Instagram for Information and Publicity Purposes During the Covid-19 Pandemic

Andi Poplas[1,2], **Nina Planinšek**[1,2], **Miha Rušnik**[1,2], **Rok Nabergoj**[1,2], **Vili Podgorelec**[1,3], **Ines Kožuh**[1,3]

[1] Faculty of Electrical Engineering and Computer Science, Koroška cesta 46, Slovenia

[2] {andi.poplas, nina.planinsek, miha.rusnik, rok.nabergoj}@student.um.si

[3] {vili.podgorelec, ines.kozuh}@um.si

Abstract. *The Covid-19 pandemic has shaken the world and brought us new challenges such as spreading information. In today's social networks-dominated world, the public is commonly informed via Instagram, one of the fastest-growing networks. In our research, we looked at the said network for the purpose of spreading information to the public during the pandemic. We found that the majority of respondents do not use Instagram for gathering information about Covid-19. However, the level of awareness of its users increases as the number of perceived posts related to the Covid-19 pandemic increases. We found that older users are more informed, and that individuals obtain information from different types of profiles. We concluded that Instagram is still a good tool to inform users, as it reaches a certain level of people and informs them well about Covid-19 and can be used with advantage by organisations and individuals for sharing information.*

Keywords. Instagram, information, publicity, crisis, Covid-19

1   Introduction

In times of crisis, such as the Covid-19 pandemic, the question of how to ensure that citizens are as well informed as possible about the situation and how to deal with it arises repeatedly. The ways in which the public is informed have changed and adapted over time and with the development of different technologies, and, in recent years, communication on social networking sites has been gaining ground.

Social networks, which have developed rapidly over the last two decades, allow users to connect with each other without time and space constraints [3]. Such networks, of which Instagram is one, can be used to keep citizens informed in crisis situations.

This topic has already been addressed by other authors. The authors of the studies we have reviewed have been dealing with the role of social networks and activities on these networks in their own settings, i.e. in different countries during the Covid-19 pandemic, and the impact of social networks on pandemic information.

Our study will help to understand better the state of information on the Covid-19 pandemic and the problems associated with the way this topic is communicated on Instagram. The knowledge gained will ease the work of the services responsible for raising public awareness in the event of future crisis situations. It will also help to understand the extent to which users obtain this type of information from social networks, and the extent to which they trust it.

2   Conceptual framework

Over the past decade social networks have become a crucial part of our everyday life, impacting economics, politics and society itself importantly. In contrast with the rise of social networks, traditional media, such as television, radio and newspapers, have declined in importance [18]. According to Hu and Ling [17], social networks have four major advantages over traditional media, which are only increasing as they evolve. These are integration, time efficiency, low resistance and orderliness.

Social networks are an important source of information for many people, which carries the risk of potential misinformation and misleading information. To avoid this, we need to pay attention to peer-reviewed and verified information, as misinformation can lead to major problems in certain situations [4].

Instagram is one of the many popular social networks that have taken the world by storm in the last decade. This is proved by its 1.1 billion global users [11]. To view, post and interact with posts and stories of other users, users have to be registered, thus creating a profile on the said social network [5]. The profile can be either public, which makes it visible to all Instagram users, or private, which makes it visible only to users who have been pre-authorised by the profile owner to follow and, thus, view the profile.

Users can post content of various types on the network. The most common are posts, the content of which is in the form of images or short videos. Stories are another type of content that offer additional information and communication. A story is content shared between Instagram users, and is only visible for one day unless it is saved among the so-called highlights. The third type of content is IGTV (Instagram television), which allows the posting of longer clips [20]. Users can respond to content in the form of posts with likes and comments, with messages, or a like in the form of direct messages, and interact with interactive elements and respond to messages in the case of stories [12].

Today, many well-known individuals, multimedia houses and government portals are already part of Instagram. Thus, we can also divide authors by type into individuals, news portals, government portals, and portals dealing with specific topics. The authors of the content use the network to share events and thoughts from their lives, inform the public about current events, and publish entertaining and educational content [5].

In 2020 content regarding Covid-19 became widespread on Instagram following the outbreak of the pandemic. The Covid-19 pandemic initially hit China at the end of 2019, but took global proportions a year later. The WHO declared the spread of the virus a pandemic, underlining the gravity of the situation, and calling on the public to take action in detecting and containing the spread of the virus [8]. Therefore, countries introduced various measures, such as emphasis on hygiene, social distancing and the introduction of quarantines. Many countries and organisations have also resorted to social networks to communicate taken measures and to inform about the spread of the virus.

Informing the public about the pandemic was crucial, as it allowed people to increase control over their own and others' health. It focused both on individuals' behaviour change and disease management, and interventions that impact organisations and communities, and, at the higher level, by informing policies that affect populations [13]. In times of crisis, people want to be well informed so that they know what specific preventive measures they need to take and how they can cope with the consequences. Information on the Covid-19 virus is abundant, with official and unofficial websites and media portals updating recommendations, guidance, and reporting on the current situation regularly. Bombarding communications, even if well planned, can cause confusion. As information about the virus is also spread via social networks, there is an additional risk of spreading false information that some people take as truth. These misconceptions can be reinforced by the false consensus that is created when information is shared on social media, leading to an 'illusion of truth' effect, meaning that information that is repeated often is more easily taken as true [9].

3 Methodology

3.1 Variables, research questions, hypotheses and research model

Through a literature review, we set out to answer the following research questions:

- Does the average number of detected Covid-19-related posts help to inform individuals better about the Covid-19 pandemic?
- Does the age of an Instagram user affect the level of awareness of the Covid-19 pandemic?
- Does the level of education of an Instagram user influence the level of awareness of the Covid-19 pandemic?
- Do different types of Instagram posts on Covid-19 have a different impact on the level of information individuals have about Covid-19?
- Does the type of author of Instagram posts about Covid-19 have an impact on the level of information people have about Covid-19?

3.2 Sampling, participants, research process and measuring instrument

We used convenience sampling, which is a basic type of sampling. Participants were selected according to their availability, as we did not have the option of selecting individuals. We sought them randomly by sharing our survey across different media. Finally, we used a personal approach, by approaching individuals and asking them to complete our survey. The participants were, thus, completely random.

The research was carried out by defining the theoretical framework, research questions and hypotheses. Based on that we created a research model and the measurement system across the survey.

The research questions were used to analyse the statistical data obtained from the research design (survey). In order to obtain data to answer the research questions, we conducted a survey, which we designed in an online format using the 1KA online service. The survey consisted of three parts filled with questions and a conclusion. The first part of the survey measured knowledge related to Covid-19 (symptoms, transmission, preventive measures and alleviating its symptoms), in the second part we collected data from the respondents regarding the use of Instagram, and in the third part of the survey we collected the demographic data of the respondents. At the end of the survey, we invited all respondents to a possible interview, which we would conduct if we had enough candidates.

4   Results

Of the 88 respondents, the second part of the survey, which included questions related to the use of Instagram in connection with posts related to the Covid-19 pandemic, was completed by only 36 respondents.

For the first part of the analysis we analysed the impact of the average number of detected Covid-19 publications on user awareness. We first performed a test of normality of the distribution for information. The Shapiro-Wilk test was used to test for normality. The test showed a characteristic statistical correlation to an abnormal distribution of data, p <.001. Due to the abnormal distribution, we used the Kendall rank correlation coefficient, which is a nonparametric test, to determine the strength and direction of the linear relationship between the ordinal or continuous variables. Using the Kendall rank correlation coefficient, we examined the relationship between the average number of detected Covid-19-related publications per day on the network and the level of awareness that respondents achieved by solving the test. The correlation between the variables was positive and statistically significant, $\tau b = .28$, p = .026. The level of information of users about the pandemic also increased with the increase in the number of detected posts related to the Covid-19 pandemic on the Instagram network .

Next, we analysed the impact of the age of Instagram users on pandemic awareness. In this case, the distribution normality test was performed at the level of responses of 36 respondents. We used the Shapiro-Wilk test, which showed no statistically significant correlation, and, thus, an abnormal distribution of data, p <.001. We used the Kendall rank correlation coefficient to determine the relationship between user age and Covid-19 pandemic awareness. The correlation between the mentioned variables was positive and statistically significant, $\tau b = .40$, p = .004. The older Instagram users are, the higher their level of pandemic awareness.

In the level of education achieved we found that, due to the abnormal distribution, we used the Kendall rank correlation coefficient to determine the relationship between the level of education of the respondents and their level of awareness of the pandemic. The correlation test did not show a statistically significant association between the variables, $\tau b = .08$, p = .574.

The type of publication on Instagram was related to the level of information. The test did not prove statistically significant, p <.001. We used the Kruskal-Wallis H test to check the impact between the type of posts surveyed by respondents on the social network Instagram and the level of their awareness. The test result showed no statistically significant effect between the type of Covid-19-related posts on Instagram and the level of user awareness of the pandemic, X^2 (2) = 0.059, p = .971.

The influence of the type of author of Instagram posts monitored by the respondents on the level of their awareness of the Covid-19 pandemic was checked with the Kruskal-Wallis H test. The latter showed a statistically significant effect between the type of author of Covid-

19-related posts on Instagram and the level of user awareness of the pandemic, X^2 (6) = 16.2, p = .013, with an average level of information of 12.5 for acquaintances (friends, relatives), 11.07 for influencers, 24.25 for public figures (politicians), 23.95 for news portals, 32.50 each for government portals and organisations and 12.91 for portals dedicated to the Covid-19 pandemic.

5   Discussion

The Covid-19 pandemic presented a unique challenge that the modern world has not yet faced. That's why it's important to know how to inform the public effectively about the pandemic and what is happening.

In our research we have focused on a key concept in information dissemination today; social networks. We chose Instagram as the subject of our research, as it is one of the most used networks today, especially in our environment. In our research, we wanted to find out to what extent the public obtains information about the Covid-19 pandemic on Instagram compared to other media channels, and we also wanted to know whether they perceive the information they obtain on Instagram as credible.

Based on data from the survey we found that characteristics such as age and attained age of the Instagram user do not influence the awareness of the Covid-19 pandemic. Moreover, neither the type of Covid-19-related post, nor the time spent on Instagram has any impact on awareness.

We found that the type of author of a post has an impact on pandemic awareness; government portals and organisations have the highest impact, while influencers have the lowest. In addition, the number of perceived Covid-19-related posts on Instagram also influences pandemic publicity.

Comparing our results with previous related studies, we can conclude that our results are relevant. Saud, Mashud and Ida [10] also concluded in their study that their target population found social media useful in gathering information about the disease. Alnasser et al. [1] in their study found that the most common source of information on the Covid-19 pandemic on social media was government portals; it is this type of profile that has the highest impact in our country of all the profiles considered. Goodyear et al. [7] showed in their study that the use of social networks promoted healthy behaviour, and increased the potential of participants. In our study, we demonstrated that Instagram users were better informed about the pandemic if they consumed more posts, suggesting a positive correlation.

Our results and findings can help us to understand the importance of social networks better, and help us to communicate on these networks. This knowledge can be useful in everyday communication, but is even more important in times of crisis, when effective and efficient communication with society is even more important for crisis resolution and management. Communication via social networks has features and elements that are useful and crucial in times of crisis, and it would be absurd not to use technology and its benefits

to our advantage in order to overcome crisis situations more quickly, as the Covid-19 pandemic certainly was.

6 Conclusion

Through our study we wanted to find out to what extent the public was getting information about the Covid-19 pandemic on Instagram and how this compared to other media. The aim of the study was to provide statistics to understand better the state of communication, and to present an overview of the optimal way to share information in a crisis situation that individuals can trust.

The contribution of our study is statistical information on how Instagram users acquire information related to the Covid-19 pandemic. Through statistical analysis we found that, as the number of perceived Covid-19-related posts increases, so does the level of user awareness of the pandemic. A related finding is that, as the age of the user increases, so does the level of awareness of the pandemic. In relation to age, education level was not found to have a significant impact on the level of awareness of users, but the type of author of the post was an important factor, as the analysis showed a correlation between the type of author of Instagram posts and the level of awareness of users.

All findings are available to Instagram users who post pandemic-related content. Our analysis allows them to change the audience for which the information is intended, and to share it only with that group of individuals. They could also use the results of the analysis to tailor the types of posts and focus on certain types of authors as a community. It can also be helpful for all researchers analysing or researching audience information about the Covid-19 pandemic on the web.

The biggest limitation of our research is the accuracy of the results, as the diversity of the respondents was important in the data collection, but this was limited, as we mostly selected citizens of Slovenia and members of the same cultures. Another limitation, in our view, was the lack of cooperation with Instagram or their partners who deal with statistical analysis of users on the social network, as they would be able to answer our questions directly. As a third shortcoming, we point to the use of a simple questionnaire that could be upgraded.

In the future, we could extend our research by using more measurement instruments. We could also run an experiment in conjunction with the survey, which would be adapted according to the statistical results of the survey. The experiment would then be used to confirm or refute some of the results. Similarly to the experiment, interviews would be conducted with the respondents to obtain detailed explanations as to why these results were obtained. Despite the potential for extension, the analysis has generated important data that can be used in further research on how individuals are informed about Covid-19.

References

[1]   Alnasser *et al* "The positive impact of social media on the level of COVID-19 awareness in Saudi Arabia: a web-based cross-sectional survey," *Le infezioni in medicina*, vol. 28, no. 4, pp. 545–550, Dec. 2020. [Online]. Available: https://www.researchgate.net/publication/346841047_The_Positive_Impact_of_Social_Media_on_The_Level_of_COVID-19_Awareness_in_Saudi_Arabia_a_Web-Based_Cross-Sectional_Survey (accessed Mar. 5, 2022)

[2]   W. Antonelli. "A beginner's guide to Instagram, the wildly popular photo-sharing app with over a billion users." BusinessInsider.com. https://www.businessinsider.com/what-is-instagram-how-to-use-guide (accessed Mar. 5, 2022)

[3]   N. Barrett-Maitland, N. and J. Lynch, "Social Media, Ethics, and the Privacy Paradox," *Security and Privacy From a Legal, Ethical, and Technical Perspective*. London, United Kingdom: IntechOpen, 2020 [Online]. Available: https://www.intechopen.com/chapters/70973 doi: 10.5772/intechopen.90906 https://doi.org/10.5772/intechopen.90906.

[4]   K. Chan, C. P. Nickson, J. W. Rudolph, A. Lee and G. M. Joynt, "Social media for rapid knowledge dissemination: early experience from the COVID-19 pandemic," *Anaesthesia*, vol. 75, no. 12, pp. 1579-1582, Mar. 2020, doi: 10.1111/anae.15057.

[5]   J. Cook, *Instagram Rules: The Essential Guide to Building Brands, Business and Community*. London, UK: White Lion Publishing, 2020

[6]   F. de Véricourt, H. Gurkan and S. Wang, "Informing the public about a pandemic," *SSRN Electronic Journal*, Dec. 2020, doi: 10.2139/ssrn.3749146.

[7]   V.A. Goodyear *et al* "Social media use informing behaviours related to physical activity, diet and quality of life during COVID-19: a mixed methods study," *BMC Public Health*, vol. 21, no. 1, Jul. 2021, doi: 10.1186/s12889-021-11398-0.

[8]   R. Güner, I. Hasanoğlu, and F. Aktaş, "COVID-19: Prevention and control measures in community," *Turkish Journal of medical sciences*, vol. 50, no. 1, pp. 571-577, Apr. 2020, doi: 10.3906/sag-2004-146.

[9]   K. C. Santosh and A. Joshi, *COVID-19: Prediction, Decision-Making, and its Impacts,* Singapore: Springer, 2020.

[10]   M. Saud, M. Mashud and R. Ida, "Usage of social media during the pandemic: Seeking support and awareness about COVID-19 through social media platforms," *Journal of Public Affairs*, vol. 20, no. 4, Dec. 2020, doi: 10.1002/pa.2417.

[11]   Statista Research Department. "Instagram – Statistics & Facts." Statista.com. https://www.statista.com/topics/1882/instagram (accessed Mar. 5, 2022)

[12] The Logo Creative. "Tips to Use Instagram as a Graphic Designer." Medium.com. https://thelogocreative.medium.com/tips-to-useinstagram-as-a-graphic-designer-c4889e894376 (accessed Mar. 5, 2022)

[13] S. Van den Broucke, "Why health promotion matters to the COVID-19 pandemic, and vice versa", *Health promotion international,* vol. 35, no. 2, pp. 181-186, Apr. 2020, doi: 10.1093/heapro/daaa042.

[14] "Explained: What is Instagram?" Webwise.ie. https://www.webwise.ie/parents/explained-image-sharing-app-instagram/ (accessed Mar. 5, 2022)

[15] S. Weston and M. B. Frieman, "COVID-19: Knowns, Unknowns, and Questions," *mSphere,* vol. 5, no. 2, Mar. 2020, doi: 10.1128/msphere.00203-20.

[16] R. M. Jaber, B. Mafrachi, A. Al-Ani and M. Shkara, "Awareness and perception of COVID-19 among the general population: A Middle Eastern survey," PLOS ONE, vol. 16, no. 4, Apr. 2021, doi: 10.1371/journal.pone.0250461.

[17] D. Ling and H. Hu, "Feature analysis of the social media," Proceedings of the 2013 International Workshop on Computer Science in Sports, pp. 186-190, Aug. 2013, doi: 10.2991/iwcss-13.2013.50.

[18] L. McCay-Peet and A. Quan-Haase, "A Model of Social media Engagement: User Profiles, Gratifications, and Experiences," Why Engagement Matters, pp. 199-217, May 2016, doi: 10.1007/978-3-319-27446-1_9

[19] B. Stegner. "What is Instagram and How Does it Work?" MakeUseOf.com. https://www.makeuseof.com/tag/what-is-instagram-how-does-instagram-work/ (accessed Mar. 9, 2022)

[20] M. Karle, A Social Media Survival Guide: How to Use the Most Popular Platforms and Protect Your Privacy, Rowman & Littlefield, Feb. 2020