Abstract

The advance of digital innovation has brought an epic phenomenon to user’s behaviour, not to mention the development in Social Networking Site and data mining has become the crucial element in the digital industry. An innovation often leads to collateral flawed since the emergence of Web 2.0. both to users an developers. This study learned on how Social Networking Sites (SNS) such as Instagram and Twitter users in Indonesia that came to a stage where they decided to leave Instagram but keep Tweeting. To see the factors that drive the discontinuance phenomenon, researcher approach this study by analysing content from a Twitter conversation that exported from Pulsar Platform machine learning with the time range from 1 March 2017 to 28 February 2018. Resulted in 995 relevant Twitter conversation, this study also applied as quantitative descriptive to help develop new measures of a key in phenomena. By categorizing the exported conversation, it has appeared that the dominating factors of Instagram fatiguing is caused by user-related factors. It is affected users’ psychological perspective towards Instagram that led them to discontinue using it. This study can be related to Social Exchange Theory that also happens in Social Networking Site medium. People are actually starved for being awarded and exchanging even on their social media stage.

Keywords: SNS’s Discontinuance; Data mining; Instagram Fatigue; Indonesian Twitter users;

1. Introduction

In the millennium where the information and technology have become something worth of future, human activity in social network counts as big data. The innovators have developed the way of people processing information.

The social element of new media is not only imperative to new media but caters the human dynamic that makes all new media beat. It renders a service to users that seemingly would get what they don’t pay for – at least for the basic feature (Why "New New" Media?, 2009). Levinson declares on his book, digital and mobile communication have been a fusion in business, and personal life. Thus, new media is a portrait of the phenomenal upheaval in communication. Not to mention the extension of social media as the categories of “new media” has brought how the way this world spins. This, in turn, has led to concerns over whether the common and deeply-engaging experiences offered by such platform might have occurred in users suffering from the inescapable post-adoption stage, in the form of phenomenon commonly referred to as social network fatigue according to Bernstein (as cited in Ravindran, Kuan, & Lian (2014).
Social media can be any form of computer-mediated communication where people can be both as user and creator, and interact with other users (Carr & Hayes, 2015). Meanwhile, some of the users might not notice that social networking sites (SNSs), is a subdomain of social media, have been defined as a network communication platform-based, which consist of contents that provided by users, accessible publicly that articulate connections of interactions with another users (Carr & Hayes, 2015), Facebook, and Twitter as the nearest one. The SNS’s growth has no longer impacting to our cyberspace only but to users real lifestyle, even future.

It is no secret that our devices can be taxing on our physical and emotional well-being, resulting in digital detox trend to risen in the quarter in 2017 (NJ Goldston, 2018) and was expected to become a trend in 2018. The term of digital detox refrains as the activity to lessen the interaction with electronic devices that believed could reduce the stress level and gain more interaction in the physical world (English Oxford Living Dictionaries). The phenomenon of social media fatigue (SoMeFat) has emerged among SNS’s users and their interest has lessened, which indicates the users are getting tired of content that insistently appeared on SNS, and is consequently diminishing their frequency of social networking (Lee, Chou, & Huang, 2014). The fatigue over Instagram also found in Twitter conversation by researcher when the issue of fatiguing over Instagram was appeared. Thus researcher See figure 1.1. to 1.12.

Figure 1.1. Explore feature factor.

Figure 1.2. Content-related factor.

Figure 1.3. Advertisement or endorsement factor.

Figure 1.6. Self-compare.

Figure 1.7. Algorithm factor.

Figure 1.8. Insecurity and algorithm factor.

Figure 1.9. Fatigue without specific reason.

Figure 1.10. User judgement on an Instagram user about commenting.
However, as SNSs have been growing some features that beyond user’s possible needs, the innovation has led to some pitfalls into discontinuance of SNSs users from many aspects both technical and psychological in the post-adoption stage. As Instagram has changed the algorithm, back to March 2016 (Lafferty, 2016) resulted in 300,000 signed petition in requesting *Make Instagram Chronological Again* (Heard, 2016) has brought a massive conversation that the algorithm was taking a side on paid media and high-engagement account only. Algorithm in Social Networking Sites is a programming language to give a sequence of instruction that build up as a system (Bitesize, 2018). Bought by Facebook in 2012, Instagram algorithm repeated just like what its big brother did in 2016 (Team, 2017), and had brought collateral controversies by its users. If we take a look back in 2006 the privacy issues went to Facebook for its first time in 2006, then continued in 2007, 2009, 2010, 2011 and 2013, and the burnt out moment was in March 2018 (Hempel, 2018) when Cambridge Analytica, a political data firm that devoted to President Trump’s 2016 campaign has misused the data. Resulted in 40,398 times #DeleteFacebook were mentioned on Twitter. The privacy issue has been the biggest concern for the users to leave Facebook, as in 2013 49% of the quitters due to privacy concern (Stieger, Burger, Bohn, & Voracek, 2013).

Since 2010, Instagram, as the photo-sharing application based, has been growing more advanced features, not to mention the collateral damage in user’s psychological condition. Indonesia as the top three countries (beaten by the United States and Brazil) with 53 million monthly active Instagram users as of January 2018 (Statista, 2018). As per May 2017, Indonesia popped up as the fifth-largest country with 4.1 billion tweets. It indeed is that this hypersensitive society would come up with ‘compare and despair’ attitude while scrolling someone’s Instagram feed, as in the fact that the photo-based app awarded as the worst platform for young people’s mental health (Young Health Movement).

The abstention of using Instagram by doing cross-platform to Twitter in Indonesia will be the focus of social networking analysis as a part of user behaviour. The reason behind this experiment based on researcher’s experience in an advertising agency. Where analysing consumer insight is essential to every campaign pitch by using Pulsar Platform as machine learning. To reach the consumer insight, some effort (method) would be applied. The motives behind cyber migration in social networking site would be different towards another SNS (Facebook, Snapchat, Instagram, Twitter, etc.) due to its differ characteristic. This research is obviously an analysis of content, but this can be counted as quantitative without using SPSS, instead of this research using a machine learning (a subset system of Artificial Intelligence that designed to take a large set of data, analyze it, and learn from it) to collect the data. Rodgers initiated the research about discontinuance theory in diffusion of innovation (Rogers E. M., 2003), along with discontinuance consequences and its type. This study used machine learning to practice data mining by utilizing Pulsar Platform social machine leaning to earn supporting big data.
2. Literature Review

2.1. Discontinuance Theory in Diffusion of Innovation by Rogers

Discontinuance theory by (Rogers M. E., 1995) as “a decision to reject an innovation after it has previously been adopted during the confirmation stage”. Specifically, an individual may decide to replace an inferior innovation with a superior one (replacement discontinuance) or discontinue with an innovation when there is dissatisfaction with its performance (disenchantment discontinuance) (Rogers E. M., 2003). A Throwback to what might affect the innovation’s rate of adoption (the relative speed which innovation is adopted); (1) the nature of communication channels diffusing the innovation at various stages, (2) the nature of the social system in which the innovation is diffusing. Biased appraisal of an innovation (as in Instagram feature), derived from individuals’ personal experience and perceptions and conveyed by interpersonal networks, also drives the diffusion process (Rogers E. M., 1983). By the time the discontinuance theory were being discussed, then the scholar differentiate two types of this theory: permanent discontinuance and intermittent discontinuance (York & Turcotte, 2015). Those types of discontinuances are simply whether the adopter is possible not to use at the current moment or might use it later (Zhu & He, 2002).

2.2. Related Work

In the recent study demonstrated that nearly half (46%) of Facebook users who quit their Facebook accounts did so because of privacy concerns –the number one reason that users deactivated their Facebook pages (Chang, 2017). Surveyed was conducted to collect the data. The phenomenon of “Facebook vacation” and explored the reasons underlying temporary discontinuance on the basis of secondary data (York & Turcotte, 2015).

Another case study developed the Facebook Fatiguing, by using the Big Five Personality Traits that influence social media fatigue. The relationship between personality traits and social media fatigue could explain 38.5% of social media fatigue phenomenon. The Social Media Fatigue Scale had an explanatory power of 48.1% toward fatigue behaviour, which tells, the higher degree of social media fatigue the users had, the easier for fatigue behaviour to arouse (Lee, Chou, & Huang, 2014).

Meanwhile, Weibo, a China microblogging has decreased its users and conducted a survey to see the motives behind the discontinuance. The number of Weibo users decreased from 309 million in January 2013 to 230 million in January 2016. Even worse, a number of social media platforms have stopped the operations of their function (Zhou, Yang, & Jin, 2018).

As reviewed in Weibo discontinuance case study, the factors categorized into four types as developed from Rogers Discontinuance theory:

- User-related factors are the key to discontinuance of innovation. Individual-level user-related factors include: habit, time limitation, satisfaction, guilty feelings, and so on;
- Context-related factors: social effects, technical disturbance, replacement with other innovation;
- Functional factors: system shortcomings, complexity, uncertainty;
- Content related factor, there is additional: task, as in social media.

Zhou, Yang, and Jin (2018) state the research gap in the theory of discontinuance is less considered on the importance of factors what drive discontinuance behaviour (e.g. task-related factors). Then, Roger has mostly pointed out the focus on one permanent discontinuance. Cited in research question of Weibo study, there is a consequence of discontinuance that users might found an alternative.
3. Method

3.1. Content Analysis On Interactive Media

Based on the Content Analysis Guidebook by Kimberly Neuendoorf (2017), the activity of content analysis now is more concern in interactive media clearly differs from earlier media users (consumers and receivers). The users of interactive media show massive performance in adapting, revamping, and bearing content. Coupled with the dissemination of digital advance and Web 2.0 (synonymous with User-generated content – e.g., Facebook; Vine; Twitter; Instagram; Snapchat; Wikipedia; YouTube), users have been optimizing the high-speed wireless connectivity to access powerful content rapidly. Moreover, Web 2.0 and platform creators are often updating the features even before their users are completely adjusted. This situation was considered tricky to the application towards the method of content analysis. As explained by Sally McMillan in 2000, in the turn of the 21st century she pictured the adversity of exercising the “microscope” of content analysis to the "moving target" of the World Wide Web as cited in Skalski, Neuendorf, & Cajigas (2017).

By the conception of online content, researchers are now exposed to vast data created by user behaviour towards media usage. In other words, researchers face the era of big data (used to describes data sets that are too vast or complex if applied in the traditional method of analysis). In the sphere of content analysis, big data gathered information that secured the users behaviour, collected by the programs behind platforms, websites, and application (Lewis, Zamith, & Hermida, 2013).

The vastness of available content gives some challenges at the peculiar stage, mainly with sampling. The guidebook states, big data are massive and complex to be handled by humans, thus the computer power empowered to assemble, administer, and analyze. While (the machine) mining the data, human power is not needed, only the big picture of the outcomes that tracked could be understood, not denying if the findings on big data slightly abstract and might not relevant to a human background. That is one of the consequences of the ethical implications in discarding and interpreting data about human (user) behaviour and communication that can't be handled by human practice. Many researchers have worried toward big data due to the possibility of machine reject the basis of an analytical process of sampling in a mathematical investigation, in this case, the approach is data-dependent. However, the criticism over big data must put aside while practising content analysis of social media. Still, to picture the expected result, human manual methods are respectful to combine when analysing big data.

3.2. Descriptive Quantitative?

To see the phenomenon in social networking site migration, the essential motive is needed. By learning the data, the researcher had expected unique findings that can picture Indonesian Instagram and Twitter users toward their behaviour based from the Twitter conversations. This research is using quantitative method without utilizing the SPSS, because the data will be counted by manual excel. The sample of the data is from Indonesian Twitter users that has posted their tweets within the time range from March 1st 2017 to February 28th 2018, with the total of exported conversation (population) (2.557), Irrelevant conversation (n: 1562), Relevant conversation (n: 995).

Descriptive analysis characterizes phenomenon—picture questions about who, what, where, when, and to what extent. The descriptive analysis utilized to: identify; describe trends and variation in populations; develop new measures of a key in phenomena; and causal effects. This approach to independent research when it comes to a unique phenomenon that has not been known. As part of the descriptive analysis, analytical, communication, and data visualization is needed appropriately as the intended audience can experience the findings (Loeb, et al., 2017).
3.3. Pulsar Platform

Pulsar Platform is an advance audience intelligence platform to get a complete view of a webinar activity. With the combination of keyword, Pulsar Platform tracks content tracking as the data source, access to view data of an audience or entire market. Pulsar Platform offers three product that has specific features. In this case: Pulsar TRAC allows its user to mine complex data instantly. It helps to visualize the result, and access to custom the chart. This listening tool covers: 175 languages; learns topics in 11 languages (excluding Bahasa Indonesia); understands the sentiment in 9 languages (excluding Bahasa Indonesia); image analysis for content and context of an image; network analysis to see how the audience, content influencers, and the topic connect. The advanced filtering also featured 50 filters to let researchers slice data by demographics, gender, location, and interests. Content Dashboard shows the identified content that has driving engagement, reach, and visibility. (Pulsar Platform, 2018).

Using Twitter’s data sets business model, Pulsar (also any other listening tools) can access the Twitter conversation in one year of time range by using application programming interface (API), which export tweets freely containing keywords as coded.

3.4. Search Query

In big data mining activity, the most basic way to optimize the result beside the tools is the accuracy in picking out keywords that input in the search query(is). To unearth the story, the keywords needed first is "males Buka Instagram " . In data mining and content tracking, users may input any kind of keywords to fulfil their curiosity. The more keywords input, the more specific and/or diverse the result would be. In using this platform, there is a sentence range query, means a user can find the keywords within a specific length of a sentence. In this case, the writer input: "males Instagram"~6; "males Buka Instagram"~6. The “~6” means the keywords will also be appealed within a sentence consists of 6 words long. The second keywords have the same step. As inquiry to answer the research question, the keywords are: “twitter berfaedah”~6; “mending Buka twitter”~6. The keywords were chosen as a preference expression. Last, “algoritme ig”~6. That term was input as the anticipation of the rarely mentioned term in daily-topic. In choosing keywords, the writer had been surfing on Twitter for almost a year to pick out the conversation that has a strong relationships to this social networking site migration story. The time range used to track the conversation is from 1 March 2017 to 28 February 2018 (see figure 3.4.1).

![Figure 3.4.1. Time range and the total of expected conversation.](image-url)
The word "males" is an adjective term in Indonesian, that commonly used to explain a situation of somebody that has no intention/passion/courage to do something (Kamus Besar Bahasa Indonesia (kamus versi daring), 2018). As the next step to bridge the issue, another keywords inquiries need to input is "berfaedah", an Indonesian verb that will be used to accompany a sentence that something is beneficial/advantageous (Kamus Besar Bahasa Indonesia (kamus versi daring), 2018). The term was chosen based on the conversation that was floated along with the first attempt in searching for the first keywords. Those two sentences would be seemed contrary or irrelevant to people that do not have high-engagement activity on social media in Indonesia. It is indeed that social networking site's user is not only present to build up their own stage but as the activity of information mining as a form of benefit.

Completing the search query did not stop in keywording, there are some queries that need to be filled in search query bar: URL keywords (blank); Instagram tags (blank); bad keyword to exclude (instagram.com); bad domain to exclude (blank); data source (Twitter); country (all); language (Indonesia); media type (all); modular analysis (blank). After saving the queries, Pulsar Platform London team will be giving the permission to proceed the access to data mining via users email that registered with a company domain (see figure 3.4.2.).

![Figure 3.4.2. Search query summary](image)

3.5. How To Calculate the Categorized Result.

After categorizing the conversations by analysing the content of Twitter conversation, the raw data that exported into excel format calculated by using Vlook Up formula. Then the conversation hat has labeled into a category can be counted by using Vlook Up formula. Then the result will be appeared at the next column.
4. Result and Discussion

Table 1. Categories and Sub Categories of Instagram Discontinuance Factors

| Total exported conversation (n: 2557), Irrelevant conversation (n: 1562), Relevant conversation (n: 995) |
|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| Fatigue without a specific reason | 166 | - | - | - | - | - | - | - | - |
| User-Related Factors | - | - | - | - | - | - | - | - | - |
| Fatigue without a specific reason | 16 | 9 | 60 | 84 | 16 | 4 | 26 | 4 | 14 |
| Functional Factors | - | - | - | - | - | - | - | - | - |
| Algorithm | 20 | 11 | 8 | 2 | 20 | 5 | 2 | - | - |
| Content-related Factors | - | - | - | - | - | - | - | - | - |
| Selfie | 11 | 48 | 23 | 76 | - | - | - | - | - |
| Love Twitter Berfaedah | - | - | - | - | - | - | - | - | - |
| Prefer Twitter than Instagram | 125 | - | - | - | - | - | - | - | - |
| Compare the preference of using another social media (Facebook, Whatsapp, Instagram, Path) | 39 | - | - | - | - | - | - | - | - |

4.1. Result

After filtering the exported conversation from Pulsar Platform, resulted in 995 of relevant conversations, 1,562 of irrelevant conversations, from total of 2,557 exported conversation. The first result for “Fatigue without a specific reason” earned 166 conversations. In this category, the content most likely only declare their statement of fatiguing without any further explanation (e.g. “udah males buka Instagram”, “Kok males ya buka Instagram”, “males-semalesnya buka Instagram”). In User-Related factors category, “Judging users” (84), “Insecurity” (60), “Bad influence” (16), “Pencitraan” (16), “no willingness to upload a picture” (26), and “pamer (show-off)” (14), are dominating the element of user-related factors.
Figure 4.1.1. The graph on how strong the conversation about this topic. The orange bullet is for Twitter, the purple bullet is for Instagram.

Figure 4.1.2. The result of the Twitter conversations based on search query.
4.2. Discussion

As the result of analysing each conversation to categorize the factors according to the development theory from Rogers in Weibo microblogging site case study, the specific category applied. The content analysing took quite sometimes, but worth of detail findings.

First, states in search query stage, the researcher input the search inquiry "algoritme ig"~6, as a result of the keyword "algoritme" did not appear as expected would emerge, instead, the conversation was about the story of their (Instagram users) experience of not getting their feed no longer in chronological. Regarding that fact, users might not understand the term of "algorithm" that applies on Instagram.

Second, the user-related factors show an edgy story. Insecurity, and judging towards other users, building self-image (users called as pencitraan), and bad influence have tickled writer’s curiosity. The writer concludes that using Instagram is powerful enough to throw judgment to other users. This can be said that users do not like each other, it is just the matter of medium. The Twitter users are more likely to create gap towards Instagram users which see them as a negative community. Twitter users are glorifying themselves over what they do in Twitter as the best platform to update and discuss any kind of issue.

Third, in functional factors, shows clearly that Indonesian Instagram users based on the exported conversation had the concern to their mobile data. It is indeed that the Instagram interface as the photo-based application takes a lot of mobile data to load the whole display. To optimise the usage of Instagram needs much expand in mobile data.

Fourth, in the content related factors, users clearly stated their concern over what appears as Instagram content, especially the Instagram Stories feature that let users take more activity on it, which also costs a lot of mobile data to load the feature. There is no doubt when the users are fatiguing over Instagram Story feature, as reported by Sri Widowati as the Facebook Country Director for Indonesia that over one third (250 Mio) users in the world upload the content to Insta Story every day, and Indonesia came up as the biggest uploader in the world. Indonesia Instagram users upload almost twice from the global average. Jakarta also at the top for tagging location in InstaStories (Glenn Kaonang, 2018). The data pictures that the level of Indonesian Instagram users narcissism is exaggerating, no wonder if it led to users fatiguing on this feature.

The result for Twitter preference keywords is quite unique. The preference of consuming Twitter has a big result in this data. Surprisingly, the conversation towards their preference of using Twitter has resulted to a conversation that users were actually comparing another presence of social media like Facebook, LINE, WhatsApp, Instagram, and Path. The writer sees that, Twitter has loyal users compared to another social networking site.

If this phenomenon linked to Social Exchange Theory developed by Homans (1961), Emerson (1962), and Blau (1964) as cited in Karen S. Cook in her book about social force (Cook, 2014) and it fits into this phenomenon. This theory links how social status, influence, social networks, fairness, coalition formation, solidarity, trust, affect, and emotion is a massive element in human society (Eric Rice; Karen S. Cook, 2014). Homans says people will become angry and aggressive when they do not receive what they anticipate. The whole complaining conversation as exported from the data also pictures that the users do not receive "award" after presenting themselves in a social media stage. On Twitter, the users are comforted because they have exchanged enough as underlying in the relations between groups as well as between individuals, as Blau states in 1964.
4.3. What Is The Dangerous of This User Diminishing

Instagram and Twitter general users might not feeling direct impact towards the diminishing of the users, but the advertiser and endorser should concern about this case. The thing that people is aware about the algorithm shows that users put concern on what they deserve as SNS’s user. To endorser, content creator, and social media brand they might not lose their loyal followers, but they might lose followers that have characteristic as categorized above, criticize about the content and behavior towards other users. To the content creators on Instagram, the side effect might not be recognized soon, but first they will have low engagement on their posts. Another side effect is, if other users keep on judging towards Instagram users, the one that will get low engagement is not only the big content creator but also ordinary Instagram account.

5. Conclusion and Recommendation

5.1. Conclusion

To sum up all, the life of social networking site is just like what the users' network in real life. As total of user-related factors dominate the motives, thus pictures that user perception can lead to how they behave and using social networking site, that somehow creates a unified thoughts towards Instagram and Twitter in Indonesia. Not to mention that learning digital phenomenon is just at the tip of fingers, a small effort to gain a big data.

This phenomenon of discontinuance over Instagram can describe how Indonesian user behaviors in SNS’s can be very judging. Indonesian Instagram users in this sample do not really like someone’s being happy and prefer their on perception win on this virtual relationship that impact on their own discontinuance in using the SNS’s.

5.2. Recommendation

Researcher recommends this study to learned as user behavior in virtual relationship, since the life in social networking sites can be similar in real life. To content creator and social media analyst, this case must take in advance since human behavior can be very honestly appear in social network. For the next researcher, the strategy in inputing search query by using free or manual coding software to learn the result, then continue with paid listening tools to mine richer insight to optimize the result. Using manual data mining can also apply by using Twitter API with longitudinal time range. Be concern in detecting the irrelevant content from the beginning to optimize the research. Researcher must be good at excel skill to process the raw data. This study can be published for the purpose of social networking sites users’ education, to have more insight and be critize and aware towards social issue that appear on SNS.
Neuendoorf, K. A. (2017). *Content Analysis in the Interactive Media Age*. Cleveland University. USA: SAGE.


