Social Media Fatigue in the Healthcare Industry and its Impact on Environment and Energy Consumption

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Abstract

The significant number of users on social media platforms (SMP) has shown a positive trend lately in the healthcare industry. However, the side effects of social media platforms can cause social media fatigue (SMF) and stress due to the information delivered. While this phenomenon still occurs, some evidence has also shown that users' fatigue and stress from high social media consumption have been increasing. In addition, it can also reduce environmental activism and education, such as; activities that lead to electronic waste and energy consumption. To address this issue, this research will empirically examine the association between information quality and media richness of social media platforms towards social media fatigue and their implication for the environment and well-being in the healthcare industry. The purposive sampling is designed with 150 respondents using WhatsApp platforms as samples. To analyse the data, this study proposed a structural equation model (SEM) with PLS 3.3 as the tool of the quantitative approach. The findings from WhatsApp users show: (1) Information Quality (IQ) has negatively affected social media fatigue, where it is shown that the better the quality of information, the less fatigue the social media is; (2) Media Richness (MR) has negatively affected to the social media fatigue, it is shown that the richer the media, the less fatigue the social media is. In addition, to enrich the knowledge and fill the novelty, the practical implication of the research is also discussed in this paper.

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INTRODUCTION

The issue of healthcare and well-being has been agenda for most countries in the world. Ensuring every citizen obtains healthcare access and facilities and also lives properly has become a great concern. Thus, healthcare and well-being are the programs proposed by SDG to advance the country not only in economy but also in human resources. Digital technology is assured to enhance the healthcare systems and well-being. Therefore, it will be beneficial for the healthcare industry to implement technology in the system.

In addition to digital technology development, the progress of IT has played a significant role in people having access to the healthcare industry. People tend to use social media to interact and give feedback to the information shared by the other parties, an example is the healthcare industry. This is supported by the increasing number of social media platforms (SMP) which has side effects for some users. Many users suffer from fatigue and stress due to the information delivered in some SMP. As WhatsApp application is the most preferred media to communicate in Indonesia, much information from the healthcare industry is delivered through this application consequences, some healthcare industries will innovate and improve the communication and service provided to compete in the same industry. SMP is an entire form of interactive communication media that supports two-way interaction and feedback.

Currently, the WhatsApp platform has the most active users as much as 88,7%. It is believed that information about health through this platform will be effective where it can utilize the features through group chats, video calls, and voice calls. In addition, it allows users to send various forms of files such as photos, videos, documents, and voice messages to have messages and information delivered. However, the information can lead to social media fatigue if there is too much information delivered to social media users, WhatsApp- for example. Hence, the informa-

Table 1. The amount of Social Media Users in Indonesia (January 2022)

No	Social Media Platform	The Number of Active Users (%)
1	WhatsApp	88.7%
2	Instagram	84.8%
3	Facebook Messenger	81.3%
4	Telegram	62.8%
5	Line	39.2%

Source: We Are Social & Hootsuite, Inc Digital Regional Report Indonesia January 2022

tion should have quality and media richness to attract users (Xiao et al., 2021). Some research related to the use of social mobile platforms utilizes a stimulus-organism-response model which results in inducing negative coping with Covid-19 (Zhang et al., 2021).

In addition, media richness can be a variable to know the technical characteristic information. Sometimes in communication, the information can be unclear and confusing. So, there is the role of media richness which is used to determine the importance and diversity of a particular communication platform (Trevino et. al, 1987). Based on the background, the result of several previous studies, the phenomenon of social media WhatsApp, and the influence of the information quality and media richness on social media fatigue. Little is known that quality information and media richness can affect social media fatigue. This is the novelty of the research where it focuses more on these variables and observes WhatsApp users.

The Media Richness Theory (MRT) is one of the theories used in choosing media communication. The usefulness of media depends on its richness Trevino et al, (1987). The higher the level of media richness, the more information is offered and the less ambiguity in it, which reduces ambiguity and uncertainty among information recipients Trevino et al, (1987). The ambiguity in communication is

defined as presuming a messy, unclear field. uncertainty as the absence of information. Trevino et al, (1987) made a hierarchy of media richness, such as (1) Immediate feedback means the ability of media to provide information on a regular basis and enable quick feedback. This criterion is important for the communication process because delay can cause important issues to become inappropriate; (2) The multiple cues and senses involved refer to the ability to communicate the message through different approaches, such as body, language, voice, and intonation; (3) Language variety is shown as the ability to use of different words to improve understanding, namely in the variety of ways of conveying ideas and concepts through language symbols; (4) Personalization which focuses on the ability to express emotion and feelings. It is in the context of delivering messages to the communicant.

Moreover, social media is an online media where the user easily participates, share, and create content including blogs, social networks, forums, wikis, and the virtual world. Social media is a medium for consumers to share information tasks, pictures, audio, and videos with each other and with the company, and vice versa. Social media is also defined as social network which is the most important power in marketing activity for both business to customer or business to business. Social media networks can be in the form of social networking sites such as Facebook, Myspace, LinkedIn, WhatsApp, and Twitter. Social media is used to share and participate or known as mobilizing the community, sharing tools, and looking for news, information, and knowledge.

Moreover, WhatsApp was founded on February 24, 2009, by Jan Koum and Brian Acton. WhatsApp is a mobile chat app that is directly related to the phone number and provides free service. WhatsApp is designed to make user easy to stay connected and communicate anytime and anywhere. As an application, WhatsApp is equipped with several features that make it easier for users to communicate. The feature available on WhatsApp is chat groups, WhatsApp on the web and

desktop, voice notes, encrypted end-to-end, and video calls.

Information quality (IQ) is a new discipline that focuses on taking full advantage of an organization's information assets and ensuring that the information products it produces meet the needs of its users (Talburt, 2011). Meanwhile, information quality relates to the quality of the outputs produced by an information system, which can include reports or web screens (Gorla, 2010). The indication of information quality is reducing uncertainty, supporting decisions, and encouraging better planning. The decision will be better when all factors that influence the decision-making are considered.

In addition, the information needs to in certain accuracy so there is no doubt about the truth. This paper will use some variables related to accuracy, timeliness, and relevance. In relation to social media fatigue, it was derived from the phrase fatigue, which means waste of time. Social media fatigue is defined as subjective, unpleasant emotions of exhaustion with numerous dimensions of length, unpleasantness, and severity (Hardy, 1997). Fatigue is categorized as psychological fatigue, which means negative emotions like stress, burnout, exhaustion, and so on (Zhang et al, 2016). Social media fatigue is also a multifaceted, subjective user experience that includes feelings like weariness, aggravation, anger, disappointment, guardedness, loss of interest, or lessened need/motivation related to many aspects of social network use and interactions.

Furthermore, Social media fatigue will be a concern in the social media platform, because it will affect a bad impact on the individual users or the service provider. For the individual user, the result of social media fatigue is a decrease in usage of the social media platform or even disjointing usage of the platform. As said before social media fatigue is related to the mental health of the individual issue, which is it will cause unhealthy behavior. For the service provider, it will impact the profit in the long term because of the decrease in the usage of social media.
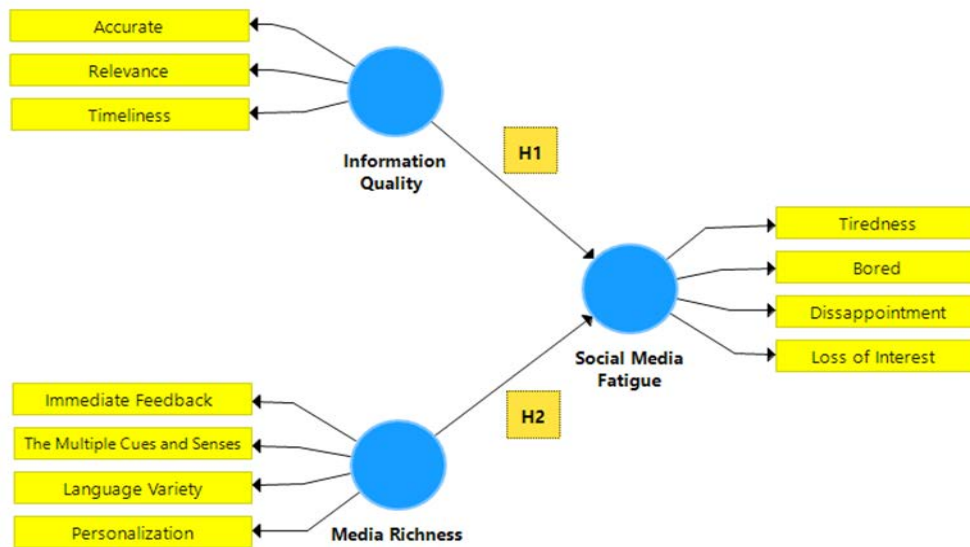
Figure 1. Conceptual Framework

Hypothesis Development

Communication is important in daily life because it will be given information. Information is the basic need for the informant to take decisions, but sometimes there is uncertainty in the information. Clear communication is needed to make ensure people do not suffer from unnecessary anxiety and disruption and took the correct action. The information that is provided needs to be quality. Accurate, relevance, and timeliness used to value the information quality

H1: the information quality such as relevance, timeliness, and accuracy negatively affects the social media fatigue

Media richness state that different communication media transmit varying levels of information and that the richness of information transmitted over time depended on the medium's capacity to transmit different sort of feedback. With richer information so the trust will be huge. The media play an important role in transferring information; it can be more than the word/text of the massage. The information in social media cannot be controlled, so it will be made a load of information. A load of information needs to be selected, so the role of media richness is used in social me-

dia platforms.

H2: the media richness such as immediate feedback, the multiple cues and senses involved, language variety, and personalization positively affect social media fatigue.

METHODS

This research has the objective to know the effect of information quality and media richness to social media fatigue in the healthcare industry, so the approach that is used is a quantitative method. In this research, all data are collected from respondents by using a questionnaire that related to the variable. The answer that is given will explain the research question. The relationship between variable analysis using a static computer program, called Partial Least Square Structural Equation Model (SEM-PLS) software.

In addition, the population used in this research is entire patients and family patients in the healthcare industry. The sample is part of the population; the sample is chosen with a purposive sampling technique. The sample selection criteria in this research are (1) Outpatients and inpatient hospital patients in Padang who consult using WhatsApp, and

(2) Outpatients and inpatient hospital patient families in Padang who consult using WhatsApp. In this research, the total sample is 150 respondents.

To address this research, the researcher uses two models of variables that come from the SEM application. Information quality and media richness as exogenous latent variables, for the endogenous latent variable, is Social Media Fatigue. This research 2 exogenous latent variables and 1 endogenous latent variable [8]. The exogenous latent variable is information quality (X1) with indicator relevance; accuracy; timeliness and media richness(X2) with indicator immediate feedback; the multiple cues and sense involved; language variety; and personalization. The endogenous latent variable is social media fatigue with several indicators, such as bored tiredness disappointment, and loss of interest Kartika (2023).

To collect the data, this study uses primary data that get directly by the researcher. In collecting the data, the researcher distributed the questionnaires. The questionnaire was distributed by online questionnaires. The data was collected using the survey method. Questionnaires have contained the statement of each variable. Then the respondent will be answered based on a scale called the Likert scale. The score on the Likert scale is (5) always, (4) very often, (3) sometimes, (2) rarely, and (1) never. The online data is using Google Forms. As a result, each patient or patient family at or after a medical consultation, or during their stay at a health center completed the study-related questionnaire about the effect of information quality and media richness on social media fatigue in the healthcare industry. Moreover, the data will be analyzed using a structural equation model (SEM) with the tools PLS 3.3.3. In the SEM-PLS, there are two measurements of the evaluation model, the outer model and the inner model. Both of these evaluation models aim to assess the validity, reliability, and the variable's causal relationship.
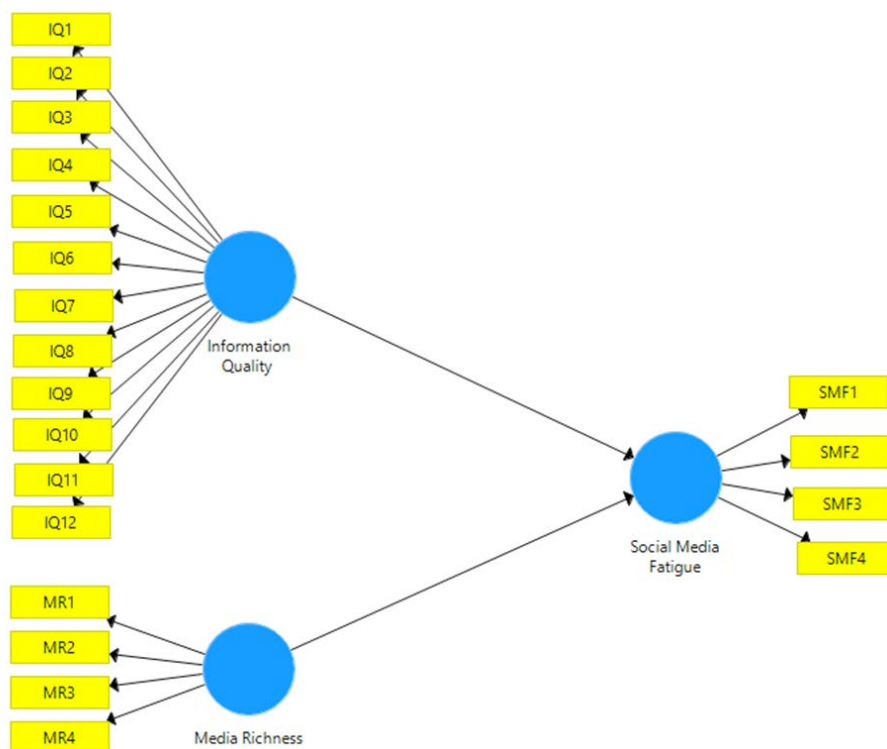

Figure 2. Schematic Model

We use the PLS tools with SMARTPLS application version 3.3.3. the descriptive statistics analysis in this research is focused on two aspects: 1. The characteristics of respondents' answers:

$$TCR = R\_S/N \times 100\%$$

Description:

TCR = Level of achievement of respondent's answers

N = Maximum answer score

1. The TCR ranges from 90-100%= very good
2. The TCR between 80-89%= good
3. The TCR ranges from 65-79%= quite good
4. The TCR between 56-64%= good
5. The TCR between 0-54%= Not good

RESULTS AND DISCUSSION

Respondent Profile

The number of questionnaires distributed is 175 and returned is 150. Of 150 respondents grouped based on gender, there are a higher number of respondents whose gender is women with a total of 101 (67.34%) and a total respondent whose gender is men as much as 49 (32.66%). Furthermore, the highest respondent age was in the age range 20-50 years old 111 (74%), followed by age >50 with the amount of 25 (16.67%) and the age <20 with a total of 14 (9.33%). Additionally, 59 respondents (39.33%) were in senior high school, 18 respondents (12%) were Diploma III, 65 respondents (43.33%) were a bachelor's degree, 7 respondents (4.6%) were a master's degree and 1 respondent (0.67%) grouped as another educational level.

Data Analysis

The highest average score is on indicator timeliness, with an amount of 4.05. Meanwhile, the other indicator is still low, such as the timeliness of information through WhatsApp with a score of 4.00.

Table 2. The Average Score for IQ Component

	N	Minimum	Maximum	Mean	Std. Deviation
Relevance	150	1.00	5.00	3.96	0.982
Timeliness	150	1.00	5.00	4.00	0.878
Accurate	150	1.00	5.00	4.05	0.844

Table 3. Loading Factor Result

	Information Quality	Media Richness	Social Media Fatigue	Description
IQ1	0.553			Valid
IQ2	0.658			Valid
IQ3	0.642			Valid
IQ4	0.737			Valid
IQ5	0.704			Valid
IQ6	0.635			Valid
IQ7	0.766			Valid
IQ8	0.798			Valid
IQ9	0.691			Valid

	Information Quality	Media Richness	Social Media Fatigue	Description
IQ10	0.757			Valid
IQ11	0.696			Valid
IQ12	0.723			Valid
MR1		0.858		Valid
MR2		0.871		Valid
MR3		0.892		Valid
MR4		0.884		Valid
SMF1			0.880	Valid
SMF2			0.932	Valid
SMF3			0.916	Valid
SMF4			0.837	Valid

Convergent validity can also be seen from the value of Average Variance Extracted (AVE). The table below states that the value of each construct is above 0.5. Therefore, there are no issues found in convergent validity in the model tested.

Table 4. Average Variance Extracted (AVE) Result After Modification

No	Variable	AVE
1	Information Quality	0.509
2	Media Richness	0.768
3	Social Media Fatigue	0.811

Table 5. Cross Loading Result

	Information Quality	Media Richness	Social Media Fatigue
IQ1	0.553	0.351	0.279
IQ2	0.660	0.328	0.281
IQ3	0.640	0.354	0.319
IQ4	0.732	0.452	0.358
IQ5	0.711	0.458	0.504
IQ6	0.628	0.420	0.330

Discriminant Validity

Based on the estimated cross-loading in Table 1.7 it is shown that each item of indicator on the variable information quality (X1) has a loading value that is less than the cross-loading value, namely IQ12. This means the construct or latent variable does not have good discriminant validity, where the indicator in its construct indicator is not better than other blocked indicators. So, from this analysis, the IQ12 indicator needs to be deleted from the model. It means that those indicators on the variable fulfilled the discriminant validity test.

	Information Quality	Media Richness	Social Media Fatigue
IQ7	0.764	0.361	0.487
IQ8	0.802	0.457	0.417
IQ9	0.693	0.404	0.322
IQ10	0.758	0.507	0.403
IQ11	0.709	0.707	0.410
IQ12	0.728	0.783	0.498
MR1	0.647	0.858	0.448
MR2	0.624	0.871	0.487
MR3	0.519	0.892	0.519
MR4	0.610	0.884	0.419
SMF1	0.470	0.433	0.880
SMF2	0.524	0.498	0.932
SMF3	0.532	0.535	0.916
SMF4	0.513	0.462	0.837

Table 6. Result of Cronbach's Alpha and Composite Reliability

No	Variable	Cronbach's Alpha	Composite Reliability	Description
1	Information Quality	0.903	0.919	Reliable
2	Media Richness	0.900	0.930	Reliable
3	Social Media Fatigue	0.922	0.945	Reliable

Table 7. Value of R Square

	R Square
Social Media Fatigue	0.365

Table 8. Q Square Redundancy

	SSO	SSE	$Q^2(=1-SSE/SSO)$
Information Quality	1,800,000	1800,000	
Media Richness	600,000	600,000	
Social Media Fatigue	600,000	428,282	0.286

Inner Model

The value of 0.365 for social media fatigue means that information quality and media richness can explain social media fatigue as much as 36.5% where R2 is in the low category.

It is shown from the Table 8 that the value of Q2 is 0,286 if the Q2 >0 it indicates a relevancy predictive.

Discussion

The negative and significant result means that the higher the information quality felt by the customer, the lower the social media fatigue will be. The information quality used to measure the quality of output of application used in its effect on social media fatigue. The information that has quality will be useful for the user who needs that information. The factor in the information quality variable includes: (1) accuracy of the information; (2) relevance of information; and (3) timeliness of the information.

Based on the analysis stage that has been done before, a conclusion can be made by looking at the path coefficient. Where, for the media richness variable, t-statistical is 2,185 >1.96. by looking at the original sample and P-value column, it can be explained that the direction of the relationship is negative and significant because the p-value is 0.029<0.05. so based on the analysis result, it can be concluded that the hypothesis that media richness has a positive effect on social media fatigue is rejected.

The negative and significant effect means that the richer media will be made the low of social media fatigue. Media richness is used to prevent communication breakdown because of the error of selecting the media. The ability to select the media that is suitable for the delivered massage will be determined the effectiveness of the message (Chen & Chang, 2018). Based on media richness theory each media has its strengths and weakness. If the information or massage has the potential for multi-interpretation, uncertainty, and strategy, it requires richer media (Chen and Chang,

2018). According to (Trevino et.al, 2018) a media can be measured by four criteria, namely: (1) Immediate feedback; (2) the multiple cues and senses involved; (3) language variety; and (4) personalization.

Based on the findings, social media fatigue can lead to environmental degradation where people will act indifferently to the environment and surroundings. Some harmful and hazardous activities due to social media fatigue to the environment is energy and electronic waste.

CONCLUSION

This research aims to know the effect of information quality and media richness on social media fatigue in the healthcare industry and its impact on environmental activism. This research uses primer data that was obtained by distributing questionnaires to 150 respondents who use WhatsApp to consult and book with the hospital in West Sumatera. Based on the testing that has been carried out using SMART-PLS 3.3.3, it can be concluded: (1) Information quality has negatively affected and is significant to the social media fatigue in the healthcare industry in West Sumatera. It is shown that the better the quality of information, the less fatigue the social media is. (2) Media richness has negatively affected and significant to the social media fatigue, It is shown that the richer the media, the less fatigue the social media is. The finding also impacts the environment and well-being. When people are fatigued due to social media, people will be more indifferent to the environment. Some activities can lead to environmental degradation which can harm not only people but also their surroundings.

Practical Implication

From the research conducted, there are some consequences of social media fatigue on environmental issues:
(1) Electronic waste

The use of social media will automatically require electronic devices which will im-

pact electronic waste. The disposal and improper handling of electronic waste can have harmful effects on the environment which contains hazardous and poisonous materials to our earth and environment.

(2) Excessive consumption

The excessive consumption of electronic devices will require more raw materials which means more mining activities from earth and the environment. The mining process will impact deforestation, habitat destruction, and soil erosion

(3) Energy Consumption

Social media platforms require extensive servers and a high level of infrastructure to handle the enormous amount of data. The more time, people spend on social media, the more demand for its server and it will automatically be increasing in energy consumption and damage to the environment.

(4) Bad psychology impact

A bad psychological impact will lead to bad attitudes and behavior. The unhealthy mind will impact into frustrated and will engage in contra-environment behavior, such as indifference to the environment, inactive to environment preservation, and littering in an environment which leads to environmental problems.

In order to mitigate these environmental issues, social media users need to be more aware of social media consumption effectively and efficiently. One of the ways to reduce the excessive use of social media platforms is to share information quality.

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