

LogOn Baltic Regional reports
20:2007



ICT SURVEY IN THE SOUTHERN METROPOLITAN REGION OF HAMBURG, GERMANY

**Wolfgang Kersten,
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EXECUTIVE SUMMARY

This report is part of the cross-national European Union funded project LogOn Baltic. In a high number online-based survey, mainly manufacturing companies, trading companies and logistics service providers were asked to answer questions on the use of Information and Communication Technologies (ICT) in their daily business. The aim of the survey was to identify the intensity and type of ICT utilized in the Metropolitan Region of Hamburg.

The questionnaire used in the survey covers the following fields:

- Use of ICT systems
- Use of Internet
- E-commerce and e-business
- General assessment of ICT usage

The first chapter gives information on the LogOn Baltic project and on the participating partners. In the second chapter, the surveyed companies are introduced and classified according to their size, industry and function of the contact person.

In chapter 3, the actual survey results are presented. Chapter 3.1 contains an analysis to which extent internet and e-mail are used in the companies. It also discusses the administration and costs of ICT as well as security measures that are implemented with respect to ICT.

Chapter 3.2 focuses on Internet usage. Companies were asked for information on their internet connection, on their website and for which purposes they use the internet.

Chapter 3.3 concentrates on e-commerce and e-business. First, the means of communication are evaluated that are most-utilized for business communication. Second, the future role and usage of electronic communication processes between companies and their suppliers and customers are assessed.

This section of the report finishes with chapter 3.4, which deals with barriers to the implementation of the internet, e-commerce and ICT in general. The fourth and last chapter summarizes the results.

EXECUTIVE SUMMARY

Der vorliegende Bericht zum Thema Informations- und Kommunikationstechnologien (IKT oder IuK) in der Metropolregion Hamburg ist Bestandteil des länderübergreifenden EU-Projektes LogOn Baltic. Im Rahmen einer großzahligen Online-Befragung wurden Produktions- und Handelsunternehmen sowie Logistikdienstleister zum Einsatz von Informationstechnologien in ihrem Geschäftsalltag befragt. Ziel der Befragung war es, die Art und Intensität der eingesetzten IKT in Unternehmen der Metropolregion Hamburg zu identifizieren. Der verwendete Fragebogen deckt neben allgemeinen Angaben zum Unternehmen folgende Themenbereiche ab:

- Einsatz von Informations- und Kommunikationstechnologien
- Internetnutzung
- E-commerce und E-business
- Einschätzungen zu Hindernissen für den Einsatz von IKT.

Im ersten Kapitel werden zunächst umfassende Informationen zu dem EU-Projekt sowie den teilnehmenden Ländern und Partnern gegeben. Anschließend wird im zweiten Kapitel eine Einordnung der Befragten nach Größe des Unternehmens, der Funktion im Unternehmen sowie der Branchenzugehörigkeit gegeben.

Kapitel 3.1 beinhaltet eine Analyse, in welchem Umfang Internet und E-Mail in dem Unternehmen eingesetzt werden und welche Bereiche davon betroffen sind. Weitere Fragen des Kapitels betreffen die Verwaltung der IKT sowie Schätzungen entsprechender Kosten. Dabei werden auch Möglichkeiten zur Kontrolle und Auswertung der IKT-Kosten erfasst. Kapitel 3.2 fokussiert die Internetnutzung. Hierbei wurden die Unternehmen gebeten, Angaben zu ihrem Internetanschluss sowie zur Gestaltung und Verwaltung ihrer Webseite vorzunehmen. Zudem wird erfasst, in welchem Umfang und zu welchem Zweck die Unternehmen auf Internetseiten öffentlicher Institutionen zurückgreifen. Kapitel 3.3 beschäftigt sich mit dem Schwerpunkt E-Commerce / E-Business. Nach einer Analyse der am häufigsten eingesetzten Kommunikationsmittel erfolgt eine Einschätzung über die zukünftige Bedeutung und den Einsatz von elektronischen Interaktionen zwischen dem Unternehmen und seinen

Kunden bzw. Zulieferern. Die Befragung endet mit generellen Einschätzungen zu den Hindernissen in den Bereichen der Internetnutzung, dem Einsatz von E-Commerce sowie dem generellen Einsatz von IKT.

An der Befragung nahmen 166 Unternehmen teil. Hierbei stammt der Großteil aus dem produzierenden Gewerbe (26,5%), gefolgt von Logistikdienstleistern (21,7%) sowie Handels- (15,7%) und sonstigen Unternehmen (36,1%). Neben zahlreichen kleinen und mittelständischen Unternehmen sind auch größere Unternehmen mit einem Umsatz von mehr als 50 Mio. Euro vertreten.

Die Ergebnisse der Befragung zeigen, dass die überwiegende Mehrheit der befragten Unternehmen ihren Mitarbeitern Internet zur Verfügung stellt und ihnen Zugriff auf einen E-Mail-Account ermöglicht. Die am häufigsten von IKT betroffenen Bereiche sind neben dem Finanzwesen und Rechnungswesen die Abteilungen Marketing/Vertrieb und Beschaffung/Einkauf.

Die eingesetzten Informations- und Kommunikationstechnologien werden etwa 40% der Unternehmen in eigenen Abteilungen verwaltet. Eine ebenso große Zahl der Unternehmen greift auf die Leistung von IT-Dienstleistern zurück. Die hierfür geschätzten Ausgaben für Personal, Soft- und Hardware belaufen sich in den meisten Fällen nur auf jeweils 0-2,5% des Umsatzes. Es wird in den nächsten drei Jahren jedoch mit einem Anstieg der Kosten gerechnet.

Bei der Analyse der eingesetzten Sicherheitsmaßnahmen ist festzustellen, dass diese durch den Einsatz von Passwörtern, Virenprogrammen, Firewalls sowie entsprechende Weiterbildungsmaßnahmen für Mitarbeiter zum Thema Datensicherheit in hohem Maße vorhanden, aber weiter ausbaufähig sind. Zudem sorgt ca. ein Drittel der Unternehmen für regelmäßige Updates.

Eine Vielzahl der Unternehmen nutzt die Möglichkeit, ihre IKT-Kosten zusammen mit ihren Zulieferern bzw. Kunden regelmäßig zu kontrollieren und auszuwerten, um Einsparungspotenziale zu identifizieren. Auf die Durchführung von Benchmarking-Aktivitäten wird jedoch in den meisten Fällen verzichtet.

Bei den Angaben zur Gestaltung ihrer Webseite geben über 80% der Unternehmen an, diese in erster Linie zur Präsentation von Informationen über das Unternehmen und angebotene Produkte/Leistungen zu nutzen. Über 70% bieten u.a. Kontakt- und Feedbackformulare auf ihrer Internetseite an, die den Kunden direkte Kommunikation mit dem Unternehmen ermöglichen.

Das Angebot von Internetseiten öffentlicher Institutionen wird von den Unternehmen in erster Linie zur Informationsbeschaffung sowie zum Download wichtiger Formulare, Vordrucke etc. genutzt. Auch die angebotenen Zahlungsabwicklungen über das Internet werden stark genutzt.

Die Analyse der am häufigsten eingesetzten Kommunikationsmittel zeigt, dass zwischen Telefongesprächen und dem Schreiben/Lesen von E-Mails kein großer Unterschied gemacht wird. Der persönliche Kontakt steht bei der Mehrheit der Unternehmen an oberster Stelle, um mit Kunden, Zulieferern etc. in Kontakt zu bleiben.

Die Ergebnisse der Befragung zeigen, dass sich der verstärkte Einsatz von Informations- und Kommunikationstechnologien auch in den kleinen und mittelständischen Unternehmen niederschlägt. Auch der Bedeutungszuwachs von E-Commerce und E-Business wurde erkannt und wird zukünftig noch stärker in die Unternehmensstrategie einbezogen.

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LIST OF ABBREVIATIONS

BSR	Baltic Sea Region
ERDF	European Regional Development Fund
EU	European Union
HSL	Hamburg School of Logistics
ICT	Information and Communication Technology
IKT	Informations- und Kommunikationstechnologie
IT	Information Technology
IuK	Informations- und Kommunikationstechnologie
SAG	Wachstumsinitiative Süderelbe AG
SMEs	Small and Medium-sized Enterprises
TUHH	Hamburg University of Technology
WP	Work Package

1 INTRODUCTION

In the following, the project, its regional partners as well as the ICT survey will be described.

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 **HSL Hamburg School of Logistics** was founded in 2003 as an innovative partnership between the Hamburg University of Technology (TUHH) and the Kuehne Foundation of Schindellegi (Switzerland). Its aim is to combat current shortfalls in the training of logistics managers. It provides appropriate further training and prepares young professionals within the logistics sector for their future tasks in senior management. The HSL vision is to become a top business and logistics school and a leading international competence centre for applied research in logistics.

The challenging program offered by the HSL includes three elements: in addition to the one-year full-time or two-year part-time MBA degree, which is targeted at highly-qualified young professionals, the HSL also offers part-time training and a competence centre for practice-oriented research. A network of high-calibre academic and business partners ensure that training is both practice-oriented and academically sound. In the LogOn Baltic project the HSL participates

as work package (WP) 3 leader due to its expertise in logistics research.

The regional partner of the HSL Hamburg School of Logistics is the **Wachstumsinitiative Süderelbe AG** (abbrev. SAG). SAG was founded in December 2004 against the background of an increased need for regional cooperation between Hamburg and its surrounding region in regard to the growing international metropolis competition. Representing a new type of a regional development agency, the SAG cooperates with its partners in the form of a “*private-public partnership*” (PPP) in which the participation of the business sector is to the fore. With its cluster-oriented strategy the SAG aims to achieve sustainable economic growth in the Southern Metropolitan Region of Hamburg by forming networks and accomplishing project-oriented cooperation between regional companies, service providers, scientific institutions and authorities, thereby crossing borderlines of municipalities, districts and federal states. For this innovative approach to action the SAG was recently awarded the national “kommKoop Award” by the Federal Ministry of Transport, Building and Urban Development. According to the laudation, the SAG is “an outstanding and trend-setting example of inter-communal co-operation” in Germany.

1.3 ICT survey introduction

This survey – part of the LogOn Baltic project - is one of the tools for primary data collecting. 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 have 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 is 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

In the following, the target group and sample as well as the main themes of the survey are described.

2.1 Target group and sample

Target group of the survey were companies from several industry groups: manufacturing industry, retail industry, logistics service providers and others. As the survey was designed as an online-based questionnaire, the Hamburg School of Logistics (HSL) sent emails to around 5,000 employees of these company groups in January 2007 and asked them to take part in the survey. The emails contained a link leading to a website where the participants could directly answer the questions.

The majority of email-addresses stem from the databases of the HSL and the Wachstumsinitiative Süderelbe. Other databases with a specific focus on companies in the logistics sector were used, for instance from the Chamber of Commerce Hamburg.

After sending the first email, two reminders were sent at two-weekly intervals in order to increase the response rate. Furthermore, the survey was announced on the HSL homepage as well as on four conferences which took place in the Metropolitan Region of Hamburg in December, January and February. In total, the participants had two months time to respond to the questionnaire from the first email in mid-January until the closure in mid-March. 166 participants finally answered the questionnaire.

In this report, the respondent companies were generally categorized according to the sector or the company size. Micro, small or medium-sized companies depending on the turnover are defined by the European Commission as follows (European Commission 2003):

- Micro companies: €0-2 million
- Small companies: €2-10 million
- Medium-sized companies: €10-50 million

Large companies are therefore characterized by a turnover of more than €50 million.

Micro, small and medium-sized companies are also referred to as SMEs. The company size and sector were generally used as background parameters.

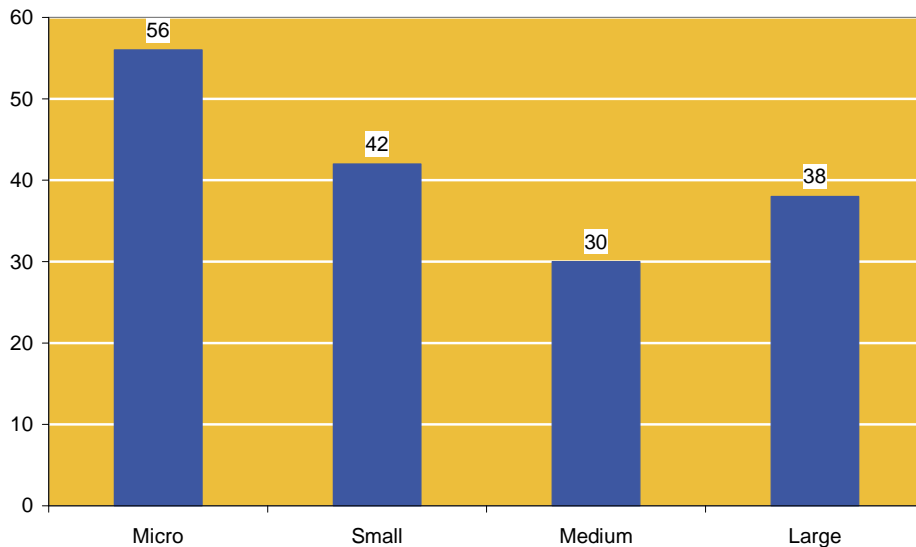
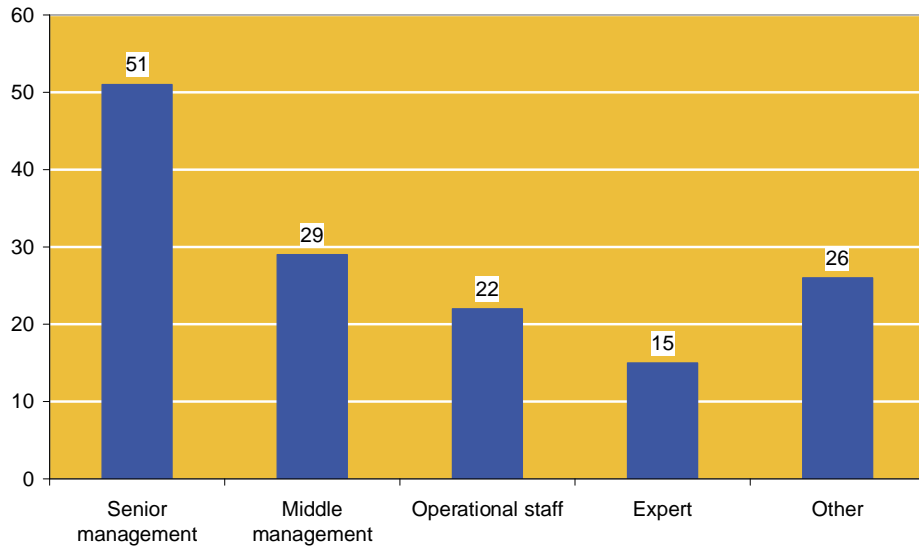


Figure 1 Number of respondents according to company size

Figure 1 shows the number of respondent companies according to the company size. Out of the 166 companies that responded to the questionnaire, 34% (56) represent the micro companies, 25% (42) belong to small companies, 18% (30) are medium-sized and 23% (38) represent large companies.

As a result, nearly 80% of the respondents can be classified as SMEs. The German economy is characterized by an even higher number of SMEs (99.7%, Statistisches Bundesamt Deutschland 2006), with the percentage of SMEs varying from one region to another. Thus, the distribution of participating companies does not fully reflect the proportion of companies in Germany. This may have several reasons, one being that there are a higher proportion of large companies' email addresses in the databases. Another reason could be that SMEs generally have a lower willingness to answer surveys, mainly due to only limited personnel resources.

However, as the majority of respondent companies represent SMEs, the distribution of participants supports the objective of the LogOn Baltic project to evaluate the needs and to strengthen the competitiveness of SMEs in particular.



Please note: Companies were also able to tick the option "no response".

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

Moreover, the respondents were also categorized according to their positions in the companies (Figure 2). More than two thirds of the respondents either belong to the senior or the middle management. More than one third of the respondents are senior managers. This is not very surprising since the number of participating micro companies is slightly higher than the others and the number of employees of micro companies is usually lower. The high number of senior and middle managers supports the credibility of the survey. The management can be expected to have a broad overview of their current situation with respect to ICT and also to have a strategic view on future developments and trends. In SMEs, the management is often involved in operational issues as well and thus has a good knowledge of daily problems and challenges.

In addition to their size, the companies are classified depending on the industrial sectors (Figure 3). 27% represent the manufacturing industry, 16% are from trade and 22% belong to the group of logistics service providers. The remaining 35% of the respondents are from other industries.

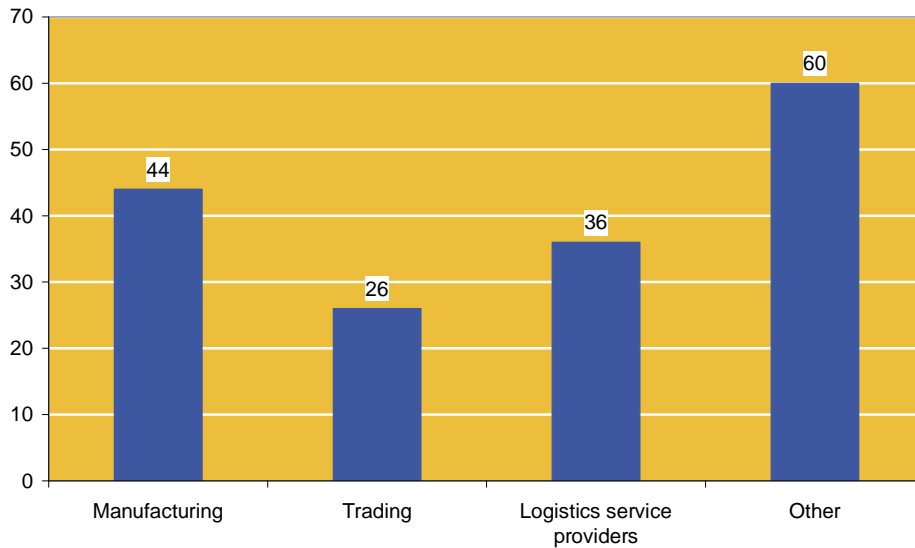


Figure 3 Number of respondents according to main industry

The three contemplated sectors are chosen because companies from these industries certainly deal with logistics issues. Nevertheless, since the survey's objective is also to reflect ICT as the interface between the public and the private sector, other companies are important for the results as well.

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

The structure of this chapter follows the structure of the interview guideline. Therefore, the following subchapters refer to the four parts of the guideline listing and analysing the findings regarding the use of ICT systems and the Internet, e-commerce and e-business as well as a general assessment of ICT usage.

3.1 Use of ICT systems

Both e-mail and the internet are widely used in the surveyed companies as Figure 4 shows. Around two thirds of the companies state that over 75% of their employees have internet access and even a few more companies agree that their staff also have a company e-mail account.

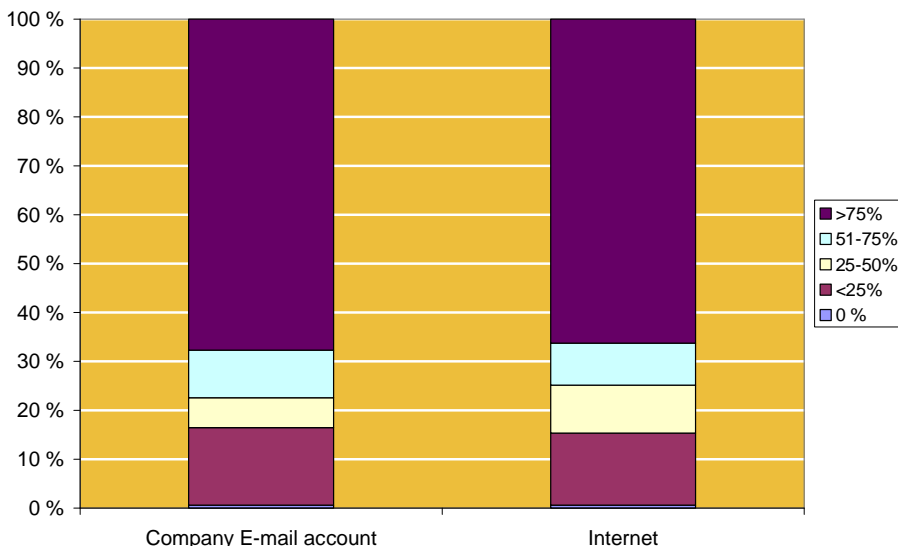


Figure 4 Percentage of employees having access to E-mail and Internet

The Internet makes a range of information available at very low cost and at high speed. Paperless and therefore very fast and safe

communication is possible through sending emails not only internally but also externally. Hence, transaction costs can be kept very low.

The closer a company gets to the manufacturing industry, the less Internet and e-mail are normally used by employees. For service providers, however, Internet and e-mail become more and more important to ensure seamless and smooth communication with customers.

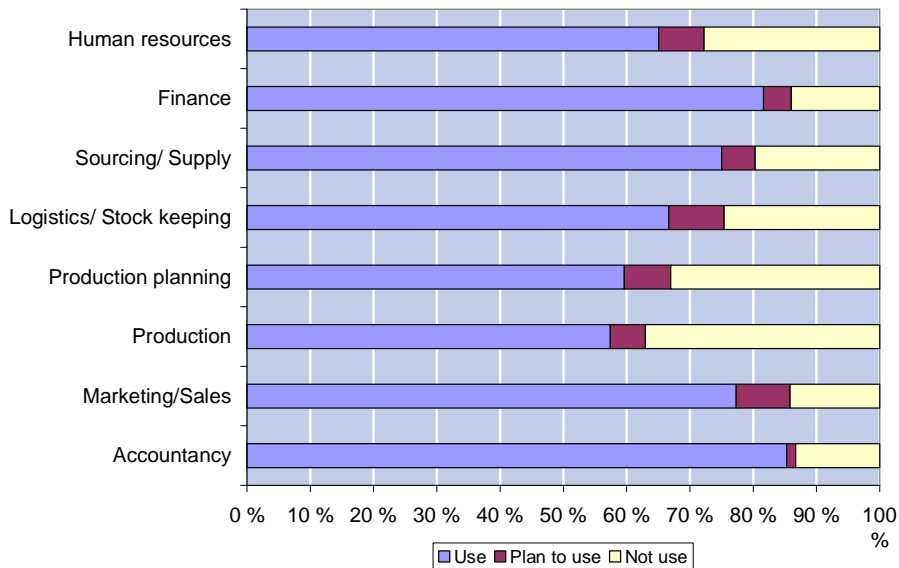


Figure 5 Areas of business where companies are using ICT

Companies use ICT according to their needs. As can be seen in Figure 5, Finance, Accountancy and Marketing and Sales are the main business areas for using ICT systems, although ICT systems are also widely used in other fields. For Finance and Accountancy, different software tools are applied enabling quick and easy access to the information that is required without any delay or disruption.

In business areas like Production, Production planning and Logistics, ICT systems are often applied as well and their usage is still increasing. Customers, suppliers, product data, as well as formulas or recipes, batches, orders and deliveries can be entered into just one central system and can be managed from there on. This way, all available data is always up-to date and consistent, can be better monitored and the flows of information can be better managed. Furthermore, inventory levels as well as any movements of goods can be optimized. Authorised users both inside and outside of companies

can access the necessary information quickly and easily. At any time of the day, the supply of raw materials, semi-finished products and finished products can be controlled.

In conclusion, companies seem to have realized that today's information technology very often leads to greater accuracy, more economy, higher speed and visibility, immediate availability, higher productivity and to a tighter customer focus (Lambert, Stock, Ellram 1998).

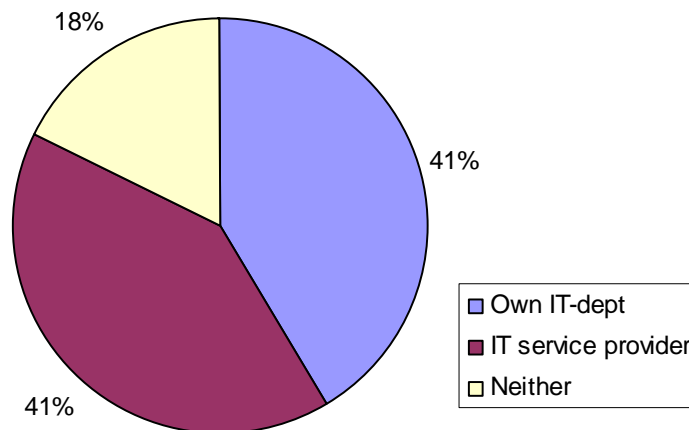


Figure 6 The way ICT administration is handled in the companies

The respondents were asked to indicate whether they have an own IT-department, an IT service provider or neither. As Figure 6 shows, about 41% of the responding companies have their own IT-department, 41% mentioned that they outsource IT services to an external service provider. 18% do not have either an own department or an external service provider. This result is not amazing, considering that the majority of the companies can be characterized as small and medium-sized enterprises. Due to the limited human resources and in most cases a limited budget, it is often not possible to have a separate IT-department if the company's core competence is not IT-related. Therefore most SMEs use rather simple IT systems and/or have one or few employees with specific IT competence who can handle the IT systems. In most cases the implementation and complexity of IT systems still seems to be controllable by few persons.

Since the outsourcing of IT administration is often costly and needs an intensive co-operation, mainly large companies cooperate with an IT service provider. Therefore it is not common; only 11% of the companies responding to the survey mentioned that they outsource IT services to an external service provider.

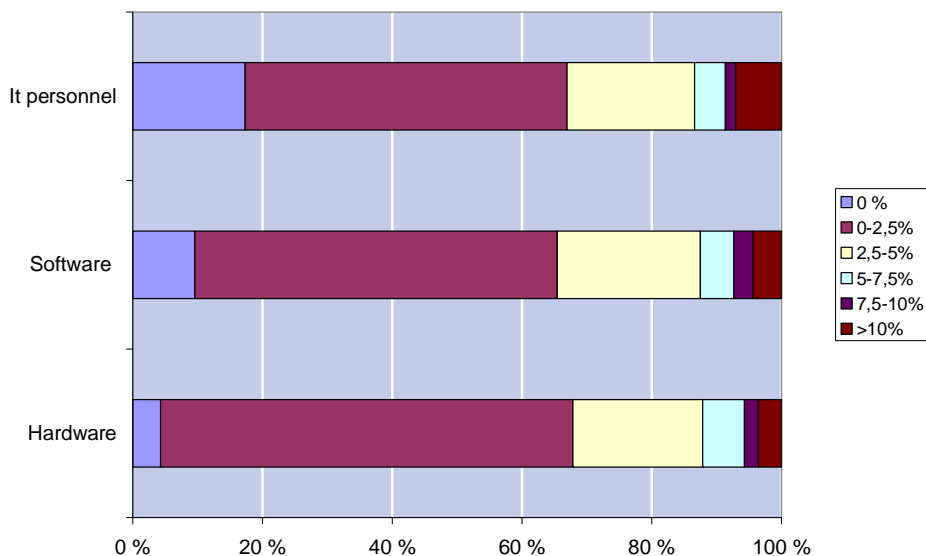


Figure 7 ICT expenses as a percentage of company turnover

In the next question, companies estimated their ICT expenses during 2005 as a percentage of their turnover used for IT personnel, software and hardware. In total, the structure for the three main aspects hardware, software and IT personnel is very similar. The results also show that companies spend quite different proportions of their turnover on IT.

As Figure 7 shows, up to 17% of the companies did not have expenses in IT personnel in 2005. As mentioned before, the responses of this survey are dominated by SMEs. Thus, one explanation could be that these companies prefer investing in employees who can take over the function of an IT administrator in parallel to his/her day-to-day business. In this way, the companies can save the expenses for expensive consulting and IT firms.

About half of the companies have spent between 0 and 2.5% of their annual turnover for IT personnel. Around 20% of the companies used 2.5-5% of their annual turnover for IT personnel. 5% of the companies used 7.5-10% of their annual turnover and only 2% spent 7.5-10% of it.

The companies that have spent more than 10% of their annual turnover on IT personnel might be medium-sized or large companies for whom IT plays a more significant role or is even a core business.

The costs can be mainly divided into two parts: administration and training costs. Especially when new systems are installed, it also costs money to train the personnel. Mostly, SMEs have one or two employees at most that are trained professionally from external IT services and then share their knowledge with their colleagues. Thus, the biggest part of the costs can probably be traced back to administration costs.

Comparing the IT expenses for software, Figure 7 shows that 8% of the companies did not have any costs for software last year. Especially in SME, an IT system does not have to be changed very often. If companies have implemented a software tool, they can use it for several years with rather low follow-up costs. Consequently, the majority, namely 56% of the companies used only 0-2.5% of their annual turnover for software expenses. About 4% also stated that they would use more than 10% of their turnover on IT systems. This number seems surprisingly high, especially when compared with IT personnel costs.

Figure 7 also shows that 6% of the companies did not have any costs for hardware; more than 60% of the companies invest about 0-2.5% of their annual turnover in hardware. A reason for this can be that hardware can often be updated only every four to six years, because many basic functions do not really change. The hardware is able to work more efficiently at a higher speed and at a higher memory capacity, but most software systems are also compatible with older hardware. Therefore high expenses in hardware are not always necessary. A reason for this low investment can be that hardware with the same performance has become much cheaper during the last years. The general trend in the increasing use of IT and telecommunication and the high speed of hardware developments also affects prices.

20% of the companies used 2.5-5% of their annual turnover for hardware, 8% used between 5 and 7.5% of their turnover, only 3% spent up to 10% and only 5% of the companies had costs of more than 10% for hardware.

Table 1 Expectations of ICT costs development in the next 3 years

	Decrease	Remain constant	Increase
Hardware	36	80	34
Software	18	81	49
IT personnel	9	82	51

In addition to the estimation of the amount of ICT expenses in 2005, respondents were asked how they expect the ICT costs to develop in the next 3 years, differentiated again between hardware, software and IT personnel. The majority of companies mainly expect the costs for all three categories to remain the same in the near future (Table 1).

For personnel, however, 36% of the participants also expect an increase in costs while only 6% expect a decrease. This anticipated trend can mainly be explained by a general increase in personnel costs which is largely independent from ICT. More specific to ICT, there is currently a shortage in sufficiently qualified employees. This problem will aggravate in the future and will also have an impact on the wages of ICT personnel.

In the area of hardware, 24% of the respondents expect a decrease and about 53% expect the costs to remain constant. Only 23% think that the costs for hardware will increase during the next years. On the one hand, SMEs have to interact more globally and more internationally in the near future if they want to stay competitive. As a consequence, SMEs have to enlarge their business area and they have to update and to improve their IT systems while implementing new and better software to optimize their processes. In addition, the product life cycle of hardware takes only one or two years in most cases. Keeping one's hardware updated and state-of-the-art therefore requires permanent investments. On the other hand, hardware with the same performance can be purchased at a much lower price than some years ago. Thus, there might be two philosophies: one company group that pursues a "technology leadership" strategy, leading to high costs, and one group with lower requirements and lower costs.

The situation looks different regarding software. 12% of the companies believe that the ICT costs for software will decrease and 55% expect costs to remain constant. But 33% of the respondents still think that the costs for software will increase in the next years. One reason for this could be that an increasing number of business processes will be handled electronically in the next period. This is illustrated by the tables in chapter 4. The order tracking and service

status, payment possibilities etc. will increasingly be available online in the next years, thus requiring new software and hardware.

Table 2 The use of different data security measures

	Available	Regularly used/ updated
Password access control	138	58
Virus protection applications	132	72
Computer firewall applications	133	66
Employee education on data security	86	56
Own documented data security program	69	39

In the next question the companies indicated whether different data security measures are installed and regularly used/updated (Table 2). The security of sensitive information will become more and more of an issue in the future, since accessibility, transparency and security of information are essential to the success of a firm.

In 138 out of 166 companies, password access control is available and 58 of them regularly use and/or update it regularly. Concerning virus protection and computer firewall almost the same can be found: 132 companies use virus protection applications and 72 of them use/update it regularly, 133 companies have a computer firewall application to secure against hackers and 66 use/update them. This shows that data security is of great importance in Germany. One important aspect is that it is very difficult to do business under insecurity. The business contacts via email and also the transfer of business data have rapidly increased. Documents are transferred to the internet and intranet or they are sent by email. If business data was manipulated in that way it would have fatal consequences. Therefore 86 companies offer additional employee education on data security, and 56 of them update them consequently. Part of such educational measure could be to learn not to open attachments from unknown senders, not to surf on dubious homepages or only to send important documents in an encoded way.

69 companies also stated that they have their own documented data security program, 39 of them use/update it regularly. Considering the fact that it is very complex to develop and to administer such a program and to specifically train employees, this seems quite a high number.

Particularly with respect to own data security programs but also to the other points of this question, the main limitation of this question has to be kept in mind: security and education programs can have very different levels and standards in different companies. In addition, although there is high standard of data security in Germany with respect to the availability of security tools and programs, it is surprising that only between 40 to 50% use or update them regularly.

Table 3 Monitoring and evaluation of ICT costs and performance

	Disagree	Neither disagree nor agree	Agree
We regularly monitor and evaluate our IT costs and performance internally	6	15	128
We regularly monitor and evaluate IT costs and performance with selected suppliers and/ or customers	24	34	71
We regularly benchmark IT performance metrics against our competitors	29	50	53

Please note: Companies were also able to tick the option "no response".

Next, companies were asked how they monitor their ICT costs and performance (Table 3). 86% of the companies agree that they regularly monitor and evaluate their IT costs and performance internally. Only 4% disagree and 10% neither disagree nor agree. For a company it is relatively easy to monitor its internal procedures because all data is available and transparent. In order to avoid wasting limited resources, it is necessary that the company monitors its costs regularly. In times of high competition the efficient allocation and assignment of resources decides if a company will succeed in business in the near future.

In contrast to internal monitoring and evaluation, only 55% of the interviewed companies agreed that they regularly monitor their costs and performance with selected suppliers and/or customers, 26% neither disagree nor agree and 19% disagree. One reason is certainly that IT costs and performance are sensitive data that companies do not want to give to their business partners in order not to put them in a stronger negotiation position. Another reason is that there might be only limited aspects that make sense to evaluate and monitor together, such as EDI systems that are used by both partners.

There is an even lower tendency to benchmark IT performance metrics against competitors. 22% of the companies do not regularly benchmark their IT performance metrics against their competitors. 38% of the companies neither disagree nor agree and only 40% of the companies said that they perform benchmarking.

3.2 Use of Internet

This subchapter deals with the use of internet and websites as well as with its contents. The respondents were asked if they use a modem, broadband connection or other type of connections in their day-to-day business (Figure 8).

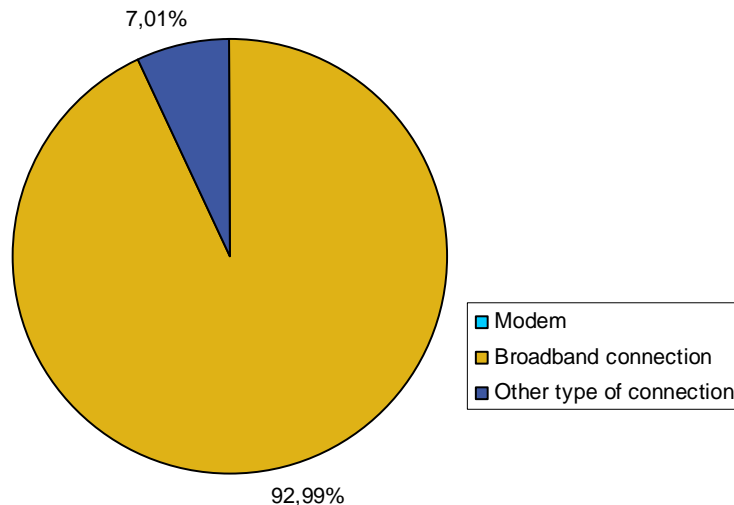


Figure 8 Types of Internet connections used

DSL is typically capable of transmitting data much faster than a dial-up modem (56kbit/s). Broadband Internet access became a rapidly developing market in many areas in the early 2000's. It enables people to make video and telephone conferences of good quality as well as to send emails with big attachments.

The results show that more than 90% of the companies nowadays use a broadband connection. While modems are not used at all, 7% of the companies used other types of connections.

Next, the respondents were asked if their company has an own website and who is responsible for its design and administration. Here, 95% of the companies stated that they have their own website. Reasons for this may be that providing information about the company in an electronic version is much cheaper than using print material like booklets, flyers or brochures. Changes in the content can be done

almost in real time on the internet instead of printing a new and revised booklet or flyer.

51% of the companies' websites are designed and administered by an IT service provider and 48% are designed and administered by the company's own IT department or certain employees. Reasons for that can be that today there are many free and open source software tools for designing an own homepage. Even educational institutions such as universities, academies or adult education centres offer special courses or seminars where people can learn about it in a few hours. But if you are not familiar with programming in html or other languages, designing and administering the homepage on your own can be very time-consuming. Therefore, about half of the companies have an IT service provider to design and to administer their website, although the costs for occupying IT services from an IT service provider can be very high.

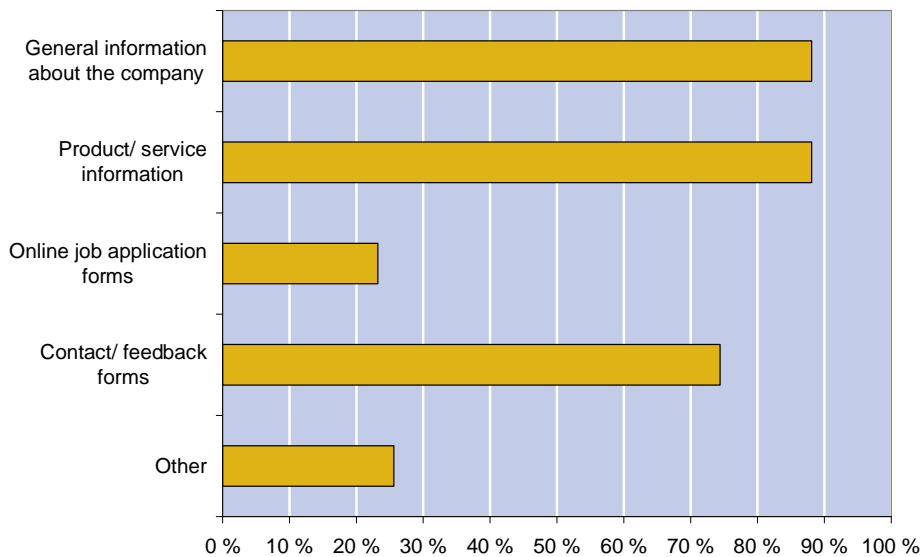


Figure 9 Types of features that the company website includes

In the next question, the respondents were asked what types of features their website includes. 87% of companies' websites are mainly used to give general information about the companies such as their history, location or subsidiaries, general contact information etc. In most cases this information is published together with information about the company's products and/or services, e.g. price information, opening hours, information about placing an order etc.

It is hardly possible to find online job application forms. There are several advantages for offering this kind of online application, e.g. it makes the handling of large numbers of applications easier and less time-consuming because on the one hand it easily enables the forwarding of application to others and on the other hand it saves archiving the paper-based versions, or it offers the possibility to filter potential candidates with the help of primary criteria of selection. Another advantage of online applications is that the acquisition of data in an electronic version does not require feeding the data into the computer, making it faster to establish analyses and statistics. Nevertheless, only 22% of the companies offer this kind of service. A reason might be that the number of applications particularly at SMEs can still be handled manually and therefore the administration of the application form would be too expensive. It can show that companies still choose the traditional ways like personal contact for applications.

Contact and feedback forms can be found on more than 70% of the surveyed companies' websites. This means that they would like to be within easy reach by their customers or suppliers.

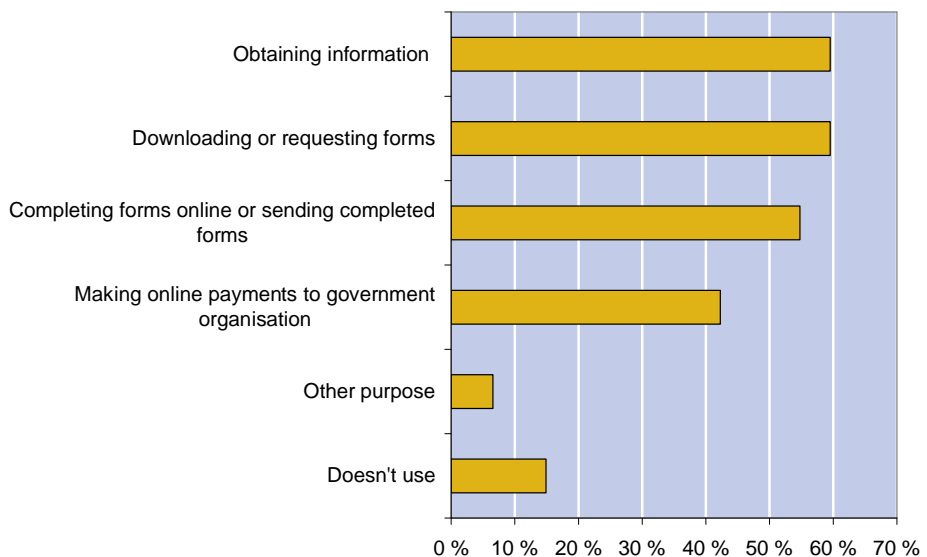


Figure 10 Different purposes companies use the Internet for to interact with public authorities and government organisations

The companies were also asked about the purpose of internet use regarding interactions with public authorities and organisations. They mainly use the internet to obtain information about public authorities

and government organisations (59%) such as finding the right authority and contact persons, maps, opening hours etc. for a specific purpose. The same number of companies uses the internet for downloading or requesting forms, e.g. applications for licences, bulletins, regulatory frameworks etc.

About 55% of the companies use the possibilities to complete forms online or to send completed forms, e.g. tax declaration or different kind of applications. In addition, more than 40% of the companies make online payments to government organisations via internet. This comfortable account management increases in popularity.

Approximately 6% of the companies use the internet for other purposes and about 14% do not use the internet for dealing with public authorities and organisations.

3.3 E-commerce / E-business

Electronic commerce or e-commerce is the ability to perform major commerce transactions electronically. There is no generally accepted definition for the term. In the following, electronic business, or e-business is a collection of business models and processes motivated by Internet technology and focused on the improvement of extended enterprise performance. (Simchi-Levi et. al, 2003).

With the help of e-business, companies are able to link their internal and external data processing systems more efficiently and more flexible. They can work more closely with suppliers and partners, and can better satisfy the needs and expectations of their customers. In comparison to e-commerce, e-business refers to a more strategic focus, it emphasizes on the functions that occur using electronic capabilities. E-commerce is a subset of an overall e-business strategy.

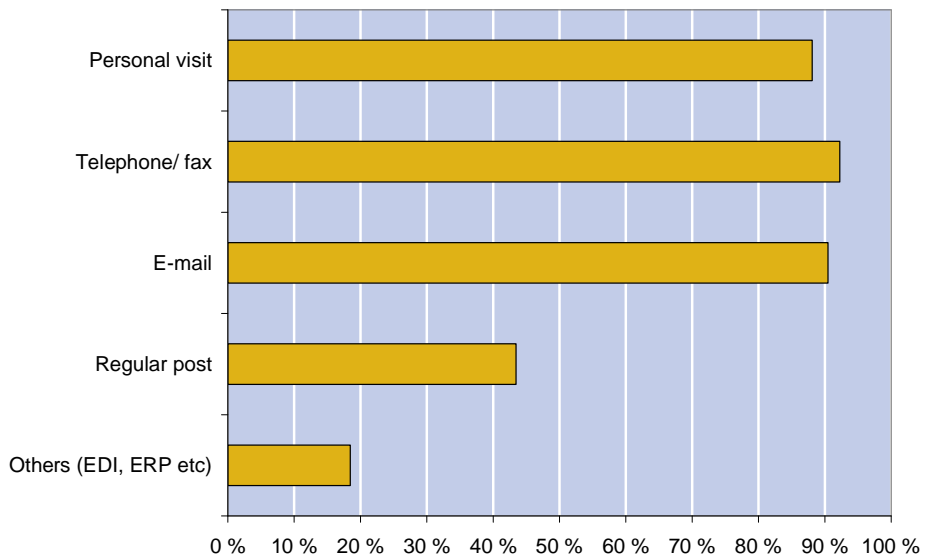


Figure 11 Types of communication methods the organisations use when communicating with customers and suppliers

The participants were asked which type of communication methods they use when communicating with customers and suppliers. As Figure 11 shows, personal meetings are of great importance for communication. About 85% of the companies mentioned that they visit their customers and suppliers personally. A reason for this high number can be that the respondents belong to SMEs in Hamburg. In these cases the number of customers and suppliers is still manageable. If a company had a high number of customers and suppliers, visiting all of them would hardly be possible.

Traditional ways of sending messages are still common methods for communication. The most used type of communication other than personal contact is telephone and fax. About 90% of the companies make use of them. It is a cheap and easy way to communicate with customers and/or suppliers. Current issues can be discussed directly and without time-delay. About 42% of the companies use regular post for important documents, e.g. for legal contracts, invitations etc. In comparison to sending an email, regular post takes a long time and is more expensive. E-mail is the commonly used e-commerce method by surveyed companies. 90% of the companies use e-mails regularly. This is the cheapest and a fast way to communicate with each other.

The use of other communication methods such as EDI and ERP is still very rare in the surveyed companies of the region (18%).

Table 4 Companies' business interactions with customers and suppliers that are handled electronically

	Customers		Suppliers	
	Now	In 3 Years	Now	In 3 Years
Order placement for products/ services	107	106	126	114
Order tracking/ service status available online	74	91	101	110
Payment possibilities	64	83	82	95
After sales support	69	75	60	77

Table 4 shows the different types of business processes between the companies and their customers and/or suppliers which are handled electronically now and in three years. Electronic orders made by customers are expected to remain stable in the next three years. However, there would be a slight decrease of about 10% in the order placement for products or services by suppliers. On the other hand, payment possibilities, tracking orders and after sales support will show an increase in the next three years for both customer and suppliers.

Table 5 Companies' opinion on the development of e-commerce in their business operations

	0 %	1-19%	20-39%	40-59%	60-79%	80-100%	Total
Customers	7	39	36	22	0	0	104
Suppliers	2	36	29	22	21	28	138

Table 5 shows that the participating companies have a higher tendency to do business electronically with their suppliers than with their customers. 20% of the respondents handle nearly all of their business interactions with their suppliers electronically. But there is no company that handles over 60% of the business transactions with its customers electronically. One of the dominant influencing factors for the percentage is certainly the position in the supply chain. Companies whose customers are end consumers will have a low percentage of electronic interactions if they are not internet vendors.

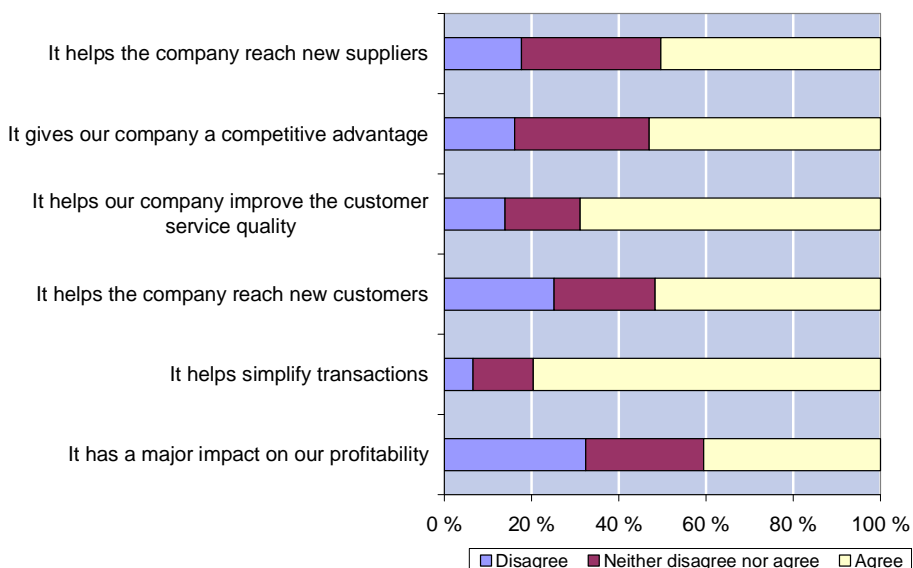
It can also be seen that only very few companies do not use e-commerce at all. Only 7 companies (6.7%) do not have any e-commerce interactions with their customers and even less (2 companies or 1.4%) with suppliers. The vast majority of companies

handle up to 59% of their business with their customers as well as with their suppliers via e-commerce.

Table 6 Expectations of the share of e-commerce in the next 3 years

	Decrease	Remain the same	Increase
Customers	1	39	108
Suppliers	0	30	115

In order to evaluate the development of e-commerce in the next years, the participants were asked about their expectations on the share of e-commerce in the next three years (Table 6). The usage of e-commerce currently does not seem to be very high; hence, companies plan to increase the usage rate. 73% of the respondents believe that the share of e-commerce for business with their customers will increase. About 26% expect that it will remain the same and less than 1% believe that there will be a decrease in the near future. The situation for interactions with suppliers is even clearer: 79% of the companies believe that the share of e-commerce with their suppliers will increase. About 21% think that it will remain the same and not a single company expects a decrease.



Please note: Companies were also able to tick the option "no response".

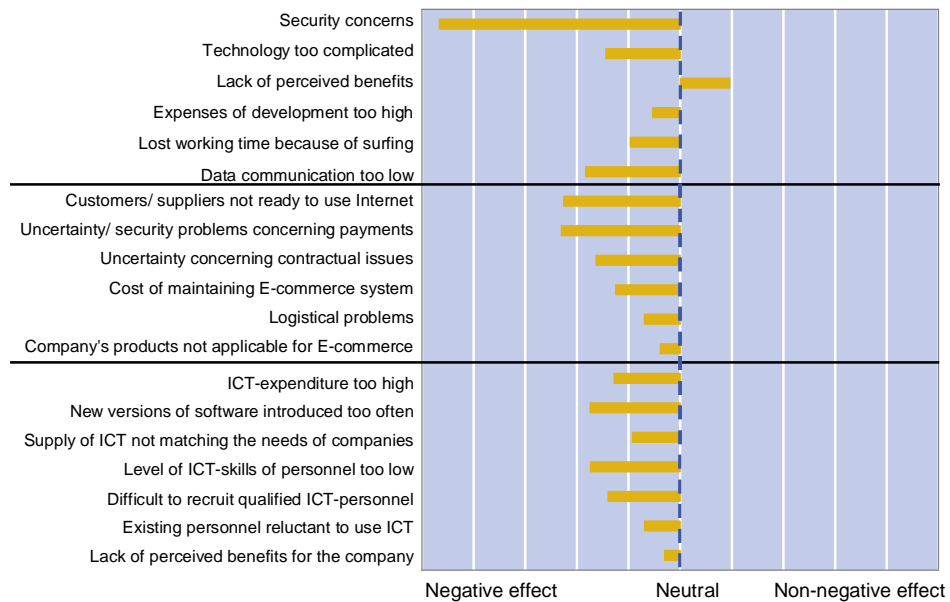
Figure 12 Companies' views on the importance of E-commerce

In the next question the respondents were asked to assess the benefits of e-commerce. In general, companies believe that e-commerce is useful for their firms. As Figure 12 shows, about 50% of the respondents seem to agree with all but one category. Surprisingly, this exception is the impact on the profitability of the companies, which is the most important one and has a direct effect on the bottom line of the companies. This is astonishing because the other categories such as gaining a competitive advantage and reaching new customers are not independent and should also influence the profitability. Nevertheless, only 40% of the companies agree that e-commerce positively affects their profitability.

The aspect which was regarded most positive was that e-commerce helps to simplify transactions. 80% of the companies agree that it simplifies transactions. Also, more than 50% of the companies strongly support the idea that e-commerce helps the company to reach new suppliers and to give the company a competitive advantage (52%). Most of the companies are of the opinion that e-commerce is good for the company's marketing strategy in terms of improving customer service quality (68%) and reaching new customers (52%).

3.4 General assessment of ICT usage

In the last question the companies were asked to estimate the effects of different barriers on the use of 1) Internet, 2) e-commerce and 3) ICT in general. Participants could choose between a negative effect, a neutral and of a non-negative effect.



Please note: Companies were also able to tick the option "no response".

Figure 13 The effect of different barriers on the use of Internet, e-commerce and ICT in general

Security concerns are by far the most important barriers to the use of the Internet. The cost aspect does not seem to have a relevant negative effect. Lost working time due to surfing on the Internet, too low data communication and a complicated technology have also not been judged too negatively.

Companies implementing e-commerce see the main barriers in the uncertainty concerning contractual issues and particularly concerning payments. Also, they see their customers and suppliers as not ready for using e-commerce. The costs of maintaining e-commerce systems seem to play a bigger role than for internet usage. While the Internet has nowadays become a commodity product, e-commerce still requires specific systems and maintenance leading to higher expenses. Logistical problems and products which are not applicable for e-commerce have only small negative effects on the use of e-commerce.

Compared to Internet and e-commerce, the barriers for using ICT in general are assessed lower. The participants see a lack of sufficiently ICT-trained employees as one of the biggest problems which also corresponds to the fact that companies expect an increase in costs for IT personnel. Furthermore, the frequent introduction of new software versions does not seem to contribute to more trust in ICT systems.

4 SUMMARY AND CONCLUSIONS

The purpose of this report within the framework of the EU-funded project LogOn Baltic is to present the first results of the ICT survey conducted in the Southern Metropolitan Region of Hamburg from January to March 2007. Different topics were covered in the survey, ranging from the usage of ICT systems, ICT administration and costs, to barriers to usage and the future development of ICT. 166 respondents took part in the survey, 80% of which represent SMEs. This supports the objective of the LogOn Baltic to evaluate the needs and to strengthen the competitiveness mainly of SMEs. Regarding industry, 27% of the respondents represent the manufacturing industry, 16% belong to the trading industry, 22% are logistics service providers and 35% represent other industries.

The results of the survey show that in the majority of the companies, more than 75% of the employees have access to internet and email. Finance and Accounting, Marketing/Sales and Sourcing are the functions where ICT systems are used most often. The ICT systems in place are administered by an own IT department in about 41% of the companies. Another 41% engages external IT service providers. 18% have neither a separate IT department nor uses external service providers. In most cases, the estimated costs for personnel, software and hardware account for 0-2.5% of the turnover each. In the next three years, however, an increase of these costs is expected.

Regarding the analysis of data security measures, it can be observed that a number of measures such as the usage of passwords, virus protection applications, firewalls and employee trainings are already implemented in the companies to a high degree, but the usage rate can be further improved. In addition, only about one third of the companies regularly update their security programs.

A large number of companies use the possibility of monitoring and evaluating their ICT costs and performance internally and together with their suppliers and/or customers in order to identify areas for improvements and cost savings. Benchmarking activities, however, are not implemented by most companies.

95% of the companies stated they have an own website. More than 80% of the companies use the website to present information on the

company itself and the products/services offered. About two thirds also offer contact and feedback forms which allow their clients to directly communicate with them. Websites of public organisations and institutions are mostly used for the retrieval of information and the download of forms. The possibility of making payments online is also adopted by more and more companies. The analysis of the usage of communication methods shows that the vast majority of companies no longer makes any differences between traditional methods such as fax and telephone on the one hand and email on the other hand. Personal visits, however, still have the highest priority in order to stay in contact with customers, suppliers and other business partners.

The results of the survey indicate that the increased application of modern information and communication technologies also finds its way into SMEs. The growing importance of e-commerce and e-business has to be realized and will be increasingly incorporated into the business strategy in the future.

While the aim of this report is to present the first results of the ICT survey in the Southern Metropolitan region of Hamburg, further research on this topic will be done in the future. Interpretations of the results will mainly concern two areas. The first is a more detailed analysis of the Hamburg results, meaning for instance causal analyses with e.g. the company size as a background variable. An even more important aspect is the comparison of these results with the results of other regions in the Baltic Sea Region.

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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]

- | | |
|--|---------------------------------|
| <input type="checkbox"/> Senior management | <input type="checkbox"/> Expert |
| <input type="checkbox"/> Middle management | <input type="checkbox"/> Other |
| <input type="checkbox"/> Operational staff | |

- 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]

- | | |
|------------------------------------|---------------------------------------|
| <input type="checkbox"/> 1 -9 | <input type="checkbox"/> 1000 – 1999 |
| <input type="checkbox"/> 10 – 49 | <input type="checkbox"/> 2000 – 4999 |
| <input type="checkbox"/> 50 – 249 | <input type="checkbox"/> 5000 – 10000 |
| <input type="checkbox"/> 250 – 499 | <input type="checkbox"/> Over 10000 |
| <input type="checkbox"/> 500 – 999 | |

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

- decrease
- increase
- remain constant

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]

- | | |
|--|--|
| <input type="checkbox"/> 0 – 2 M EUR | <input type="checkbox"/> 50.1 – 100 M EUR |
| <input type="checkbox"/> 2.1 – 5 M EUR | <input type="checkbox"/> 100.1 – 500 M EUR |
| <input type="checkbox"/> 5.1 – 10 M EUR | <input type="checkbox"/> 500.1 – 1000 M EUR |
| <input type="checkbox"/> 10.1 – 25 M EUR | <input type="checkbox"/> 1.1 – 5 billion EUR |
| <input type="checkbox"/> 25.1 – 50 M EUR | <input type="checkbox"/> over 5 billion EUR |

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

[Drop-down menu]

- | | |
|--|-----------------------------------|
| <input type="checkbox"/> decrease | <input type="checkbox"/> increase |
| <input type="checkbox"/> remain constant | |

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

- | | | |
|--|---------------------------------------|--------------------------|
| <input type="checkbox"/> Yes, but only in (the home country) | | |
| <input type="checkbox"/> Yes, also abroad: | In the Baltic Sea Region ¹ | <input type="checkbox"/> |
| | Rest of Europe | <input type="checkbox"/> |
| | Other | <input type="checkbox"/> |
| <input type="checkbox"/> 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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IT Personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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

[Separate tick box for each]

	decrease	remain constant	increase
Hardware	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IT Personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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

	available	regularly used/updated
Password access control	<input type="checkbox"/>	<input type="checkbox"/>
Virus protection applications	<input type="checkbox"/>	<input type="checkbox"/>
Computer firewall applications	<input type="checkbox"/>	<input type="checkbox"/>
Employee education on data security	<input type="checkbox"/>	<input type="checkbox"/>
Own documented data security program	<input type="checkbox"/>	<input type="checkbox"/>

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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We regularly monitor and evaluate IT costs and performance with selected suppliers and/or customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We regularly benchmark IT performance metrics against our competitors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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	<input type="checkbox"/>	<input type="checkbox"/>

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
<u>Regional e-Government activities</u>						
I'm satisfied with the existing e-Government offers	[]	[]	[]	[]	[]	[]
I'd appreciate more and better e-Government offers	[]	[]	[]	[]	[]	[]

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