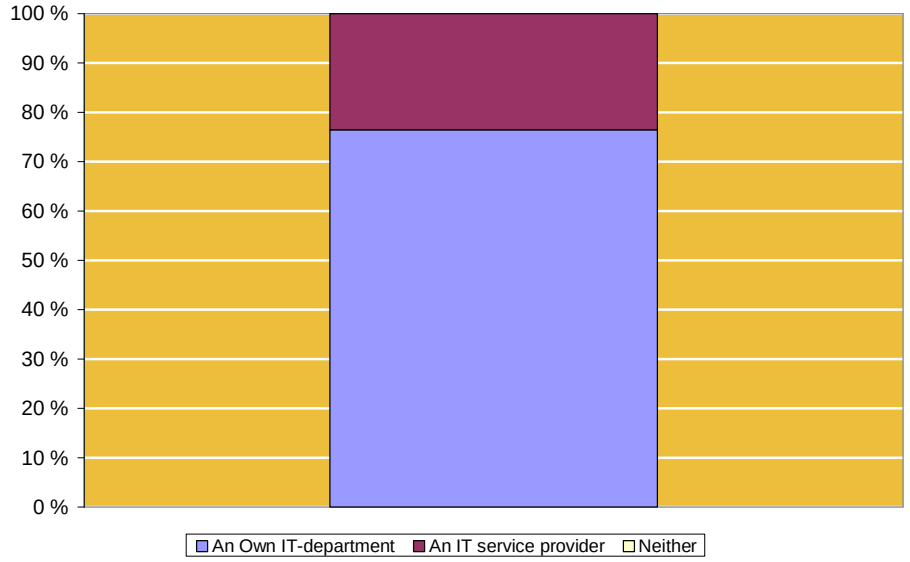

Figure 6 How the ICT administration is handled in the companies

Over 75% of the respondents claim to have an own IT-department. The rest of them are subcontracting ICT services. All of the companies are concerned about the different ICT-related issues.

It is questionable that micro- and small-sized companies have the resources to hire several ICT-specialists; they would rather have a “contact person” for ICT-related issues – an IT-specialist - or person with more knowledge in the field of IT. Companies using service providers are usually in a stage where they have acknowledged the need for a specialist, but consider a separate qualified employee to be a waste of resources.

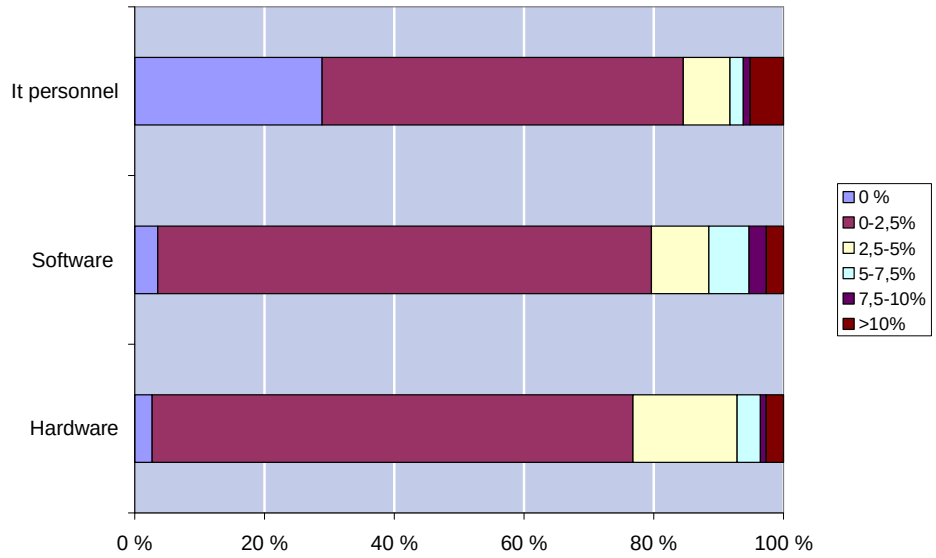

Figure 7 ICT expenses as a percentage of company turnover

The overall trend shows that ICT expenses in the responding companies is less than 2.5% of their turnover – this is the case in about 80% of the companies. It is clearly shown that the least expenses are made in IT personnel and the most in hardware.

About 24% of the companies spend no money on IT-personnel. This is explainable by the fact that many small companies exploit the knowledge of the younger generation generally capable of solving simpler ICT issues. Close to 85% of the companies spend less then 2.5% in personnel, which shows that most of the companies have very small departments or just one person employed in IT.

The situation of software in Estonia has progressed in recent years, but little expenditure in software is still an issue which comes from the society's relative tolerance towards illegal software. The companies also upgrade their software rarely, and usually buy new software with new hardware when the old machinery is unusable. Very little is spent for special solutions developed according to the companies' own needs, and most of the software among micro-sized companies is for home-use.

The relative importance in hardware expenses comes from the software issues explained above. Also, the development of the hardware in recent years, guides on upgrading of the physical characteristics of the hardware. This trend is most likely to slow down in the next few years as differences are not that dramatic anymore.

Table 1 How the ICT-costs are expected to develop in the next 3 years

	Decrease	Remain constant	Increase
Hardware	3	73	37
Software	3	58	51
IT personnel	5	53	35

As can be seen from Table 1, the main increase in costs is predicted for software. Increasing expenditure on IT-personnel and hardware are at the same level, but still are less than software. This proves that the conclusions made based on Figure 7 regarding the need to legalize and upgrade or tailor the software, will lead to more expenses. However, the majority of the companies believe the cost level will stay the same, especially for hardware, leading to the assumption that the companies have developed own IT-systems that meet their current needs.

Table 2 The use of different data security measures

	Available	Regularly used/ updated
Password access control	96	43
Virus protection applications	82	71
Computer firewall applications	77	54
Employee education on data security	63	40
Own documented data security program	26	21

Password access control and virus protection applications are the most implemented data security measures. Also firewall applications and employee education are implemented in over half of the responding companies. The least implemented measure are own documented data security programmes. Using/upgrading the means is not a problem regarding virus protection. Regarding own data security programmes, the level of using/upgrading is on an acceptable level compared to other fields. Surprisingly, password access controls is not being used or upgraded in more than half of the cases where it is available, which is definitely not a good sign.

Table 3 How the companies monitor and evaluate their ICT costs and performance

	Disagree	Neither disagree nor agree	Agree
We regularly monitor and evaluate our IT costs and performance internally	22	12	71
We regularly monitor and evaluate IT costs and performance with selected suppliers and/ or customers	28	19	45
We regularly benchmark IT performance metrics against our competitors	45	19	29

Most of the companies regularly monitor their ICT costs and performance internally. Also, half of the companies follow the same indicators on a client-basis. Benchmarking is substantially less used which may indicate that there is either no benchmarking information available, or the companies do not see the benefits of this analysis.

3.2 Use of Internet

Over half of the respondents have broadband connection, about 30% use modem and more then 10%, other type of connection. Connections are state-of-the-art and correspond to the needs of the companies. Very little dial-up modems are used, and wireless or radio connections are widespread.

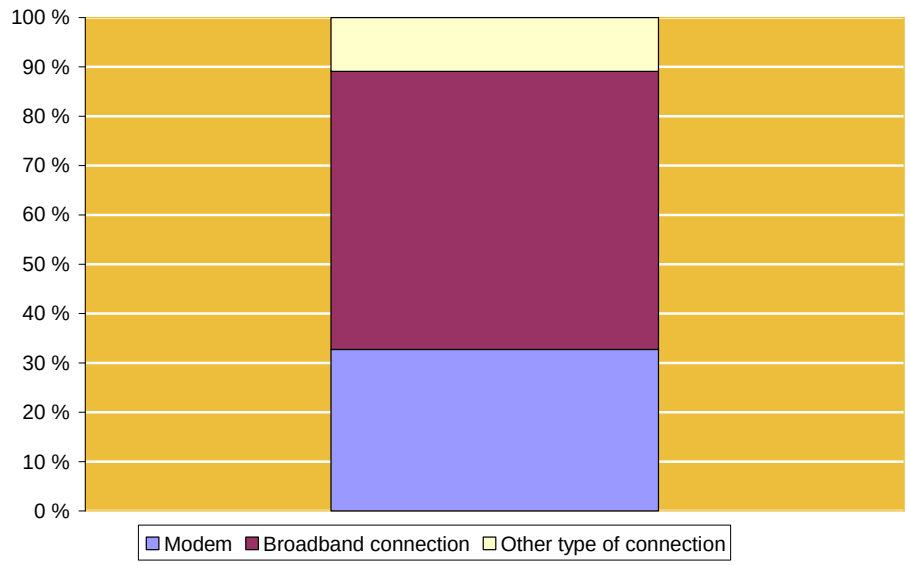

Figure 8 The type of connection companies have to the Internet

Concerning this question, a terminology and knowledge may be an issue since the respondents are not qualified IT-specialists and judge the connection type based on the very end of the line coming straight to their computer (modem needed even in the case of broadband, especially in home use which is the case of most micro companies).

The survey also covered the issue of the use of websites by the companies. 89% of the respondents have a website, and 56% of these sites are managed by IT service providers. For Estonian companies it would be useful to distinguish between “content of website” and “design-software” issues. Very often, small companies buy ready design-layout of the website and CMS (Content Management System) software to ensure independence from the providers and administer the website content themselves.

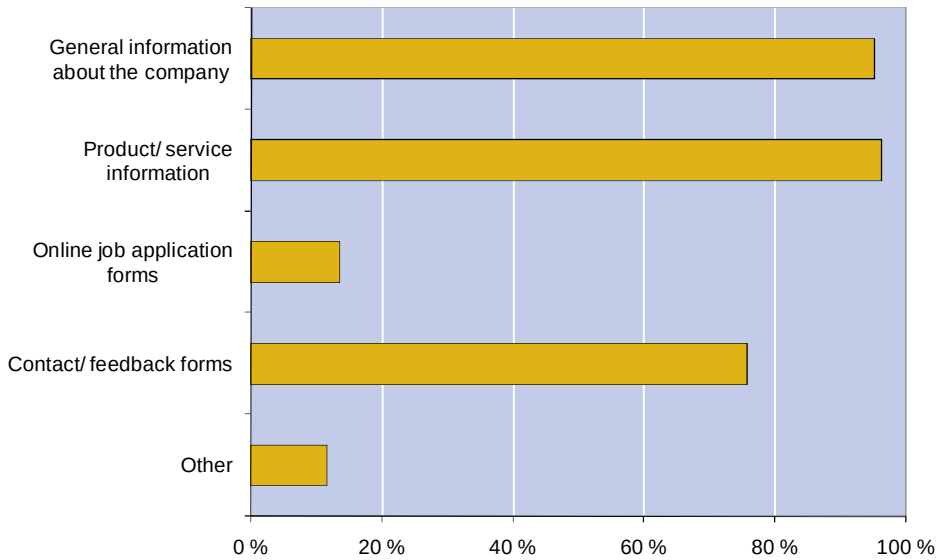

Figure 9 Different type of features that the company website includes

Websites are generally used for marketing purposes – in over 80% of the cases it is possible to find product/service information and also general information about the company. Contact/feedback forms are also common, but other information, including online job application forms are quite rare. It is not surprising, considering that most of the respondents are SMEs, where the rotation of employees could be rather slow and therefore the need for this kind of application is also low.

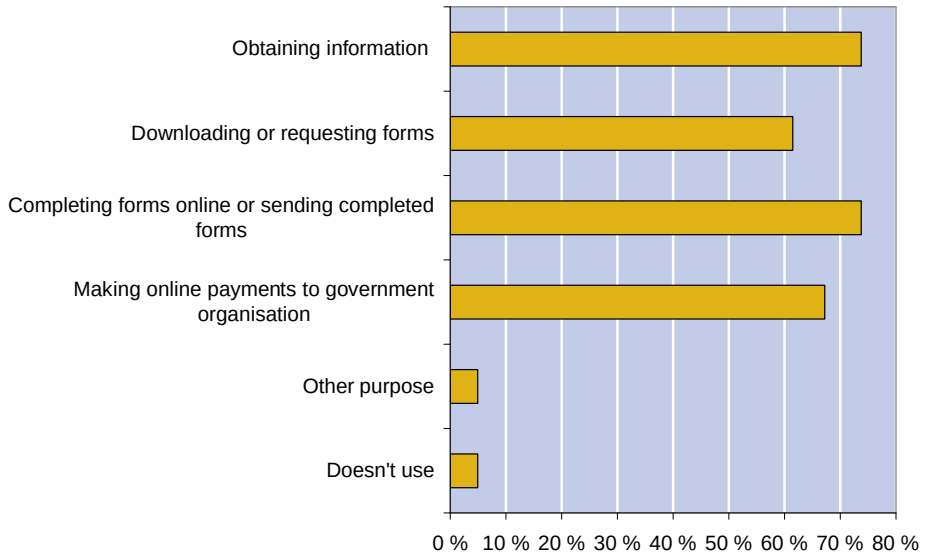

Figure 10 The different purposes companies use the Internet to interact with public authorities and government organisations

Over 70% of the respondents use Internet to obtain information or complete/send online forms. A high rate of online-form usage is a result of systematic e-Government development in Estonia as it is compulsory for the public institutions to accept digitally signed or any other type of electronic documents (80% of the inhabitants have ID-card allowing them digital signing procedures). Making online payments (over 65%; third in importance) is explained by the high internet-banking rate in Estonia. There are a considerably small percentage of companies (about 5%) who do not use Internet at all in communication with public authorities, which is a remarkably good result, and shows that companies as well as people in Estonia are very willing to use all the opportunities ICT has to offer.

The survey also included the question about Internet being used for clearing goods through Customs. 39% of the companies do. It is a relatively low percentage compared to the overall use of Internet for communicating with public authorities. It can be explained by the low percentage of logistics companies, and the big number of SMEs who are in most cases oriented to the local market and have little contact with international trading.

3.3 E-commerce / E-business

The importance of E-mail communication among Estonian companies is very high and exceeding even telephone/fax. Considering the level of Internet usage and most of the companies having websites including E-mail addresses, it is not surprising. Traditional means like personal visits and regular post are used in over half of the companies simultaneously.

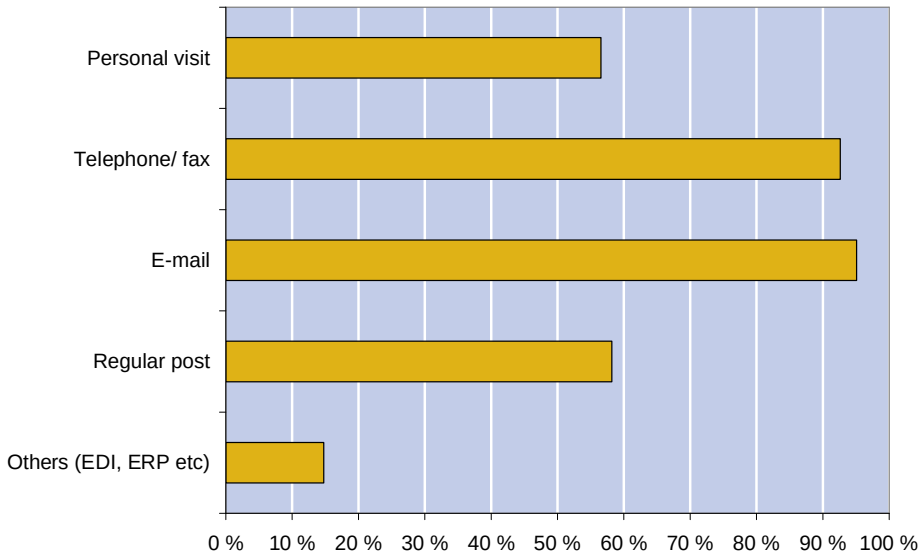

Figure 11 The type of communication methods the organisations use when communicating with customers and suppliers

Other possibilities are used rarely as they need special technology/software and training. Developing special system just for own company is not considered reasonable among SMEs, but may be the case among large companies.

As can be seen from Table 4, there is no remarkable difference in demands either from customer or supplier side concerning order placement or payment possibilities status. Both are commonly used among respondents and explainable by high level of E-mail and Internet banking usage.

Table 4 The type of business processes between the companies and their customers/ suppliers are handled electronically

	Customers		Suppliers	
	Now	In 3 Years	Now	In 3 Years
Order placement for products/ services	94	96	98	96
Order tracking/ service status available online	57	87	53	82
Payment possibilities	100	102	98	95
After sales support	66	76	43	57

The pressure coming both from customers and suppliers concerns online order tracking, which is seen as the biggest development within the next three years and most likely will demand investments. Some possibilities for further development are seen in After Sales support which concerns more customers than suppliers.

Table 5 The share of companies business that is handled electronically

	0 %	1-19%	20-39%	40-59%	60-79%	80-100%	Total
Customers	6	24	25	18	0	0	73
Suppliers	2	20	16	21	11	36	106

There is more business handled electronically with suppliers than with end-users and customers. The low share of E-business with customers is a result of not fully developed E-commerce systems and also legislation and protection in Estonia. Internet trading has not yet gained enough credibility among the people so that the companies would be willing to invest in developing Internet shops and other means for E-trading.

On the other hand, security is not an issue in supplier-relations. As shown in Table 5, a higher share of the supplier-relations is handled electronically and close to 100% in one third of the companies.

Table 6 The companies' opinion on what the development of the share of E-commerce will be in their business operations

	Decrease	Remain the same	Increase
Customers	3	33	77
Suppliers	3	39	66

The development of E-commerce is seen similarly in customers and suppliers side. In both cases, about one third believes the share will remain the same and two thirds have prepared themselves for the increase.

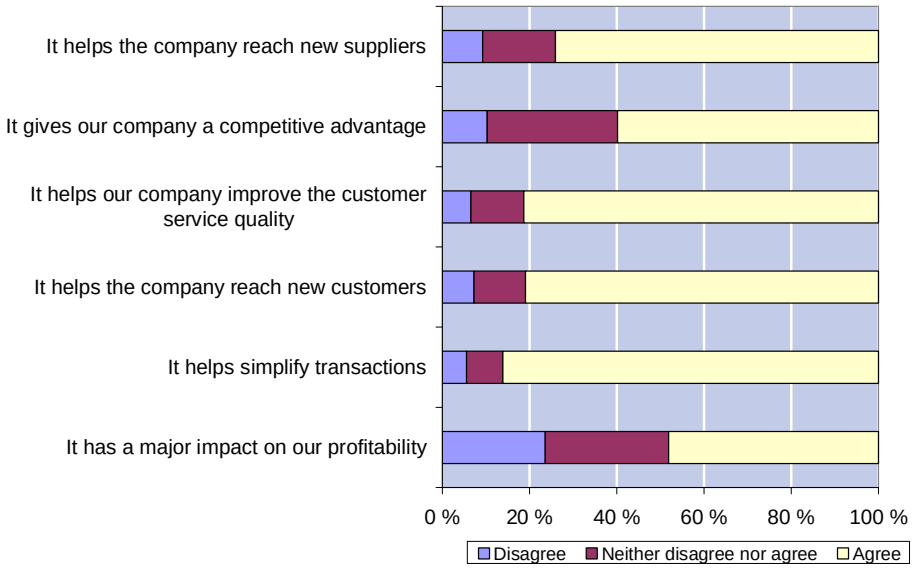

Figure 12 Companies views on the importance of E-commerce

Companies see E-commerce to have a significant effect on several perspectives of doing business. The most important one is helping to simplify the transactions and therefore speed up the process. Not less important are the opportunities of reaching new customers or suppliers and improve the service quality offered to the customers. Respondents do not agree that strongly about the competitive advantages and profitability E-commerce creates, but still over 50% has positive attitude towards these perspectives.

3.4 General assessment of ICT usage

The biggest and only barrier companies see on using Internet is security concerns. Expenses on the development and data exchange are not seen as problems. Surprisingly neither is web surfing nor lost working time seen as problems concerning the use of Internet. There are no obstacles at all seen on the use of E-commerce solutions. Payments and contractual issues are an area where internet baking providers or the government has done the best job and where satisfaction is highest.

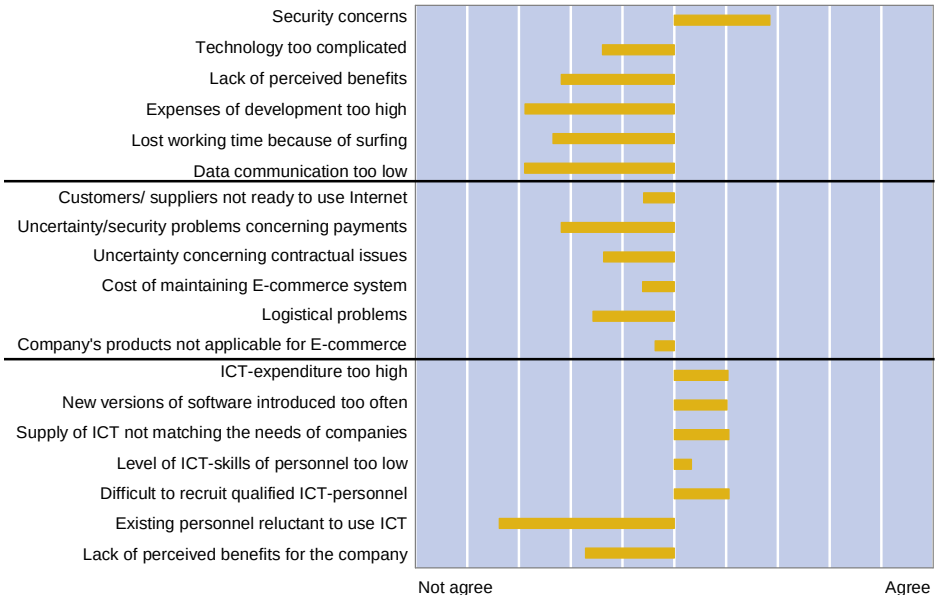

Figure 13 Barriers seen by the companies on the use of Internet, E-commerce and ICT in general

There are more barriers seen on ICT use in general. In the same level we find as many as four obstacles – high ICT expenditure, too many new versions and updates, supply of ICT not matching the needs and difficulties to recruit qualified ICT personnel. The last issue was also the main conclusion coming from the expert interviews; therefore the problem is seen very serious. Figure 12 also confirms another, positive, conclusion from the expert interviews – Estonian people are very willing to use new solutions so that reluctance of personnel is not seen as an obstacle at all.

Most of the conclusions made based on expert interviews are confirmed by this survey, including the lack of ICT personnel, lack of custom-tailored solutions for the companies and from the positive side open-mindedness of Estonian people for using ICT in their everyday work.

4 SUMMARY AND CONCLUSIONS

The respondents of the survey were mainly SMEs with strong emphasis on micro-sized companies. They represented manufacturing, trading and other industries; only few were from the logistics service provider sector. Most of the survey participants were positioned as senior management members.

The Internet access rate among the responding companies can be considered high and access of employees to company E-mail accounts good. Main business areas where ICT is used in the companies are Accountancy and Marketing/Sales; few use ICT in production-related areas, but plan on starting the usage. Most of the respondents have own IT-department or IT-personnel and there are no companies admitting they do not pay attention to ICT-related issues. The overall trend shows that expenses in ICT are rather low and made more on hardware than personnel; in the future expenses on software will increase the most. Password access control and virus protection applications are the most used measures of data security, but password updates and usage are a huge problem. Most of the companies regularly monitor ICT costs and performance internally, some on client-basis but very few benchmark with competitors.

Over half of the respondents have broadband connection and about one third use modem. Most of the responding companies have websites which are mainly managed by an IT service provider. Websites are generally used for marketing. Respondents use Internet to obtain information or complete/send online forms. There are a considerably small percentage of companies who do not use Internet at all for communicating with public authorities, showing the companies are very willing to use all the opportunities ICT has to offer.

Importance of E-mail communication among Estonian companies is very high and exceeding even telephone/fax. Traditional means, like personal visits and regular post are used in over half of the companies simultaneously. The pressure from customers and suppliers to establish online order tracking is seen as the biggest development within next three years. There is more business handled electronically with suppliers than with end-users and customers and the share is predicted to increase. Companies see E-commerce to have a

significant effect on several perspectives of doing business. E-commerce's importance to the companies is seen as helping to simplify the transactions and the opportunities it offers of reaching new customers or suppliers and improving the service quality.

The biggest barrier companies see on the use of ICT in overall is security. From other results most of the conclusions made based on expert interviews are confirmed by this survey, including lack of ICT personnel, lack of custom-tailored solutions for the companies and from the positive side, open-mindedness of Estonian people for using ICT in their everyday work.

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Tartu Science Park, www.sciencepark.ee

APPENDIX

Appendix 1 Interview guideline

Module A Contact- and background information

1. Contact information

a) Company Name/Business Unit: [Open field]

b) Postal Code: [Open field]

c) Contact e-mail: [Open field]

(Provide this information if you wish to receive the customised survey report)

d) Respondent's position in the company [Drop-down menu]

[ ] Senior management
[ ] Middle management
[ ] Operational staff
[ ] Expert
[ ] Other

e) Please choose whether you wish to respond on behalf of the whole firm or a group of companies OR an individual business unit [Drop-down menu]

[ ] I wish to respond on behalf of the whole firm or a group of companies
[ ] I wish to respond on behalf of an individual business unit.

2. Please indicate the current number of employed people: [Drop-down menu]

[ ] 1 -9
[ ] 10 – 49
[ ] 50 – 249
[ ] 250 – 499
[ ] 500 – 999
[ ] 1000 – 1999
[ ] 2000 – 4999
[ ] 5000 – 10000
[ ] Over 10000

In the next 3 years, do you expect the number of employees to … [Drop-down menu]

[ ] decrease
[ ] remain constant
[ ] increase

3. What activity best classifies your company? [Drop-down menu]

[ ] Automotive industry
[ ] Manufacturing of textiles and textile products
[ ] Financing / Banking / Insurance
[ ] Publishing and printing

[ ] Manufacturing of electrical and optical equipment
[ ] Manufacturing of basic metals and fabricated metal products
[ ] Manufacturing of pulp, paper and paper products
[ ] Manufacturing of wood and wood products
[ ] Manufacturing of chemicals, chemical products, and man-made fibres
[ ] Manufacturing of food products and tobacco
[ ] Wholesale Trade
[ ] Retail Trade
[ ] Government, Public Administration
[ ] Energy Supply
[ ] Construction
[ ] Transport, Distribution and Logistics
[ ] Health and Human Services
[ ] Tourism and Leisure Industry
[ ] ICT / Telecommunication
[ ] Maritime Industry
[ ] Other

4. Please indicate the total turnover of your company in the past year

[Drop-down menu]

[ ]	0 – 2 M EUR	[ ]	50.1 – 100 M EUR
[ ]	2.1 – 5 M EUR	[ ]	100.1 – 500 M EUR
[ ]	5.1 – 10 M EUR	[ ]	500.1 – 1000 M EUR
[ ]	10.1 – 25 M EUR	[ ]	1.1 – 5 billion EUR
[ ]	25.1 – 50 M EUR	[ ]	over 5 billion EUR

How do you expect the company's turnover to develop in the next 3 years?

[Drop-down menu]

[ ]	decrease	[ ]	increase
[ ]	remain constant		

5. Does the company have other subsidiaries? [Separate tick box for each]

[ ]	Yes, but only in (the home country)		
[ ]	Yes, also abroad:	In the Baltic Sea Region[1]	[ ]
		Rest of Europe	[ ]
		Other	[ ]
[ ]	No		

[1] South-West Finland, Östergötland, Denmark, Hamburg, West-Mecklenburg, North-East Poland, Lithuania, Latvia, Estonia, St. Petersburg

Module B Use of ICT systems

6. What percentage of your employees has access to…? [Separate tick box for each]

	0%	< 25%	25-50%	51-75%	> 75%
Company E-mail account	[ ]	[ ]	[ ]	[ ]	[ ]
Internet	[ ]	[ ]	[ ]	[ ]	[ ]

a. If any option was answered with '0%':

Does the company plan to give access to company E-mail account/Internet to the employees in the future? [Drop-down menu]

[ ] Yes

[ ] No

7. Does the company use (or plan to use) ICT technology in following areas?

[Separate tick box for each]

	Use	Plan to use	Not use
Accountancy	[ ]	[ ]	[ ]
Marketing/Sales	[ ]	[ ]	[ ]
Production	[ ]	[ ]	[ ]
Production Planning	[ ]	[ ]	[ ]
Logistics/Stock keeping	[ ]	[ ]	[ ]
Sourcing/Supply	[ ]	[ ]	[ ]
Finance	[ ]	[ ]	[ ]
Human Resources	[ ]	[ ]	[ ]
Other: _____	[ ]	[ ]	[ ]

8. The company has … (check both options if they apply to your company)

[Separate tick box for each]

[ ] an own IT department. With approximately _____ employees.

[ ] an IT service provider (IT outsourcing)

[ ] none of the above mentioned

How do you expect the outsourcing of IT services in your company to develop in the next three years? [Drop-down menu]

[ ] decrease

[ ] remain constant

[ ] increase

9. Please estimate the following ICT expenses expressed as % of company turnover in the past year. [Drop-down menu]

	0%	02-5%	2,5-5%	5-7,5%	7,5-10%	> 10%
Hardware	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Software	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
IT Personnel	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

b. How do you expect these expenses to develop in the next 3 years?

[Separate tick box for each]

	decrease	**remain constant**	**increase**
Hardware	[ ]	[ ]	[ ]
Software	[ ]	[ ]	[ ]
IT Personnel	[ ]	[ ]	[ ]

10. Does your company have – and actively use/update – the following data security measures? [Drop-down menu]

	available	**regularly used/updated**
Password access control	[ ]	[ ]
Virus protection applications	[ ]	[ ]
Computer firewall applications	[ ]	[ ]
Employee education on data security	[ ]	[ ]
Own documented data security program	[ ]	[ ]

11. Please indicate the extent to which you agree or disagree with the following statements regarding "IT performance evaluation" from the perspective of your company (where: -2 = strongly disagree, -1 = disagree, 0 = neither disagree nor agree, +1 = agree, +2 = strongly agree, NR = no response)

	- 2	**- 1**	**0**	**+ 1**	**+ 2**
We regularly monitor and evaluate our IT costs and performance internally	[ ]	[ ]	[ ]	[ ]	[ ]
We regularly monitor and evaluate IT costs and performance with selected suppliers and/or customers	[ ]	[ ]	[ ]	[ ]	[ ]
We regularly benchmark IT performance metrics against our competitors	[ ]	[ ]	[ ]	[ ]	[ ]

Module C Use of Internet

12. What type of connection to the Internet does your company use? [Drop-down menu]

[ ] Modem (via standard phone line)

[ ] Broadband connection

[ ] Other type of connection: _____

13. Does your company have a website. [Drop-down menu]

[ ] Yes

[ ] No *(Go to question 16)*

14. About the company's website…

a) Who designed and administers the website? [Separate tick box for each]

[ ] an IT service provider

[ ] the company's own IT department/special employees

b) Which of the following features does the website include? (Please check all that apply) [Separate tick box for each]

[ ] general information about the company

[ ] product/service information

[ ] online job application forms

[ ] contact/feedback forms

[ ] others: _____

15. Does your company use the Internet for interacting on a regular basis with public authorities/government organisations (Ministries, local governmental departments, Customs, etc)? [Separate tick box for each]

[ ] Yes, the company interacts with public authorities/government organisations for…

[ ] obtaining information (i.e. from websites or via e-mail)

[ ] downloading or requesting forms

[ ] completing forms online or sending completed forms

[ ] making online payments to government organisations

[ ] other (please specify) _____

[ ] No

16. Does your company use the Internet for clearing goods through Customs?

[ ] Yes

[ ] No

Module D E-commerce/E-business

17. Which of the following methods does your company use on a regular basis to contact customers/suppliers? [Separate tick box for each]

[ ] personal visit

[ ] telephone/fax

[ ] e-mail

[ ] regular post

[ ] Others (EDI, ERP, etc):_____

18. Which of the following business processes between your company and your customer/supplier are handled electronically (i.e. Internet, EDI, ERP)?

[Separate tick box for each]

	Customers	**Suppliers**
- order placement for products/services	[ ]	[ ]

- order tracking / service status available online	[ ]	[ ]
- payment possibilities	[ ]	[ ]
- after-sales support	[ ]	[ ]

How do you think the situation would look like in 3 years?

	Customers	Suppliers
- order placement for products/services	[ ]	[ ]
- order tracking / service status available online	[ ]	[ ]
- payment possibilities	[ ]	[ ]
- after sales support	[ ]	[ ]

19. Please indicate the approximate percentage of the company's commerce/business handled electronically (i.e. Internet, EDI, ERP) during the past year:

[Separate tick box for each]

	Customers	Suppliers
0%	[ ]	[ ]
1 – 9%	[ ]	[ ]
10 – 19%	[ ]	[ ]
20 – 29%	[ ]	[ ]
30 – 39%	[ ]	[ ]
40 – 49%	[ ]	[ ]
50 – 59%	[ ]	[ ]
60 - 69%	[ ]	[ ]
70 - 79%	[ ]	[ ]
80 - 89%	[ ]	[ ]
90 - 100%	[ ]	[ ]
doesn't know	[ ]	[ ]

In the next 3 years, do you expect this percentage to …

decrease	[ ]	[ ]
remain constant	[ ]	[ ]
increase	[ ]	[ ]

20. Please indicate the extent to which you agree or disagree with the following statements regarding the "importance of E-commerce/E-business" from the perspective of your company (5-point scale, where -2 = strongly disagree, -1 = disagree, 0 = neither disagree nor agree, +1 = agree, + 2 = strongly agree, NR = no response) [Separate tick box for each]

	- 2	- 1	0	+ 1	+ 2	NR
It has a major impact on our profitability	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
It helps simplify transactions	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

It helps the company reach new customers	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
It helps our company improve the customer service quality	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
It gives our company a competitive advantage	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
It helps the company reach new suppliers	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Module E General assessment of ICT usage

21. Please assess the significance of following barriers for the present or future use of Internet, E-commerce and ICT in general in your company. Indicate your opinion on the effect of each issue in your company by selecting between – 2 – + 2 (where: -2 = very negative, -1 = negative, 0 = doesn't know, +1 = positive, +2 = very positive, NR = no response). [Separate tick box for each]

	- 2	**- 1**	**0**	**+ 1**	**+ 2**	**NR**
Barriers on use of Internet						
Security concerns (i.e. hacking, viruses)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Technology is too complicated	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Lack of perceived benefits for the company	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Expenses of development and maintenance of website are too high	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Lost working time because of irrelevant surfing	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Data communication is too low or unstable	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Barriers on use of E-commerce						
Customers/suppliers not ready to use Internet Commerce	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Uncertainty/security problems concerning payments	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Uncertainty concerning contracts, terms of delivery and guarantees	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Cost of developing and maintaining an E-commerce system	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Logistical problems	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Company's products/services not applicable for Internet sales	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Barriers on use of ICT in general						
ICT expenditure too high	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
New versions of existing software are introduced too often	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Supply of ICT technology not matching the ICT needs of the companies	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
The level of ICT skills is too low among the employed personnel	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Difficult to recruit qualified ICT personnel	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Existing personnel reluctant to use ICT	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Lack of perceived benefits for the company	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

(where: -2 = strongly disagree, -1 = disagree, 0 = neither disagree nor agree, +1 = agree, +2 = strongly agree, NR = no response)

	- 2	**- 1**	**0**	**+ 1**	**+ 2**	**NR**
Regional e-Government activities						
I'm satisfied with the existing e-Government offers	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
I'd appreciate more and better e-Government offers	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

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