

ACTIVITY OF SOCIETY 5.0 ON SOCIAL MEDIA VS SELF-ESTEEM. EMPIRICAL STUDY BASED ON INSTAGRAM

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Purpose: The purpose of the article is to attempt to identify the relation between social media activity and self-esteem.

Design/methodology/approach: To achieve the purpose of the article, the study was carried out in the form of an online survey technique supported by an online questionnaire, created in the Microsoft Forms environment, on a sample of 300 individuals who possessed the characteristics of representatives of society 5.0.

Findings: The conducted study indicated that there is a significant negative correlation of low strength between self-esteem measured by the RSES scale and activity on the Instagram app. In addition, we found that self-esteem depends on gender (men have significantly higher levels of self-esteem than women), while activity on the Instagram app depends on gender (women spend significantly more time on the Instagram app than men) and age.

Research limitations/implications: The limitations of the survey conducted are the non-random sampling of individuals and the size of the study sample, which make it impossible to relate the results to the general population as a whole. In addition, the study was conducted taking into account only one social network, which was Instagram. This type of study makes it impossible to relate the results to the general population of various sites, or even social media. Future research should focus on taking into account the differences in activity between the available social networks, and should also take into account other determinants that may affect it in some direct or indirect way.

Practical implications: The study conducted can be useful for brands communicating with users and promoting their products via social media. Companies can pay attention to the differences in the use of Instagram by young users and, based on this knowledge, create and then publish advertising content on the said platform.

Social implications: The results of the study can make social media users - both viewers and creators - aware that showing an ideal life on the Instagram platform, can decrease the self-esteem of the recipients of these messages. Having this kind of information, it is worth considering whether online activity significantly alters behavior and lowers well-being, and whether the actions of creators are carried out in a sustainable manner.

Originality/value: While most of the studies covering the topic covered focus on the Facebook platform or social media in general, this article focuses on the Instagram platform.

Keywords: marketing, society 5.0, social media, Instagram, self-esteem.

Category of the paper: Research paper.

1. Introduction

Social media has been an integral part of most societies around the world for many years. It is estimated that in 2022 as many as 4.62 billion people are active users of them with 7.91 billion of the total population (Datareportal, 2022). Social networks were created to communicate with others and share moments that are important to the user. It is also integral to responding to content made public by others, or activity, defined as the quantity and quality of audience engagement and interaction with other users and other social networks (Keles, 2020). According to the Statista platform, in 2022 the average time spent on social media platforms was 147 minutes (2 hours 45 minutes), which is 57 minutes more than 10 years earlier (Statista, 2022). The frequency of users' use of social media is primarily due to the widespread availability of smartphones (Pew Research Center, 2018), which is the result of huge advances in science and technology (Tabarés, 2022). A study of Korean students showed that smartphones and social media are not only constantly present for them, but have become an important part influencing their lives and thinking (Webster, Paquette, 2023). In contrast, Filipino Millennials use selfies (self-portrait photos) as a way to express themselves and show freedom of expression (Cortez, 2021). Researchers are also addressing the topic of social media in the context of the dangers it poses, as well as the negative effects from its use (Yang, Zhang, 2022). Among other things, studies are being undertaken on the consequences of obsession with beauty through online advertising on women (Mishod et al., 2022), lowering self-esteem among adolescents, and emotional problems caused by excessive use of social media (Acar et al., 2020). Given that it is mainly young people who use social media and, as mentioned above, they are influenced by it, it was decided to formulate the purpose of the study, which is to try to identify the relationship between social media activity and self-esteem.

The achievement of the objective was based both on secondary sources - academic articles from databases such as SCOPUS and industry papers and reports, and primary sources in the form of an empirical survey conducted by questionnaire method on a sample of 300 individuals.

2. Theoretical background

2.1. Society 5.0

Technological, informational and social revolutions have their positive effects - new opportunities for opportunities and benefits economically, demographically and sociologically (Calp, 2022). The latest revolution - society 5.0 (a.k.a. information society) is a good example of this. This concept was created to solve the current problems of the population, which is a progressive, ultra-intelligent society in which everyone can lead a high-quality, comfortable life, thanks to the combination of cyberspace and physical space and the full use of information and communication technologies (Huang, 2022). A simplified diagram of how society 5.0 works is shown in Figure 1. Data that is collected from the real world is processed by computers, and the results have their application in the real world.

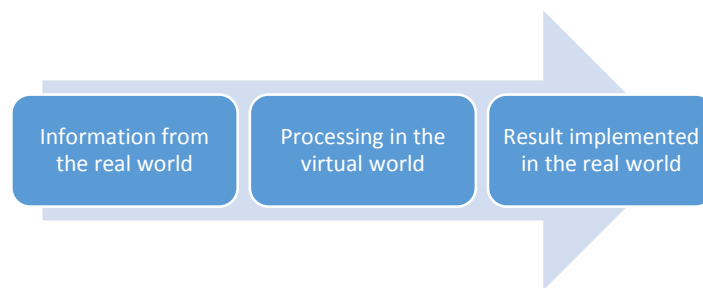


Figure 1. Diagram of the functioning of society 5.0.

Source: Own elaboration based on: Deguchi, A. *et al.* (2020). What Is Society 5.0? In: Society 5.0. Springer, Singapore. https://doi.org/10.1007/978-981-15-2989-4_1.

Society 5.0 is human-centered (Sá, 2022). It is also a creative society, in which digital transformation combined with the imagination and creativity of diverse people will be able to solve social problems and create value (Kitano, Nakanishi, 2018). It integrates physical space with cyberspace, makes very intensive use of knowledge, processes all data and information (Smuts, 2022), so as to balance economic development with solving social problems (Pu, 2020). A super-intelligent society is very adept at adapting to technological changes and is aware of their impact on society, so it tries to carry out activities aimed at promoting talent, diversity and empowerment (Huang, 2022).

Nakanishi and Kitano distinguished 5 key characteristics of society 5.0. These are:

- The ability to solve problems and create value.

Society 5.0 is not primarily focused on efficiency, as was the case with its predecessors in society 3.0 and 4.0. Society 5.0 has more diverse needs than mere efficiency. It focuses on individual needs, problem solving and value creation.

- Diversity.

Society 5.0 values the diverse skills, ideas and needs of others, transforming them into business. Individuality becomes a value where discrimination and prejudice have no place.

- Decentralization.

Defined as liberation from inequality. Society 5.0 seeks to give everyone a chance to learn and work, regardless of circumstances. It attempts to minimize the information disparity left by societies 3.0 and 4.0.

- Resilience.

Society 5.0 is focused on freeing people from fear and anxiety. It pays special attention to security by strengthening the level of medical care, regardless of location, strengthening resilience to: disasters in physical space, attacks in cyberspace, unemployment and poverty.

- Sustainable development and harmony with nature.

Society 5.0 values living in harmony with nature. It becomes independent of traditional energy grids, manages water supply and waste both technologically and systemically, enabling people to live in a variety of places in harmony with nature. As part of the development of the sharing economy, it promotes food that is good for both the environment and health, but its price will increase significantly, contributing to the non-waste of food.

Another tool for conducting and promoting this type of activity can be, among other things, social media, which, as already mentioned, includes a large part of the population, especially the younger generation.

2.2. Social media

As research demonstrates, individuals using social media have the ability to satisfy their desires, connect with others, share, access and receive information regardless of spatial (Purva, Grover, 2022) and temporal boundaries (Whelan et al., 2020). Using social media platforms is part of society's daily routine (Shorter et al., 2022), which can communicate through voice calls, video calls, text messages, and by creating and sharing content (Rozgonjuk, 2020). Most social media users are young people between the ages of 20 and 29. However, it is the group of teenagers from age 16 to young adults up to 24, which ranks third in terms of numbers, that spends the most time on social media - an average of 3 hours 13 minutes among women and 2 hours 43 minutes among men (Datareportal, 2022). For young groups of consumers, current teenagers, social networks are the main source of information about consumption options, outweighing other media (Ho, Shin, Lwin, 2019). The research of the aforementioned Datareportal report also shows that when differentiating active social media users by gender, the vast majority of age groups, especially young people, are outnumbered by men. Only in the 50-59 age group are the results almost identical considering both genders. And the group of 60 years and older is only minimally dominated by women. However, it is women, in all age groups, who spend more time on social media than men.

This article takes up the consideration of a selected social network - Instagram. It is the fourth in the ranking of social media platforms applications, after - Facebook, Youtube' and Whatsapp, respectively. Among the apps available on the market, Instagram is shaping up as one of the most influential (Casalo et al., 2021), with 1.28 billion users worldwide. Instagram is a visually oriented platform (Alshawf, Wen, 2015), initially allowing users to add and view photos. However, since 2013, it has been updated to include the ability to display and share video content (Kusumasondjaja, 2019). The aforementioned visual content has become a primary means not only of communication, but also of identity exploration and self-expression (Soo-Hyun, 2022). Instagram being an application particularly oriented towards visual content and self-presentation (Hong et al., 2020) is an ideal place to explore the issue of self-esteem in the context of user activity.

2.3. Self-esteem

Self-esteem is recognized as an important aspect of human social and cognitive development (Berndt, 2002; Pulkkinen, Nygren, Kokko, 2002; Wigfield, Battle, Keller, Eccles, 2002). It is an individual's overall assessment of his or her self-esteem (Rosenberg, 1965). It refers to the degree to which a person appreciates, approves and values himself (Tazghini, Siedlecki, 2013). Any individual's experiences can affect his or her self-esteem (Rahma, Setiasih, 2021), which can be stable or variable due to other factors or events (Jan et al., 2017).

Previous studies addressing self-esteem have mostly focused on the Facebook platform (Tazghini et al., 2013; Eşkisü et al., 2017; Marshall et al., 2015) or addressed social media in general (Cingel et al., 2022; Jan et al., 2017). Juxtaposing the phrases self-esteem and Instagram, for instance, 36 items are available in the Scopus database. However, they include other research samples, for example Insta Moms (Moujaes, Verrier, 2021), teenagers (Feijoo et al., 2022), young women (Kim, 2020; Jolanda et al., 2020), etc. Studies are also being undertaken in other contexts, such as the influence of influencers on the ideal appearance of teenagers (Antonietti et al., 2020) or covering other markets, including Spain (Feijoo et al., 2022), Kuwait (Alfailakawi, 2018), Singapore (Jiang, Ngien, 2020), etc.

The present study is more narrowly focused, focusing on Instagram and primarily young people - statistically the most frequent and longest-acting of the day, representatives of the 5.0 generation.

Based on the above, the following hypotheses were formulated:

- H1: The level of self-esteem significantly differs in terms of:
 - H1a: gender.
 - H1b: age.
 - H1c: education.
 - H1d: place of residence.

- H2: The level of activity on the social network - Instagram significantly differs in terms of:
 - H2a: gender.
 - H2b: age.
 - H2c: education.
 - H2d: place of residence.
- H3: There is a significant correlation between activity on social networking site - Instagram and level of self-esteem.

3. Methods

3.1. Procedure

The study was conducted using a survey method, in the form of an online survey technique, supported by an online form questionnaire created in the Microsoft Form environment. The process of collecting responses lasted from February 2022 to July 2022. The selection of individuals for the survey sample was based on a purposive selection scheme, in which the categories were the age of the respondent (young people) and the use of the Instagram application.

Initially, a total of 324 responses were collected in the electronic questionnaire, however, due to missing responses and errors, 24 items were rejected.

3.2. Sample characteristics

In the final analyzed sample - 300 individuals, the majority were women (67.7%, compared to men - 32.3%). The average age of respondents was $M = 22.4$ with a deviation of $SD = 2.360$. The sample was dominated by respondents with a high school education - 68.0%, while the rest had a university degree - 32.0%. Almost half of the respondents lived in cities with a population of more than 500,000 - 47.3%, 8.7% of the respondents lived in cities of 200,001 to 500,000 people, 12.7% of the respondents lived in cities of 50,001 to 200,000 people, while 12.0% and 19.3% of the respondents lived in cities of up to 50,000 people and villages, respectively. The reasonableness of the selection of individuals was based on the possession of the characteristics of Society 5.0 within the framework of the foundations of this concept such as, among others: technological transformation in the context of openness to new technological or digital solutions, value creation and co-creation; living in harmony with nature (Kitano, Nakanishi, 2018). Young and middle-aged people (up to 44 years old), mostly with a university education in Poland are considered techno-enthusiasts, who have positive attitudes towards technology, often use most of the available technological solutions, and see it as one of the

development factors of the economy (Digital Poland, 2020), among others, in the context of creating business opportunities (Gregor, Kalińska-Kula, 2016). Research conducted by the IBM Institute Business value and the National Retail Federation shows that 40% of consumers pay attention when shopping whether the products or services they are looking for are in line with values, and 57% say they are willing to change their shopping habits in order to reduce their negative impact on the environment (Inquiry Market Research, 2021; IBM Institute for Business Value & National Retail Federation, 2020).

3.3. Measures

The Polish adaptation of the Rosenberg Self-Esteem Scale (RSES), which has been validated on representatives of the Polish population (among other publications - (Laguna, Lachowicz-Tabaczek, Dzwonkowska, 2007)), was used to examine the level of self-esteem. This construct consisted of 10 questions to which respondents referred according to a scale from 1 to 4, where 1 meant "strongly disagree" and 4 meant "strongly agree." The sum range of the scale ranges from 10 to 40 points, the higher the sum of points the higher the level of self-esteem. For some analyses, the variable was transformed to the ordinal level to 3 classes - low level of the index (values from 10 to 20 points), medium level of the index (above 20 points to 30 points) and high level of the index (above 30 to 40 points) (Hellwig, 1968; Łogwiniuk, 2011).

Activity on the Instagram application was measured by an index calculated based on the following formula.

$$A = \frac{T}{C} \quad (1)$$

Activity in the Instagram app (A) is the relation of the declared amount of time spent in the app in hours (T) to the declared number of logins to the app per day (C). Thus, this variable represents how much time in hours a respondent spends in 1 login to the app.

4. Results

The analysis began by examining the distributions and detailed statistics for the variables: self-esteem and activity in the social media - Instagram.

The RSES scale measuring self-esteem proved to be reliable (Cronbach's Alpha at $\alpha = 0.865$). Detailed statistics for the scales are presented in the following table (Table 1).

Table 1.

Values of statistical measures of the scales: self-esteem RSES and activity on the Instagram app in the study sample (n=300)

Statistical measure	Values of statistics	
	RSES	Activity on the Instagram app
Mean	30.3067	0.2600
Standard deviation	5.69098	0.20697
Median	31.000	0.2000
Dominant	31.000	0.2000
Skewness	-0.551	1.537
Kurtosis	0.139	2.788

Source: Empirical research.

Considering the presented descriptive statistics of the scales: RSES and Instagram activity index, such as similar values of central measures (mean, median and dominant), asymmetry and kurtosis indices, it can be concluded that in the case of RSES scale, the distribution of the variable is close to a normal distribution (skewness and kurtosis falling between -1 and 1), while the distribution of Instagram activity index is not close to a normal distribution (values of skewness and kurtosis falling between -1 and 1).

Then, in order to verify hypotheses H1 (a, b, c, d) and H2 (a, b, c, d), the corresponding tests of dependence of the previously indicated scales were performed in relation to the demographic characteristics of the respondents. The results of the tests are included in the following table (Table 2).

Table 2.

Probability p-values of statistical tests for the scales of RSES self-esteem and Instagram app activity in relation to respondents' demographic characteristics (n=300)

Variable	RSES	Activity on the Instagram app
	p - value	
Gender	0.005*	0.012*
Age	0.129	0.007*
Education	0.157	0.076
Place of residence	0.415	0.231

Note. Due to the impossibility of meeting the requirements for parametric methods, such as equality of units, distribution close to normal and homogeneity of variance in the subgroups examined, it was decided to use non-parametric equivalents - the Mann-Whitney U test for the number of subgroups $k = 2$ and the Kruskal-Wallis H test for the number of subgroups $k > 2$. For age, scatter plots were made which did not show the linear nature of the correlation, so the non-parametric equivalent - the Spearman rank correlation coefficient - was used.

* $p < 0,05$.

Source: Empirical research.

The level of self-esteem (RSES) differs significantly in terms of respondent gender ($U = 7871.500$; $p < 0.05$), with men ($M = 31.505$; $SD = 5.566$) having significantly higher levels of self-esteem than women ($M = 29.734$; $SD = 5.674$) in the sample. Statistical tests showed no relation between the RSES variable and age ($\rho = -0.088$; $p = 0.129$), education ($U = 10781.000$; $p = 0.157$) and place of residence ($H = 3.938$; $p = 0.415$).

Activity on Instagram depended on the gender of the respondent ($U = 11602.500$; $p < 0.05$) - women ($M = 0.272$; $SD = 0.198$) spend significantly more time on Instagram than men ($M = 0.234$; $SD = 0.223$); and age ($\rho = 0.154$; $p = 0.007$). No relationship was found between Instagram app activity and education ($U = 8552.500$; $p = 0.076$) or place of residence ($H = 5.603$; $p = 0.231$).

In order to verify hypothesis H3, a scatter plot was made for the respondents: RSES and Activity on the Instagram app.

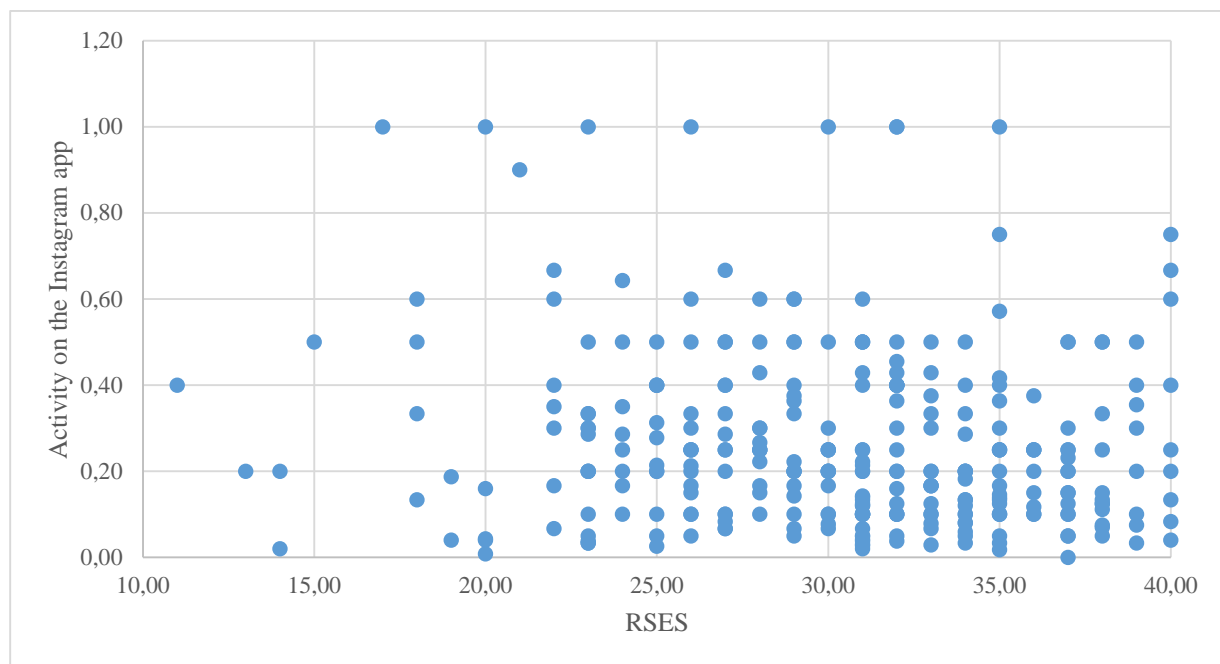


Figure 2. Scatter plot for the variables RSES and Activity on the Instagram app ($n=300$).

Source: Empirical research.

Analysing the aforementioned diagram, it can be observed that there are a significant number of outlier observations and the nature of the data is not linear. According to the Pearson correlation coefficient assumptions, the variables should be characterised by a linear relationship (Wiktorowicz et al., 2020). Thus, it was decided to use a non-parametric statistic - the Spearman rank correlation coefficient. The correlation turned out to be significant, negative, but of low, insignificant strength ($\rho = -0.120$; $p = 0.38$).

In order to further analyse the relationships between the variables studied above, the RSES variable was aggregated into 3 classes (low, medium and high levels) (Hellwig, 1968; Łogwiniuk, 2011). The results of the transformation are shown in the chart below.

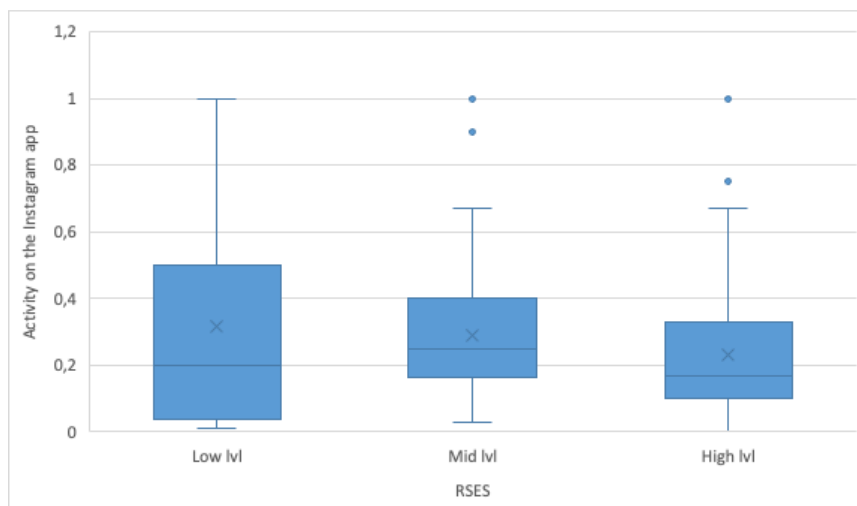


Figure 3. Box plot for the variables RSES and Activity on the Instagram app (n=300).

Source: Empirical research.

As the requirements for parametric tests were not met, a non-parametric equivalent was used for comparisons when the number of groups $k > 2$ - the Kruskal-Wallis H test.

The test showed significant differences among the subgroups studied ($H = 8.328$; $p = 0.016$), respondents with a medium level ($M = 0.290$; $SD = 0.205$) of self-esteem spending significantly more time on the Instagram app than representatives of the subgroup with a high level ($M = 0.233$; $SD = 0.192$) of RSES ($D = 30.119$; $p = 0.012$). There were no significant differences between the groups of respondents with low versus high levels ($D = 12.278$; $p > 0.05$) and low versus medium RSES ($D = -17.841$; $p > 0.05$).

5. Discussion

A study conducted demonstrated a negative significant correlation between activity on the Instagram app and self-esteem as measured by Rosenberg's RSES scale. Similar results were obtained for a study on the Facebook platform with a similar sample in terms of age (Jan, Soomro, Ahmad, 2017; Kalpidou, Costin, Morris, 2011).

An explanation for this correlation could be that people with low self-esteem, by spending a lot of time on social media and logging a high frequency, try to replace their social needs (Tazghini, Siedlecki, 2013; Zhang et al., 2017; Faraon, Kaipainen, 2014; Jan et al., 2017) or even have the opportunity to expand their social capital (Kalpidou, Costin, Morris, 2011).

In the case of the Instagram platform, activity comes down to both consuming and creating content in the form of posts in the form of graphics or video, testimonials (so-called stories) or, until recently, IG TV (a longer form of video content). Nowadays, a new alternative is also reels, which are inspired by a form from the popular social network Tik-Tok. Such consumption

or creation often relies on the phenomenon of comparison. It is very common to see profiles of people who are professionally or privately successful, respected, travelling, taking care of themselves and comparing themselves to their not-so-perfect selves, which can quite often contribute to lower self-esteem (Vogel et al., 2014).

The results of the conducted study also showed that women spend significantly more time on the Instagram app than men, which has been substantiated in works (Ellison, Steinfield, Lampe, 2007; Ryan et al., 2014; Błachnio, Przepiorka, Rudnicka, 2016). According to the results of the aforementioned works, women are more dependent on social media than men, which translates into a longer time of use, and gaining social popularity online.

6. Conclusion

Based on a critical analysis of the available literature on society 5.0, self-esteem, media and social networks, mainly on the Instagram platform, research hypotheses were formulated on the relationship between the aforementioned variables, in relation to control variables - metrics such as respondent's gender, age, education or place of residence (Table 3).

Table 3.

Hypotheses and decisions on their acceptance and rejection based on the empirical study

Hypotheses	Decisions
H1a – Level of self-esteem significantly differs in terms of gender	Lack of basis for rejecting the hypothesis
H1b – Level of self-esteem significantly differs in terms of age	Rejected hypothesis
H1c – Level of self-esteem differs significantly in terms of education	Rejected hypothesis
H1d – Level of self-esteem significantly differs in terms of place of residence	Rejected hypothesis
H2a – Level of activity on social networking site - Instagram significantly differs in terms of gender	Lack of basis for rejecting the hypothesis
H2b – Level of activity on social networking site - Instagram significantly differs in terms of age	Lack of basis for rejecting the hypothesis
H2c – Level of activity on social networking site - Instagram significantly differs in terms of education	Rejected hypothesis
H2d – Level of activity on social networking site - Instagram significantly differs in terms of place of residence	Rejected hypothesis
H3 – There is a significant correlation between activity on social networking site - Instagram and level of self-esteem	Lack of basis for rejecting the hypothesis

Source: Empirical research.

The results of the study presented that gender significantly differentiates activity on the social networking site Instagram and levels of self-esteem. It was also discovered that there is a correlation between Instagram activity and age, as well as between activity and self-esteem.

The limitations of the present study are undoubtedly the non-random nature of the selection of individuals for the study sample and its size, which makes it impossible to relate the collected results to the general population. It is also worth mentioning that the study carried out concerns one of the available social networks - Instagram, therefore, inferring attitudes, behaviours or relationships in the context of all the various networks or even social media does not seem valid. Future research should focus on taking into account the differences in activity between the available social networks and should also take into account other determinants that may influence it in some direct or indirect way.

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