

EVALUATING E-GOVERNMENT: THE CASE OF PALKKA.FI -PORTAL

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Title of Thesis: EVALUATING E-GOVERNMENT: THE CASE OF PALKKA.FI -PORTAL	
Abstract: <p>Government organizations are increasingly providing a wide range of e-government services to their citizens. Using information and communication technologies allows the government to gain the presumed benefits of providing timely, effective and cost efficient services.</p> <p>A central standpoint in the models for e-government deployment is the analysis of interaction between a government and its citizens. The aim of this study is to investigate how and why a new type of e-government solution provides added value to its users, and what are the critical factors that affect user acceptance. The service studied is Palkka.fi; a portal incorporating services from a governmental Tax Administration with private insurance companies.</p> <p>An online questionnaire was circulated to 300 pilot users of Palkka.fi –portal. 50 of the potential users started to test the system and answered the questionnaire.</p> <p>The questionnaire findings show a mixture of positive appreciation of a good system combined with suggestions for improvements. Critical factors and major areas of improvement in Palkka.fi relate to navigation and understandable information. Many of the users believe they will be using Palkka.fi when it goes live even though the saving in time or money compared with their previous way of calculating salaries was not as much as expected.</p> <p>The findings also show that being an experienced accountant, such as an accounting firm, does not correlate with having easier to adopt to the system. Information technology companies do correlate with easier adoption.</p>	
Keyw ords: e-government, usability, palkka.fi, portal, web-service,	

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1. INTRODUCTION

1.1. Background

The advent of internet has changed the daily routines of businesses as well as the lives of private citizens. For some businesses and citizens the use of information technology tools is a natural part of their daily lives while others prefer more traditional channels. Private firms using new technology to improve their contacts with customers and suppliers are grooming citizens into wanting to communicate with the government in the same manner.

Technological change has always catalysed organizational change [22]. Private firms, when implementing new technology, need to integrate activities across departments and implement best practices. In the same way governments need to look at their administrative processes and communication within and across agencies when applying new technology. When government began using telegraphs and telephones, the old messenger-based processes and organizational formats were replaced by new formats and processes enhancing the swiftness of government actions and reactions. Thanks to our less hype-prone ancestors, this innovation was not labelled something like t-Government even though the telegraph and telephone-induced changes have been quite dramatic [22].

1.2 Digital Divide

The term digital divide was made up in the 1990s to describe the perceived growing gap between those who have access to and the skills to use information and communication technology tools and those who have limited or no access [30].

People who don't have access to internet are feared to be disadvantaged compared with the internet users. As more of the society is being digitalized the non users will have less power as consumers, less access to information, fewer options for dealing with the government and less opportunity to interact with others via email [26].

The earlier conception that people are either online or offline is being replaced by a new definition with the idea that access to and use of the internet is more versatile. The use pattern ranges from full use, intermittent use to non use of the internet. Research has found two subsets of users, net dropouts, who once used the internet and no longer do, for example due to technical problems. The other new subset is net evaders, who know how to use the internet but choose not to. They might have a family member who uses the internet for them, though. These new subsets differ from the truly disconnected because they have experience of the internet as compared with the truly disconnected, who don't have any direct or indirect experience [14].

Physical access through infrastructure is the most clearly defined element of digital divide. It can be a dial-up connection, a broadband or a wireless connection. But digital divide also encompasses the ability, know-how and the culture to use technology. These aspects can be divided into (1) access to a core set of technology tools must be widely available to the majority of the population, affordable and have support and maintenance available to reach the required access threshold, (2) formal legal and regulatory framework as well as an e-government policy are required for citizens and businesses to confidently conduct business online and the government to provide public services and information electronically, (3) technology related education, learning large groups of the population how to utilize technology as a part of their daily lives, and (4) the lingua franca of the electronic world is currently English and individuals who do not have some English language skills are going to be at a relative disadvantage to those who do [26].

1.3 International Framework

Before the turn of the millennium the European Union felt being left behind in the technological revolution as compared with the US economy. A goal was set by the European Union in year 2000 to rectify this imbalance within a decade. The EU Commission put forward an action plan, e-Europe 2005, aimed at boosting the use of the internet in the European Union. By 2005, Europe should have modern, online public services. Users should have access to low-cost communication networks and a wide range of online services with a confidence that the privacy of their messages is protected [31].

Same topics are evident in the information technology outlook as defined by the OECD. It comprises of five categories; fostering ICT innovation, increasing diffusion and use, maintaining a healthy ICT business environment, enhancing the infrastructure and promoting trust online.

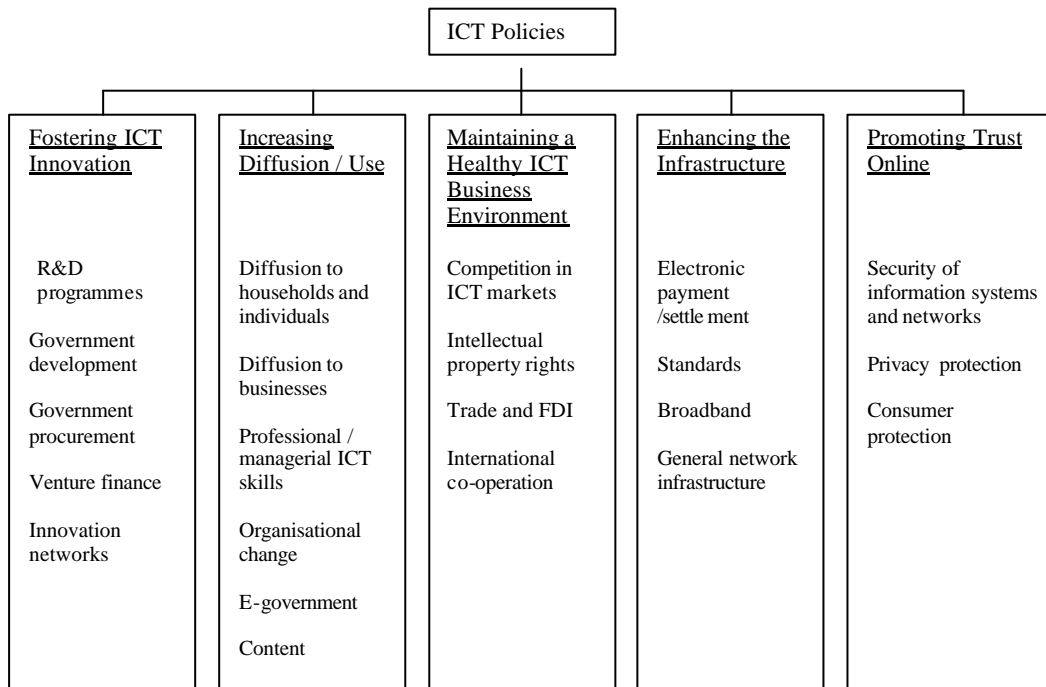


Figure1: ICT Policies (Source: [27])

To fulfil the e-Europe 2005 goal the Finnish government announced The Information Society Policy Programme in 2003. It is intended to provide the opportunity for a more efficient co-operation within different branches of government to promote the information society, and for active co-operation with nationally and internationally. Among other topics, the programme is focusing on online services in public administration, the development of e-business and digital contents and services, government information management and legislative measures central to the promotion of the information society. [28]. The Finnish government has issued a broadband strategy to promote the use of online services. It's aim is to ensure the availability of broadband even in remote areas as well as stimulation of demand through development of content, such as e-government services [27]. A parallel has been drawn between railroads and broadband diffusion. Both require that a part of the network is always unprofitable, but is needed in order to provide the main line with traffic [23].

The Finnish government offers a broad range of e-government services. 75 % of ministries and state agencies and 65 % of local authorities provide online forms as of autumn 2004. Half of all ministries and agencies offer various online services. The most popular are TYVI, data transfer service from businesses to authorities, job search service, school enrolment, the public library, financing applications to Tekes and the online form service www.lomake.fi [28].

A wider view of the role of information technology is to consider it's positive indirect impact which is more than just the direct use of government services [27]. Electronic banking applications, which are used by a majority of businesses and citizens, have proved to be an opening to a broad-based usage of the internet. Government online services can continue in the same spirit giving a positive impact on a sophisticated interactive use of information technology.

1.4 E-government service delivery categories

Government services can be categorized in four groups. Government to citizen (G2C), government to business (G2B), government to government (G2G) and intra-government internal efficiency and effectiveness (IEE) [7].

1.4.1 Government to citizen (G2C)

This service delivery category focuses on the ability of the government and citizen to communicate information to each other in an efficient manner using electronic format. One of the most popular benefits of G2C is the simple posting of forms and registrations that were previously only available to those who were willing to wait in long lines or wait for forms to be mailed to them. Other applications are data submission online to the government and e-democracy [7].

1.4.2 Government to business (G2B)

A practical application in this category is the online submission of company data into government databases. A study by the Helsinki Chamber of Commerce addressing 500 member companies found that SMEs are familiar with online reporting to authorities. In year 2001, in a corresponding study, 60 % of SMEs felt that they had too little information on e-government services. Two years later, only 33 % felt so. In 2001, 45 % of the respondents found it inconvenient that the databases needed for reporting to authorities were not integrated to other information systems of the company. In year 2003 the share was 31 % [27].

A widely used system for information submission from businesses to public authorities is the TYVI-system. Finnish companies can submit compulsory reports such as VAT, customs, statistical as well as pension insurance reports online to authorities and

pension insurance companies using the TYVI-system. Reporting is free of charge for the companies. In the study made by the Helsinki Chamber of Commerce it was found that 59 % of SMEs had started to use e-reporting or e-form with the tax authorities. 47 % report to pension insurance companies online [27].

1.4.3 Government to government (G2G)

This category of delivery strives to improve the efficiency of delivery when transacting information within the government itself, for example by using intranets for government employees, or with other governments. This category aims at allowing the government to communicate efficiently by eliminating redundancies and duplication. There are benefits in terms of crime detection such as the ability to follow large exchanges of money via networks of banks, casinos and suspect organizations and charities may help the government to recover funds, trace criminals and predict terrorist activities. Examples of other areas are updating emergency response systems, consolidating information needed by law enforcement agencies and the introduction of Web cameras help to ensure security [7].

1.4.4 Intra -governmental (IEE)

This category focuses on delivery systems within the e-government system. It is hoped that this will create substantial savings by allowing for the better management of supply chain issues, as well as information gathering. This allows the government to effectively manage its supply chain so that it keeps minimum inventories and minimum prices and allows others in the supply chain to recommend changes that would lead to increased efficiency. The government hopes to develop better systems to control ordering and billing, to create savings and to reduce collection problems. It can be described as applying industry best practices to government [7].

1.5 Statement of Problem

Using sophisticated information and communication technologies allows the government to gain the presumed benefits of providing timely, effective and cost efficient services. At the same time a variety of service channels must be maintained for the benefit of those citizens and businesses which prefer to use more traditional channels of service. Motivating businesses and citizens to use the more cost efficient online services creates a challenge to the government. Building the network is not enough; maintenance, usage skills and social acceptance are even more important [23]. A basic condition for user acceptance of online services is their dependability on user satisfaction [28] and the added value they provide. There must be a match between what is asked and what is supplied to yield authentic and qualitative e-government [10].

1.6 Research Objective

This study aims to investigate the theoretical framework of e-government and to find out

- How and why a new type of e-government solution; a portal incorporating services from a governmental Tax Administration with private insurance companies, provides added value to its users
- What are the critical factors that affect user acceptance

1.7 Limitations of the Study

The scope of this study will be limited to the G2B category of e-government and more precise, on the interaction between the government and the businesses. The empirical part will study a front-office application of a web-service. The effect of e-government in the governmental back-office administration is discussed in the

theoretical part of this study.

The technical details of web-services as well as security issues are discussed only briefly as these could use a thesis of their own.

1.8 Structure of the Study

The theoretical framework of e-government is introduced followed by a short introduction in web-service architecture. Research methodology used is discussed before presenting and analyzing the empirical findings. The study ends with a conclusion and recommendations for future research.

2. THEORY

2.1 Definition of e-government

Although definitions of e-government are numerous, no single definition has been widely accepted. The notion of citizen-centric government has been propagated long before the advent of the internet. If the definition of e-government is to make any meaningful sense, it needs to reflect what the term electronic in connection with government, stands for any outcomes, desired or not. If electronic is included in the definition it only clouds the essence of the difference between electronic government and previous forms of government. Any definition of government including e-government will reflect on the source and the purpose of all government [22]. These are affected by a government's vision of e-government goals and policies stated to achieve these goals [2] quoted by [8]. Those definitions reflect the anticipation of desired outcomes rather than the particular technologies and tools used which may or may not enable these outcomes [22].

Some definitions enumerate the areas of impact on government such as developing the service delivery aspect, other read like vision statements such as creating internally efficient back-office systems or issues such as constituent relationship management and e-democracy [2] quoted by [8]. Some definitions emphasize a re-orientation on citizens, business and agencies needs or on gains in administrative efficiency, cost savings or on high service availability such as 24/7.

A service availability definition of e-government as the electronic provision of information and services by government, 24 hours per day, and seven days per week is given by Norris, Fletcher and Holden, 2001. This definition, which focuses on the electronic service delivery component, does not take into account the transformational effect of e-government in the governmental back-office

administration [20] quoted by [8].

Grant 2004 gives a definition of e-government as a transformation initiative using the capabilities of information and communication technology. Grant's definition focuses on three different goals for e-government. The first is to develop and deliver high quality, seamless and integrated public services. The second is to enable effective constituent relationship management and the third is to support the economic and social development goals of citizens, businesses and civil society at local, state, national and international levels.

Lenk (2002) advocates the notion that e-government should be understood in a broad sense. Not only a tool to modernize the dealings with government through making use of the internet, but in using the potential of information technology to support all types of government functions. Even if the front-office is offering personal service, instead of the interaction with the internet, the back-office can use sophisticated information technology.

2.2 E-government models

A central notion in the models found in literature for e-government deployment is the analysis of varying grades of interaction between a government and its citizens.

Layne and Lee propose a four stage growth model for the development of e-government. The different stages help public administrators to focus on organizational issues in transforming a traditional administrative organization to e-government. The four stages of development show how the internet-based government models merge with traditional public administration. Each stage is accompanied with technological and organizational challenges. The four stages of a growth model for e-government are cataloguing, transaction, vertical integration,

and horizontal integration [13].

Norris and Moon (2005) add one more level, a portal function, to Layne and Lee's model of e-government. The most sophisticated sites are informational, have transactional capability and are integrated horizontally (within the government) and vertically (across governments) and provide full portal capability. Data from focus groups conducted by Norris 2003 show the progression through the growth model is not necessary linear. Some late adopters have moved directly into integration and transactional capability with only a brief stop at cataloguing stage [19].

Koh and Prytok (2003) have expanded the Three Ring Model of the internet functions, proposed by Koh and Balthazard (1998), to cover e-government. The Three Ring Model captures internet applications in three primary categories of use: informational, transactional and operational. The informational use comprises of using the web to publish information, to educate, entertain, influence or reach the consumer. The transactional use is a two-way communication. This application brings forward new issues such as security. The operational use aims at integrating internet applications and, maybe, legacy systems to improve organizational productivity and enhance communication.

2.2.1 The Growth Model

In the growth model each stage is accompanied with technological and organizational challenges.

1) Stage 1 - Information

The informational stage, or cataloguing, is still the most predominant form of internet application [11]. Governments establish an online presence where information can

be obtained regarding government services. Many government's efforts on web developments belong to this stage. In terms of the citizen as customer, this stage offers the least amount of functionality for the user. As this stage progresses, the quantity of posted information increases and governments will begin to see the need for an index site that provides links to other sites. Usually, at first the index site is organised on the basis of functions or departments as opposed to service access points. Consequently, a search for the necessary agency will be required before being able to obtain the information. The next step in this natural progression is to re-organize information by different services, by different actions or by different events. Forms can be downloaded, but no transactions are possible [13].

2) Stage 2 - Transaction

In this stage government efforts consist of putting live database links to online interfaces and allowing citizens to transact with government electronically. In ideal cases, web transactions should be posted directly to the internally functioning government systems with minimal interaction with government staff [13].

An important aspect is the authentication of the citizen or the business which is requesting the service [4]. The functionality offered here is a two-way communication. Government is presented on the other side of the internet as an active respondent. Citizens transact with government online by filling out forms and government responds by providing confirmations, receipts, etc. thus creating a service channel. Within the government, this trend consists of offering personnel services, benefits administration, payroll and timekeeping functions, supply ordering, travel services, conference arrangements and online training [13].

3) Stage 3 - Integration

This stage offers critical benefits for improved efficiencies through administrative

reform because of both its vertical (across different levels of government) and horizontal (across different functions of government) integration. Such integration will facilitate one-stop-government for the citizen. By having similar agencies across different levels of governments and by having different agencies with different functionality talk to each other, citizens will see the government as an integrated information base. A benefit from the viewpoint of the government is the elimination of redundancies and inconsistencies in their information bases for citizens [13].

While the first growth model stage does not yet require any business process reengineering (BPR), more fundamental changes become the norm in subsequent stages. Adaptations and redesigns of existing information systems along with the incorporation of completely new systems become a necessity, which in turn require significant and increasing changes to the underlying business processes [22].

The integration stage is to a great extent a management challenge, not only a technical one [13]. Integration of applications and services across governments are relatively more complex and problematic than similar integration in private businesses. Integration efforts in government require cross agency cooperation, which is not necessarily forthcoming or legally permitted [16]. In many governments, individual ministers and agencies are charged with executing the responsibilities assigned to them through legislation and are, therefore, not eager or able to expand resources a cross-agency arrangements that were not anticipated or provided for in budgetary allocations and mandates [24].

Government has been criticized for its slow adoption of new technologies and innovative practices. However, in the western system of democratic governance, which has been intentionally and purposively designed for thorough and incremental change via checks and balances, such criticism misses the point. Particularly, in the case of BPR, one might even want to praise the slow adoption rate since it protected

the public sector from those early BPR failures the private sector encountered so numerous [22].

E-government policies have proved harder to implement in practice than in theory. Predicted efficiency gains have not been realised, costs have exceeded expectations, public servants have been resistant to the cultural and administrative changes required, and citizens and business have proved reluctant or unable to make use of ICT in their dealings with government. While e-government, through the enhanced capacity to collect and share information, can change the traditional ways in which government operates, many administrations rather keep to the old models in the face of the new developments. E-government initiatives require fundamental changes in the way that public services are delivered if they are to be successful. It is important to acknowledge that the successes achieved over the past decade have been as much due to a cultural change within public administrations, with changes to operating practices including better interaction both within and across agencies, as to the use of ICT [24].

Applying Business Process Reengineering practices in e-government might help in the change process. Business history indicates that the downsizing campaigns of the 1990s ended in disaster for many private sector organizations. This circumstance bears the potential to cloud valuable insights that can be learned from BRP. Such are that 1) a business can be re-thought and redesigned from the bottom rather than only incrementally improved, 2) information technology might play a major enabling role in such a fundamental change process, 3) information systems development (ISD) and BPR have to be treated as two sides of the same coin and 4) the organizational-culture context and the human interests involved in the change process matter [22].

The ultimate aim in integration is for the user to contact one point of government and complete any level of governmental transaction, a one-stop-government concept.

The service access is organised through a portal that looks at the service needs of the customer [13]. A portal function can be achieved without integrating databases but through acting in virtual organisations and using technologies such as XML. Horizontal and vertical integration can also occur on a web site without the development of a portal capacity [18].

2.3 Evaluation of e-government

The owners of private companies want to have return for their investments. In the same way the taxpayers also wish to have return for the public spending. The rationale of governments' investments is more versatile than in private companies. Government services online can encourage companies to adopt new technology for the benefit of a more efficient society. Governments may be in the forefront with new technology as they do not need to justify investments with being profitable in the same way as private companies [28]. But measuring the outcome of a project, which justifies its implementation, is still of the essence.

The literature of e-government offers few approaches, which have been found useful in selective evaluation. Some of the evaluation methods are known as hard measures. These include cost benefit analysis and benchmarking [9].

2.3.1 Cost benefit analysis

Cost Benefit Analysis is a technique that assesses projects through a comparison between their costs and benefits, including social costs and benefits for an entire region or country. Generally cost benefit analyses are comparative; they compare the costs and benefits of the situation with and without the project. The costs and benefits are considered over the life of the project.

The main disadvantage in using the cost benefit analysis comparing government investments is its operationalization. Capital investments are made to improve the quality of service. The true monetary value of improvements such as increased quality, faster service, flexibility, better citizen service or improved working conditions for employees are difficult to quantify [9].

Improved organizational performance, such as increase in transactions or improved return on investment, is produced by a multiple of activities that take place concurrently. Thus, it is very difficult to measure or split the proportion of outcome as value contributed by information systems of e-government. Information can also have psychological value if the user does not necessarily make better decisions but has more confidence in the correctness of his decision. Though the role of information at the strategic level is very crucial, measurement of its worth in monetary terms is an impractical proposition. The diffusion of IT solutions can be investigated in terms of their impact on organizational effectiveness in performing and servicing the user better [9].

Cost-benefit analysis of usability presents a generic framework for identifying the costs and benefits associated with a user-centred design activity. The first step is to identify the benefits to be gained by improving the usability of a system. These include increased user productivity, decreased user errors and decreased training costs. The personnel and equipment overheads costs of the proposed usability effort must be taken into account and subtracted from the total projected benefit value [29].

2.3.2 Benchmarking

Benchmarking provides a method of evaluating performance against best practice and provides strategic guidance [9]. Benchmarking e-government suffers from the vague definition of e-government. It is crucial to realise that country rankings from

different benchmarking studies are probably based on different definitions of what is being measured [10]. Policy evaluation in e-government has mostly resulted in benchmarking exercises and international country rankings. The serious financial implications of implementing e-government policy, coupled with the uncertainty of benefits, have led countries to legitimize their e-government spending by pointing at international studies that place them high on the e-government ladder [10].

The aim of benchmarking is not always to see who has the best e-government. Rationales for e-government benchmarking include finding out if lessons can be learned from other country's e-government policies, measuring e-government progress compared to other countries, identifying and learning from best practices in other countries, discovering global trends in e-government and measuring of underlying e-government concepts to identify points of leverage. If the aim is to learn from the countries which are doing better the focus will have to be on back-office integration, intra- and intergovernmental information sharing and database development instead of on applications in the front office [10]. These kind of studies are scarce.

Janssen et al (2004) examined 18 international comparative e-government studies. These studies differ in focus, in the definition of e-government and in the type of measurement indicators used; input, output, usage, impact and environmental indicators. The aim was to analyse what was actually measured, in order to assist policy makers in making a well-informed judgement on the relevance in benchmarking results. The studies can be divided into three groups with a clear difference in focus.

A first cluster of studies can be called the supply-oriented e-government measurements. The focus is on the supply of e-government applications and the success of a country's e-government is measured by counting the amount of visible applications. Most of the studies belong to this group. E-government adoption is

progressing rapidly if it is measured solely by deployment of web sites [28]. If there is no match between what is asked and what is supplied, using benchmarking in policy evaluation might lead to wrong decisions in strategic policy as changes are not being realized in authentic and qualitative e-government [10].

A second group of studies takes an opposite approach and evaluates the demand side of e-government. These are studies that see e-government success in terms of actual levels of usage or levels of customer satisfaction with online services [10]. Only three of the 18 studies belong to this group. This approach evaluates integrated and transactional e-government which is progressing more slowly than the deployment of web sites [28].

3) A third group of studies has the Information Society as a focus. These studies benchmark countries, not only in terms of e-government efforts, but also according to their broader policy for creating enabling conditions for the Information Society [10].

2.3.3 Measuring e-government

The aim of the Janssen et al (2004) study was to analyse what was actually measured in form of indicators used so as to judge the relevance of benchmarking results. The choice of e-government indicators is often based on the information sources that are easily available [10].

Janssen et al (2004) found four categories of indicators for the measurement of e-government.

1) Input indicators try to measure the resources countries have invested in e-government. If a statistic is found, it is never entirely comparable with statistics found

in other countries [10].

2) Output indicators measure the amount of e-government applications realised. Studies that make use of a broad set of output indicators are mostly those with a limited definition of e-government as online service delivery. This feature is important, so the output indicators are in no way unimportant. But e-government is more than online service delivery. Governments may digitalize as many existing services as possible, thereby neglecting the more fundamental process of redefining service delivery in an online environment. You might be better off with less but better services [10]. Another critique on output indicators concerns the fact that countries get good grades for making lots of applications but that it does not matter if these applications are actually used by citizens. This is corrected by the use of usage indicators and by weighting them together with output indicators.

3) Usage/intensity indicators do not measure the amount of applications but the actual usage by citizens/businesses of electronic services offered. The applications of usage indicators and by weighting them together with output indicators results in an evaluation of both the supply and the demand for e-government in a country. The usage indicators provide for a good monitoring instrument for governments to evaluate the success of different applications and make corresponding strategy decisions. To arrive at a nuanced view of usage, there are often indicators for information seeking, information provision and transactions.

Examples of usage indicators are the number of citizens and businesses that make use of electronic services offered the percentage of citizens that have visited government websites to search for information, the number of businesses that make payments online and the percentage of internet traffic that pertains to electronic service delivery [10].

4) Environmental indicators try to assess the degree in which a country is ready for the Information Society and its consequences. They do not measure e-government as such but they measure some of the preconditions of a successful e-government.

(1) ICT infrastructure is one of the basic requirements of online government and can be measured by indicators such as internet penetration rates, broadband penetration, internet access tariffs and the amount of public access points.

(2) ICT skills have to do with the way a country's population is able to handle computers and ICT. A further categorisation here distinguishes ICT skills among citizens, businesses and civil servants.

(3) A third group of environmental indicators indirectly measure trust on online environments by measuring the presence and success of e-business and e-commerce.

(4) A fourth group focuses on a country's legal environment and assesses this in the light of the requirements of the information society, dealing for example with the juridical value of an email and with the issues of online identification, online safety and online privacy (Janssen 2004)

2.4 Usability

A central standard in usability ISO 9241-11 (1998) defines usability as: The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.

Thus, the three dimensions of usability are:

- Effectiveness - can users achieve what they need to do using the product; is the product useful

- Efficiency - how much effort (time) does it require; is the product easy to use

- Satisfaction - how do the users feel about their interaction with the product; the user's objective vs. subjective perception of the system

These factors are affected by:

- The users - are the users highly trained and experienced users, or novices
- Their goals - does the product support what the users are trying to do with it
- The usage situation - where and how is the product being used

Usability should be distinguished from functionality, which is concerned with the functions and features of the product, not whether users are able to use them or not. Greater functionality does not necessarily mean improved usability [29].

Davis et al (1989) differentiates between usefulness and ease of use as determinants of usage. Perceived usefulness is the degree to which a person believes that using a particular system would enhance his or her job performance [5]. In other words, people tend to, or not to use an application to the extent they believe it will help them perform their job better. Perceived ease of use is the degree to which a person believes that using a particular system would be free of effort [5]. In other words, even if potential users believe that a given application is useful, they may, at the same time believe that the system is too hard to use and that the performance benefits of usage are out weighted by the effort of using the application.

Usefulness is more strongly linked to usage than is ease of use. Users are driven to adopt an application primarily because of the functions it performs for them, and secondarily for how easy or hard it is to get the system to perform those functions. For instance, users are often willing to cope with some difficulty of use in a system that provides critically needed functionality. Although difficulty of use can discourage adoption of an otherwise useful system, no amount of ease of use can compensate for a system that does not perform a useful function. The prominence of usefulness over ease of use has important implications for designers, who might overemphasize ease of use and overlook usefulness. A major conclusion of Davis et al (1989) study is

that perceived usefulness is a strong correlate of user acceptance and should not be ignored by those attempting to design or implement successful systems [5].

Even though the major reason which causes people to accept or reject information technology is usefulness, also ease of use matters. All else being equal an application perceived to be easier to use than another is more likely to be accepted by users [5].

Even if an application would objectively improve performance, if users don't perceive it as useful, they are unlikely to use it [5]. Also, people may overrate the performance gains a system has to offer and adopt systems that are dysfunctional. The study indicates that people act according to their beliefs about performance, even if performance beliefs are often in disagreement with objective reality [5]. The user's prior positive attitude towards information systems increases the actual use of the system [24].

One problem when studying usage is finding systems where usage is truly voluntary. If usage of a system is a job requirement, factors such as usefulness and ease of use may have little influence on overall levels of use, though they may influence measures such as user satisfaction. The same applies in case of captive use, when usage is not strictly required as part of the job there may be no alternative but to use that system to effectively complete the job [1].

2.5 Web services

One new technology, which can be applied when government agencies and partners need to communicate and share data, is Web services.

Web services allow different applications from different sources to communicate with each other without time-consuming custom coding, and as all communication is in

XML, Web services are not tied to any one operating system or programming language. For example, Windows applications can talk with UNIX applications [32].

The basic structure of web applications is based on a multi-tier architecture. The application's functionality is divided into separate, logical groupings. The data tier stores information. This tier can be comprised of one or more databases, which together contain the data relevant to the application. The business tier acts as an intermediary between data in the data tier and the client tier. The business tier controls and processes rules to execute tasks, including how clients access data, how the application processes data and how content is presented to clients. The client tier provides the application's user interface, which typically runs in a web browser. Users communicate with the application through the user interface [6].

Web services can exchange information via many internet protocols, but most employ HTTP (hypertext transfer protocol), the key communication protocol of the internet. Basically, a Web service communicates over a network to supply specific tasks performed by computers that other applications can access and use. This means that an application residing on one computer can send requests to and possibly receive responses from, applications on other computers [6].

Web services are based on XML and XML-based standards; most commonly SOAP, WSDL and UDDI. XML is an open, text based standard, which enables web services to communicate with other applications, even if those applications are written in different programming languages and run on different platforms. A downside is that Web services may suffer from poor performance. This is a common trade-off when choosing text-based formats [33].

XML (Extensible Markup Language) is a platform independent standard for describing data and creating markup languages. Data independence, or the separation of

content from its presentation, is the essential characteristics of XML. Many core Web service standards, SOAP, WSDL and UDDI, are based on XML. SOAP (Simple Object Access Protocol) is a messaging protocol for transporting information and instructions between applications and platforms. WSDL (Web Services Description Language) is an XML-based language used for describing available Web services. UDDI (Universal Description, Discovery and Integration) is used for listing which services are available and learning about their capabilities [6].

2.5.1 Microsoft .NET

Web services can be deployed by using application server software. The main platforms are Microsoft .NET and J2EE.

Microsoft launched the .NET initiative in June 2000. .NET offers an interoperable computing environment that can be implemented using the Visual Studio .NET software to create, document, run and debug. Visual Studio .NET enables programmers to design web services in a variety of .NET compatible languages such as C++, C# and Visual Basic .NET. .NET technologies are available only for Windows 2000 or XP.

The Visual Studio .NET provides an environment for visual programming, a technique by which pre packaged components can be dragged and dropped into an application. Visual Studio .NET tools facilitate code reuse by making it easy to build applications from pre existing code. Programmers can use predefined controls to set up connections to databases, organize and add files in an application. Through visual programming, developers can incorporate predefined features in programs without having to know the details of those features [34].

The Microsoft .NET Framework manages and executes applications and web services,

provides a Framework Class Library (FCL), enforces security and supplies many other programming capabilities. The FCL contains reusable components that programmers can incorporate into their applications; this saves programmers from having to create new software entirely from the ground up. Details of the .NET Framework can be found in the Common Language Specification (CLS), a specification that defines the common features of .NET languages and contains information about the storage of data types, objects and so on [34].

Another central part of the .NET framework is the Common Language Runtime (CLR) which executes programs written in any .NET compatible programming language. .NET programs are compiled in two steps. First, a program is compiled into the Microsoft Intermediate Language (MSIL) which defines instructions for the CLR. Code translated into MSIL from multiple programming languages and sources can be woven together by the CLR. MSIL then is compiled into machine code for a specific platform. Because most platforms use different machine languages, compiling first to a common format such as MSIL increases portability between platforms and interoperability between languages [34].

Microsoft's Active Server Pages. NET (ASP.NET), another integral part of the .NET initiative, is a technology for creating dynamic web content marked up as HTML. Web pages built with ASP.NET are designed using Visual Studio.NET. When a developer creates web services using ASP.NET and Visual Studio.NET, many programming details are hidden. For example, developers do not need to create WSDL documents for their web services, because ASP.NET generates these descriptions. Visual Studio.NET also creates a testing and documentation web page, which provides information about the web service and its methods [34].

Web services technologies are designed to be simple and open, containing only the necessary features to transmit data between applications across a network. Microsoft

has created the Global XML Web Services Architecture (GXA) to provide additional capabilities such as increased security.

2.5.2 Security

Both individuals and companies are vulnerable to data theft and hacker attacks that can compromise data, corrupt files and crash systems. Security is crucial to the success of web systems.

There are five fundamental requirements for a successful, secure transaction (1) confidentiality to ensure that information sent over the net has not been captured by a third party, (2) integrity to ensure that information has not been compromised or altered, (3) authentication to ensure that sender and receiver of a message verify their identities to each other, (4) authorization to ensure that protected resources are accessed on the basis of user credentials, and (5) non-repudiation to ensure that it can be legally proved that a message was sent or received [6].

Web services tunnel everything through an HTTP port 80, thus requiring no change to firewall or browser configuration in order to operate. A downside is that at the same time Web services evade existing firewall security measures as companies protect themselves using firewalls that filter and block internet traffic for security reasons. Therefore, many ports are closed to incoming and outgoing traffic. Port 80, however, is always open because it is used for HTTP traffic in web browsers. Using port 80 may be an attractive solution to vendors and users of web services, but it bypasses certain aspects of network security [33]. This calls for additional protection measures.

The Global XML Web Services Architecture (GXA) created by Microsoft provides additional web service capabilities. One GXA specification is WS-Security. WS-Security enables developers to authenticate web service users and ensure that messages

remain private (message confidentiality) and unmodified (message integrity).

WS-Security defines ways of authenticating users by attaching security tokens to SOAP messages. WS-Security is extensible; it supports multiple security-token formats. The specification is designed to be compatible with commonly used security models, such as Secure Sockets Layer , Public Key Infrastructure and Kerberos. WS-Security can also be used in conjunction with XML Signature and XML Encryption, which are W3C security technologies [6].

Since its introduction in 1994, SSL has been the standard protocol for e-commerce transaction security. Secure Sockets Layer (SSL) is considered the next step beyond basic security for web services. The SSL protocol secures the channel through which data flows between a client and server and enables authentication of both parties. SSL allows for authentication of the server, the client, both or neither [6][32].

SSL uses a two key cryptographic system to encrypt data, a public key known to everyone and a secret key known only to the recipient of the message. Both Netscape Navigator and Internet Explorer support SSL, and many web sites use the protocol to obtain confidential user information, such as credit card numbers. By convention, URLs that require an SSL connection start with *https:* instead of *http:* [6][32].

SSL implements public-key cryptography using a 128-bit encryption; the RSA algorithm and digital certificates to authenticate the server in a transaction and to protect private information as it passes over the internet. The SSL certificate helps to prove that the site belongs to who it says it belongs to and contain information about the certificate holder, the domain that the certificate was issues to, the name of the Certificate Authority, the root and the country is was issued in [32].

To begin with a client sends a message to a server. The server responds and sends its digital certificate to the client for authentication. Using public-key cryptography to communicate securely, the client and server negotiate session keys to continue the transaction. Session keys are secret keys that are used for the duration of that transaction. Once the keys are established, the communication proceeds between the client and the server by using the session keys and digital certificates. Encrypted data is passed through TCP/IP just as regular packets travel over the internet. However, before sending a message with TCP/IP, the SSL protocol breaks the information into blocks, compresses it and encrypts it. After the data reaches the receiver through TCP/IP, the SSL protocol decrypts the packets, then decompresses and assembles the data. SSL is primarily used to secure point-to-point connections, transmissions of data from one computer to another [6].

SSL encryption calculations use considerable processing power, which can slow down transmissions and significantly impede web services performance. This can be remedied by SSL accelerators, which are hardware devices or software programs that handle complex SSL encryption calculations. Accelerators free server resources, improve performance and can be less expensive than setting up additional servers to handle SSL transactions.

Specialized XML firewalls offer the promise of protecting internal systems when using Web Services. Traditional firewalls offer protection at the packet level and do not examine the contents of messages. XML firewalls, on the other hand, examine the contents of messages. This includes the SOAP headers and the XML content.

3. METHODOLOGY

3.1 The questionnaire

The aim of the questionnaire is to assess how successful Palkka.fi - portal is in satisfying the user needs of 300 pilot users.

The pilot users were chosen from applicants who signed in for the experiment. They come from different parts of the country, their companies belong to a variety of branches and company forms.

A draft outline of the questionnaire was revised by the Palkka.fi project group at the Tax Administration. A refined version was tested by the project group members before the final questionnaire was distributed in January 2006.

The questionnaire was made using Survette software and distributed by e-mail to the respondents. Survette is a web-based software frequently used by the Tax Administration for surveys. Circulation by e-mail was chosen because the response rate was believed to be higher than for postal questionnaires. Also the saving in time and effort achieved by having the responses input directly in a database for analyses proved valuable.

The questionnaire is compiled of four parts; background information, payroll computation, data communications, and functionality and usability related questions.

The first two parts, background information and payroll computation, consist of factual type of questions. These are ones that ask for relatively straightforward information and does not need personal interpretation to answer. Answers to factual questions can be proven right or wrong [35].

The questions on data communications, and functionality and usability are a mix of factual questions and opinion based questions. The later ones ask the respondent what they think of something. An answer to an opinion question cannot be proven right or wrong as it gives you feedback from the point of view of the user. It is the opinion of the respondent and is inaccessible to independent verification [35].

A total of 19 questions were closed-ended consisting of tick-boxes with a variety of scales depending on the type of the question. Space for open-ended comments was provided with each question. This enabled the respondents to state their opinions clearly in their own words in the same way they would have been able to do in an interview situation. No additional interviews were performed due to time constraint and the fact that the respondents were spread throughout the country.

Two general open-ended questions rounded up the questionnaire. The number of questions and the desire to obtain as much useful data as possible had to be balanced with the size of the questionnaire. The time and effort required for completing a large questionnaire might lead to reduced participation. Questions which would have been nice to ask had to be left out and the effort concentrated on basic matters.

Mixing closed-ended questions with space for open-ended comments provides the best sides of both types. Closed-ended questionnaires are good for processing large quantities of data to yield structured information. On the other hand open-ended questions can provide specific comments, which can be valuable and insightful.

4. EMPIRICAL RESULTS

4.1 Palkka.fi -portal

Government organizations are increasingly providing a wide range of e-government services to their citizens. Providing services demands understanding of user requirements and tailoring of solutions. In this thesis, we examine the results of an evaluation questionnaire of a web site provided by the Tax administration together with private insurance companies. The site examined is Palkka.fi –portal. The portal was open for pilot users during the period of September 2005 through January 2006. The site went live on February 1st, 2006.

Palkka.fi is a free-of-charge web-service providing salary calculation and related printouts, employee related tax submissions to tax authorities; employee related insurance submissions to insurance companies, submissions to the Finnish Social Insurance Institution, payments to all related parties through banks and VAT submissions. The target groups are small companies with one to five employees, households acting as an employer and non-profit associations.

User identification is performed by using bank user codes, a special type of ID card, TYVI user codes or an advanced form of TYVI called Katso codes. A potential user is provided an opportunity to test the service without user identification.

The parties providing the service are the Tax administration, insurance companies, the Finnish Social Insurance Institution and banks. The service can be found in www.palkka.fi. It is available in Finnish and in Swedish .

4.2 The Online Questionnaire

The questionnaire was administered at the end of the pilot use of the portal. Answers were received during the period of January 10th through February 16th, 2006. Out of the 300 pilot users, who had preliminarily signed in for the experiment, 50 participated in the actual pilot. All 50 also answered the questionnaire.

Open comments were encouraged and a high proportion of respondents took the effort to provide an additional comment on the site. Out of 50 responses received there were 34 comments, representing 68 % of respondents.

4.2.1 The structure of the questionnaire

A basic condition for user acceptance of online services is their dependability on usability. There must be a match between what is asked and what is supplied.

According to ISO 9241-11 (1998) standard the three dimensions of usability are: 1) Effectiveness; is the product useful, 2) Efficiency; is the product easy to use and 3) Satisfaction; the user's objective vs. subjective perception of the system. Among factors which can affect the usability are the training and experience of the users.

The questions asked in the questionnaire can be divided in categories usefulness and ease of use. The open-ended comments provide answers to the subjective perception of the users.

Category: Usefulness

Q 17: How much time do you estimate having saved using Palkka.fi compared with your previous way of doing salary calculations ?

Q 18: How much money do you estimate to save in salary administration using Palkka.fi ?

Q 11: How much time have you spend using Palkka.fi ?

Category: Ease of use

Q 15: Have you experienced Palkka.fi as

Q 16: Do you think the user instructions on Palkka.fi have been

Q 12: How many times have you called the Palkka.fi customer service number so far ?

Q 13: Was your problem solved by the customer service number (if you have been in contact with them) ?

Q 10: While using Palkka.fi, do you feel that the pages have been uploaded on a speed which you think is

4.3 Result analysis

A summary of the background information is presented below before looking at the actual findings.

Q 1: Which area does your company operate in ?

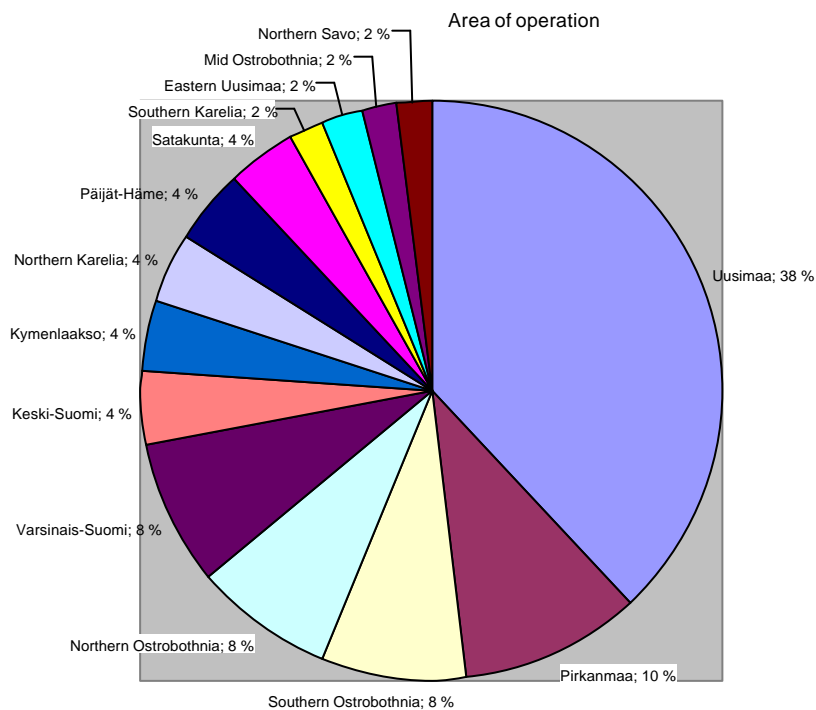


Figure 2: Area of operation

The southern part of the country is strongly represented. Uusimaa area is standing for a third of the answers. Companies in five areas, Southern Savo, Kainuu, Kanta-Häme, Lapland and Ostrobothnia, did not participate.

Q 2: What is your company's line of business ?

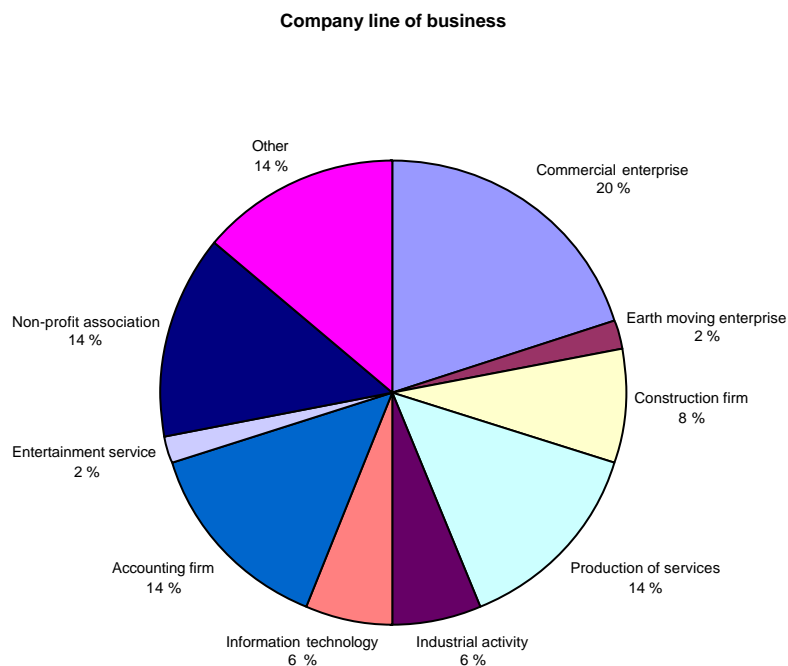


Figure 3: Company line of business

Commercial enterprises, accounting firms, non-profit associations and other branches are the main lines of business. Painting contractors, advertising agencies, electrical enterprises and gardening enterprises did not provide any answers.

Q 3: What is your company's company form ?

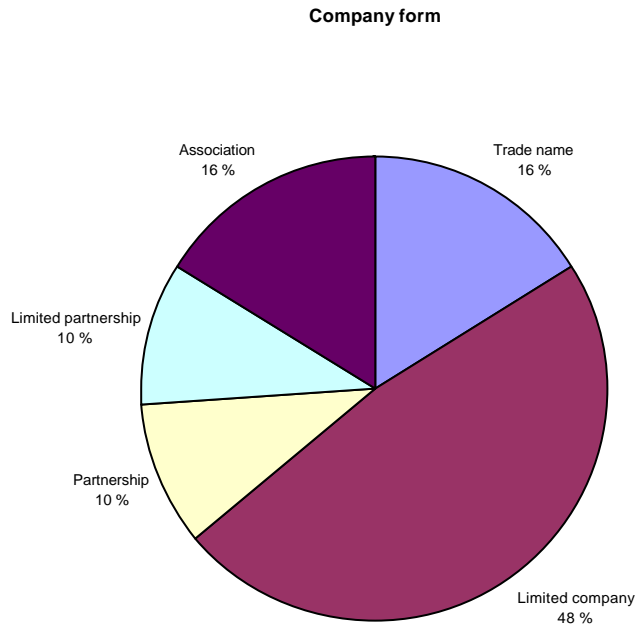


Figure 4: Company form

Limited companies represent a half of the answers. Trade names, associations, limited partnerships and partnerships dividing the other half.

Joint-stock property companies, co-operatives, foundations and concerns did not participate.

Q 4: How many employees do you have ?

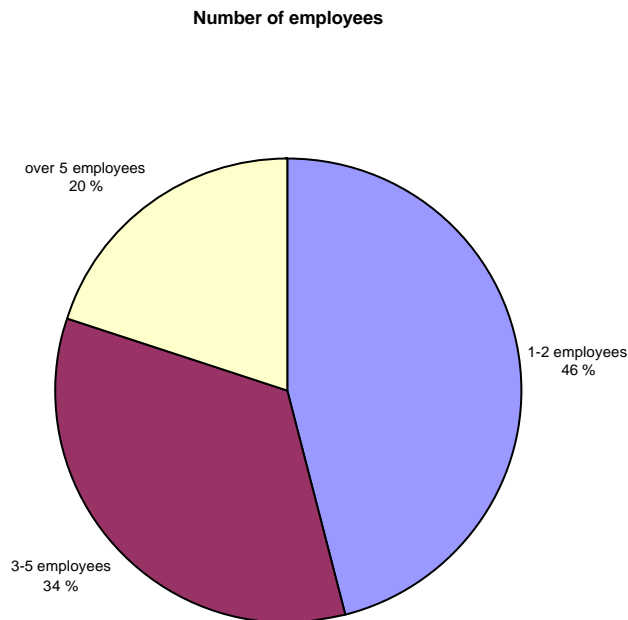


Figure 5: Number of employees

The number of employees in the participating companies favours 1-2 employees which provided almost half of the answers. The main target group of the Palkka.fi-portal is companies with 5 or less employees.

4.3.1 Usefulness

Usefulness, as defined in this study, requires that either time or money or both will be saved if an application is to enhance the job performance of a person. The usefulness questions in the questionnaire deal with this aspect.

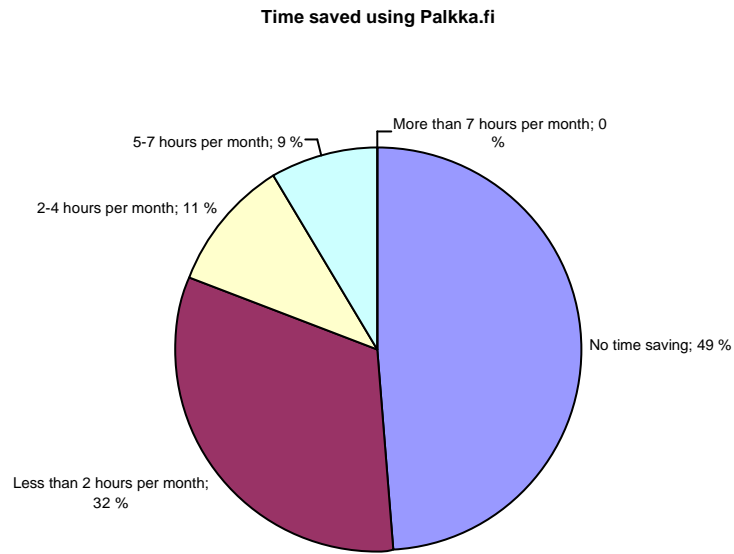


Figure 6: Time saved using Palkka.fi

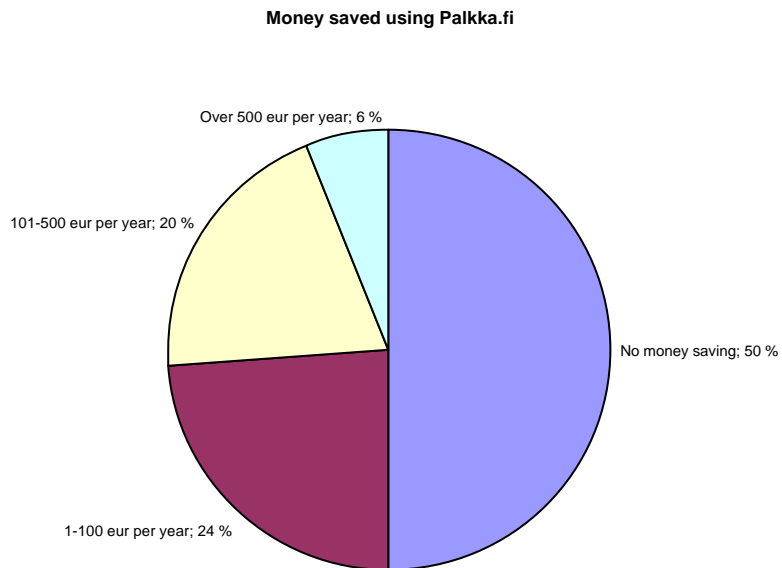


Figure 7: Money saved using Palkka.fi

Half of the users did not find any savings in either time or money. 52 % of those who found no time saved had previously been using spreadsheets (excel) and 28 % a purchased salary calculation software. 65 % of those who found no time saved considered themselves as having little experience of salary calculation.

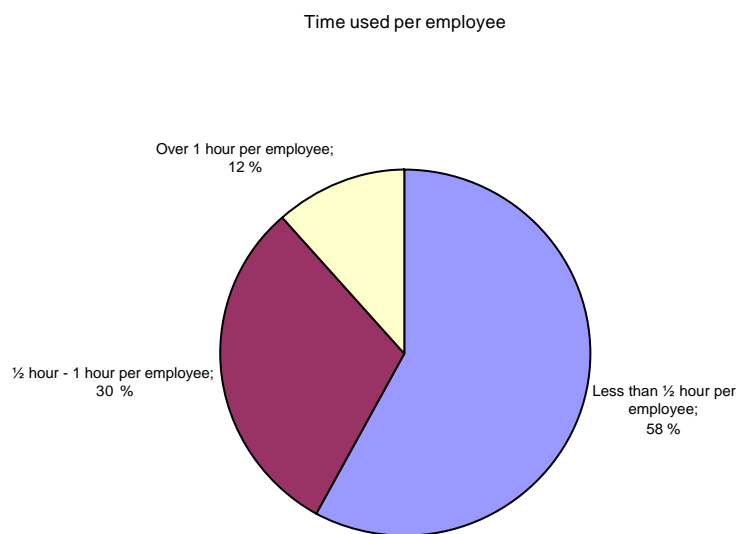


Figure 8: Time used per employee

More than half of the respondents used less than 1/2 hour per employee. Almost a third used between 1/2 hour and an hour per employee. 1/2 hour can not be considered much if it includes everything from salary calculation through tax and insurance submissions to payment.

Differentiating between novice users and experienced users it is surprising that only 15 % of users from accounting firms use less than 1/2 hour per employee. On the other hand, 62 % of those who were familiar with TYVI system use less than 1/2 hour per employee. Using TYVI indicates they are familiar with using online e-government.

4.3.2 Ease of use

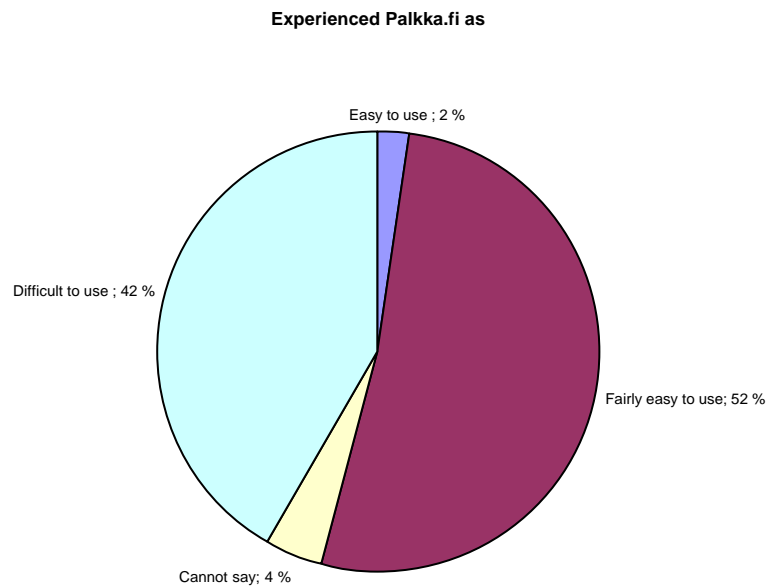


Figure 9: Experienced Palkka.fi as

Half of the users consider the service as fairly easy to use while almost as many, 42 %, consider it difficult to use. Surprisingly, only 43 % percent of users from accounting firms consider the service as fairly easy. I would have expected professional users to show more of a difference. On the other hand, 67 % of users from information technology companies consider Palkka.fi as easy to use.

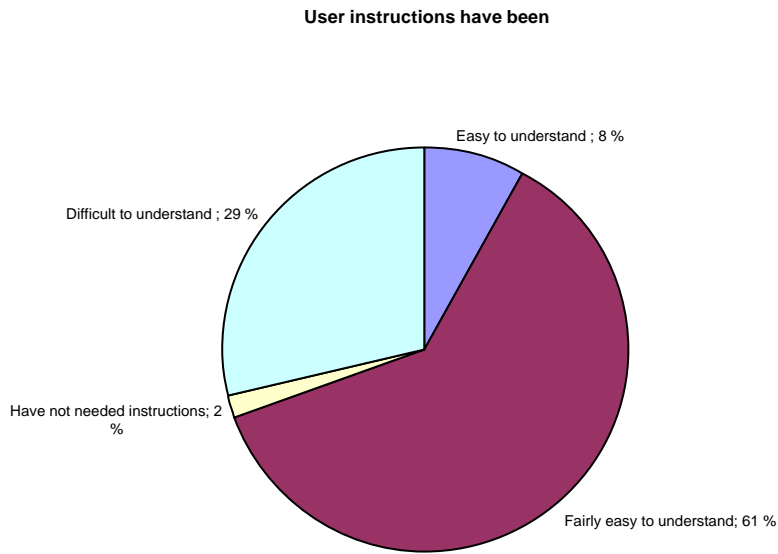


Figure 10: User instructions have been

Two out of three, 70 %, of users found the instructions to have been easy or fairly easy to understand. The distribution between accounting firms show that 57 % of them belong to this category, while all information technology companies consider user instructions as easy or fairly easy.

How many times called customer service number

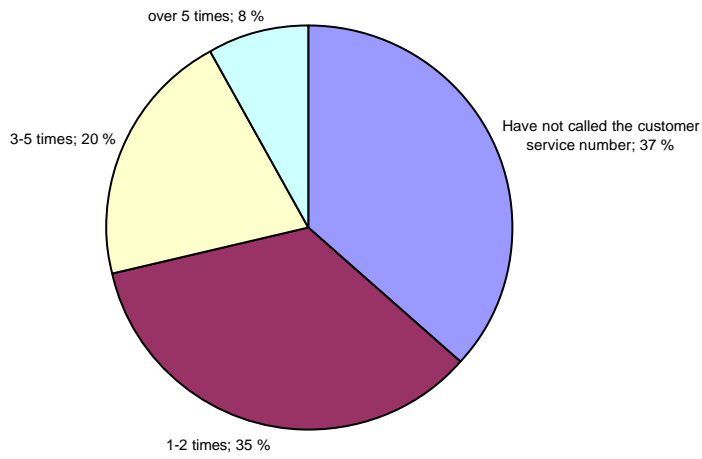


Figure 11: How many times called customer service number

Was your problem solved

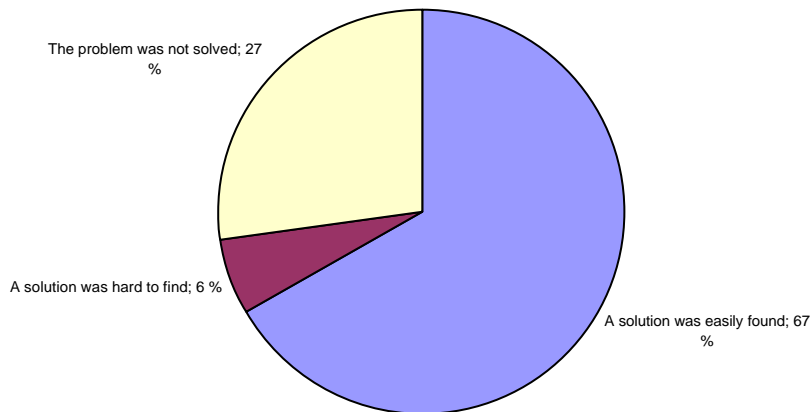


Figure 12: Was the problem solved

A customer service number was available for questions. 37 % of users had not needed this help while 35 % had called 1-2 times and 20 % 3-5 times. Of those who had contacted the customer service number two out of three, 67 %, had found an easy solution. On the other hand, 27 % had not found a solution. A third of those who had not found a solution experienced problems with data connections and logging in. Palkka.fi has been developed using Microsoft.NET which is not supported by Windows 98.

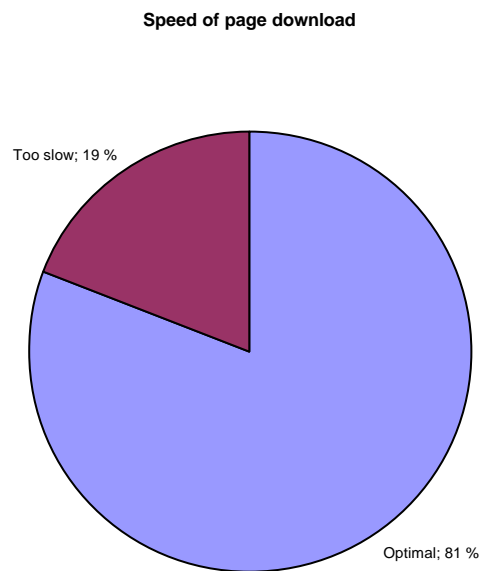


Figure 13: Speed of page download

The speed which the users were able to download Palkka.fi pages was found optimal for 81 % of the users. Those who found it too slow, 66 % were using a broadband connection with a speed of 1 MB or more, while 22 % were using 512 kb and 256 kb respectively.

4.3.3 Open-ended comments

Open comments were encouraged and a high proportion of respondents took the effort to provide an additional comment on the site. Out of 50 responses received there were 34 comments, representing 68 % of respondents.

The responses were mostly a mixture of positive appreciation of a good system combined with suggestions for improvements. Some were disappointed because they had set their hopes too high.

Thanks were given

- To having a salary calculation program combined with access to several service providers
- Official looking payslips and other printouts were appreciated
- Many of the respondents believed that they would be using Palkka.fi when the system went live

The suggested improvements can be grouped as regarding

Navigation

- The novice users require basic instructions to the salary calculation process
- The more experienced users require a checklist where the salary payment procedure could be seen in one go. This could be in word, excel or pdf format and replace the need to make own notes
- Basic employee data and monthly salary data somewhat difficult to distinguish when submitting

Data

- The basic data needed to start with a new employee, is somewhat tedious to fill in
- A reminder would be appreciated if not all necessary data has been filled in
- An overall view of the data before submitting it to the tax authorities would be useful
- Difficult to get an overall view of the data once it has been submitted
- The terminology can be sometimes difficult to understand
- The logic behind the holiday pay calculation somewhat difficult to understand

Technical problems

- The service requires a minimum of Windows 2000. Users with Windows 98 found that they could not access the service
- "Server is busy" and the need to log on several times

4.4 Reliability, validity and generalizability

The reliability of the study would have been strengthened by benchmarking the user conceptions of the meanings used, prior to circulating the questionnaire. For example, accounting firms answering the question whether they have a great deal or not so much experience in salary calculation might have a different scale for experience than other companies involved.

Questions concerning performance measures, such as how much time a certain task has taken to perform, might be more reliably answered in a laboratory setting than in questionnaires.

Out of the 300 pilot users, who had preliminary signed in for the experiment, 50 participated in the actual pilot. All 50 also answered the questionnaire. A larger amount of participant rate would have enhanced the validity of the study.

The validity of the data is increased by the triangulation of data. Out of 50 responses received there were 34 comments, representing 68 % of respondents. The qualitative data from the comments provides a triangulation with the quantitative results from the closed-ended part of the questionnaire.

Salary calculation, tax and insurance submissions are a universal subject. I believe the findings from the study can be generalized to other studies in these subjects.

5. CONCLUSION

E-government success can be measured in different ways. A central notion in the models for e-government deployment is the analysis of varying grades of interaction between a government and its citizens. One way of looking at e-government success is from the demand side evaluating actual levels of usage or levels of customer satisfaction with online services.

The aim of this study was to investigate how and why a new type of e-government solution; a portal incorporating services from a governmental Tax administration with private insurance companies, provides added value to its users and what are the critical factors that affect user acceptance.

Davis et al (1989) differentiate between usefulness and ease of use as determinants of usage. The findings from the online questionnaire answered by the pilot users can be separated into usefulness and ease of use categories.

In this study usefulness was quantified as the perceived savings in time and money achieved by using Palkka.fi. The findings show that half of the users did not find any savings in either time or money. This is surprising considering that more than half of the respondents used less than ½ hour per employee. ½ hour is not much if it includes everything from salary calculation through tax and insurance submissions to payment. One aspect explaining the usefulness score is that changing from an existing, well known form of salary calculation might initially take time and feel troublesome. Two out of three of those who had not found savings in time, had been previously using familiar software, either spreadsheets or purchased software.

Another surprising result is that users from accounting firms do not stand out as using less time as could have been expected due to their previous experience in the field.

Prior use of online e-government, such as the TYVI system, correlates with less time used. Being an accounting firm does not correlate with finding the system easier to use or understanding the instructions better. On the other hand, information technology companies find it easier than the average. Could it be that the system has been developed by IT professionals more than accounting professionals?

In the findings from the open-ended comments, problems relating to navigation and understandable information were given most comments. Some were experiencing problems with incompatibility as they were using Windows 98.

This study was based on a pilot use of a service which was still in development. Since going live on February 1st, 2006 several improvements have been made in Palkka.fi based on the questionnaire feedback. Palkka.fi is evolving with user requirements and with legal changes.

Most of the e-government studies are made on supply-oriented e-government. Studies on the demand-side e-government are scarcer. Though limited, as this study has been, it is a contribution to the general trusted knowledge.

5.1 Future research

Interesting future research would be to study the transformation of back-office administration which is evoked by introducing e-government.

Now that Palkka.fi has gone live it would be interesting to repeat the study in a few years time to find out the long-term level of usage and to find out which user categories are keenest on using this type of service. A comparison with other countries with similar e-government services, as well as similar services coming up in Finland, would be an interesting study subject.

Evaluating e-government from a technical and security point of view is also one area for future research.

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Appendix A

The Online Questionnaire

PART 1 - COMPANY BACKGROUND INFORMATION

Q 1: Which area does your company operate in ?

Choices:

Southern Karelia

Southern Ostrobothnia

Southern Savo

Eastern Uusimaa

Kainuu

Kanta-Häme

Mid Ostrobothnia

Keski-Suomi

Kymenlaakso

Lapland

Pirkanmaa

Ostrobothnia

Northern Karelia

Northern Ostrobothnia

Northern Savo

Päijät -Häme

Satakunta

Uusimaa

Varsinais-Suomi

Q 2: What is your company's line of business ?

Choices:

Commercial enterprise

Painting contractor

Earth moving enterprise

Advertising agency

Construction firm

Electrical enterprise

Production of services

Gardening

Industrial activity

Information technology

Accounting firm

Entertainment service

Non-profit association

Other

Q 3: What is your company's company form ?

Choices:

Trade name

Limited company

Partnership

Joint-stock property company

Limited partnership

Co-operative
Foundation
Association
Concern
Other

Q 4: How many employees do you have ?

Choices:

1-2
3-5
over 5

PART 2 - SALARIES

Q 5: How did you use to perform salary calculations ?

Choices:

Manually
Spreadsheet (e.g. Excel, etc)
Salary administration software (purchased)
Service outsourced
Other - how?

Q 6: Do you have any experience / training in salary calculation / financial administration ?

Choices:

A great deal

Not much

Not at all

Q 7: Through which channel did you use to search for information on salary calculation ?

Choices:

By phone from the Tax Administration

www.vero.fi website

Written guidelines published by the Tax Administration

The Kouvola Service Centre for Small Enterprises

Other – how?

PART 3 - DATA COMMUNICATIONS

Q 8: Have you previously used employer services in electronic format (e.g. TYVI) ?

Choices:

Yes

No

Q 9: The speed of you broadband connection ?

Choices:

256 kb

512 kb

1 MB or more

Q 10: While using Palkka.fi, do you feel that the pages have been uploaded on a speed which you think is

Choices:

Optimal

Too slow

Q 11: How much time have you spend using Palkka.fi ?

Choices:

Less than ½ hour per employee

½ hour - 1 hour per employee

Over 1 hour per employee

PART 4 - FUNCTIONALITY AND USABILITY

Q 12: How many times have you called the Palkka.fi customer service number so far ?

Choices:

1-2 times

3-5 times

over 5 times

Have not called the customer service number

Q 13: Was your problem solved by the customer service number (if you have been in contact with them) ?

Choices:

A solution was easily found

A solution was hard to find

The problem was not solved

Q 14: Calling the customer service number at The Kouvola Service Centre for Small Enterprises has been free of charge during the pilot study. Afterwards a call will be charged € 1,- / minute plus a local call charge. Do you think the charge will have a relevance on how often you will call the customer service number ?

Choices:

Considerable relevance

Some relevance

No relevance

Cannot say

Q 15: Have you experienced Palkka.fi as

Choices:

Easy to use

Fairly easy to use

Difficult to use

Cannot say

Q 16: Do you think the user instructions on Palkka.fi have been

Choices:

Easy to understand

Fairly easy to understand

Difficult to understand

Have not needed instructions

Q 17: How much time do you estimate having saved using Palkka.fi compared with your previous way of doing salary calculations ?

Choices:

Less than 2 hours per month

2-4 hours per month

5-7 hours per month

More than 7 hours per month

No time saving

Q 18: How much money do you estimate to save in salary administration using Palkka.fi ?

Choices:

1-100 € per year

101-500 € per year

Over 500 € per year

No money saving

Q 19: What other kinds of e-government service applications would you wish to have available ?

Open-ended

Q 20: Do you want to give feedback on Palkka.fi or propose improvements ?

Open-ended

