

Investigation of The Tendencies of Social Networking in The Modern Society

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Abstract

The article presents results of the investigation of Ukrainian society, conducted by popular social media in the period from December 2017 to December 2019. The research determines the share of adult population of Ukraine, who used social media in December 2019. The work demonstrates the dynamics of the social network reach of the adult population of Ukraine in the period from December 2017 to December 2019. The authors of the paper have composed polynomial trendlines of Ukrainian people reach on Facebook and Pinterest in the period from December 2017 to December 2019; exponential and power trendline of the reach on Twitter and YouTube of Ukrainian population in the period from December 2017 to December 2019; exponential and power trendline of Ukraine people reach on VKontakte and Instagram in the period from December 2017 to December 2019; polynomial trendline of Ukrainian population reach on Tumblr and others in the period from December 2017 to December 2019. The work gives a forecast of changes in the tendencies of behavior of Ukrainian population, who use the social media, for six future periods, i.e. January – June 2020. It is argued that the principal goal of people's social networking is to keep in touch with close people and relatives, as well as to review the news.

Keywords: Social Networks, Facebook, Internet, Society.

Introduction

Nowadays, social networking has become a necessary component of our life. They provide people with the opportunity to study, to discuss problems of their concern, to make friends and keep in touch with them, as well as to move to any country in the world, to read about its culture and traditions, etc. Moreover, social media shape a personal opinion and influence a person, whereas not always in a positive way. In some cases, communication in social networks causes negative, even fatal effects. Thus, there is a necessity to study the level of social networking, aimed at communication. Moreover,

there is a problem of the analytical investigating concerning argumentation of the period of stay in the social networks.

The goal of the work is to study the tendencies of the popular social networks reach of the adult population of Ukraine. Accomplishment of the set goal substantiates the necessity to solve the following tasks, particularly:

- to study the time a modern person spends in a social platform;
- to set the reason of stay in a social network;
- to make retrospective investigation concerning social media reach of adult population.

Literature Review

Investigation of the Facebook impact on the process of decision making by consumers concerning the choice of hotels was performed by Mohammmd Abuhashesh, Mohammad Al-Khasawneh, Rand Al-Dmour and Ra'ed Masa'deh (2019). In the modern conditions, clients get more information about a commodity due to the opportunity to communicate in different social media, particularly Facebook (Varkaris E. and Neuhofer B., 2017). YouTube, Facebook, and Twitter take an important position in the modern world, because having viewed some podcasts with advertisement, potential clients can reconsider their life attitude, influence the purchasing process (Smith, A., Fischer, E., and Yongjian, C., 2012).

Brooke Auxier, Monica Anderson and Madhu Kumar (2019) shaped the following principal changes, related with the social platforms, studied by the Pew research center for the recent decade:

1. Social media sites appeared as a platform for communication, search of news and political involvement.
2. In the world, social media have become the key instrument for activists and their opponents.
3. For many Americans, smartphones have changed their way to access the Internet.
4. The increased use of mobile and social media has provoked discussions about the screen time impact on the youth of America and other countries.
5. Privacy and control for data have become the main problems in the post-Snowden age.
6. Technical platforms gave rise to the economy.
7. The Internet requests have become a common feature of life of both teenagers and adults.
8. Fabricated news and misinformation cause the increased concern.

Kathleen Stansberry, Janna Anderson and Lee Rainie (2019) consider that fifty years after connecting the first computer network, experts estimate that the digital life will change people's life to better in the next fifty years. However, they give a notice that it will happen in case the people accept the reforms, which will secure improvement of cooperation, safety, main rights and economic justice.

The research by Esther Dyson (1998) (businesswoman, former journalist, founder of the ICANN Department and the Wellville company) is well-reasoned. She writes that "The impact of the Internet is not entirely technology-specific; it depends on what we do with it. It is so powerful that it has enabled us to satisfy many of our short-term desires instantly; we need to learn to think long-term. For the most part, we have done a bad use of this: people depend on short-term pleasures such as liking and other appraisals (say nothing about drugs and immediately available favors on the Internet), search of friends, but not making friends (and marriages); businesses to increase their

quarterly earnings and raise “stars”, rather than invest in their people; non-profit organizations to run programs, but not establish institutions; and politicians for voting and power”.

Moreover, investigation of social platforms has been conducted both by foreign researchers (A. Voiskunskyi, A. Goldberg, D. Greenfield, K. Yang), and Ukrainian scientists (O. Bielinska, Yu. Danko, Ye. Akimova, Yu. Babayeva, A. Zhychkyna, O. Filatova and others). In their works, they reveal motivation of the users of the Internet and social networks: their impact on development and socialization of a person, on the users’ personality, symptoms, reasons of the Internet addiction, as well as develop preventive measures concerning its prevention.

Methodology

To argue investigation of the system of social networking in the modern society, the following methods were used, particularly inductive, deductive – to collect, make systematization and processing of the information, obtained due to marketing research; economic analysis and comparison – to make analysis of the reasons for people’s stay in the social networks; economic-mathematic modeling with application of Microsoft Excel – to compose models of the social media reach of Ukrainian population in the period of 2017-2019; graphical – to visualize results of the conducted investigation; abstract-logical – to make theoretical generalization and conclusion making.

Empirical Analysis and Discussions

In the recent decades, the world of technologies has crucially changed, both in Ukraine and in the whole world. Use of social media and online-platforms (including Facebook and Instagram) and technologies (for instance, the Internet, mobile phones and smartphone) has significantly increased. In some cases, it has caused an excessive level of use among the main layers of population, particularly youth.

Facebook, which has recently celebrated its 15th anniversary, is still one of the most used sites of the social media among the adult USA population. Almost seven-ten adults (69%) say they use the platform from time to time (Andrew Perrin And Monica Andersona Pril, 2019).

One can observe an annual growth of the number of people, who use social networks. The shares of Ukrainian population, who use the popular social media like Facebook, Pinterest, Twitter, YouTube, VKontakte, Instagram, Tumblr, Reddit, Google+, LinkedIn, StumbleUpon, News.ycombinator.com, Sina Weibo in the period of 2017-2019 are systemized in the Table 1.

Table 1: Popular social media reach of Ukrainian population in the period from December 2017 to December 2019, %

Date	Social Media							
	Facebook	Pinterest	Twitter	YouTube	VKontakte	Instagram	Tumblr	Other
2017-12	39.42	4.46	18.57	18.83	15.03	0.95	0.98	1.76
2018-01	54.13	7.04	15.22	12.88	5.53	1.53	1.45	2.22
2018-02	44.45	6.92	23.22	15.78	3.64	2.21	1.47	2.31
2018-03	55.85	9.12	6.95	16.11	3.54	2.86	2.18	3.39
2018-04	59.41	8.48	12.06	10.04	3.38	2.17	1.80	2.66
2018-05	45.32	5.57	14.11	17.47	12.40	2.13	0.95	2.05
2018-06	47.82	5.21	13.58	16.85	11.27	2.64	0.94	1.69
2018-07	40.68	4.27	14.60	17.26	12.86	9.08	0.73	0.52
2018-08	56.20	6.50	7.31	10.49	4.77	12.41	0.98	1.34

2018-09	53.11	8.88	5.80	9.10	2.94	16.79	1.43	1.95
2018-10	49.23	10.11	9.65	13.15	5.76	8.25	1.58	2.27
2018-11	61.70	10.48	6.74	7.39	2.69	6.75	1.61	2.64
2018-12	45.21	14.68	22.14	6.85	3.62	2.39	1.67	3.44
2019-01	40.28	19.68	23.95	5.68	4.32	2.40	1.23	2.46
2019-02	43.00	25.98	10.54	9.96	2.33	3.94	1.52	2.73
2019-03	47.47	22.53	7.76	8.32	2.32	6.42	1.27	3.91
2019-04	54.96	19.32	5.71	10.92	1.74	4.08	1.25	2.02
2019-05	46.87	18.38	8.26	15.26	3.63	4.06	1.44	2.10
2019-06	52.42	18.90	8.69	9.59	3.87	3.02	1.48	2.03
2019-07	52.35	21.68	5.75	8.70	4.06	3.99	1.53	1.94
2019-08	57.69	22.08	4.99	6.52	2.70	3.80	1.45	0.77
2019-09	58.89	17.76	5.86	5.67	2.64	4.84	1.19	3.15
2019-10	57.63	16.53	6.56	5.63	2.10	8.97	0.94	1.64
2019-11	71.19	11.82	4.27	3.46	1.56	6.41	0.56	0.73
2019-12	73.56	11.49	3.99	3.05	0.97	6.20	0.46	0.28

Source: <https://gs.statcounter.com/social-media-stats/all/ukraine#monthly-201712-201912>

Thus, as of December 2019, in Ukraine there were two the most popular social networks, namely Facebook 73.56% and Pinterest 11.49%. Facebook currently has more than 11 million active users in Ukraine. The second position is occupied by a very interesting social platform, namely Pinterest, which is attractive due to some innovations: “Products like this” and Pinterest lens. Pinterest can be called a visual searching platform due to its searching options. The third place is taken by Instagram, i.e. 6.2 %, which keeps the position steady in time and by the territorial characteristic, i.e. everywhere and always. It appeared in 2010, rapidly won the favour of people, because its users liked the option to share videos and photos. The fifth position is occupied by YouTube, i.e. 3.05 %. However, there is a question, is it a social network or a search network? Twitter has lost its position a little, taking 3.99%. Hence, VKontakte took 0.97% of requests, but held a high position by the number of visitors among the sites of Ukraine. The seventh position is held by Tumblr, i.e. 0.46%. It is a favourite site of bloggers. They keep their blogs, comment and read others’ comments. The resource was created in 2007. Considering the fact of appearance and rapid growth of new Ukrainian social networks, they stay within the figure of 0.28%.

Since 2014, many new Ukrainian social networks have rapidly appeared after significant transformations in Ukrainian society, whereas there are earlier examples. The list of new Ukrainian social networks includes Ukrainians.co, Nimses.com, WEUA.info, SICH.UKR, Namaidani.com (since 2014), Cimbor.net, Famalyua.com, Yachudo.com (since 2010), Ukrainci.org.ua (since 2009) etc. To earn reputation, a social platform needs much time and costs. It is not an easy task, because Google has recently declared about the stop of supporting for its social network G+ in the nearest future. Thus, currently, Nimses, which has its specific feature, is the most prospective platform among the Ukrainian media. A general picture of the share of Ukraine’ adult population, who use social platforms, is depicted at the Fig. 1.

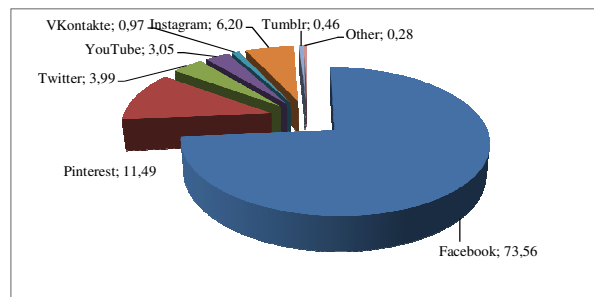


Fig. 1: The share of Ukraine's adult population, who used social media in December 2019, %.
 Source: systemized by the authors on the base <https://gs.statcounter.com>

The popularity of social networks Facebook and Instagram among the Ukrainian population continues to increase in contrast to the fall in coverage of Russian social networks Vkontakte and Odnoklassniki. The key factor determining the significant popularity of Facebook in Ukraine (73.56%) is the ban on Russian social networks. Results of the conducted research demonstrate the dynamics of popular social network reach of Ukrainian population in the period of 2017-2019 using monthly dynamics of the indices (Fig. 2).

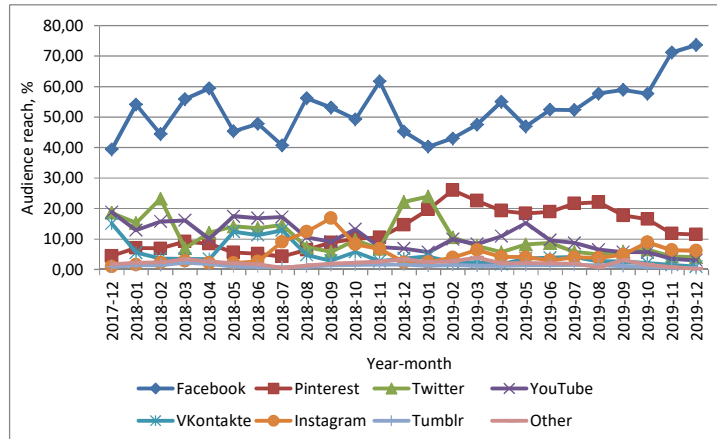


Fig. 2: Dynamics of the popular social network reach of the adult population of Ukraine in the period from December 2017 to December 2019, %.

Source: developed by the authors.

Investigation of the tendencies in behavior of Ukrainian people, who use popular social media, is conducted using the methods of economic-mathematic modeling with Microsoft Excel. The reach on Facebook and Pinterest of Ukrainian population is measured by polynomial models of the 2nd degree (Fig. 3).

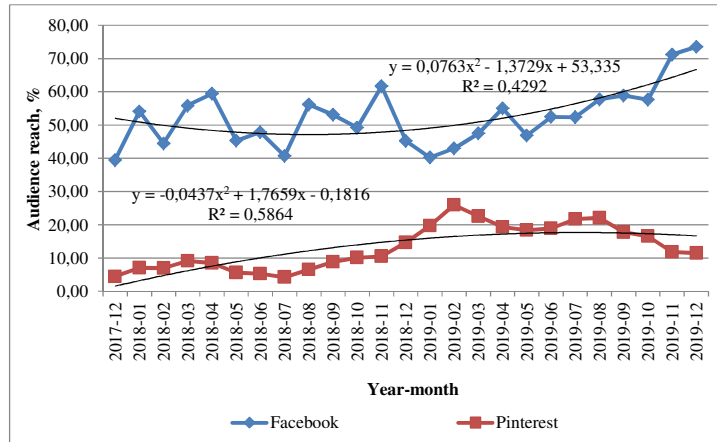


Fig. 3: Polynomial trendlines of the reach on Facebook and Pinterest of Ukrainian people in the period from December 2017 to December 2019, %.

Source: composed by the authors

The correlation-regression analysis on the reach on Facebook and Pinterest supplies the following results: the factor of determination $R^2 = 0.4292$ and 0.5864 respectively confirms that changes of the dependent variable y_t can be primarily explained by the changes of time t . Therefore, the relation type in the model is chosen correctly. It is determined that the obtained regression equations $y = 0.0763x^2 - 1.3729x + 53.335$ and $y = -0.0437x^2 + 1.7659x - 0.1816$ respectively, are significant, because examination of the relation essentiality under the F-criterion supplies the following results: $17.2943 > 4.2793$ and $32.6093 > 4.2793$ under the significance level $\alpha = 0.05$ and the number of the freedom degrees $k1 = 1$ and $k2 = 23$. Thus, results of the correlation-regression modeling substantiate that the relation between the figure of the social media reach of the society and the time is functional and essential. The proposed regression equations are acceptable and recommended to be used as trend models for the future forecast.

The reach on Twitter and YouTube of Ukrainian society is measured by exponential and logarithmic models (Fig. 4).

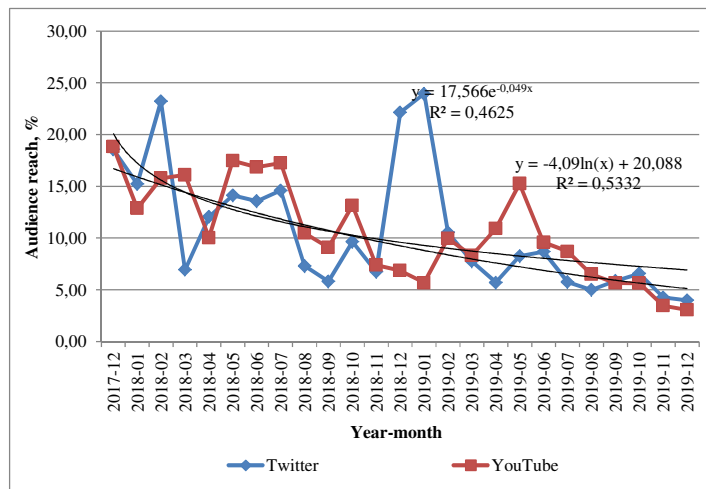


Fig. 4: Exponential and logarithmic trendlines of Twitter and YouTube reach of Ukrainian public in the period from December 2017 to December 2019, %.

Source: composed by the authors.

The correlation-regression modeling of the Twitter and YouTube reach of Ukrainian people supplies the following results: factor of determination $R^2 = 0.4625$ and 0.5332 respectively, confirms that changes of the dependent variable y_t can be primarily explained by the changes of time t . Therefore, the relation type in the model is chosen correctly. It is stated that the obtained regression equations $y = 17.566e^{-0.049x}$ and $y = -4.09\ln(x) + 20.088$ respectively, are significant, because examination of the relation essentiality under the Fisher criterion supplies the following results: $19.7907 > 4.2793$ and $26.2716 > 4.2793$ respectively. Thus, results of the correlation-regression analysis characterize that the relation between the value of the reach and time is functional and significant. The proposed regression equations are acceptable and recommended to be used as trend models for the future forecast.

The VKontakte and Instagram reach of Ukrainian population is calculated by using exponential and power law models (Fig. 5).

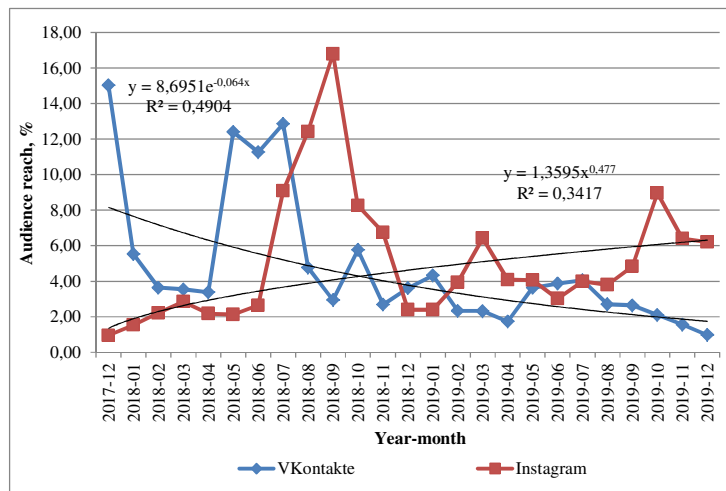


Fig. 5: Exponential and power law trendlines of the VKontakte and Instagram reach of Ukrainian people in period from December 2017 to December 2019, %.

Source: composed by the authors.

The correlation-regression analysis of the VKontakte and Instagram reach of Ukrainian people supplies the following results: the factor of determination $R^2 = 0.4904$ and 0.3417 respectively, confirms that changes of the dependent variable y_t can be partially explained by the changes of time t . Therefore, the relation type in the model is chosen correctly. It is argued that the obtained regression equations $y = 8.6951e^{-0.064x}$ and $y = 1.3595x^{0.477}$ respectively, are significant, because examination of the relation essentiality under the F-criterion supplies the following results: $22.1334 > 4.2793$ and $11.9385 > 4.2793$ under the level of significance $\alpha = 0.05$ and the number of the freedom degrees $k_1 = 1$ and $k_2 = 23$. Thus, results of the correlation-regression modeling characterize that the relation between the value of the reach and time is functional and significant. The presented regression equations are acceptable and recommended to be used as the trend models for the future forecast.

Referring to results of the conducted research and composition of the trendlines of the social media reach of Ukrainian people, the authors of the work make forecast about the change of tendencies in the behaviour of Ukrainian population, who use popular social media like Facebook, Pinterest, Twitter, YouTube, VKontakte and Instagram. The forecast is made for the six future periods, i.e. January - June 2020 (Fig. 6).

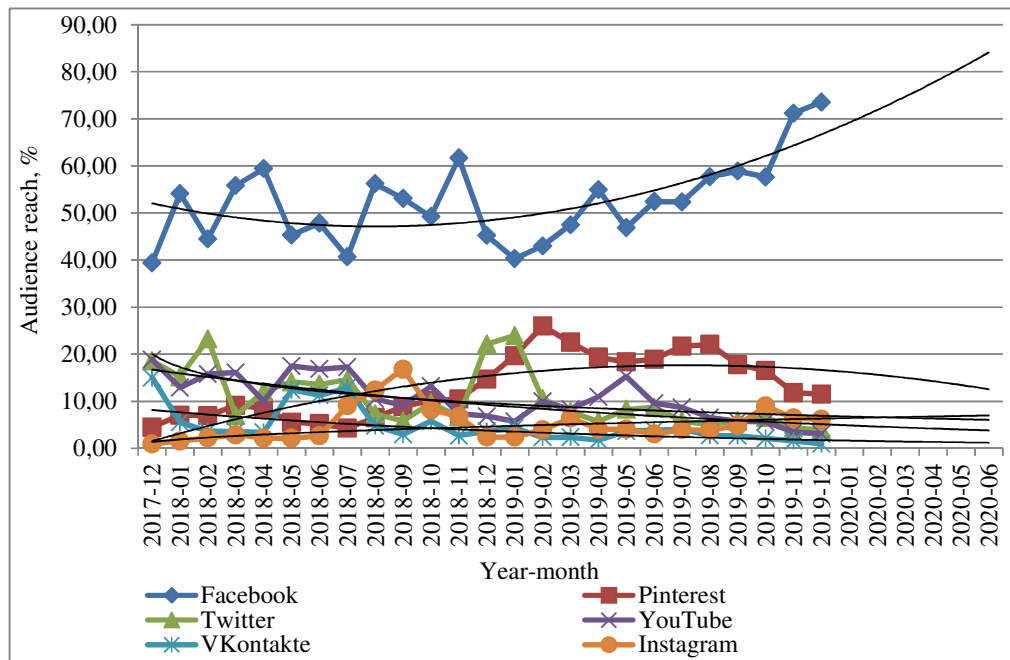


Fig. 6: Forecast of the change of tendencies in behaviour of Ukrainian people, who use popular social media, is made for the six future period, i.e. January-June 2020.

Source: competed by the authors

The above-studied trend models, depicting the dynamics of the reach of Ukrainian population, provide an adequate characteristic of the current tendency in society. The forecast of future tendencies suggests the further positive dynamics of the reach on Facebook, YouTube and Instagram. A little negative dynamics features the indices of the social platforms like Pinterest, Twitter and VKontakte. The determined type of dynamics of the index of reach of the population can be used to analyze and make forecast of the tendencies of future development.

Moreover, the authors of the work have conducted a marketing investigation in the Internet using the software <https://docs.google.com/>. (Link to the questionnaire <https://docs.google.com/forms/d/1-NEiqINBOeF0IvIw9Or24naD39Sk97Xewo2OiFahNXo/edit?ts=5df52cf3#responses>) concerning the spent time and principal goal of activity in the social networks.

Nevertheless, it is worth noting that practice of empiric sociological investigations demonstrates that the interviewing is conducted mainly in the local researches, being performed rare. The principal peculiarity of the social opinion interviewing is that usually a small share of some group of population is interviewed, whereas conclusions refer to the whole group. The main problem of the sampling is about what should be the correlation between the group in total and the share of its interviewed members.

To calculate the volume of sampling of the investigation of social networking, it is necessary to set a permissible scale of the sampling deviation and the level of the confidence figure. Values of those parameters will depend on the compromise between the value of more precise information and the necessity to expend the sampling.

The level of confidence figure suggests a degree of confidence that the figure of the observed element stays within the confident interval. Normally, the 95% confidence figure is used. A confidence interval (tolerable error) – is the allowable variation of the studied figures referring the real ones. The

interval size is set by the researcher with consideration of the requirements to information accuracy. In case the tolerable error is increased, the sampling size is reduced. In the current case, the size of the tolerable error accounts for 5%.

Under such initial data, the formula to measure the sampling volume will look like (Paniotto V., Maksymenko V., Kharchenko N., 2004):

$$n = 1 / (\Delta^2/0,9604 + 1/N)$$

where, n – is the sampling volume;
 Δ – is the size of the tolerable error;
 N – is the volume of the sampled population.

Using the above-presented formula, the volume of the current sampling will make: $1/(0.0025/0.9604+1/262) = 155.766$. To improve representativeness of the research, the obtained figure is rounded to $n = 160$. Thus, it confirms representativeness of the sampling and credibility of the authors' investigation.

In the marketing survey, Ukrainian respondents participated in the following ratio: 66.5% - women and 33.5% - men. Referring to the results of the conducted investigation, it is determined that among the interviewees there is no person, who is not registered in a social network. The largest share of the interviewees were 18-24 years old (60.4%), the share of under 18-age made 15.6%, and those, who were 36-45, accounted for 12.4% of the interviewed people (Fig. 7).

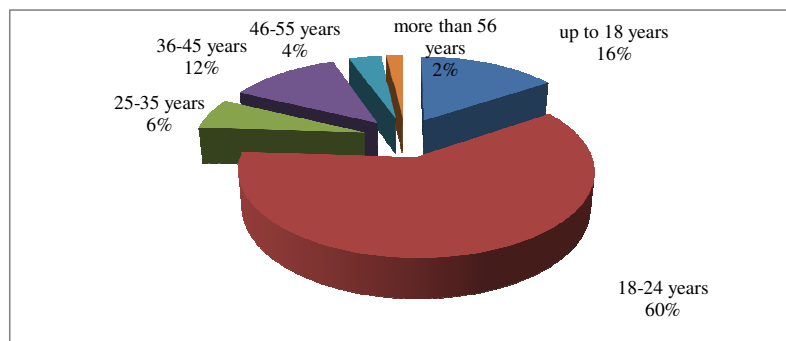


Fig. 7: The results of the age structure research of Ukrainian users of social networks

Source: researched by the authors

According to the survey, the social network Facebook is the most popular among users aged 25-35 years, slightly less among the young people aged 18-24 and the least common among respondents aged 36-45 years. Instagram has more users under 30 than Facebook. The number of Instagram users has been decreasing since 25-year-olds and Facebook - by 35-year-olds. Instagram social network is popular among Ukrainian users aged 18-24. Every third respondent between the ages of 25-35 and only a quarter of those between 36-45 is registered on Instagram. In the Ukrainian segment of Facebook and Instagram, according to the research, the female audience dominates.

It is reasonable to note that among the interviewees, 89.8% were registered in Facebook, 87.5% - in Instagram, and 71.2% - in YouTube (Fig. 8). However, one person could be registered in more than one social network.

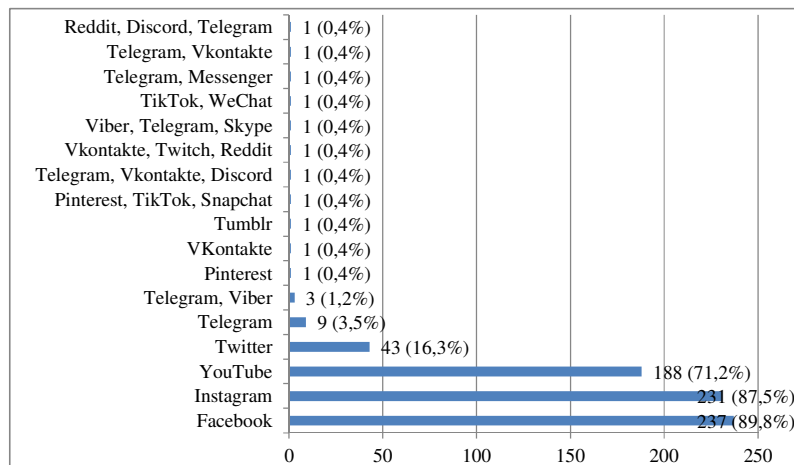


Fig. 8: Figures of the number of people, registered in social networks

Source: studied by the authors

According to the research results, the number of people, who spend from 1 to 3 hours in the social media accounts for 46.6%, and of those, who spend from 3 to 6 hours, accounts for 31.4% (Fig. 9).

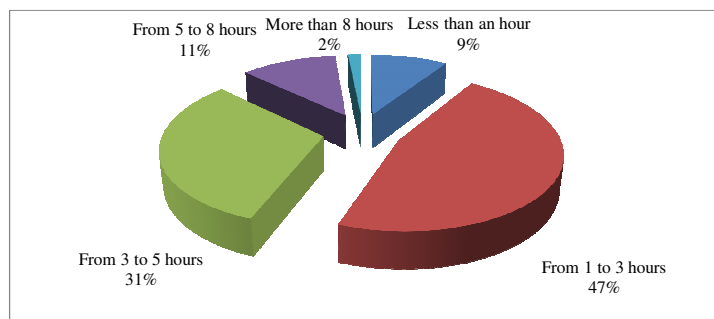


Fig. 9: Figures of the amount of time, spent in social networks

Source: studied by the authors

It is noted that the main reason of people's stay in the social platform is to keep in touch with the friends and relatives (86.7%). Besides, almost 83.3% of the interviewees use social platforms to review news (Fig. 10).

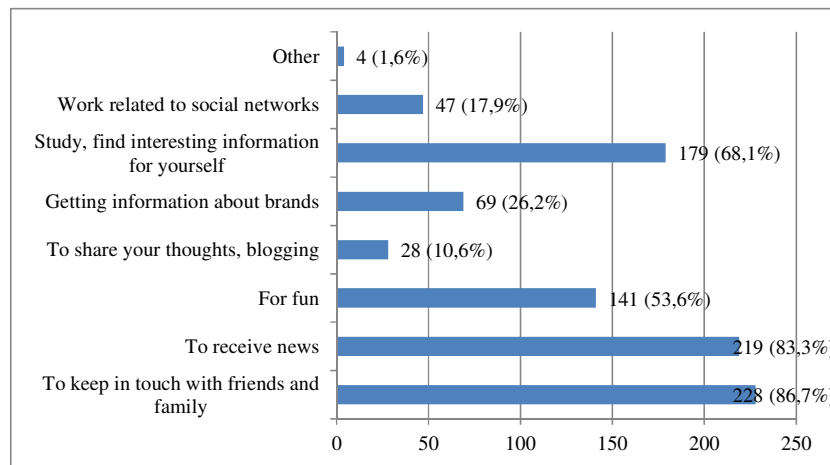


Fig. 10: Results of the research of the main reason for social networking

Source: studied by the authors

The research argues a growing number of the users of Facebook and Instagram, whereas a fall of the number of Tumblr users. Most of the interviewees spend their time in the social media efficiently, i.e. to communicate with friends, exchange news, work and advertise.

Conclusions

Results of the conducted investigation demonstrate a gradual growth of the reach of popular social platforms of the population of Ukraine. Moreover, the composed trend models prove the growing popularity of Facebook and Instagram. In contrast, once-popular platforms like OK (Odnoklassniki) and VK (VKontakte) have crucially lost their position. It is primarily connected with implementation of the Decree of the President of Ukraine of May 16, 2017 concerning exercising of the resolution of the National Security and Defense Council of Ukraine of April 28, 2017 “About performance of personal specific economic and other restricting measures (sanctions)”, which shut out the access to the above-mentioned resources for a three-year period. Results of the investigation, in spite of some skepticism about the efficiency of such measures, demonstrate that some Russian social platforms have been substituted with their Western competitors.

Results of the conducted questionnaire are of great importance. They manifest that almost 78% of the respondents spend from 1 to 5 hours in the social networks, and more than 11% - from 5 to 8 hours. However, social platforms are used mainly to keep in touch with friends and relatives, to get entertaining content and information about commodities and brands. Nevertheless, there is still a considerable share of respondents, who have never used social platforms to make purchases. Thus, it provides a great potential for growth.

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