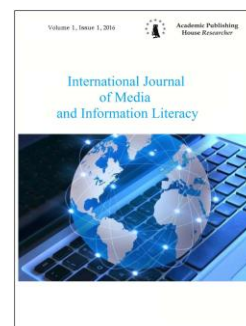


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Digital Literacy and Readership of E-Books in Slovakia

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Abstract

Digital literacy and the level of digital skills represent a key determinant within the information-based and knowledge society. Thanks to development and higher accessibility of the Internet connection, its use is constantly growing outside the working environment, as well. The average age of users of the Internet or any other devices, such as computers, tablets or smartphones, has also increased. The level of digital literacy in specific countries has reported a considerable growth, which has brought about new opportunities connected with the use of these media. One of these is the question of the impact of digital media on readership of e-books. The paper is also analysing the level of digital skills in Slovakia and the extent of use of particular devices. The authors are studying what devices Slovak users have at their disposal, how often and for what purpose they use them. They are also observing what devices they prefer for specific activities. The emphasis is placed on readership of e-books through presentation of the results of their own research focusing on readership of electronic books. By means of various statistical methods, they are trying to define the statistical dependence between the respondents' sex and readership of traditional books compared to readership of traditional and electronic books.

Keywords: digital literacy, book readership, e-books, media.

1. Introduction

After the fall of Communism in 1989, the Slovak Republic has undergone several systematic changes, notably: 1) the change of the political regime, 2) the transformation into the market economy, 3) the creation of the independent state (it was the part of the Czechoslovakia before) and 4) the integration into the European Union and the NATO.

The abovementioned systematic changes were accompanied by new globalisation trends and technological progress. One of the key steps to success seemed to be the technology readiness of Slovak citizens and digital literacy connected herewith.

As stated Gálik (Gálik, 2020) over the last two or three decades we have experienced great cultural and social changes that came with the Internet, or broadly speaking, the digital media. The Internet, or speaking more broadly – digital media, which have been being developed since the beginning of 1990s, have changed our culture and society considerably (Fedorov, 2019a). At the present time we quite clearly see dominance of digital media, therefore we need to learn how to mistrust them to certain degree or, in other words, stay sober and learn about information hygiene in order to keep balance (Fedorov, 2019b, Gáliková Tolnaiová, 2019a).

Digital competences can be defined by various skills and abilities in the field of information-communication technologies and the corresponding use of a computer or other electronic devices,

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such as a tablet, a smartphone, etc. The key element in the progress and improvement of digital competences is the accessibility of the Internet connection and mobile Internet which enable these devices to be used interactively and for various activities.

According to the results of the research into media literacy of the young in Slovakia (Vrabec, 2008), more than a half of high school students own a personal computer or a laptop. In average, they are actively online more than 3-4 hours a day. These statements have been confirmed by the research by the European Interactive Advertising Association (European..., 2007) which states that the Internet has become a top media for the young aged 16 to 24 across Europe. The results of another study (Petranová, Vrabec, 2015) confirm that the Internet use increases among younger age groups. The most online respondents can be found in the young age group (81.5 %) or among the youngsters aged 25 – 34 (71.6 %). On the contrary, there are only few everyday Internet users among the elderly (9.1 %). The same tendencies can be observed in case of a mobile phone with the majority of users to be found among 16 to 24 years-olds (67.5 %) and young adults (60 %). In other words, the younger the users, the larger proportion of the Internet use.

Despite growing digital and media literacy, the level of readership of e-books is lagging behind this trend. We can only expect that the work on improvement of digital competencies will create new opportunities for development of readership of electronic books. The level of digital competences directly influences the quality of life in many ways, not excluding the reading of electronic books.

2. Materials and methods

Within this research, we focused on digital competences and readership of e-books. Our main goal was to find out to what extent the respondents read electronic books and what devices they prefer using for reading. We were also looking into what devices the respondents have at their disposal, what they use these devices for and how they perceive e-books. We also observed the statistical dependence between the selected traits (the sex and readership of traditional books) and readership of electronic books.

The observation was done by means of the electronic questionnaire to be sent from the 21st February to the 29th March 2020. The questionnaire contained 12 close and three identification questions. The basic set consisted of active social sites users aged 15 to 65. The size of the selected group was calculated by the following pattern:

$$n = \frac{z_{1-\frac{\alpha}{2}}^2 \cdot \pi \cdot (1 - \pi)}{E^2}$$

where: π = the occurrence ratio of the observed trait within the basic set; E = maximum acceptable error interval; z = quantile of the distribution function.

As we do not know the occurrence ration of the observed trait within the basic set, we have conservatively determined the value as 0.5. The maximum acceptable error interval was determined at the level of 5 % and the quantile of the distribution function had a value of 1.96, which equals to 95 % reliability.

The minimum size of the selected set was 385 respondents. The real size of the selected set represented 434 respondents. The respondents' structure is shown in the Fig. 1 and Fig. 2 below:

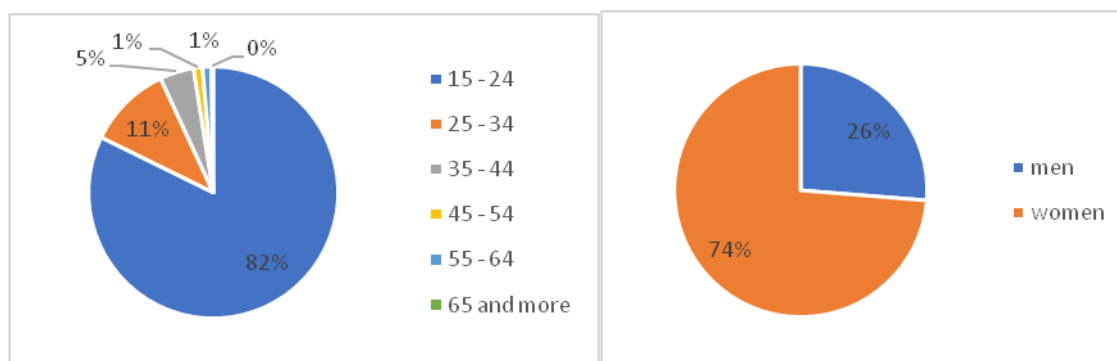


Fig. 1. Respondents' structure by their age
Source: own sources, 2020

Fig. 2. Respondents' structure by their sex
Source: own sources, 2020

The data we obtained were analysed by the MS Excel programme. The particular steps of the quantitative sign were classified according to their frequency and by means of simple sorting inserted into the tables, where the symbol f_i refers to the occurrence rate of the value x_i ($i = 1, 2, \dots, k$). The relationship $f_1 + f_2 + \dots + f_k = n$ remains valid.

The dependence between the selected quantitative elements, which are arranged on various levels, was studied by means of their analysis, whereas two quantitative signs A, B on various levels (A_1, A_2, \dots if; B_1, B_2, \dots, B_k) were observed. The main condition was the validity of the relation $k > 2$ or $m > 2$.

The results of this observation were inserted into the contingency table. The main testing criterium was the statistics χ^2 , providing the relation:

$$\chi^2 = \sum_{i=1}^3 \sum_{j=1}^3 \frac{(f_{ij} - o_{ij})^2}{o_{ij}}$$

The degree of dependence between the selected quantitative signs was observed by means of the contingency coefficient to be defined as follows:

$$C = \sqrt{\frac{\chi^2}{n + \chi^2}}, \quad \text{kde } \chi^2 = \sum_{i=1}^k \sum_{j=1}^m \frac{\left(f_{ij} - \frac{f_i^A f_j^B}{n} \right)^2}{\frac{f_i^A f_j^B}{n}}$$

3. Discussion

The first definition of digital literacy dates back to 1997 when P. Gilster defined this term as *“an ability to comprehend and use information in various formats from a large set of sources which are obtained (provided) through a computer”* (Gilster, 1997). Gilster identifies four key digital literacy competencies: knowledge assembly, evaluating information content, searching the Internet, and navigating hypertext.

Eshet-Alkalai (Eshet-Alkalai, 2004) is more specific by referring to a *„large variety of complex cognitive, motor, sociological, and emotional skills, which users need in order to function effectively in digital environments“*. Swift progress in the field of information technologies can be observed in other definitions respecting the current trends in IT. As emphasised by GálikováTolnaiová (Gáliková Tolnaiová, 2019b), new digital media have become an inseparable part of our living. A question that needs to be solved today is literacy in relation to use of digital media, which should be formed by media education.

Association of Educational Communications and Technology (Association..., 2014) has identified that *„digital literacy is the use of high technology in everyday life. A digitally literate person may use specific hardware such as a computer, a cell phone, or other digital resource in combination with communication software, such as the Internet, to interact with society at large, thus becoming a digital citizen or e-citizen and improving social and economic opportunities. The process of digital literacy can be classified into specific categories according to the basic activities it entails. Spires and Bartlett (Spires, Bartlett, 2012) have divided the various intellectual processes associated with digital literacy into three categories: 1) locating and consuming digital content, 2) creating digital content, and 3) communicating digital content.*

The term of an electronic book firstly appeared back in the 70s' of the 20th century, especially thanks to development of IT technologies and all brand new information and communication technologies resulting herefrom. Mattison (Mattison, 2002) defined an e-book *„as a monograph akin to a printed book that is made available in a digital format to be read online or downloaded to a handheld device“*. Abbott and Kelly (Abbott, Kelly, 2004) explained that *„while an e-book can be as simple as scanned version of a printed publication, inherent in e-books is the ability to make available a number of features to the reader which include multimedia, hyperlinks and other interactive components, search features, and customizability to change text size or convert text to audio so as to meet the needs of special readers. As a result, they explained that print on demand books should not be considered e-books, as once printed, many of the qualities inherent in the electronic format cease to be available“*.

Midgley reported (as cited in [Wilson, 2003](#)) that while proponents believe that e-books will come to change the way we understand reading and represent the future of reading in this digital age, critics explain that reading on a screen is an unpleasant experience that has, and will continue to, stymie the growth of e-books ([Weeks, 2002](#)).

New ways that have been introduced by new communication technologies are able to render digital reading much more attractive. Not all texts that are read on screens are considered digital. These texts must meet at least two characteristics: integration of different reading modalities patterns –oral, written, visual, gesture, touch screen and spatial– and with a different connection forms between the texts, such as, hyperlinks ([MECD, 2010](#)). Mobile devices (for example) offer augmented mobility – a mobility that is connected, networked and collaborative ([Carloso, 2014](#)).

Digital literacy in Slovakia. The research from the years 2000 and 2002 into the level of digital literacy in Slovakia already demonstrated that the differences in the use of information-communication technologies and the level of digital literacy connected herewith represent a key factor that is likely to widen social disparities and what is more, digital literacy can be perceived as a real driving force towards the poverty. The research shows that the overall level of digital literacy was quite low back in 2003, when Slovakia ranked a bit above the average of the new EU member states, yet far below the average of the existing 15 EU member states.

In general, it can be said that the citizens learnt to handle those tools and activities that were considered as a basis for digital literacy (e.g. working on a PC, printing the documents, text editor, online search, e-mail and mobile phone communication), yet there were certain disparities observed among various groups of inhabitants according to their age, economic activity, the type of household, the domicile and the region ([Velšic, 2005](#)). These results were also confirmed by the sample study of 2,906 respondents back in 2016 ([Kokles, 2016](#)), which identified the highest level of digital literacy in the field of the Internet and the lowest level in the field of software applications. The statistically significant were the factors of education (higher education was an advantage in all the categories), the age (the higher age was a disadvantage in all the categories), the sex (hardware as a disadvantage for women), the region (the Bratislava region had much better results in contrast to other Slovak regions).

Every year, the European Commission observes the progress and the level of progress of digital competitiveness in each EU member state by means of the Digital Economics and Society Index (DESI) using the combination of 44 indicators in five key assessment dimensions: 1) accessibility of the Internet connection, 2) digital competences, 3) use of Internet services, 4) integration of digital technologies and 5) digital public services. In 2018 Slovakia ranked the 20th among the 28 EU member states. In general, Slovakia is one of the countries that reported rather poor results – including Bulgaria, Cyprus, Greece, Croatia, Hungary, Poland, Romania and Italy. The report states that both employers and employees understand that one of the main possibilities how to improve citizens' digital competences and skills is to promote trainings, lessons, life long and formal education, requalification and other forms of education and expertise that are likely do develop digital competences from the part of Slovak businesses as well as the state, e.g. requalification provided for the unemployed ([Stratégia..., 2018](#)).

E-bookmarket in Slovakia and worldwide. The sale of e-books in Slovakia started back in 2012 on two main platforms – Dibuk (martinus.sk) and Wooky (Ikar). Their sale is constantly growing, yet still reaching only a fragment in comparison with the sale of traditional books. It is worth noting that Slovak readers tend to prefer books with the Czech translation. This is mainly due to the size of the Czech book market as well as the amount of the translated foreign literature.

According to the Association of Editors and Booksellers of the Slovak Republic (ZVKS – *the Slovak abbreviation*), which in their yearly report present the overview of the publishing and sale of e-books in the Slovak book market, the demand for e-books and the total turnover are increasing on a yearly basis. ZVKS assume the total turnover from the sale of e-books reached 1.2-1.5 ml EUR in 2018, which is only a slight year-on-year increase. The results are shown in the [Table 1](#) below.

According to the final report of the Association of Booksellers and Publishers of the Slovak Republic ([Združenie..., 2018](#)), women readers lead the e-book market. As for the genre, the fiction ranks the first, followed with the educational and expert literature. Despite the fact that many of us perceive e-books as a threat to traditional printed books, they mainly serve as their complement. The two forms of literature are independent from each other.

Table 1. Turnover from the sale of e-books in the Slovak book market (the period from 2014 to 2020)

| Year/EUR | 2014 | 2015 | 2016 | 2017 | 2018 |
|----------------|----------|------------|----------------|----------------------|----------------|
| Total estimate | 1 ml EUR | 1.1 ml EUR | 1.1–1.2 ml EUR | no increase reported | 1.2–1.5 ml EUR |

Source: The Association of Editors and Booksellers of the Slovak Republic, 2020

E-books have also become popular to a certain extent among the US bookstores – 20 % of US readers said they preferred e-books to printed books, whereas 23 % read the equal number of printed and electronic books. In 2018, approx. 28 % of US book consumers stated they had read an e-book in the previous year, even though printed books were much more popular among US readers (E-books..., 2018).

The e-book sales in the US reached almost 771 ml USD for the period from January to September 2018, which represents a drop from the last year's sales of 29 ml. While the number of published printed books in the US has reported a steady growth since 2008, this is not the case for e-books. Even though the years 2008 and 2012 saw a net increase in the number of published e-books that were sold individually, after more than 172,000 electronic books were published in 2014, this number kept declining to show no sign of improvement since 2017 (E-books..., 2018).

The earnings in the e-book segment are expected to reach 14 ml EUR worldwide this year. Users' penetration should be 13.6 % with the expected growth to 15.9 % until 2024 (Digital Market Outlook, 2020).

4. Results

The results of the analyses show that the respondents mostly use a smartphone (97 %), a laptop or a desktop computer (90 %). On the other hand, a tablet is the least popular device (32 %). The most common combination of devices the respondents have at their disposal is a laptop (or a desktop computer) and a smartphone. The more detailed results are shown in the Fig. 3 below.

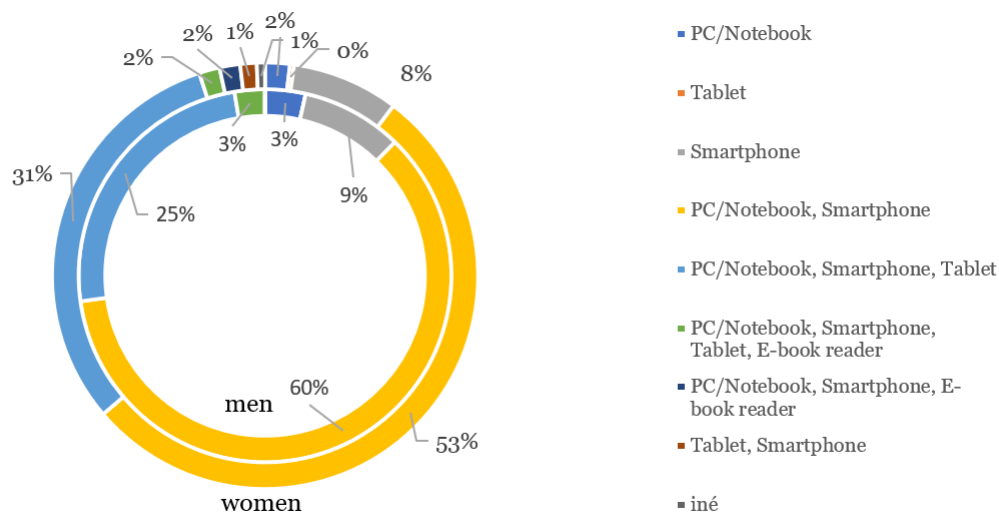


Fig. 3. Devices the respondents have at their disposal ($n_{\text{men}} = 144$ respondents; $n_{\text{women}} = 320$ respondents)
Source: own sources, 2020

As far as digital competences are concerned, the respondents tend to prefer a smartphone, followed with a notebook and a desktop computer. A tablet is still the least popular device to be used.

It is interesting to note that a tablet, as a suitable alternative to a smartphone and a computer, is rarely used. This can be due to the fact that the respondents hardly ever own this device and therefore, its use is very limited. In addition, this device is not even used for online search or social sites, as the respondents tend to use a smartphone for online shopping, internet

banking, online payments and many other applications. A laptop is preferable in case of more complicated tasks, such as communication with the authorities or photo editor.

Yet, when it comes to digital competences, the respondents used various devices. The combination of a smartphone and a laptop was the most popular. The results are shown in the Fig. 4 below.

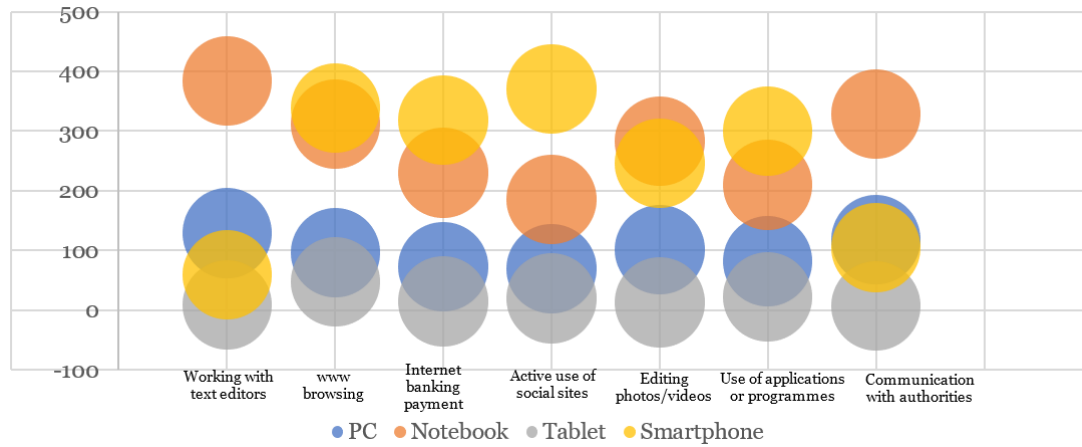


Fig. 4. Devices the respondents use for their specific digital competences
Source: own sources, 2020

Furthermore, the results of the research also show that electronic books are regularly read by a quarter of the respondents (25.8 %). Almost 35.6 % of the respondents have read an e-book at least once. Readership was much higher in case of women (64.4 %) than men (49.1 %), whereas women tend to use e-books more often (28.8 %). The results are shown the Fig. 5 below.

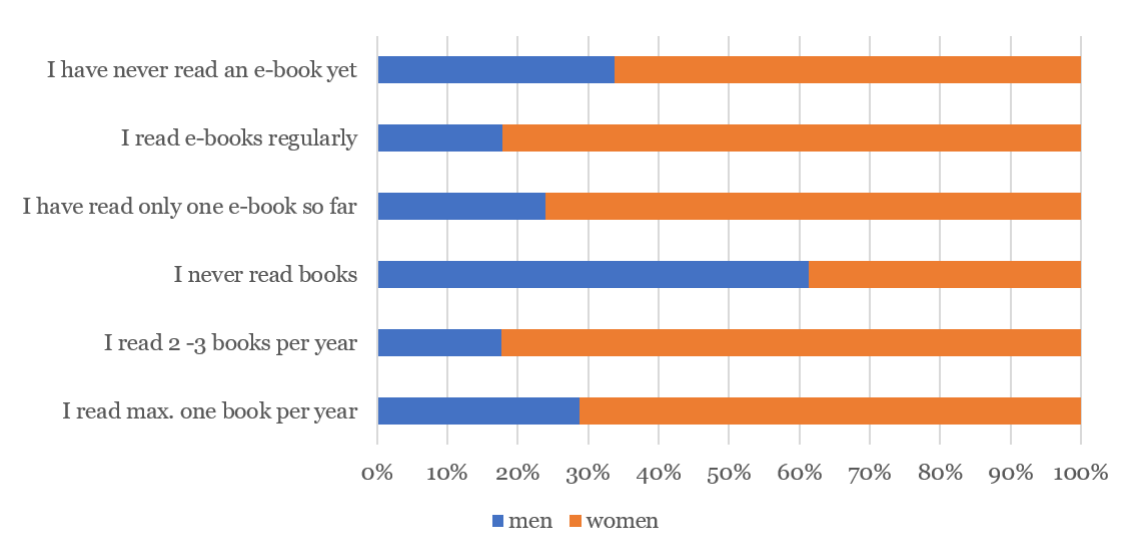


Fig. 5. Readership of electronic and traditional books
($n_{men} = 144$ respondents; $n_{women} = 320$ respondents)
Source: own sources, 2020

The respondents perceive e-books as modern, practical, environmentally friendly and comfortable. It is curious that these attributes were equally matched by the respondents who read e-books regularly, irregularly and even those who do not read them at all. Those respondents who do not read e-books consider them to be modern, though. On the contrary, those respondents who read e-books regularly see them as practical. Other details in the Fig. 6 below.

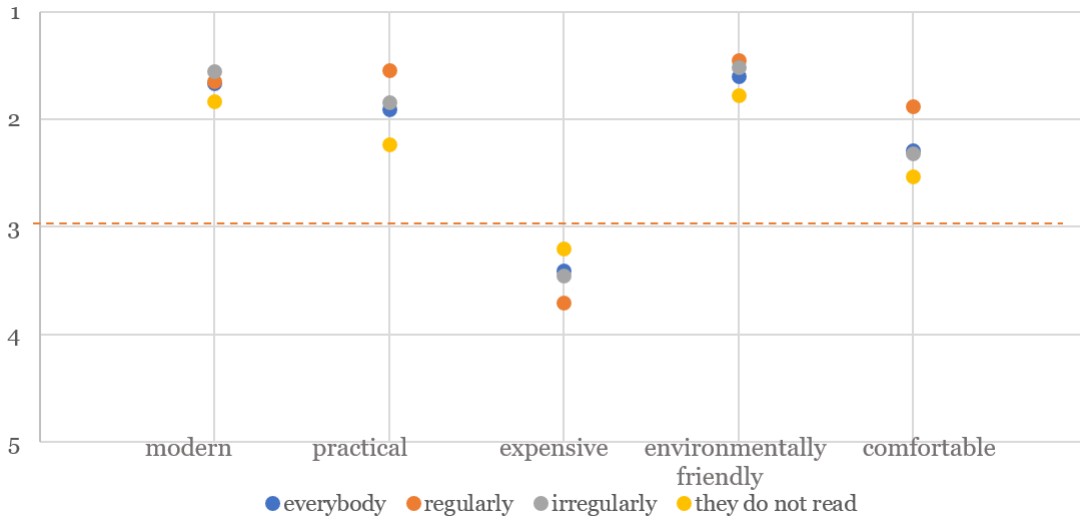


Fig. 6. Perception of e-books

Source: own sources, 2020

According to the respondents, the most suitable devices for reading e-books are a smartphone, a tablet and a laptop. There is an interesting trend we can observe in case of a smartphone when the respondents prefer this device for most of their activities, such as consulting social sites, listening to the music, reading news/articles on the Internet and watching videos. In comparison to other devices (a PC, a notebook, a tablet), a smartphone ranks first except for watching films. The respondents own this device and use it the most frequently.

The results are shown in the Fig. 7 and Fig. 8 below.

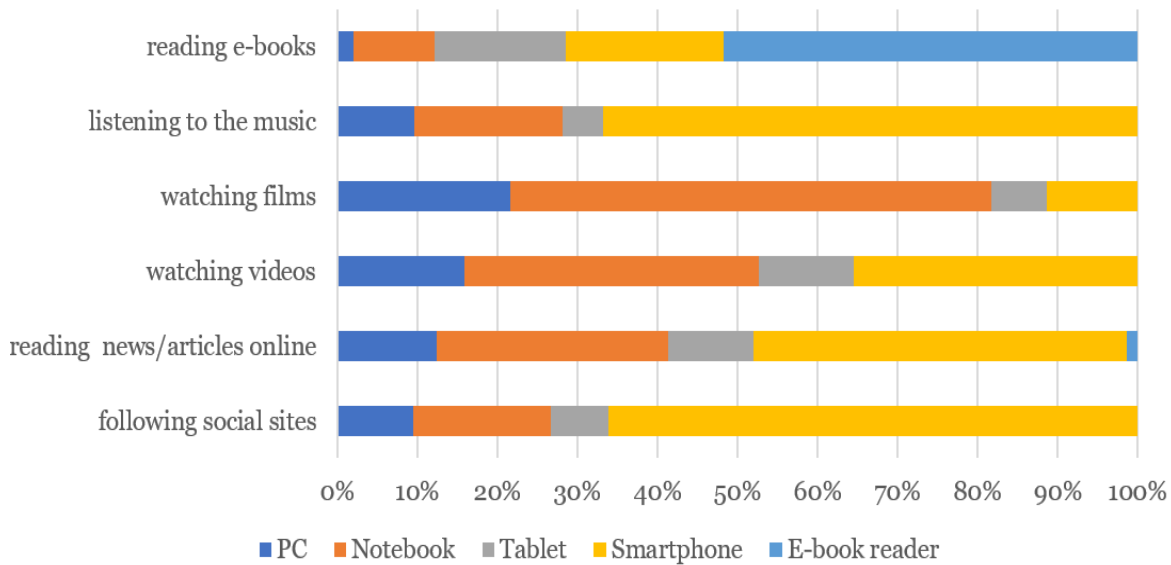


Fig. 7. Devices the respondents find the most appropriate for specific activities

Source: own sources, 2020

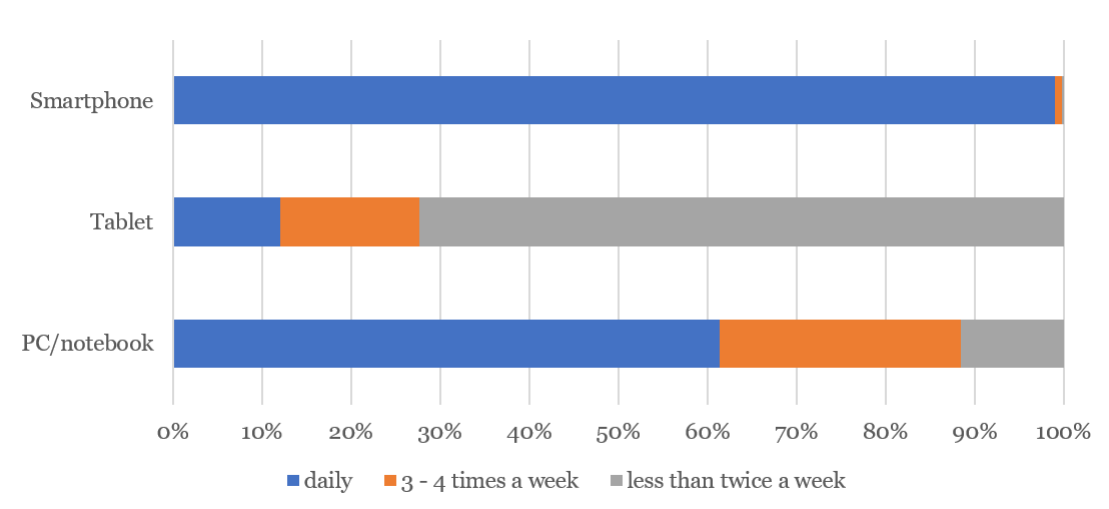


Fig. 8. Frequency of use of the devices

Source: own sources, 2020

It is interesting to find out that almost 86 % of the respondents prefer reading news in an electronic form, whereas almost 40 % of them have not read any e-book yet. News feed websites are regularly followed by almost 22 % of the respondents with almost 57 % following them at least twice or three times a week. The results are shown in the Fig. 9 below.

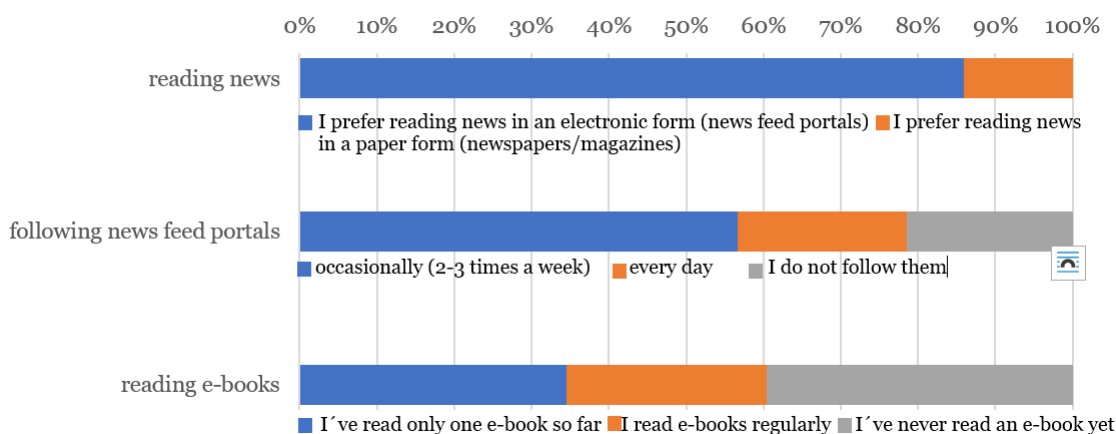


Fig. 9. Preference of news reading and e-books readership

Source: own sources, 2020

Almost 86 % of the respondents prefer reading traditional books. However, only 1 % of them buy newspapers or magazines regularly. 26.5 % of the respondents buy print media occasionally (min. 2 times per week for daily newspapers/1 time a week for monthly magazines). The results are shown in the Fig. 10 below.

Assessment of hypotheses. Within our research we were observing whether the respondents read electronic books. The respondents were primarily classified according to their sex, therefore we studied whether there is the statistically significant dependence between the respondents' sex and readership of electronic books as well as the dependence between readership of traditional and electronic books.

Since the signs by means of which we were able to study the dependence are situated on various levels, it can be described as contingency. The results of the findings were inserted into the contingency table. The expected rates are calculated as follows:

$$o_{ij} = \frac{f_i^A \cdot f_j^B}{n}$$

A zero and an alternative hypothesis was determined for each field of study:

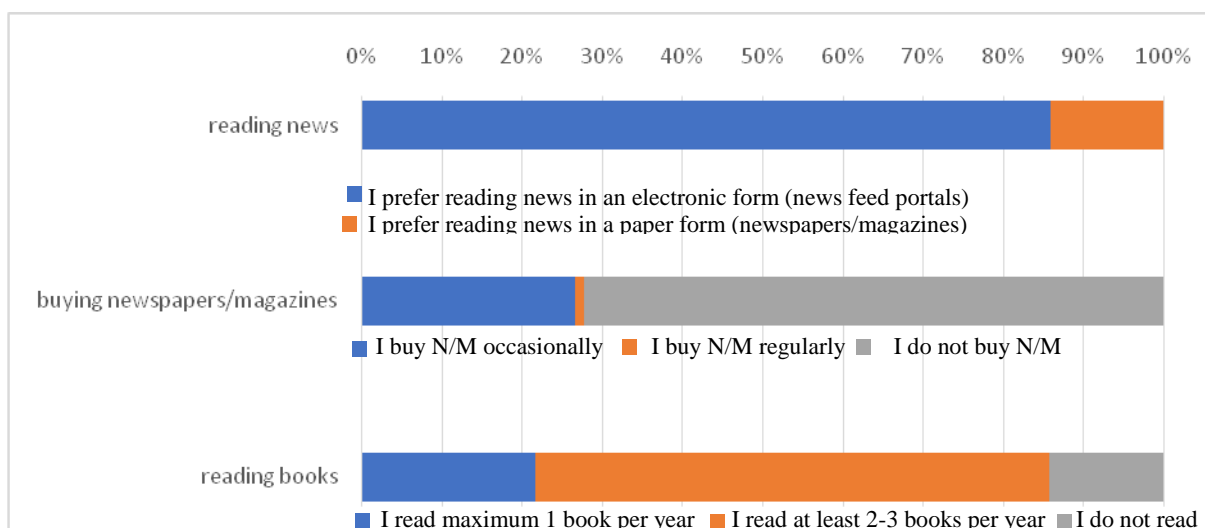


Fig. 10. Preference of news reading and readership of traditional books
Source: own source, 2020

H₀: The signs A and B are dependent. There is no statistical dependence between the sex / readership of traditional books and the field of study in these files.

H₁: There is the dependence between the signs A and B. There is the statistical dependence between the sex / readership of traditional books and the field of study in these files.

The hypothesis about the dependence between the sex and readership of electronic books has not been confirmed. The test has demonstrated the dependence between these signs. The results are shown in the [Table 2](#) below.

Table 2. Real and expected rates (respondents’ sex and readership of e-books)

| Sex/readership of e-books | Yes, but only once so far | Yes, I read electronic books regularly | No, I have never read an electronic book before | TOTAL |
|---------------------------|---------------------------|--|---|-------|
| man | 36 (39.4) | 20 (29.42) | 58 (45.18) | 114 |
| woman | 114 (110.6) | 92 (82.58) | 114 (126.82) | 320 |
| TOTAL | 150 | 112 | 172 | 434 |

Source: own sources, 2020

The tested hypothesis is to be rejected on the significance level α , if the value of the testing criterium exceeds the critical value. The value of the testing criterium = 5.991. The calculated value of the testing criterium = 9.42228. The degree of statistical dependence has been calculated by means of the contigence coefficient (C = 0,1457703671446506). The calculated value of the contigence coefficient shows that there is a zero degree of the bond between the sex and readership of electronic books.

The hypothesis about readership of traditional and electronic books has not been confirmed. The test has demonstrated the dependence between these signs. The results are shown in the [Table 3](#) below.

The tested hypothesis is to be rejected on the significance level α , if the value of the testing criterium exceeds the critical value. The value of the testing criterium = 9.49. The calculated value of the testing criterium = 78.61894. The degree of the statistical dependence has been calculated by means of the contingency coefficient ($C = 0,3916212667766193$). The calculated value of the contingency coefficient shows that there is a slight degree of the bond between the readership of traditional and electronic books.

Table 3. Real and expected rates (readership of traditional and electronic books)

| Readership of traditional book /readership of electronic books | Yes, only once so far | Yes, I read e-books regularly | No, I have never read an e-book yet | TOTAL |
|--|-----------------------|-------------------------------|-------------------------------------|-------|
| Yes, maximum 1 book per year | 43 (32.49) | 7 (24.26) | 44 (37.25) | 94 |
| Yes, min. 2 – 3 books per year | 92 (96.08) | 105 (71.74) | 81 (110.18) | 278 |
| No, I do not read e-books | 15 (21.43) | 0 (16) | 47 (24.57) | 62 |
| TOTAL | 150 | 112 | 172 | 434 |

Source: own sources, 2020

5. Conclusion

Nowadays, it has become common for publishers to include not only traditional books but also electronic alternatives into their edition activities. Their popularity is also gradually growing among Slovak readers, but it has still not reached the equally significant level as in other foreign countries. The results of our research have confirmed that approx. 35 % of the respondents have read an electronic book at least once. A quarter of the respondents read e-books regularly. In comparison with traditional books, certain digital competences are required for readership of electronic books. These multiple, multimodal, and multifaceted texts on the screen require different skills and strategies than static texts ([Leu et al., 2004](#)).

According to the studies carried out in the Great Britain (by the EBONI method) on five different levels, the first half of the respondents would continue using and reading e-books, whereas the second half stated otherwise. The main reason for repetitive use of e-books is the device portability, clarity and hypertext. The main negatives included the price, the weight of the device, the advantages presented by the print version and insufficient functionality. Other findings ([Buzeto, More, 2007](#)) (see: Dearnley and McNight z Loughborough University, Marshall and Ruotolo from University of Virginia, Rochester Institute of Technology) (as cited [Wilson, 2003](#)) identify various significant issues connected with the use of e-books, e.g. problems with the battery or a low display quality. [Kraniarová](#) describes some advantages of e-books such as their price (they are 30% cheaper compared to traditional books, some of them are even for free), they can be quickly purchased, their purchase is not bound to time or place, they are available immediately after the purchase, no extra freight or postage costs, better storage, they take up less space ([Kraniarová, 2015](#)). E-books can be closely connected to digital ecology ([Cardoso, 2015](#)), therefore reading, creation and distribution of e-books may also reduce our environmental impact.

One important finding is worth noting: the trend of use of a smartphone for most of the activities that require electronic devices. That is to say that a smartphone, thanks to its accessibility as well as frequency of its use, can easily become a good alternative to e-readers and a suitable platform in this field. Sophisticated smartphones with a larger screen or a foldable/flexible display are being currently introduced in the markets.

Other interesting solutions which may help us increase readership of electronic books are shared devices and applications that would enable the readers to read e-books on many different

platforms. It is especially educational and expert literature that can be easily accessible anytime and anywhere. The current COVID-19 measures can paradoxically promote popularity of electronic books because most of our everyday activities, including education and video conferences, have been moved to the online environment.

The e-books may also become an important part of education at all school levels. According to Fedorov (Fedorov, 2019a) the Internet is the most significant platform to reflect the topic of school and university environment, as it has long ago absorbed not only the traditional print texts, but also films, TV shows and sound recordings, and is now truly synthetic media with a growing (especially young) audience. We can assume that electronic books also belong here.

This outlines also Kačínová (Kačínová, 2019) according to which the preferred educational concepts in the field of digital media are aimed at overcoming the reductionist and lead to the holistic, which makes them fully educational. Finally, digital media on the one hand weaken our cognitive abilities that would be the foundation of the traditional European education, but on the other hand they encourage abilities that may introduce new forms of education (Fedorov, Levitskaya, 2018).

6. Acknowledgements

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