Social and Occupational Ergonomics, Vol. 65, 2022, 1–6
https://doi.org/10.54941/ahfe1002652

Application of Information Technologies for Social Inclusion: Current Trends and Future Prospective

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ABSTRACT

Remote work and remote studies has increased in great extent the requirements of information technologies use and skills to apply information technologies. In European Union countries annually it is checked the availability of computer software as well as skills of information technologies use: there are annually conducted surveys on survey on use of information and communication technologies (ICT) in households and by individuals. The aim of the paper is to research theoretical aspects and to analyze internet use in regions of Latvia for checking on whether there is statistically significant use. The source of the data is the questionnaire No. ICT-persons "Use of computers and the internet in households". As well as Labor Force Surveys, EU-SILC survey data. Research methods applied: scientific publication analysis, time-series analysis of internet use in Baltic countries, analysis of data on differences of availability of computers in households by regions of Latvia by analysis if variance or ANOVA, by territories (urban and rural) by t – test and by household size by ANOVA. The article concludes that despite differences in unemployment level in Latvia (approximately 5% in the Riga region and 15% in Latgale region (CSB, 2021), there are no statistically significant differences in internet use in regions of Latvia by territories: in urban areas and rural areas availability of internet and use of internet do not differ statistically significant. Number of persons in households has no statistically significant difference on internet use in Latvia. Those results of analysis could be useful for policy makers.

Keywords: Social inclusion, Technology, Computers, Internet, Trends

INTRODUCTION

Remote work and remote studies have increased in great extent the requirements of information technologies use and skills to apply information technologies. In the European Union countries the availability of computer software is checked annually as well as skills of information technologies use: there are annually conducted surveys on the use of information and communication technologies (ICT) in households and by individuals. The aim of the paper is to research theoretical aspects and to analyze internet use in regions of Latvia for checking on whether there are statistically significant differences on use of the internet by different society groups. The source of the

data is the questionnaire No. ICT-persons "Use of computers and the internet in households", survey is conducted by Central Statistical Bureau, Republic of Latvia and data available on Official Statistics Portal. For data analysis is used also Labor Force Surveys, EU-SILC survey data. Research methods applied: scientific publication analysis, time-series analysis of internet use in Baltic countries, analysis of data on differences of availability of computers in households by regions of Latvia by analysis if variance or ANOVA, by territories (urban and rural) by t – test and by household size by analysis of variance or ANOVA.

THEORETICAL FINDINGS

Researchers world-wide devote their research and reflect their research findings in their scientific publications on several aspects related to social inclusion and availability of computers and use of internet especially when feeling needs for going digital which become a necessity for ensuring older adults' needs for information, services, and social inclusion during COVID-19 (Xie et al., 2020) with findings that rural online learning in the context of COVID-19 in South Africa has performed evoking an inclusive education approach (Dube, 2020) which has forced to apply computer and internet use in bigger extent (Sanders, Scanlon, 2021). Researchers have investigated importance of different tools and performed evaluation of the library connectivity project through the lens of the digital inclusion model (Saheer Al-Jaghoub Al-Jaghoub and Westrup, 2009). Researchers have investigated aspects on improving social inclusion for young people diagnosed with "first episode psychosis" for employment for education and online support (Holttum, 2013) and supporting social inclusion of youth at risk using social software investigating the impact, sustainability and evaluation after one year after the pilot testing (Dekelver et al., 2013) and suggesting further innovative and creative steps for better use of such software for social inclusion. Researchers have underlined that ergonomic aspects (Kalkis et al., 2021; Kalkis et al., 2020) as well as marketing has big importance in social inclusion (Salkovska et al., 2020; Batraga et al., 2019). Municipalities in many countries have significant role for efficient social inclusion (Savrina and Seimuskane, 2018; Seimuskane et al., 2017) and effective use of financial and human resources (Romanova et al., 2018) and reassessing social inclusion and digital divides (Al-Jaghoub and Westrup, 2009) as several parts of the population have different possibilities in use of computers and internet as well as often there is lack of digital skills. Researchers have found that Australian farmers are left behind in the digital economy and the researchers have performed detailed analysis on insights from the Australian Digital Inclusion Index (Marshall et al., 2020). Researchers have analysed digital enforcement and have performed the steps for rethinking the pursuit of a digitally-enabled society (Díaz Andrade and Techatassanasoontorn, 2021) and suggest several innovative solutions for social inclusion and educating society on digital skills as well as finding different ways in getting computers for part of society in harder material conditions involving libraries and non-governmental organisations.

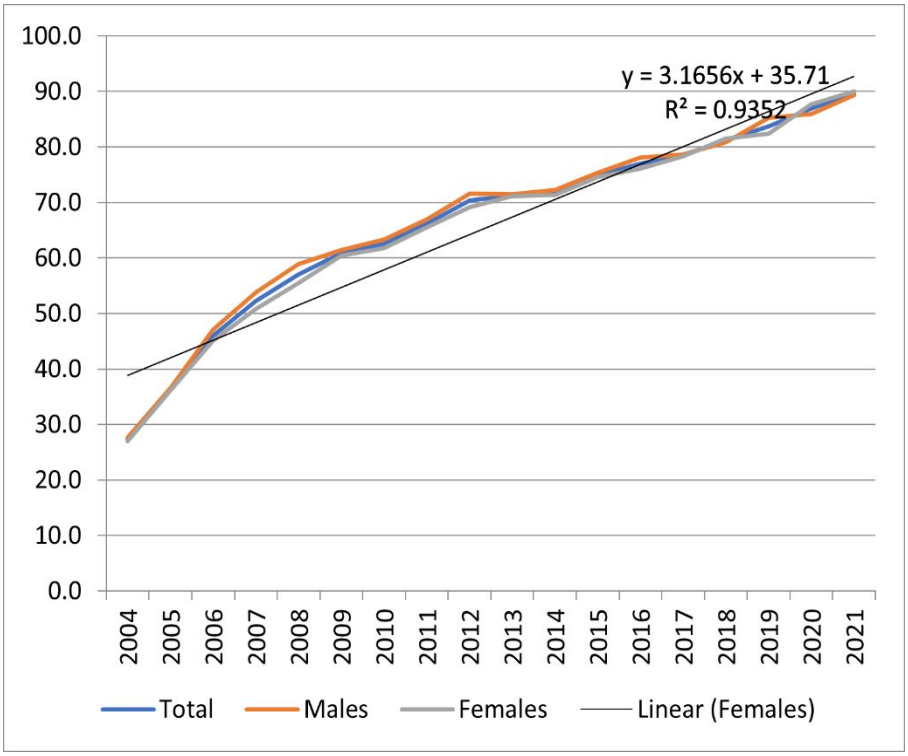

Figure 1: Internet usage by individuals at the beginning of the year (per cent of total population within the corresponding group – total, male, female) in Latvia in 2004-2021. (Authors construction and calculations based on CSB data, 2021).

EMPIRICAL RESEARCH RESULTS

Importance of internet use is stressed by many researchers and policy makers and availability of skills in application of internet use among different parts of society in Republic of Latvia. Data indicate that internet usage by individuals at the beginning of the year (per cent of total population within the corresponding group – total, male, female) in Latvia in 2004-2021 is increasing with every year for the society in total, for male and female and data are included in Figure 1.

Data indicate that in average male and female persons in Latvia are using internet on approximately the same level, female use a little bit more: data analysis indicate that annually the share of female internet users among all female inhabitants is increasing annually in average by 3.2 percent points which indicate time-series analysis.

Data indicate that there is bigger share of inhabitants having computers, but there is a question, are those data statistically different in regions of Latvia (see Table 1).

Results on testing of significance of differences (ANOVA) on availability of computers in Latvia's households by statistical regions in Latvia by authors construction based on CSB survey EU-SILC data 2019 are reflected in Table 2.

Table 1. Distribution of responses on availability of computers in Latvia's households by statistical regions in Latvia (Authors construction based on CSB survey EU-SILC data 2019).

Answer	Latvia Statistical Regions						Total
	Riga	Pieriga	Vidzeme	Kurzeme	Zemgale	Latgale	
Yes	1414	614	357	594	537	508	4024
No – cannot afford	134	70	76	86	139	159	664
No – other reason	365	175	146	247	181	212	1326
Total	1913	859	579	927	857	879	6014

Table 2. Testing of significance of differences (ANOVA) on availability of computers in Latvia's households by statistical regions in Latvia (Authors construction based on CSB survey EU-SILC data 2019).

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	43.545	5	8.709	12.774	0.000
Within Groups	4096.078	6008	0.682		
Total	4139.624	6013			

Table 3. Distribution of responses on availability of computers in Latvia's households by territories in Latvia (Authors calculations based on CSB survey EU-SILC data 2019).

Answer	Teritory		Total
	Towns	Rural areas	
Yes	2929	1095	4024
No – cannot afford	410	254	664
No – other reason	823	503	1326
Total	4162	1852	6014

Results of testing of statistical hypothesis on significance of differences by analysis of variance (ANOVA) on availability of computers in Latvia's households by statistical regions in Latvia based on authors calculations by use of CSB survey EU-SILC data 2019 indicate that there is no statistically significant difference on availability of computers by statistical regions in Latvia. Researchers in the theoretical findings have indicated that there are differences on availability of computers in urban and rural areas. Distribution of responses on availability of computers in Latvia's households by territories in Latvia is reflected in Table 3.

Data included in Table 3 reflecting distribution of responses on availability of computers in Latvia's households by territories in Latvia prepared by authors based on CSB survey EU-SILC data indicate that computers are available in households living in urban and rural areas. Theoretical findings indicate that number of persons in household can have influence on availability of computers in household. Results in Latvia are reflected in Table 4.

Data reflected in Table 4 indicate that most of households in Latvia have computers. Results of testing of statistical hypothesis on significance of differences by analysis of variance (ANOVA) on availability of computers in

Table 4. Distribution of responses on availability of computers in Latvia's households by number of persons in household in Latvia (Authors construction based on CSB survey EU-SILC data 2019).

Answer	Number of Persons in Household											Total
	1	2	3	4	5	6	7	8	9	10	11	
Yes	854	1371	834	594	235	85	34	7	6	2	2	4024
No – cannot afford	368	218	48	18	5	4	3	0	0	0	0	664
No – other reason	911	359	43	7	4	2	0	0	0	0	0	1326
Total	2133	1948	925	619	244	91	37	7	6	2	2	6014

Table 5. Testing of significance of differences (ANOVA) on availability of computers in Latvia's households by number of persons in household in Latvia (Authors calculations based on CSB survey EU-SILC data 2019).

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	892.593	10	89.259	165.020	0.000
Within Groups	3247.030	6003	0.541		
Total	4139.624	6013			

Latvia's households by number of persons in household in Latvia are included in Table 5.

Results of testing of statistical hypothesis on significance of differences by analysis of variance (ANOVA) on availability of computers in Latvia's households by number of persons in household in Latvia based on authors calculations by use of CSB survey EU-SILC data 2019 indicate that there are no statistically significant difference on availability of computers by number of persons in the household.

CONCLUSION

Use of computers and internet is becoming more and more important for social inclusion around the globe even showing different real achievements in different countries, different territories and different regions in many countries. The article concludes that despite differences in unemployment level in Latvia (approximately 5% in the Riga region and 15% in Latgale region), there are no statistically significant differences in internet use in regions of Latvia by territories. Marketing activities including ergonomic aspects are important for motivation of internet use in Latvia. Those results of analysis could be useful for policy makers for their decision making.

ACKNOWLEDGMENT

The authors would like to acknowledge National Research Program INTERFRAME-LV.

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