

Interactivity of Hospital X Instagram Account in Cyber Public Communication

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ABSTRACT

Instagram's user base and high level of interaction make it a potentially valuable tool for reaching out to others, establishing communication, gaining public trust, and enhancing a company's image. Instagram is used by Hospital X for marketing, health promotion, and corporate image development. One way to gauge the success of this account is to look at how interactive it is. The purpose of this study is to ascertain how the public views Hospital X's Instagram account and how engaged it is in terms of providing public services online. This study is being conducted using a mixed-ways approach, which combines quantitative methods to gauge interactivity, in this case, the number of likes and comments serves as a benchmark indicator, and qualitative methods to gauge public opinion. The study's findings show that while the X Hospital Instagram account has made good use of the platform's features, it hasn't done the best job of boosting involvement. While the X Hospital Instagram account has a high level of interaction, the results of evaluating interactivity per post-show varied values. On the other hand, some informants continue to believe that the administration of X Hospital does not reply appropriately to messages and remarks. It is established that there is a wide range of public perspectives and good interaction on Hospital X's Instagram account overall.

Keywords: Hospital social media, hospital Instagram, hospital health promotion.

1. INTRODUCTION

1.1 Social Media Utilization by Hospitals

Hospitals as referral-level health care institutions have the duty and function of promoting healthy habits and sharing health-related information. As a public facility, the Hospital must be able to disseminate healthrelated information quickly to the public [1]. But beyond its function as a public facility, the hospital must be able to survive among its competitors and be able to develop its services. For this reason, hospital public relations and marketing must innovate to develop their promotional programs according to the times with all their demands [2]. The method of disseminating information digitally to meet the information needs of the community is one of the gaps that can be utilized and this is realized by companies and governments [3], including service facilities such as hospitals.

In 2021, the Ministry of Communication and Information Technology (Kominfo) and the Katadata Insight Center (KIC) conducted a survey in which 73% of participants reported using social media as a source of information [4]. Because of this, social media is a useful tool for hospitals to use in disseminating health information, running promotions, enhancing their reputation, and preserving patient relationships after they leave the facility. Social media also has the benefit of being inexpensive, even free [5], which gives the hospital the chance to create a health services agenda.

According to the We Are Social report as of January 2023, the number of Indonesian Instagram users is the 4th largest in the world, namely 89.15 million users [6]. Instagram is one of the social media that is favored by users because it emphasizes visualization, and makes it easy for users to share photos and videos with various interesting features [7]. By accessing Instagram, users can always update new information and knowledge [8], allowing users to interact by commenting and liking each other's posts [9]. Users who actively post content through social media will make it easier for the account to develop better [10]. The ease of access that Instagram has is needed by hospitals because they have a target to reach all circles of society [11].

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A number of studies have been conducted on the utilization of social media by healthcare institutions and how they interact with their visitors. A study conducted in the United States showed that in-depth interaction between hospital social media accounts (Facebook and Twitter) and their visitors is still rare, mostly limited to giving likes, a few comments about sharing thoughts or even just being a passive recipient of information [12]. Another study conducted in the State of Kuwait reported that private hospitals are more active in their Instagram management activities compared to public hospitals, the interaction between private hospitals [13].

A study conducted a descriptive review of the management of an Instagram account of a public hospital in Bandung concluded that the Instagram account still had to improve in terms of objectivity, messages and timeline posting frequency, [10]. In contrast to the results shown by another study that the hospital's Instagram management is still not well managed in terms of interaction with its visitors, where the research subjects are the manager and the hospital's Instagram account [11]. Both studies focus on how the hospital's Instagram account is managed.

Based on the author's observations, a research gap remains unfilled to date: no study has been conducted on how the hospital uses social media to meaningfully communicate with its visitors. Specifically, no study has examined the visiting user's perspective on the interactions that take place on the X Hospital Instagram account. The void left by the previous studies will be filled by this research.

1.2 Interactivity on Instagram Social Media

Social media's emergence from new media has changed how people communicate throughout the world. Denis McQuail's proposal [14] regarding the characteristics of interactivity applies to new media. Users can control one another and exchange messages in a discourse [16]. Due to social media's high level of interaction, users become reliant on it on a daily basis for message exchanges as well as possible business marketing opportunities. User to system, user to user, and user to document are the three primary notions of McMillan's new media interactivity which includes Instagram and will be covered in more detail in this article's discussion section.

2. RESEARCH METHODS

This study was carried out with a combination of methods. Researchers that use mixed method research (MMR) combine quantitative and qualitative research techniques, methods, approaches, concepts, or languages into a single study [17]. MMR is frequently shortened to just MMR. Hospital X's Instagram account and its posts' level of interaction were measured quantitatively, while

the public's opinions of the account were ascertained qualitatively.

Data collection techniques in quantitative methods are carried out by counting the number of likes and comments on each post during the observation period, namely 3 months (July 25 to October 25, 2023), and determining the highest number of likes and comments, as well as determining the lowest number of likes and comments. The calculation of interactivity is carried out using a predetermined formula based on references and then analyzed in simple statistics.

Data collection techniques in qualitative methods are carried out by observation and interviews. The method of selecting informants for interviews was carried out using purposive sampling technique, where researchers chose informants with certain objectives and reasons in accordance with the research. The criteria for informants for interviews are as follows: (1) More than 17 years old, (2) Active Instagram users, (3) followers of Hospital X's Instagram account, (4) Have interacted on Hospital X's Instagram account in the form of comments. Interviews were conducted by conducting questions and answers over the phone and guided through pre-prepared questions that were in accordance with the research. Observation was carried out by directly observing the X Hospital Instagram account and its interaction with its followers.

3. FINDING AND DISCUSSION

3.1 Interactivity on Instagram Social Media Overview of Hospital X Instagram Account

This account uses Instagram features to optimize the performance of its account. On the highlight feature, it is grouped as follows: (1) Recruitment, (2) Training Center, (3) Education, (4) Directorate of Nursing, (5) Doctor's Schedule, (6) Testimonials, (7) Medical Check Up, (8) Information, (9) Ask a Doctor.

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The first feed upload of this account was on January 16, 2019. As of October 20, 2023 the X Hospital Instagram account has 32,300 followers, 7,490 follows and 850 posts. Post Categories (Feed) in the form of photos and videos contain information categorized as follows: (1) Service information, (2) Activities involving the community, (3) Health education, (4) Corporate activities, (5) Congratulations on commemorating a certain day, (6) Pieces of podcast uploads on Youtube, (7) Training / workshop activities, (8) Congratulations on Hospital X figures, (9) Corporate achievements. Instagram story updates sometimes contain information that is packaged exactly the same as the feed, sometimes it is also made specifically for tories. Instagram live is used for health education, activities that involve the community and other activities.

3.2 User Perception of Information Presentation on Instagram Hospital X

Information on health education, we, as service users, require additional details on registration procedures, how to get past registration barriers, and doctor's schedules. I hope that more thought is given to how this information is presented".

"I think the posts are visually appealing, but the X Hospital Instagram account still doesn't have any reels. Given the nature of the Indonesian populace, which favors brief videos that don't last longer than a minute, it would be ideal if the lengthy educational videos were created as captivating reels".

"The material offered on Instagram Live is incredibly fascinating and instructive, educating the public and advancing knowledge about illnesses. I occasionally find time to listen in between things on my hectic schedule". Instagram's archival nature [9] is one of its benefits; it enables users to look up the information they require. According to the statements made by the informants, they enjoy the health service information and health education provided by the posts and can refer to them at any time. Social media users have a high degree of trust and sharing, so Hospital X's Instagram account posts content that can encourage healthy living. Posting content on social media that will improve patients' lives and meet their needs is essential to doing well. It is possible for visitors to be motivated to leave remarks, pose inquiries, or get responses [5].

Attributes	Number of Posts
Data on the number of likes and comments on the X	
Hospital Instagram Account	
Number of Posts	85
Total Number of Likes	11752
Total Number of	66
Comments	
Most Number of Likes	697
Lowest Number of Likes	10
Highest Number of	13
Comments	
Lowest Number of	0
Comments	
Data Analysis	
Average number of likes	138,26
per post	
Median likes per post	100
Average number of post	0,78
comments	
Standard deviation of the	124,48
number of post likes	
For the Period of July 25-October 25, 2023	

3.3 Hospital X Instagram Account Interactivity

The information in the table reveals that each post receives an average of 138.26 likes, with a median of 100. Ten likes is the lowest number and 697 likes is the highest. The median is used to represent the data because it is clear that there is a large difference between the post's highest and lowest like values. Content with fewer likes than the median indicates that Hospital X Instagram users are not as inclined to support the post. Posts that fall below the median line show this.

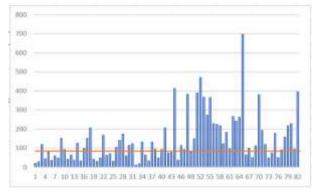


Figure 1. Graph of Number of Likes and Median Where:

Er = Engagement Rate

L = Like

- C = Comment
- F = Follower

While the engagement rate per post is calculated by the formula above obtained: The ER of the highest post is 2.16% ER of the lowest post is 0.03%. Referring to the division of the Average Engagement Rate category in the table below, the ER value of the highest post belongs to the medium category while the ER of the lowest post belongs to the low ER category.

Percentage	Information
<1%	Low Engagement Rate
1% - 3.5%	Medium Engagement Rate
3.5% - 6%	High Engagement Rate
6%	Very High Engagement
	Rate

It is evident from the analysis above that not all content uploaded is successful in grabbing followers' attention. The highest like value is far above it at 697, and the lowest like value is far below it at 10. The standard deviation value of the number of likes per post is 128.48. The average number of comments per post, which is just 0.78, demonstrates the same thing. Users' interest in different types of content is evident from the highly disparate number of likes per post.

Specific content, like the post about public health education with the highest ER, has the potential to grab the attention of followers. Content that is uninteresting to followers may not always be reflected in the post with the lowest ER value. The National Day greeting is the post with the lowest engagement rate. While there are still other factors, like design, the way information is presented, the time of posting, and others, this does not necessarily mean that content about National Day does not inspire followers to interact.

There are numerous categories of information provided on Hospital X's Instagram account, but not all of it necessitates the same level of cognitive work to consume. Compared to writing comments, automated features like "like," "share," and "check-in" demand less mental work. Consequently, sharing information in a hierarchical manner within the social media context is also possible [15]. Likes and comments are two important indicators of customer involvement that are driven by visitors' emotions and can influence them to take specific actions regarding the brand or business [19]. Because the engagement rate is the primary performance indicator for a brand, marketing constantly plans how to create posts that can compel followers or visitors to their Instagram account to get involved [20].

Undoubtedly, the kind of information a post conveys has an impact on how engaged readers are with it. According to a study, people prefer hospital Instagram content that features service details, advice on how to handle difficult situations involving symptoms of diseases, medical information, treatment options, and patient endorsements as well as hospital policies [21].

The X Hospital Instagram account has been able to establish its social credibility, as evidenced by the data above, which shows that the account's overall post engagement value is 36.59%. Its large following does not always translate into a high degree of participation [18]. However, a large number of likes, comments, and followers will boost audience trust and, in the end, successfully establish the brand's identity [22].

3.4 Interactivity of Hospital X Instagram Account According to Follower Perspective

a. User to system interactivity

Interaction between the user and the system includes clicking, downloading, and linking to specific features on websites [23]. Links and hypertext allow users to interact with the system and connect with other users so they can communicate with each other. The host of the X Hospital Instagram account demonstrates user-to-system interaction by using the link in the profile bio to point users to the X Hospital application, which is available outside of Instagram. The user can use the WhatsApp application to get in touch with the account owner and ask additional questions regarding health services offered by X Hospital. The following claims were derived from the outcomes of multiple informant interviews:

"I am reluctant to click the link because I can ask the admin via direct message, clicking the link requires more effort and time". "To ask for services in an urgent situation, I prefer to click on the link that connects to the Hospital whatsapp application so that I can more freely ask for the services I need".

b. User to User Interactivity

Communication between users or between users and hosts on the same platform is characterized by user to user interactivity [24]. The author spoke with multiple informants in-depth to gain insight into the host-user dynamic. The findings of the in-depth interviews with Hospital X followers revealed a wide range of answers from informants about the way the account admin responded to their direct messages.

"I frequently participate by liking posts to show my support for the hospital's initiatives. in particular, posts concerning business operations. Posts about business operations and service facilities are the ones that I typically read. For instance, if Hospital X receives a visit from a Korean company for cooperation regarding equipment, it indicates that Hospital X will support and enhance its services and facilities. As a service user, it matters to me. To make the most of my time when I visit, I must first familiarize myself with the company and learn about the services and facilities it offers. I am already aware of the availability of the facilities needed to support my examination, such as the MRI and CT scan."

"When I asked via direct message, the administrator responded pretty quickly. For my mother, I required information regarding outpatient service protocols. I'm happy with the administrator's response.

"My child was referred to the hospital from another hospital, so I once sent a message. The administrator's answer was excellent. Nevertheless, I had to register offline because the admin's recommended online registration application did not function properly. I was carrying a sick child, so it was really inconvenient for me."

"I was disappointed with the response of the admin who never replied to my message, even though I really needed information on the service because the area where I live is very far from Hospital X".

"I sincerely apologize for the administrator's response, which came back to me after three days. Since I don't live nearby, I wanted to know how the online registration process went. The administrator said he was sorry for the delay in responding to my message, but there was a backlog of messages that needed to be answered. I went straight to Hospital X to register offline because it turned out that the online registration had issues even then because the online registration application was not functioning properly. Despite the fact that I was going to give birth, I truly needed to know my favorite doctor's schedule quickly."

"I hope the admin can pay more attention to take the time to respond to comments and messages because we as service users contact via social media with the aim of facilitating service when confused in the midst of urgent conditions" .

The direct message feature on Instagram is a feature that when utilized can be a means of building emotional closeness with users. Replying to messages with a short, friendly and informative response time can build user trust. However, in reality, the limited number of human resources in a state agency engaged in public services causes the host who handles the social media account to be overwhelmed in replying to incoming messages and comments. Responses can be slow and can even take days after the message is received. In the cyber world, interactions between senders and recipients of messages do not have to occur at the same time and location as occurs in face-to-face or telephone communication [25]. However, the response or response to the message is also decisive in fostering sustainable relationships with customers [26].

To keep a positive relationship going, hospitals need to be proactive in their interactions with social media users. It is more crucial for hospitals to use social media to engage and listen to guests in order to demonstrate care when they are marketing themselves on these platforms. Hospitals appear to be able to connect with patients and visitors much more successfully by using social media as a two-way communication channel than by using oneway communication [12].

Customers consider other factors when evaluating businesses. They evaluate the customer journey as a whole. Thus, innovation considers enhancing communication, fortifying channel presence, and enhancing customer service in addition to product focus [27].

Businesses are advised to design communications that offer a variety of avenues for visitors to communicate, make users feel heard, encourage them to provide feedback, and provide an efficient means of gathering visitor feedback. Users develop a favorable, robust, and distinctive opinion of the brand as a result of feeling as though they are conversing with it in return [28].

c. User to Document Interactivity

Interactivity between users and the content displayed on Instagram is referred to as "user to document interactivity" on Instagram [24]. Users in this interaction process are free to understand the admin's messages and then change them to suit their own needs [23]. On the other hand, no user-modified or user-reposted post was ever found on the X Hospital Instagram account, according to observations made there. Simply put, in order to increase the number of people who see the post, the Hospital X Instagram host occasionally reposts posts from the feed to Instagram stories. From there, users may interact with the story by liking or messaging it.

4. CONCLUSION

The study came to the conclusion that although Hospital X's Instagram account has been successful in providing the public with information, it still needs to be presented in a better way. In order to create and increase the engagement rate of content and Instagram accounts, creativity in content creation is crucial. While some content has an extremely low engagement rate, other content has a high engagement rate. Reels that are visually appealing can be used to package content for health promotion. To boost interaction and exposure, hosts can also set challenges for their audience to reshare specific posts, such as details about community-based hospital events. Lastly, the public expects the X Hospital Instagram account admin to respond to messages and comments promptly in order to foster emotional ties with the public and enhance the company's reputation.

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REFERENCES

- K. T. Smith, "Hospital Marketing and Communications Via Social Media," *Serv. Mark. Q.*, vol. 38, no. 3, pp. 187–201, 2017, doi: 10.1080/15332969.2017.1363518.
- [2] L. Marliani and A. Achadi, "The Effectiveness Of Instagram as a Promotion Media at Citra Ananda Maternal and Child Health Hospital, Ciputat, Banten," in *The 6thInternational Conference on Public Health*, 2019, pp. 130– 136, doi: 10.26911/the6thicph-FP.02.03.
- [3] Leila Mona Ganiem and Anna Agustina, "Cyber Public Relations Strategies for Enhancing Public Engagement: A Case Study of Koja Hospital Instagram," *ATHENA J. Soc. Cult. Soc.*, vol. 1, no. 3, pp. 116–129, 2023.
- [4] H. F. Vania, "73 PeRumah Sakiten Masyarakat Mendapatkan Informasi dari Media Sosial," *databoks*, 2022. https://databoks.katadata.co.id/datapublish/2022 /08/20/73-peRumah Sakiten-masyarakatmendapatkan-informasi-dari-media-sosial.
- [5] D. Chung, C. C. Lee, and D. Hwang, "Analyzing Social Media Implementation in Hospitals in the U.S. Midwest Region," *J. Int. Technol. Inf. Manag.*, vol. 30, no. 5, pp. 77–96, Jan. 2021, doi: 10.58729/1941-6679.1544.

- [6] A. C. Mutia, "Jumlah Pengguna Instagram Indonesia Terbanyak ke-4 di Dunia," *databoks*, 2023. https://databoks.katadata.co.id/datapublish/2023 /05/04/jumlah-pengguna-instagram-indonesiaterbanyak-ke-4-di-dunia.
- [7] D. P. Lestari, "Analisis Strategi Internet Marketing Butik Online di Surabaya Melalui Instagram," *Commonline Dep. Komun.*, vol. 4, no. 2, pp. 412–424, 2015.
- [8] A. D. Oktaviana and K. Sinduwiatmo, "Public Perception About Vaccination Service Information Through Instagram Account," *Indones. J. Cult. Community Dev.*, vol. 14, Mar. 2023, doi: 10.21070/ijccd2023846.
- [9] L. Gurrieri and J. Drenten, "Visual Storytelling and Vulnerable Health Care ConsumeRumah Sakit: Normalising Practices and Social Support Through Instagram," *J. Serv. Mark.*, vol. 33, no. 6, pp. 702–720, Nov. 2019, doi: 10.1108/JSM-09-2018-0262.
- [10] Yustikasari, Renata Anisa, Retasari Dewi, and Fajriani Ananda, "Utilization Of Instagram Social Media In Health Promotion Activities At Hasan Sadikin Hospital Bandung," J. Prot. Kesehat., vol. 12, no. 1, pp. 78–90, 2023.
- [11] Shafa Salsabila Naufalia and Aditya Ali, "Analisis Pengelolaan Instagram RUMAH SAKIT Ortopedi Prof Dr R SoehaRumah Sakito Surakarta sebagai Media Informasi Rumah Sakit," *e-Proceeding Manag.*, vol. 10, no. 1, pp. 407–414, 2023.
- [12] E. Huang and C. L. Dunbar, "Connecting to Patients Via Social Media: A Hype or a Reality ?," *J. Med. Mark.*, vol. 13, no. 1, pp. 14– 23, 2014, doi: 10.1177/1745790413477647.
- [13] A. F. AlHussainan, Z. A. Jasem, and D. Alhuwail, "Evaluating the Presence of Hospitals on Social Media," *Int. J. Healthc. Inf. Syst. Informatics*, vol. 17, no. 2, pp. 1–17, Aug. 2022, doi: 10.4018/ijhisi.299954.
- [14] D. McQuail, *Mass Communication Theory*, 5th ed. Sage Publications Ltd, 2005.
- [15] Y. Ariel and R. Avidar, "Information, Interactivity, and Social Media," *Atl. J. Commun.*, vol. 23, no. 1, pp. 19–30, 2015, doi: 10.1080/15456870.2015.972404.
- [16] McMillan and Sally, *Handbook of New Media*, 1st ed. Los Angeles, London New Delhi,

Singapore, Washington DC: Sage Publications Ltd, 2006.

- [17] R. Johnson and A. J. Onwuegbuzie, "Mixed Methode Research: A Research Paradigm Whose Time Has Come," Am. Educ. Res. Assoc., vol. 33, no. 7, pp. 14–26, 2004.
- [18] H. A. Putranto, T. Rizaldi, H. Y. Riskiawan, D. P. S. Setyohadi, E. S. J. Atmadji, and I. H. Nuryanto, "Measurement of Engagement Rate on Instagram for Business Marketing (Case Study: MSME of Dowry in Jember)," *Proc. IEIT 2022 2022 Int. Conf. Electr. Inf. Technol.*, pp. 317–321, 2022, doi: 10.1109/IEIT56384.2022.9967851.
- [19] L. V. Casaló, C. Flavián, and S. Ibáñez-Sánchez, "UndeRumah Sakittanding Consumer The Interaction on Instagram: Role of Satisfaction, Hedonism, and Content Characteristics," Cyberpsychology, Behav. Soc. Netw., vol. 20, no. 6, pp. 369-375, 2017, doi: 10.1089/cyber.2016.0360.
- [20] E. Cuevas-Molano, L. Matosas-Lopez, and C. Bernal-Bravo, "FactoRumah Sakit Increasing Consumer Engagement of Branded Content in Instagram," *IEEE Access*, vol. 9, pp. 143531– 143548, 2021, doi: 10.1109/ACCESS.2021.3121186.
- [21] R. Dewi, S. N. Adilah, and R. Anisa, "Pengembangan Instagram @ RUMAH SAKITUDkabsumedang sebagai Media Promosi Kesehatan," *Media Karya Kesehat.*, vol. 5, no. 2, pp. 276–298, 2022.
- [22] N. happy Lestari, "Cara Menghitung Engagement Rate Instagram per Postingan dan Akun," *Tempo.co*, 2023.
- [23] K. M. Boer, "Interaktivitas sebagai Strategi Mediated Communication pada Fans Pages Starbucks Coffee Indonesia," *J. ILMU Komun.*, vol. 10, no. 2, pp. 113–128, 2013, doi: 10.24002/jik.v10i2.348.
- [24] M. D. Lestari and Nurliah, "Interaktivas Akun Instagram @ Ezraalfatah dalam Membangun Motivasi Mahasiswa Menyusun Skripsi: Studi terhadap Mahasiswa Kalimantan Timur," J. Edukasi Nonform., vol. 4, no. 1, pp. 435–444, 2023.
- [25] R. Nasrullah, *Komunikasi Antar Budaya di Era Budaya Siber*, 1st ed. Jakarta: Kencana, 2012.
- [26] Oancea Olimpia Elena Mihaela, "The Influence

of Integrated Markting Communication on the Consumer Buying Behaviour," *Procedia Econ. Financ.*, vol. 23, no. 1, pp. 1446–1450, 2015, doi: 10.1016/S2212-5671(15)00446-3.

- [27] P. Kotler, H. Kartajaya, and I. Setiawan, *Marketing 5.0*, 3rd ed. Jakarta: PT Gramedia Pustaka Utama, 2022.
- [28] T. Widodo and B. Umarullah, "Pengaruh Interaktivitas Situs Web Terhadap Nilai Merek dengan Variabel Mediasi Kesadaran Merek dan Citra Merek (Studi Pada: Blanja.com)," in *e-Proceedings of Management*, 2020, pp. 2316– 2335.

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