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Use of Internet banking by consumers in Slovakia as an aspect of relationship marketing in electronic commerce of banks

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Abstract
This article focuses on studying the essential aspects of trust and security in internet banking and their impact on e-commerce. Internet banking offers fast, convenient, secure, and cost-effective options for conducting financial transactions in e-commerce. E-commerce enables businesses to expand their operations globally and encompasses a broad spectrum of definitions and commercial activities. The article also highlights the challenges faced by internet banking and e-commerce, including extensive surveillance possibilities by governments and "Big Data" firms. Additionally, the study analyses trends in internet banking usage in the regions of the Slovak Republic and compares them to the European Union average. The conclusion examines the challenges and potential reasons for the decline in internet banking usage during the pandemic and post-pandemic period and raises questions for future research in this area.

Key words
internet banking, e-commerce, trust, safety

Information
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1. Introduction

In today's rapidly changing digital era, internet banking and e-commerce play an increasingly important role in the economy. Internet banking allows for fast and secure financial transactions, bringing many advantages to both consumers and businesses. Simultaneously, e-commerce opens new opportunities for entrepreneurs to operate on a global scale and reach a wider customer base. Considering the significant shifts in how people shop and conduct financial operations, it is crucial to address the crucial aspects of trust and security within internet banking.

Considering the rising importance of internet banking and corresponding cyber privacy in the field of security, there is rising number of studies aiming on this theme. Technology has changed everything, including ways how individuals interact with their bank houses. Technology fulfils the main task and is a key in present banking. Internet banking made life easier for millions and millions of people in the whole world. To offer better services for customers bank houses must use Internet technologies, so they can serve them 24 hours a day. Internet banking is popular and fancies thanks to its convenience. This convenience is achieved by unique trade interactions between banking institutions and customers via web pages and mobile applications. Unbelievable escalation of internet frauds however causes, that bank customers feel higher risks in field of privacy and security. Era of digital technologies brought in the banking world revolution in possibilities of online functions, operations and offered services. Success of usage lies not only in acceptation of online internet banking at first, but in persistence of using online services of bank houses.

2. Theoretical background

The impact of internet banking on e-commerce lies in its use as a payment method that offers speed, convenience, safety, and minimal costs for conducting transactions in e-commerce (LEE, Ming-Chi 2009). E-commerce opens doors for entrepreneurs to operate on a global level. The term e-commerce encompasses a wide range of definitions, not just limited to transactions conducted through the internet, but also involving the utilization of electronic technology for various commercial activities (Tunca and Haskose, 2002).

Financial sector rose very fast, namely because acceptance and flourishing of internet technology. This corner stone fact made stone shops convert their business to web-based business with using services of internet banking (Owusu Kwateng et al., 2019). According to Lee and Kim (2020) is internet banking defined as a certain banking channel, which manages wide base of financial and non-financial activities for customers via bank houses' webpages. Internet banking is more and more important alternative channel to provide banking services (Yuan et al., 2018). Lichtenstein a Williamson (2006) in their study compared internet banking and classic banking. They concluded that internet banking is reliable service not only for the bank house, but also for customers. For the user is important the ease of buying and selling process, which forces companies to aim more for bettering their technological systems (Rahi, 2016)

Survey by Othman et al. (2015) point out at impact of quality of e-services, satisfaction, and trust as corner stone of trust in using of internet banking. Internet banking is fancied thanks to its non-stop availability. Its' success is based on continuous usage (Yuan et al., 2019). Baseline is the intent to continue to use of internet banking services, not just the primary acceptance (Bhattacherjee, 2001). According to Foroughi et al. (2019) survey, a lot of users have problems with using of internet banking and hesitate to use it, while they prefer

other services, e.g., automated teller machines. Bauer et al. (2005) explained that internet banking includes process, in which user acquires direct control to his banking account via internet connection and is able to administer banking operations. Innovative financial services oriented for customer and IT infrastructure are continuous challenge for financial institutions (Lee and Kim, 2020)

There are several challenges associated with internet banking and e-commerce, as highlighted by Schneir (2015). These include the extensive surveillance options provided by governments and "Big Data" firms to monitor consumers engaged in online banking and commercial activities. Many online consumers are unaware of the measures they can take to limit the extent of surveillance. The strategic role of an e-commerce venture is referred to as its strategic context, which indicates the flow of resources to and from the banking unit (Callaway, 2006).

2.1 Trust

In the environment, which is perceived as highly risky, companies use internet as basic factor of trust. Trust is playing an important role in increasing of the intention to buy online (Berrayes, 2019). In banking sector, it helps managers to retain their customers via online services (Thakur, 2014). According to Zoghlami at al. (2018) should online environment of a webpage content information, which should automatically decrease the risk perceived by customers, which on the other hand uplifts the trust. There is an important link between acceptance of internet banking and trust, which is supported by different studies in following table:

Table 1 Studies cross-section of factors influencing of internet banking usage

Reference	Study	Metodology	Output
ALDAS-MANZANO, Joaquin at al. (2011)	- Perceiving risk as predecessor of loyalty of customers to banks' webpages	- 254 users of internet banking services in Spain	- Satisfaction positively corelates with loyalty - Trust positively corelates with high level of perceived risk
ASNAKEW, Zeleke Siraye (2020)	- Model research of effects of variables (technology acceptance and theory of trust) on intention of the customers to continue using of channels of mobile banking.	- 202 respondents - PLS-SEM analysis - Hayes macro-PROCESS	- Attitude and trust together explain 50 % of differences in intention to continue using mobile banking. - Attitude and trust mediate relation to intention to continue using mobile banking.
LÓPEZ-MIGUENS at al. (2017)	- Method of forming loyalty of individual users of the internet banking.	- e-trust - satisfaction - quality of a webpage - SEM - model of structural equations	- Satisfaction and e-trust influence loyalty - Webpage quality creates e-loyalty mediated by e-satisfaction a/or e-trust

SASONO, Ipang at al. (2021)	- Impact of e-satisfaction on mediation of quality of e-services on e-loyalty of a private bank costumer in Indonesia	- 205 respondents - Probability sampling - Regression SEM analysis	- E-service quality has significant positive impact on e-satisfaction. - e-satisfaction has significant positive impact on e-loyalty. - e-service has significant positive impact on e-loyalty. - e-satisfaction significantly mediates impact on quality of e-service to e-loyalty.

Source: Authors' own work

2.2 Safety

Safety bears probability of economic loss at the hand of online banking (Nguyen, T.; Nguyen, C., 2017). According to authors Ramavhon and Mokwen (2016) is safety one of the elements of acceptance and use of internet banking. Customer perceives perils, namely because of spreading internet frauds. According to some authors has risk sometimes positive and sometimes negative influence on acceptance of technology, which, naturally has influence on acceptance of internet banking. Positively is risk perceived by Ofuonyebuzor et al., negatively is risk perceived by authors Quan and Nam or Teka. Lallmahamood (2007) pointed out, that main reason, why customers of non-internet banking did not use online banking was trust, safety and privacy. If customers are not sure, if their private information are secure, there is an impression, that banking system does not have high level of security.

Many studies point out, that individuals do not trust internet banking just because of risk and privacy concerns (White, Nteli, 2004). Privacy contains all mechanisms of private data security, while safety aim at protective mechanisms of all types of data and actives. Implementation of cloud computing in internet banking considers privacy and safety as most important factors (Uusitalo et al., 2010).

3. Methodology

The analysis carried in this paper focuses on identifying trend in using internet banking in regions of Slovak republic in the period of years 2011 – 2022. In particular, we focus to answer following questions:

- Does the use of internet banking in regions of Slovak republic copy that of average of European Union?
- Is at least one of regions of Slovak republic trendsetter in European Union in terms of the issues surveyed hereunder?
- Has at least one of regions of Slovak republic achieved its goal in economic growth in terms of using internet banking?

EU 27 countries variable is defined as countries who are members of European Union since 2020, meaning Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania,

Slovakia, Slovenia, Spain, and Sweden. We are analysing data for the years 2011 to 2022 including. Data for the years before were not available for all 27 member states regions due to Eurostat data portfolio collection.

To answer set up research questions, our analysis uses general scientific methods of economic analysis, comparison method (used in assessing the level of using internet banking in the regions of Slovak republic), as well as methods of generalization, systematization, synthesis, analogy, and classification. These methods were used for their clarity and informative value they bring to analysed issue.

4. Results

First, we look at individuals using internet in last 12 months to assess the differences between Average EU 27 region in using internet, best performing region in EU 27 and individual regions in Slovak republic, meaning Bratislava region (BA) as a region of capital city of Slovakia, Western Slovakia (W), Middle Slovakia (M), and Eastern Slovakia (E) regions in Table 2 and Figure 1.

Table 2: Individuals who used the internet in the last 12 months (Percentage of individuals)

TIME	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Best performing region name	SE – Stockholm	NL – Flevoland	NL – Utrecht	DK – Hovedstaden	LU – Luxembourg	DK – Hovedstaden	DK – Hovedstaden	NL – Friesland (NL)	NL – Flevoland	IE – Eastern and Midland	IE – Northern and Western	ES – Ciudad de Melilla
Best performing region value	96.91	98.04	97.80	97.69	97.51	98.37	99.14	99.06	99.23	100.00	100.00	98.99
Average EU 27	71.38	73.46	75.46	78.63	79.78	81.64	83.56	85.11	87.05	88.63	90.57	91.27
Slovensko	77.97	79.83	81.16	83.12	80.71	82.76	83.45	83.25	85.08	91.18	90.17	90.19
BA	83.83	86.60	87.32	87.30	83.16	82.80	85.02	86.82	84.80	94.03	96.82	95.98
W	77.37	78.14	79.48	81.76	79.78	82.69	82.85	83.69	86.57	90.00	89.43	89.72
M	76.36	74.97	79.68	81.50	79.03	81.17	82.45	83.62	84.83	92.32	90.93	88.52
E	77.58	83.49	82.05	84.45	82.27	84.19	84.36	80.98	83.66	90.44	87.64	89.50
Best performing SK region	BA	BA	BA	BA	BA	E	BA	BA	W	BA	BA	BA
Worst performing SK region	M	M	W	M	M	M	M	E	E	W	E	M

Source: Authors own work based on the Eurostat primary data

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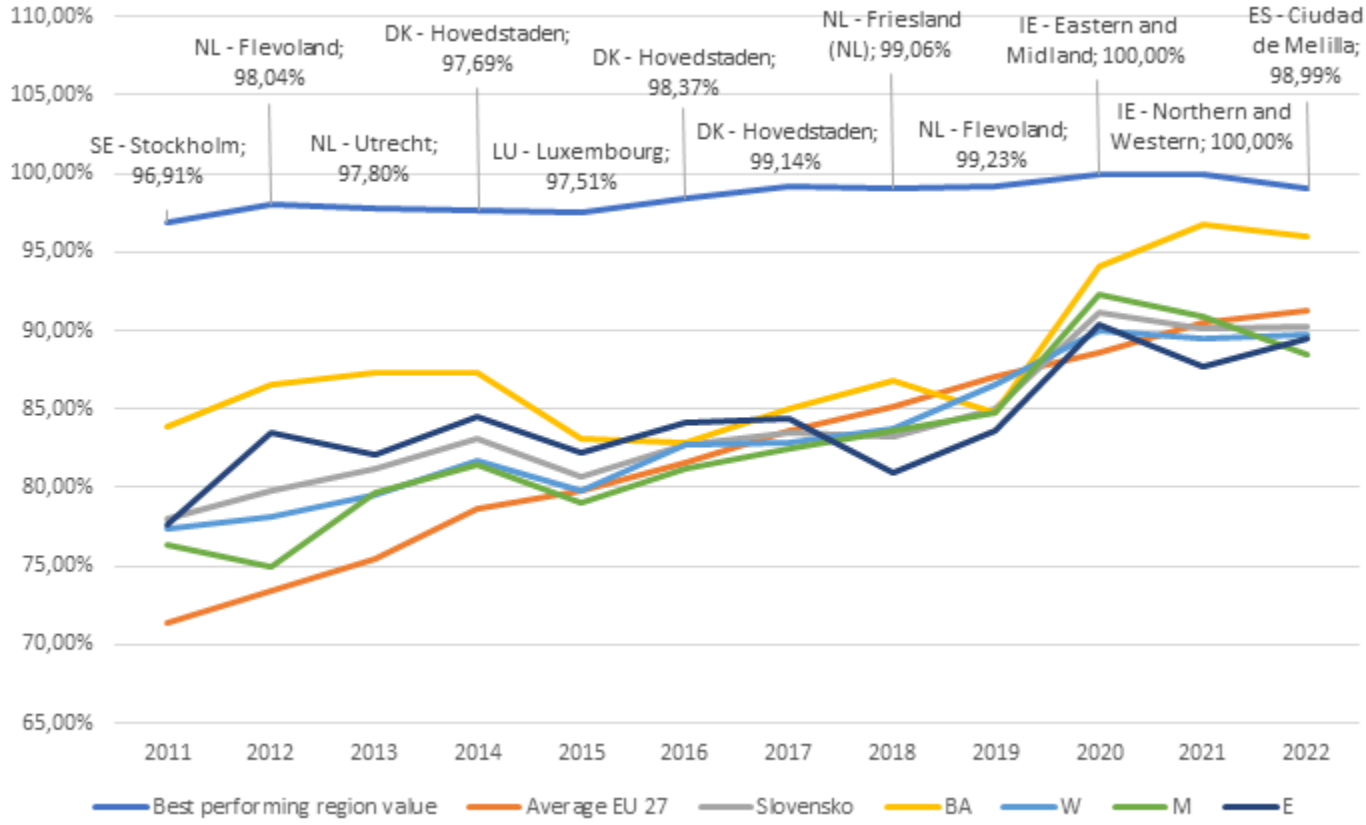

Figure 1: Individuals who used the internet in the last 12 months (Percentage of individuals)
Source: Authors own work based on the Eurostat primary data

Best practicing regions of European Union locates itself in Sweden, Netherlands, Denmark, Luxembourg, Ireland, and Spain. Percentage band of using internet in last 12 months in those fluctuates between 96.91% (Sweden region of Stockholm in 2011) to 100% in case of Ireland regions in 2020 and 2021. An average region in EU 27 has had constant rising trend in observed period from 71.38% in 2011 to 91.27% in 2022. Observed period begun with leadership of Bratislava region within years 2011 to 2015 followed by Eastern Slovakia, both above average of Slovakia and above average region of European Union. For the year 2016 Eastern Slovakia has surpassed Bratislava region. However, there is a significant drop in using internet in last 12 months in case of Bratislava region since for years 2015 to 2019 included. In pandemic years 2020, 2021 using of internet increased, and holds above average region of European Union. Drop in using internet is also significant in case of Eastern Slovakia for years 2018 and 2019, where using internet in last 12 months dropped under average region of EU, and also under the average of Slovak republic region, since only in 2020 rose usage of internet in Eastern Slovakia above average EU region, however never over average Slovak republic region. In the beginning of the observed period were both remaining Slovak regions above the average EU region. Western Slovakia region held itself above average EU region until 2017, afterwards it surpassed average EU region just in 2020. Middle Slovakia was until 2017 region with lowest percentage of individuals using internet in last 12 months. After 2017 this position has been taken by Eastern Slovakia, until 2022, where Middle Slovakia took this position back. In case of all Slovak regions there is however a rising trend in using internet. Significant year for using internet in regions of Slovak republic has been 2020, pandemic year, when all Slovak regions achieved using internet above average EU region.

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Table 3: Individuals who used the internet for Internet banking in last 12 months (Percentage of individuals)

TIME	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Best performing region name	NL - Flevoland	FI - Helsinki-Uusimaa	NL - Utrecht	FI - Helsinki-Uusimaa	FI - Helsinki-Uusimaa	NL - Flevoland	DK - Hovedstaden	NL - Groningen	SE - Övre Norrland	DK - Hovedstaden	FI - Helsinki-Uusimaa	FI - Helsinki-Uusimaa
Best performing region value	87.88	87.07	89.43	90.62	91.02	95.53	93.03	93.97	94.99	95.59	96.49	95.88
Average EU 27	37.34	39.51	41.52	45.26	46.40	48.25	51.22	53.36	56.35	58.78	62.13	63.78
SK	33.85	39.54	38.74	40.59	37.27	45.37	51.11	49.80	54.77	58.20	57.89	48.08
BA	42.67	52.30	58.46	53.48	50.30	53.82	50.93	56.37	55.87	67.61	71.38	53.05
W	33.80	39.35	38.88	38.55	33.52	41.45	47.90	50.80	55.25	53.93	54.85	46.71
M	35.30	36.95	29.92	41.57	36.76	45.15	55.66	48.06	55.30	61.07	57.01	49.68
E	28.87	37.03	38.45	37.05	37.00	46.76	51.09	47.47	53.32	56.89	56.59	46.08
Best performing SK region	BA	BA	BA	BA	BA	BA	M	BA	BA	BA	BA	BA
Worst performing SK region	E	M	M	E	W	W	W	E	E	W	W	E

Source: Authors own work based on the Eurostat primary data

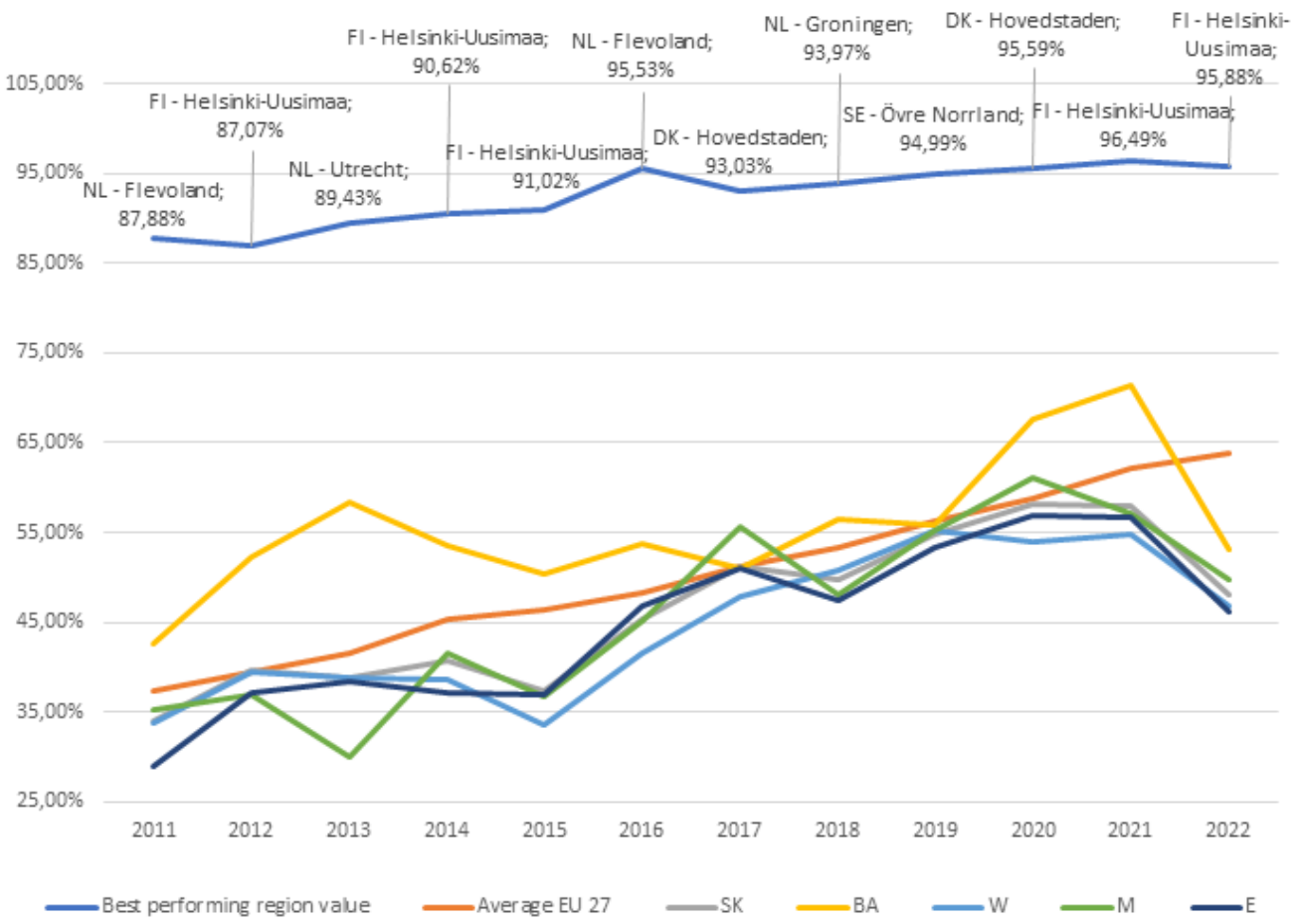

Figure 2: Individuals who used the internet for Internet banking in last 12 months (Percentage of individuals)
Source: Authors own work based on the Eurostat primary data

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In Table 2 and Figure 2 we focused on using internet for internet banking in last 12 months. We can observe, that in best performing regions of European Union, there is just difference in using internet and using internet for internet banking in rate of mere single digit percentage, around 5 percent. It is important to note that percentage of internet users using internet for internet banking is significantly lower in case of EU average region, as well as in regions of Slovak republic. Only above average region in Slovakia is the region of capital city, although there has been a significant drop in using internet banking in 2022 by as much as circa 18%. Individuals in other regions were using internet banking more rarely than in case of individuals from average region of European Union. There are just two exceptions, where Middle Slovakia region surpassed average of EU in 2017, where it surpassed even Bratislava, capital city region, and 2020. After year 2020, we can observe rarefying use of internet banking in Western Slovakia, Middle Slovakia, Eastern Slovakia. After 2021 there is steep decline in using internet banking in Bratislava region as well. We can state that there was rising trend of using internet banking between years 2011 to 2020, then, for some reason has been a change in behaviour of internet users in Slovakia and the usage of internet for internet banking dropped significantly down.

Table 4: Individuals who used the internet for Internet banking in last 3 months (Percentage of individuals)

TIME	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Best performing region name	NL - Flevoland	FI - Pohjois- ja Itä-Suomi	FI - Etelä-Suomi	NL - Flevoland	NL - Zeeland	NL - Flevoland	NL - Noord-Holland	NL - Groningen	NL - Utrecht	NL - Utrecht	NL - Drenthe	NL - Groningen
Best performing region value	95.88	93.48	93.41	95.84	94.96	97.46	94.48	97.11	96.63	97.21	98.98	98.28
Average EU 27	49.00	50.76	52.22	55.68	56.57	57.66	59.95	61.92	64.05	65.85	68.42	69.90
Slovensko	45.48	51.55	49.74	50.75	48.01	56.38	62.61	61.91	66.11	64.72	65.10	53.99
BA	53.98	62.18	68.96	62.57	62.83	67.77	61.26	70.41	68.62	72.85	75.36	56.39
W	45.20	51.95	51.03	49.60	44.17	51.13	58.73	61.62	65.03	60.16	61.75	52.78
M	48.54	52.12	39.81	53.47	48.19	58.05	69.99	60.14	68.13	67.48	63.65	56.68
E	39.28	46.24	48.25	44.95	46.31	56.67	61.63	60.29	64.71	64.22	65.71	51.99
Best performing SK region	BA	BA	BA	BA	BA	BA	M	BA	BA	BA	BA	M
Worst performing SK region	E	E	M	E	W	W	W	M	E	W	W	E

Source: Authors own work based on the Eurostat primary data

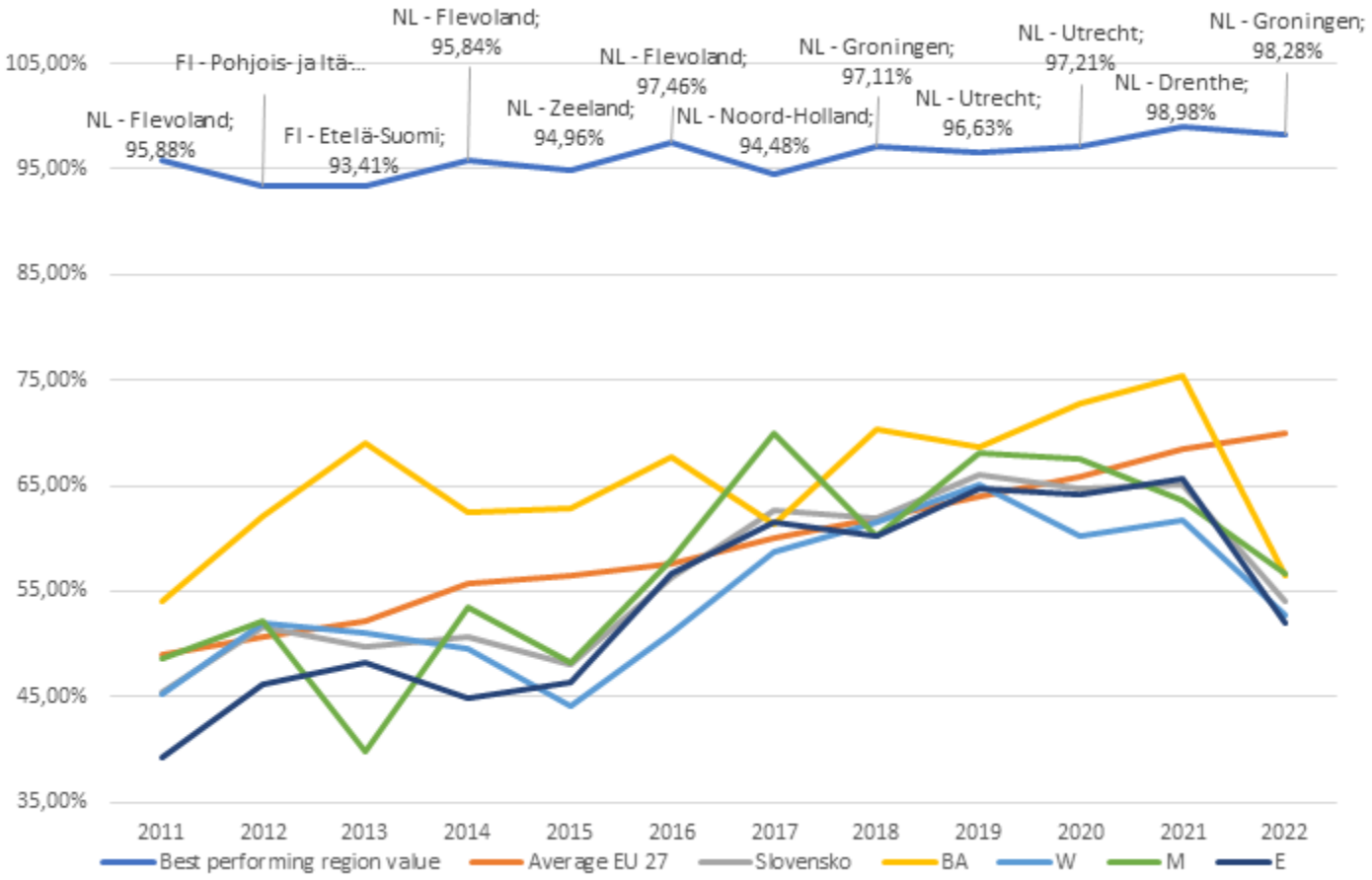

Figure 3: Individuals who used the internet for Internet banking in last 3 months (Percentage of individuals)
Source: Authors own work based on the Eurostat primary data

We also analyse Individuals who used internet for internet banking in last three months. Here we observe that the best performing regions belong to Netherland and Finland. Which is quite similar to using internet for internet banking in last twelve months. There is however difference, that individuals who used internet in last three months are more prevalent to use it for internet banking than those individuals who use internet in last twelve months, in the beginning by as much as 8%, to an end of observed period just by approximately 2.5%. We also can stat, that in case of best performing regions of EU there is just very slight trend of rise in using internet for internet banking, mainly caused by very high share of individuals using internet for internet banking, above 95%, which we can consider as ceiling of such usage. In case of average EU region, we can observe very similar phenomenon, of higher usage of internet for internet banking by users using internet in last three months compared o those who have used internet for internet banking in last twelve months. The band in this case is higher by as much as 12% in the beginning of the observed period but lowering to approximately 6% at the end of the period. As far as Slovak regions concern, Bratislava, capital city region, has except 2022 held above average EU region usage of internet for internet banking. Bratislava region had also higher usage of internet for internet banking by individuals who used internet in last three months in the observed period since 2011 to 2019 by as much as 12%, however, that difference lowered dramatically in pandemic year 2020 and following years as well by as much as half. Other regions of Slovakia in comparison with usage internet for internet banking in last 12 months exceeded the EU 27 average more times, however

it has not been stable trend. In 2012 Average EU region has been exceeded by Slovak average, Western Slovakia, and Middle Slovakia regions, in 2017 EU average has been exceeded by Middle Slovakia, Slovak average region and Eastern Slovakia region. Just in 2019 EU average has been exceeded by all Slovak regions. There is dramatic drop in usage internet for internet banking in 2022, just like by individuals who used internet for internet banking in last 12 months.

Table 5: Difference between individuals who used internet for internet banking in last 12 months and individuals who used internet for internet banking in last 3 months in %

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Best performing region value	8.00	6.41	3.98	5.22	3.94	1.93	1.45	3.14	1.64	1.62	2.49	2.40
Average EU 27	11.65	11.25	10.70	10.42	10.17	9.41	8.73	8.56	7.70	7.06	6.29	6.12
SK	11.63	12.01	11.00	10.16	10.74	11.01	11.50	12.11	11.34	6.52	7.21	5.91
BA	11.31	9.88	10.50	9.09	12.53	13.95	10.33	14.04	12.75	5.24	3.98	3.34
W	11.40	12.60	12.15	11.05	10.65	9.68	10.83	10.82	9.78	6.23	6.90	6.07
M	13.24	15.17	9.89	11.90	11.43	12.90	14.33	12.08	12.83	6.41	6.64	7.00
E	10.41	9.21	9.80	7.90	9.31	9.91	10.54	12.82	11.39	7.33	9.12	5.91

Source: Authors own work based on the Eurostat primary data

After the authors observed the difference in prevalence of using internet for internet banking between individuals who used internet in last 12 months and the individuals who used internet in last 3 months, they managed Table 4, where the development of such difference is observable better. Based on the Table 4 we can observe that the most developed regions in terms of using internet for internet banking by individuals has lower differences. We can observe that differences are lower in average EU region and has the trend of lowering these differences. Average Slovak region has tendencies to lower the difference. There is very well observable trend of lowering these differences in pandemic and postpandemic years, however, we ascribe these to the trend of dropping the usage of internet for internet banking.

5. Conclusion

In case of trends of particular regions of Slovak Republic in using internet banking rising trend has been observable both in case of individuals using internet in last 12 months and in case of individuals using internet in last 3 months in period 2011 to 2020. However, in pandemic and postpandemic years (2020 to 2022) there is significant drop in using internet banking by both groups of individuals and in all regions of Slovak Republic. That in comparison to average EU region and best performing EU regions is strict contradiction. In case of Best performing EU regions holds ceiling shares of individuals using internet for internet banking and in case of average EU region, there has been no such drop, but continuing rise. We observed that in Slovak republic trendsetter is Bratislava region, which is capital city region. However, none of Slovak regions, not even Bratislava region is trendsetter in terms of European Union. There is an observation, that in individuals with more sporadic internet using (in last 12 months) average Slovak region lags behind average European Union region. In individuals with more frequent use of internet (in last 3 months) average Slovak region had tendences to surpass average EU region in 2017, 2018 and 2019. Very high volatility in using internet for internet banking is observable throughout whole observed period by both observed groups of individuals.

Overall, we can state that in observed period 2011 to 2019 Bratislava region achieved economic goal on field of being at least on average of European Union in using internet banking and remaining regions of Slovak Republic were very close at achieving such goal. There is however significant drop in using internet for internet banking in all observed Slovak regions in pandemic and postpandemic years. This is the main topic for future research in field. What are the culprits of such a digress from set up trend?

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