Factors Impacting the Low Usage of e-Services in Latvia

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Abstract:

Despite the availability and technological flexibility of many pubic e-services in Latvia provided by both public and private organizations, users do not choose to use those services as frequently as their developers might wish. There are several possible causes for that: (1) e-services eventually do not meet users' needs, (2) users have socio-cognitive barriers discouraging them from using e-services. These barriers can be related to technological problems (such as data security) or cognitive factors (such as fear of making mistakes in virtual environments lacking direct human interaction).

The aim of the current research was to find out, which e-services users prefer and why, on the contrary, they do not choose to use some e-services. Further we wanted to explore what are the possible factors impacting this behaviour. To answer those questions, a large-scale representative (n = 1005) survey was used to collect data on how users perceive the information that is gained from various digital sources and what are their habits and choices of using information and communication technologies (ICT).

The results of the research indicate some core habits of using ICT in e-service environments, reasons of the reluctance regarding the usage of e-services, and provide some clues for facilitating the usage of e-services. Our results indicate that the reason of hesitation to use e-services is data security and inconvenient and complicated interface system. In our study, we also discuss the differences between the general use of the internet and the use of e-services.

Keywords: cognitive factors, e-services, ICT usage habits, reluctance.

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1. Introduction

Both public (state and municipalities) as well as private organizations provide their services in an electronically accessible format making them easier, faster, and more appropriate for users' needs and habits (Akopova & Przhedetskaya, 2016). In Latvia, state institutions have made a large part of their services electronically available in recent years – more than 480 services are electronically accessible via the portal www.latvija.lv, and the availability of e-services still tends to increase.

Although in last decade the number of digitally available services has significantly grown, there is a situation in Latvia when a relatively high number of users give preference to use on-site services – in face-to-face communication, rather than uses e-services. This refers also to the recent years, and the Table 1 shows that the usage of e-services by individuals is increasing over time.

As we can see from the Table 1, the percentage of available public e-services that are fully available electronically have been continually growing since year 2013 reaching the score 85.4 in year 2015 (the measurement is the share of the steps in a public service life event that can be completed online). Also, the percentage of individuals interacting online with public authorities has been growing steadily from 35.4 % in year 2013 to 69.5% in year 2016. Still the percentage of users' activity is lower when it is necessary to perform specific actions, for example, to fill-in and send documents to the public authorities. The opportunity to send electronic documents to public authorities has been used only by 30.8% of individuals, although all public authorities now accept documents signed with e-signature.

Table 1. *Availability and Usage of e-Services in Latvia (2013 – 2016)*

Year	Online Service Completion, Score of the Country (from 0 to 100)	Online banking, % of individuals	Individuals submitting completed forms to public authorities, over the internet, % of individuals	Individuals interacting online with public authorities, % of individuals
2013	73.1	54.9	12.6	35.4
2014	81.6	56.8	19.0	53.5
2015	85.4	64.3	29.1	52.1
2016	n/a	62.1	30.8	69.5

Source: *https://ec.europa.eu/digital-single-market/digital-scoreboard*

At the same time, in year 2016, for the first time in Latvia, percentage of individuals interacting online with public authorities exceeds the percentage of individuals using online banking. It means that people more and more have used Internet for interaction with public authorities including also obtaining information from public authorities' web sites, downloading official forms or sending filled in forms. Overall, despite the availability and technological flexibility of many pubic e-services in

Latvia, users do not choose some e-services as frequently as their developers might wish. The aim of the current research was to find out, which e-services users prefer and why, on the contrary, they do not choose to use some e-services.

2. Theoretical Framework

The reasons for avoiding e-services could be various – partly technological, partly socio-cognitive. On the one hand, e-services eventually do not meet users' needs from a technological perspective. This in its turn might be due to two interacting sets of reasons. First, the technological tools do not provide sufficient functionality to fulfil needs that are normally executed in face-to-face situations of interaction. Second, the system of infrastructures including variety of technological, artificial, human, and hybrid factors do not enable the successful use of e-services (Star, 2002, Star & Ruhleder, 1996, Krupa *et al,* 2015). Although there are no systematic studies of the infrastructures and ecosystems of information systems and their impact on the usability of e-services in Latvia, according to the current observations we see no indications for assuming that the infrastructures or technological tools might prevent users from choosing digital instead of analogue format of interaction.

On the other hand, users might have a variety of socio-cognitive or perceptual barriers discouraging them from using e-services. These barriers can be related to technological problems (such as data security) or cognitive factors – such as fear of making mistakes in virtual environments lacking direct human interaction. According to seminal research by Weiser & Brown (1997) it is crucial for the success in digital systems of interaction that the user has impression that he or she controls the situation. A more elaborate analysis would require a separate study but according to our observations and results from this and some upcoming work we might assume that this factor has an impact on the preference of analogue format of communication in the areas where the e-services are available.

Also, the routines of previous interactions could impact the preference to analogue instead of digital usage. The successful previous experience in analogue environment biases the preference towards analogue format. Thus, taking into account the results from the work of the adaptiveness of mental categories, we might hypothesize that hierarchic structure of knowledge in certain areas of analogue services might be transformed into digital once the previous experience in this particular area is successful but then adapting it to a different format (e.g., on-line banking) taking into account personal preferences and some of the previously used elements (for an overview of the work on mental categories cp. Johnson, 2013). Although not explored in this particular area, additionally different cognitive styles (Kozhevnikov, 2007) could have an impact on the preferences of the format and therefore could be identified and applied in further work.

Also, older generation users seem to be less open towards digital format not at least because a substantial part of them lacks sufficient skills of using digital services.

Lack of skills in turn induces uncertainty which is an important cognitive barrier for accepting digital services (a recent and comprehensive overview on interrelated factors of ageing is analysed by Bengtson & Settersten, 2016).

Finally, some perceptual factors might impact the evaluation of usability. Colours and shapes in the interfaces might be sensitive factors to different demographic profiles of users (Hartson & Pyla, 2012, Palmer & Schloss, 2010, Terwogt & Hoeksma, 1995). Although this is not a subject of the current work, we might hypothesise that these (partly neglected) factors constrain both the usability preferences in e-services and the preference of a particular format in general.

3. Data Collection

To find out, which e-services users prefer and why on the contrary they do not choose to use some e-services, the internet users' survey was carried out. First, the questionnaire was developed, consisting of several parts:

(1) the usage of Internet by means of various devices – computers, mobile phones, tablets, and the questions related to habits of using the internet;
(2) the usage of different e-services (private and public);
(3) metacognitive questions related to estimation of frequency and usage habits of other members of users;
(4) preferences and users' recommendations for receiving services using ICT;
(5) demographic and socio-economic information.

The questionnaire was distributed as Internet survey (computer-assisted web interviewing) by means of the research centre SKDS in Latvia. The respondents were Internet users from inhabitants of Latvia at the age group from 18 to 74. The reliability was insured with the quota sampling and the data was weighted by demographic data on February 13, 2017 according to the Population Register of Republic of Latvia (maintained by the Office of Citizenship and Migration Affairs). The selection of respondents is representative for the whole population of Latvia, including both cities and rural areas and different other demographic features of population. The survey's timeframe was March 16, 2017 till March 20, 2017. Altogether 1005 respondents were surveyed.

4. Results

The study dealt with such general habits of users as the use of internet in different devices revealing the preferences for different technological factors and different options for usage. The questionnaire distinguished the use of each device exclusively. We found out that computer is still the most frequently used device – a large part of the respondents does not use internet in smart-phones or tablets: slightly above 30% of respondents does not use internet in smart phones at all, but slightly above 70% does not use internet in tablets.

In our study, we also discuss the link between the general use of the internet and the use of e-services. In the study, the results show that the usage of Internet for accomplishing formalities (to fill-in forms or handing in documents electronically to state institutions) is not so often. More frequently the Internet is used to perform activities related to work, entertainment and communication (Fig. 1). The data analysis shows that significant factors, which influence habits of internet use regarding formalities, are age of users, age at which users learned computer skills, their occupation, income, and knowledge of languages.

Figure 1. *The Habits of the General Use of the Internet*
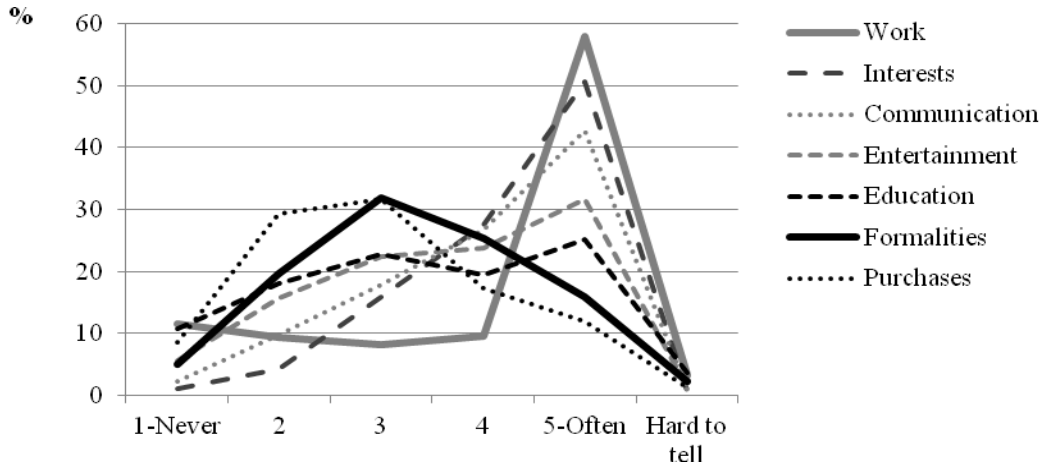
Source: *authors' construction based on research's data*

The results of the research indicate some core habits of using ICT in e-service environments. According to our results, finances are the most frequent type of e-services' usage. Internet banking and payment of bills are the most commonly used e-services, used by over 90% of all respondents (Fig. 2). Other more frequently used e-services that in the study have indicated usage close or exceeding 50% of responses are submission of income declaration, shopping in online stores and events' ticket sale. The results confirm that the use of state provided e-services are not among the commonly used e-services, except submission of income declaration that is mandatory for some groups of inhabitants (for example, individual entrepreneurs, people receiving income abroad) and optional for users who would like to recover overpaid income tax.

As Figure 2 shows, the usage of such e-services like applying to study at universities or applications for kindergartens is rare, but these e-services strongly depends on age group of respondents. We found out that 21% of respondents at the age group of 18 to 24 use e-application for studies at universities and more than 14% of respondents at the age group of 25 to 34 use e-application for kindergarten.

Figure 2. *Users' Preferences for Types of e-Services, % of respondents*
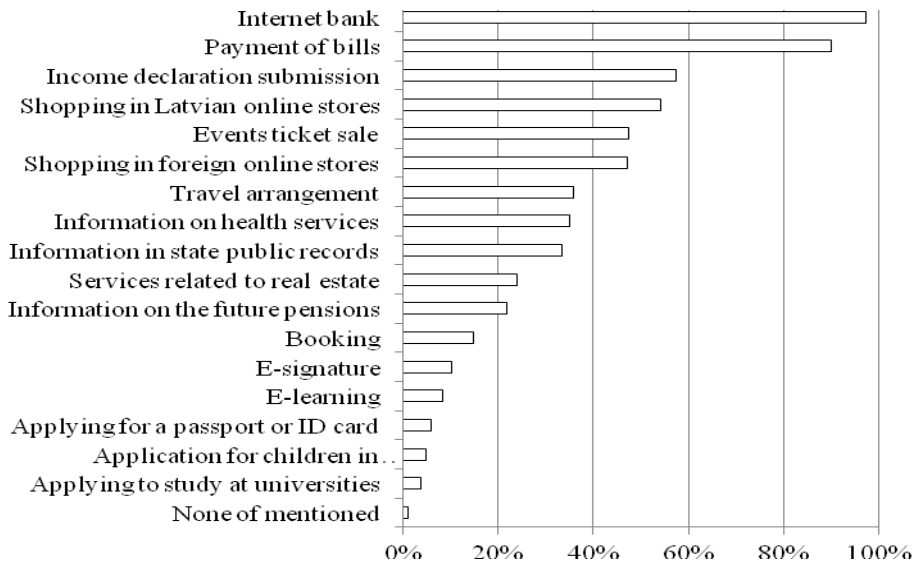
The habits of using e-services differs depending on users' age. The data shows that people at age 55 and older lesser choose to use the Internet for purchases (events, Internet shops) which partially supports our claim about the impact of age on the usage of e-services. Young adults at age 18-24 use the Internet for applying to studies at universities, but it is not important for them to look for information regarding pension funds and data concerning real estates. Other differences for using e-services are related to life stages of users – registering for schools and kindergartens, issues concerning pensions and real estates.

The analysis of the research data shows that there exist statistically significant associations (α=0.05) between use of different e-services and certain demographic factors. Although these are not strong correlations, however they give clues about possible regression models. The demographic factors which represent most significant associations with studied e-services are age, occupation and level of the education. Other factors which have significant associations with use of comparatively more e-services are age at what respondent has learned computer skills and knowledge of languages. It should be taken into account that for different e-services there are different factors that influence their usage. For example, if we look to the e-services respective to the state organisations, the common significant factors are education level and age at what respondent has learned computer skills. For two most commonly used e-services – internet banking and payment of bills, the significant factors are knowledge of languages, occupation and level of education. For the less used e-service included in the study – application to the universities – the significant factors are age (also age at what respondent has learned computer

skills), nationality and knowledge of languages, as well as field of the studies. In the study were included several other demographic factors that cannot be considered as significant commonly, still they can give some directions for further data analysis.

In the study for each of the e-services there were created ordinal regression models to test impact of demographic factors. The table 2 gives a summary of the obtained results. The table 2 indicate that overall the variance of data is low explained by regression models which test use of e-services as dependant variables and different demographic factors as independent variables. However, the results can be used for interpreting the situation regarding use of e-services and also for planning introduction of new e-services both in private and state institutions as they point to some trends.

Table 2. *The Factors impacting Use of E-services in accordance with Regression Analysis*

| E-service	% correctly classified by regression model*	% of explained variables in the model**	Groups of independent variables that include significant (α=0.05) factors***
Internet bank	97%	28%	Income, Field of education
Payment of bills	90%	19%	Gender, Income, Knowledge of languages
Income declaration submission	65%	16%	Occupation, Income, Field of education, Place of living
Events ticket sale	73%	30%	Gender, Age, Age when learned computer skills, Occupation, Income, Level of education, Field of education, Place of living, Knowledge of language
Shopping in Latvian online stores	65%	14%	Age, Occupation, Field of education, Knowledge of languages
Shopping in foreign online stores	65%	20%	Age when learned computer skills, Knowledge of languages
Information on health services	69%	12%	Gender, Nationality, Place of living
Travel arrangement	70%	23%	Age, Age when learned computer skills, Occupation, Income, Field of education, Place of living, Knowledge of language
Information in state public records	68%	13%	Age, Age when learned computer skills, Nationality, Occupation
Services related to real estate	77%	13%	Occupation, Field of education,
Information on the future pensions	79%	16%	Age, Age when learned computer skills, Occupation, Income
Booking	86%	21%	Age when learned computer skills, Income, Level of education, Place of living

E-learning	91%	18%	Age when learned computer skills, Occupation, Income
E-signature	90%	19%	Gender, Nationality, Occupation, Income, Field of education
Applying for a passport or ID card	94%	18%	–
Applying to study at universities	96%	42%	Knowledge of languages
Application for children in kindergarten	95%	36%	Gender, Age, Occupation, Place of living
None of mentioned****	99%	50%	–
* Binomial Logistic Regression using SPSS Statistics *** after Negelkerke R^2* **** not in the ranked order* ***** the model is not significant ($α=0.05$)*			

The more detailed analysis of the factors shows that the habits of using e-services differs depending on users' age. The data shows that people at age 55 and older use Internet less frequently for purchases (events, Internet shops), which partially supports our claim about the impact of age on the usage of e-services. Young adults at age 18-24 use the Internet for applying to studies at universities, but it is not important for them to look for information regarding pension funds and data concerning real estates. Other differences for using e-services are related to life stages of users – registering for schools and kindergartens, issues concerning pensions and real estates. The respondents were asked to evaluate their habits of use of the e-services. 51% reported that they think that their use of the e-services is optimal, but 23% and 18% respectively reported that they think they should use e-services more or even a great deal more than currently. This points that there is potential to improve use of e-services.

Part of the study was aimed to search for the reasons that could explain why some e-services are used more frequently, while others – less frequently. At this stage of the study we evaluated the responses about the given advantages and disadvantages regarding use of e-services. The tested advantages were economy of time, economy of money and less social contact. According to the surveyed data, the most important advantage that is gained from the usage of e-services is time (Figure 3). This advantage is almost equally important for both women (53.4%) and men (51%). The second important advantage is money – the saved time and resources for getting to and visiting on-site state institutions for accomplishing formalities. The opportunity to have less social contact in the study was also regarded as an advantage, however for most respondents it was evaluated as neutral factor. Also, the disadvantages did not show high concerns about factors that could be linked with analogue versus digital activities. In the study, we included such possible disadvantages as information loss, unprocessed information, hard registration process and problems

with finding certain e-service. However, the main reason of hesitation to use e-services is data security and inconvenient which is general technological issue (Figure 4). It is followed by disadvantage that refers to complicated interface system and it is linked with cognitive factors.

Figure 3. *Advantages from Using e-Services from the Perspective of Users*
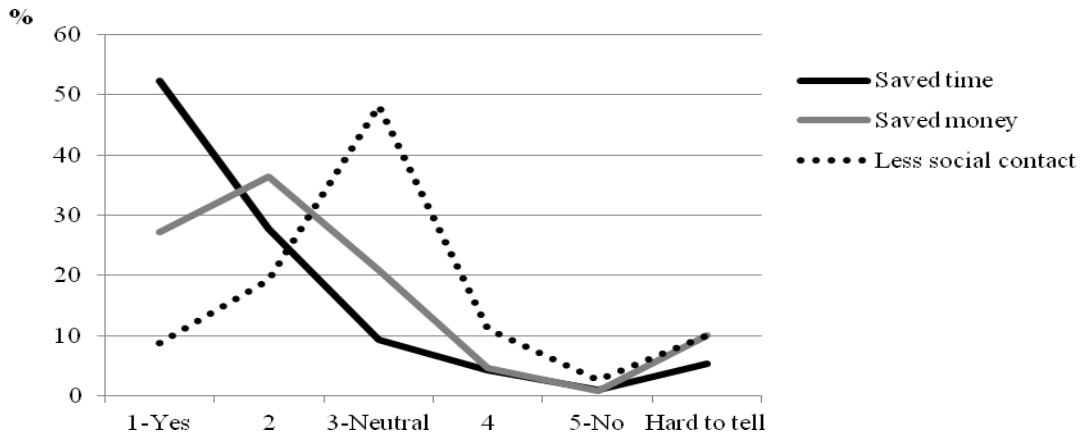
This supports our claim that we were arguing in the theoretical framework of our study that both technological difficulties and socio-cognitive barriers impacts the preference of analogue format.

5. Conclusions, Proposals, Recommendations

The results of our research indicate reasons of the reluctance regarding the usage of e-services, and provide some clues for how to facilitate the usage of e-services.

1. Technological and socio-cognitive factors play a role in subjects' decision to use analogue or digital format.
2. Age impacts the usage of e-services. Older users have a reduced set of digital operations in e-services.
3. Time is the most important benefit when using e-services.

Further, it seems that the analysis of interface impacts on the usability is underexplored. In a further study, we work on the way interface components – such as colour – shape the preferences of e-services' usage.

This research is unique since it covers a representative sample of a society with a highly developed environment of e-services but still not open enough to use it as frequently as the developers might wish.

Figure 4. *Disadvantages of Using e-Services from the Perspective of Users*
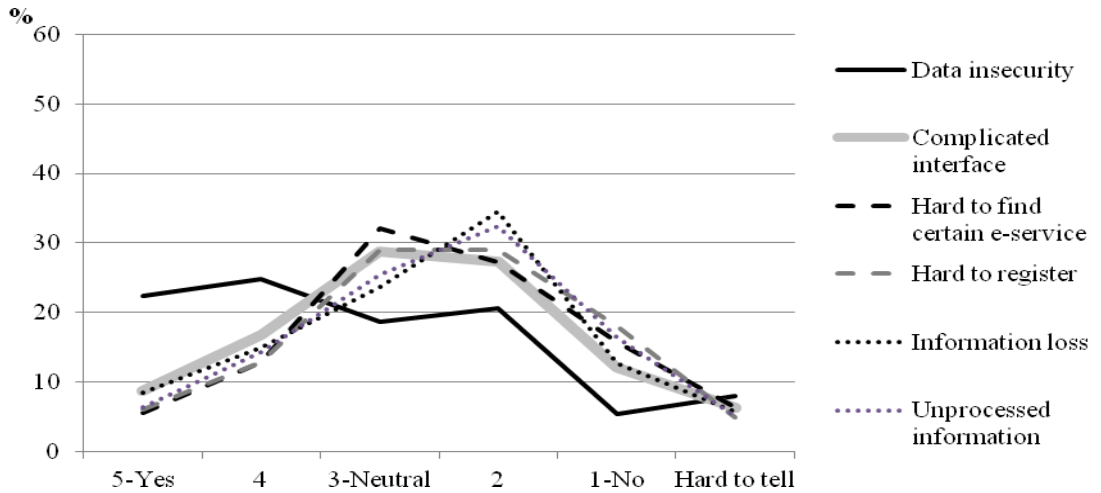
Source: *authors' construction based on research's data.*

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