FACTORS INFLUENCING THE USER STICKINESS OF A MOBILE NEWS APPLICATOIN: THE CASE OF 'LINE TODAY APP'

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Abstrak

LINE TODAY App merupakan sebuah aplikasi baca berita yang dikembangkan oleh LINE Corp. Proyek pengembangan aplikasi ini memiliki target pencapaian yaitu jumlah screen views setiap bulannya yang erat kaitannya dengan stickiness aplikasi. Setelah proyek berjalan selama kurang lebih dua tahun, progress pencapaian proyek hanya sekitar tiga persen. Tidak tercapai nya target ini merupakan permasalahan yang memerlukan solusi yang tepat karena LINE TODAY App merupakan proyek yang sangat penting bagi perusahaan. Berdasarkan permasalahan dimaksud, maka perlu dilakukan penelitian untuk mengetahui faktor-faktor apa saja yang mempengaruhi stickiness dari LINE TODAY App. Kerangka pemikiran penelitian ini dibangun berdasarkan *information system success model* dan *customer engagement theory*. Penelitian ini merupakan penelitian dengan metode campuran di mana objek penelitiannya adalah pengguna yang pernah menggunakan LINE TODAY App. Pengumpulan data dilakukan secara bertahap, diawali penyebaran kuesioner daring yang dilanjutkan dengan interview sebagai data kualitatif dan berhasil mendapatkan 76 serta 7 partisipan secara berturut. Data kuantitatif dianalisis menggunakan metode partial least squares structural equation modeling (PLS-SEM) pada aplikasi SmartPLS. Hasil penelitian menemukan bahwa terdapat empat faktor yang mempengaruhi stickiness LINE TODAY App melalui *intermediate variabel satisfaction* yaitu *system quality*, *information quality*, *brand awareness* serta *enthusiasm*.

Kata kunci: *stickiness, mobile news application, information system success model, customer engagement*, PLS-SEM

Abstract

LINE TODAY App is a mobile news application developed by LINE Corp. The main objective of the project itself is to reach a certain amount of screen views every month which is user stickiness. But it only reached three percent of the goal in the second year of development. Due to the importance of this project to the company, the application needs an immediate and proper solution. Therefore, factors that affect the stickiness of the LINE TODAY App have to be examined. The theoretical framework of this research is constructed based on the information system success model and customer engagement theory. This study is mixed-methods research which research object is users who used LINE TODAY App. Data collection is conducted in sequence, started by collecting an online survey by involving 76 users. It was continued by conducting the contextual interview by inviting 8 interviewees. The quantitative data was processed using partial least squares structural equation modeling (PLS-SEM) using the SmartPLS application. This study found that there are four factors that affect stickiness through an intermediate variable satisfaction which are system quality, information quality, brand awareness, and enthusiasm.

Keywords : stickiness, mobile news application, information system success model, customer engagement, PLS-SEM

INTRODUCTION

The global penetration of mobile devices in 2021 reached 66.6% of world population in total of around 5.22 billion unique users (Kemp, 2021). There is 1.8% of increment between 2019 and 2020 (Kemp, 2021). The very rapid of mobile technology development makes a lot of companies adapting by making their own mobile applications. Mobile applications are now considered as another channel to reach users or customers. The growth of mobile application is also huge, every week there are thousands of new application being released into App Store and Google Play Store which are still being dominated by iOS and Android for 98,4% shares of market (Statista, 2021)

Because of the fast development of mobile application, LINE Corp is a global company which owns a messenger application. The application has 186 million daily active users and running in 230 countries, where top 4 biggest users base are from Japan, Taiwan, Thailand and Indonesia. As a technology-based company, the corporation believes that they need to expand their capabilities using technology, especially mobile application. Therefore, besides relying on the messenger application as the main resource of the business, LINE Corp keeps innovating by creating other services. One of them is LINE TODAY, an online news platform that were being developed to serve user market in Indonesia, Taiwan and Thailand. LINE TODAY was originally a built-in website platform. After running several years, in Indonesia, there's an initiative to try to make it as a native application of LINE TODAY as seen in Figure 1. The main purpose was to serve users that are not using the messenger but still want to use LINE TODAY.

The development started in 2018 with a main goal to reach certain page views. However, having spent two years of development time, the accomplishment of the goal is still 3% of the target, there is still 97% to complete (LINE, 2020). The poor performance of the application needs

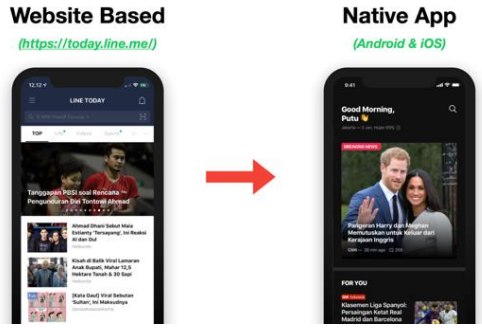

Figure 1. Native version of LINE TODAY

an immediate solution as the application is one of the most important projects of LINE Corp in Indonesia. After running some interviews with the project's stakeholders, we found that the root cause is because the team still do not know factors that affects stickiness of the app. Based on the data of active users' number in 2019, there is a peak of active. That is because the company did a marketing to introduce the application. The marketing program went very well, proven by the huge addition of active users reached to 150.000 active users in January 2019. But the numbers were decreasing until the end of the year. At the end of the year, they only have around 30.000 active users each month. They keep losing the users because the retention/stickiness of the application is low. An application that has good or high stickiness will retain the user to use it and good active users (Hsu & Tang, 2020; Lin et al., 2010). To support the desk analysis, we conducted an interview with the project stakeholders to verify the findings. Based on the interview, we map the root cause analysis using fish bone. We divided the cause into four domains because there are four domain of factors that affecting the success of a project which are people, process, organization and technology (Marchewka, 2015). Based on the interview, in the process domain, there is a root cause of 'The team does not know factors that affect the stickiness of the application". That statement strengthens the needs to find

factors affecting the stickiness of the application because stickiness is said to be a factor of a successful aplication (Hsu & Tang, 2020) to gain profit (Hu et al., 2020).

In searching of relevant theories and research, we use scoping review method based on several keywords, namely "mobile news", "mobile application", and "stickiness". Scoping review is used because it aims to provide an overview or map of the evidence to answer the research question and to be used in research that has limitation in time (Munn et al., 2018). Also, we use literatures which were published in the last 5 years.

There are some number of research that studied about stickiness, but the one whose seen factors from product side and user side is very limited. Therefore, this research will fill the gap. This research framework is based on two theories namely the Information System Success Model (DeLone & McLean, 2003) which is a group of factors from the product and the Customer Engagement Theory (Vivek, 2009) which is a group of factors from the user. From the product's group of factors, the variables utilized are derived from the Information System Success Model namely system quality, information quality, as well as services quality. Those three variables ever used in the research framework which concluded that services quality and system quality has a significant impact on user satisfaction (M. Li & Luo, 2020). Furthermore, the research added another variable namely brand awareness as a factor from the product side. The brand awareness variable is also believed to have a significant impact on satisfaction (M. Li & Luo, 2020). Therefore, we propose four hypotheses based on such relations.

- H1: System Quality positively affects Satisfaction.
- H2: Information Quality positively affects Satisfaction.
- H3: Service Quality positively affects Satisfaction.
- H4: Brand Awareness positively affects Satisfaction.

From the user's side, this research framework is based on the Customer Engagement theory stating that there are three variables that affects user satisfaction namely enthusiasm, participation as well as social interaction. Those variables have been proven to have a significant impact on stickiness (Xu et al., 2018; Zhang et al., 2017). Thus, we propose several research hypotheses as follows:

- H5: Enthusiasm positively affects Satisfaction.

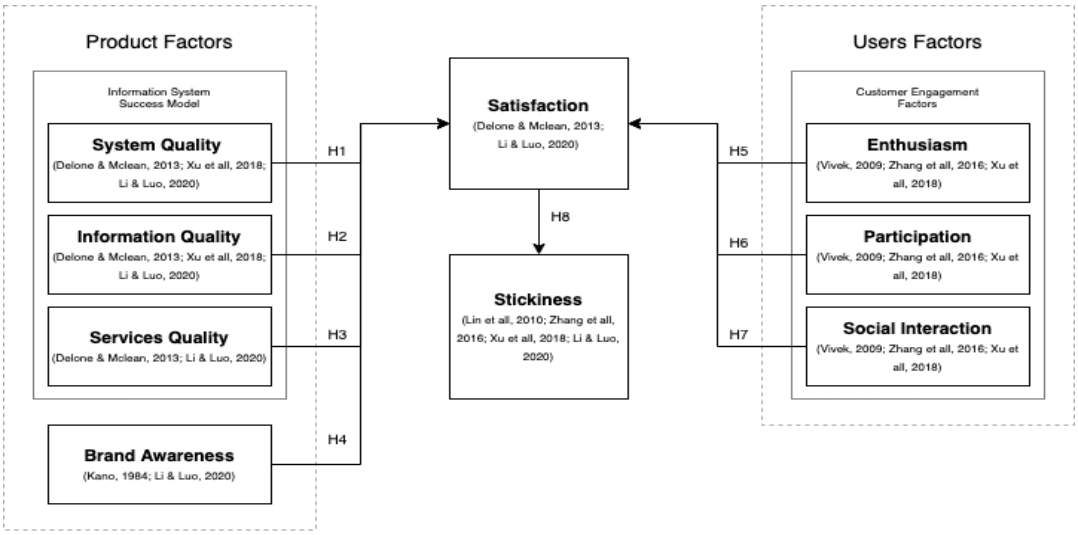

Figure 2. The Research Framework

- H6: Participation positively affects Satisfaction.
- H7: Social Interaction positively affects Satisfaction.

The last one, satisfaction is a variable from Information System Success model that is used and has a significant impact on stickiness (M. Li & Luo, 2020). Satisfaction will be a meditating variable between other seven independent variables with stickiness. Therefore, it will be included as one of the hypotheses in the research.

- H8: Satisfaction positively affects Stickiness.

The research framework can be seen in Figure 2. In total, there are eight hypothesizes within this research. Stickiness is the dependent variable while there is other seven independent variables which divided into two groups of factors. From the product factors there are system quality, information quality, services quality and brand awareness. From the user factors there are enthusiasm, participation and social interaction. Those two groups of factors will be mediated by satisfaction to see its relation to stickiness.

METHODS

This research utilizes a mixed-method approach specifically explanatory sequential mixed method. This mixed approach was selected to thoroughly comprehend the research problem (Creswell & Creswell, 2017). We conduct the quantitative data gathering using online questionnaires which will be followed by qualitative data gathering through interviews.

The questionnaire is divided into four sections. The first section consists of questions to make sure that the participant ever used LINE TODAY App. Section number two have questions regarding participant's demographic data such as age, sex, location, occupation. The third section is the main section because it has 30 questions to measure the stickiness of the app. It will be measured with a five-point Likert scale that has undergone the process of double translate as well as pilot testing. While in the end of the questionnaire, there is a question to ask participant's willingness to join the interview or not.

The contextual interview purpose is to gather qualitative data. During this session, the participant will be asked thoroughly regarding their answer in the questionnaire by "why do you answer this on your questionnaire?" so we can understand more the reasons behind their answers. Therefore, questions in the interview will be referred based on participants answers. But, in general the session is divided into three parts: introduction, main session, and wrap up.

For quantitative data gathered from the questionnaire, this research will use Partial Least Square Structural Equation Modeling (PLS-SEM) as the quantitative data processing method. We use PLS-SEM over CB-SEM because it is suitable for exploratory or early-stage research and suit in relative few participants (30-100) while CB-SEM is more suitable for proofing or confirming certain theory and need large number of participants (100-800) (Ghozali & Latan, 2015). Moreover, the tool for analyzing the quantitative data is SmartPLS. For qualitative data, several steps in processing the data are 1) Make the interview transcript 2) Refocusing interview goal 3) Interpreting information 4) Information classification.

The population of this research is LINE TODAY App users amounting to 42.265 in April 2020. To maintain a representative study results that illustrates the population, we utilize the probability sampling namely stratified random sampling. Using the PLS-SEM Technique, the minimum number of samples for the testing is around 30-100 people (Ghozali & Latan, 2015). whereas the number of samples recommended is the number of research variables multiplied by five. Therefore, as there are nine variables in this research, the minimum number of samples recommended is 45. Moreover, the contextual interviews conducted with 7 respondents that meet the sample criteria to find all of the problems (Nielsen, 2000).

Table 1. Measurement Model Evaluation

Variable	AVE	Loading Factor	Cronbach Alpha	Composite Reliability
Brand Awareness (BA)	0,617		0,701	0,828
BA2		0,787		
BA4		0,845		
BA5		0,72		
Enthusiasm (EN)	0,749		0,829	0,899
EN1		0,769		
EN2		0,88		
EN3		0,916		
Information Quality (IQ)	0,756		0,837	0,902
IQ1		0,784		
IQ2		0,888		
IQ3		0,904		
Participation (PA)	0,842		0,906	0,941
PA1		0,909		
PA2		0,918		
PA3		0,957		
Satisfaction (SF)	0,623		0,798	0,868
SF2		0,713		
SF3		0,806		
SF4		0,813		
SF5		0,822		
Services Quality (SrQ)	0,684		0,771	0,866
SrQ1		0,778		
SrQ2		0,828		
SrQ3		0,805		
Social Interaction (SI)	0,816		0,887	0,93
SI1		0,778		
SI2		0,828		
SI3		0,805		
Stickiness (ST)	0,775		0,903	0,932
ST1		0,862		
ST2		0,896		
ST3		0,875		
ST4		0,864		
System Quality (SyQ)	0,644		0,724	0,844
SyQ1		0,735		
SyQ2		0,825		
SyQ3		0,758		

Table 2. Structural Model Evaluation

Relation	Hypothesis	Path coefficient	T Statistics	Decision
System quality> Satisfaction	H1	0,140	2,003	Accepted
Information Quality > Satisfaction	H2	0,358	4,480	Accepted
Services Quality > Satisfaction	H3	-0,059	0,609	Rejected
Brand Awareness > Satisfaction	H4	0,183	2,975	Accepted
Enthusiasm > Satisfaction	H5	0,514	4,285	Accepted
Participation > Satisfaction	H6	-0,035	0,353	Rejected
Social Interaction > Satisfaction	H7	-0,015	0,184	Rejected
Satisfaction > Stickiness	H8	0,656	8,330	Accepted

RESULTS AND DISCUSSION

This research managed to collect 79 valid data. The participants are dominated by woman by 71% and male is 29%. The age range is dominated by 21-30 years old group with bachelor degrees. Also, the participants predominantly live in Jabodetabek area.

The quantitative data is being analyzed in two steps namely measurement model evaluation (Benitez et al., 2020) then structural model evaluation using SmartPLS application. The result can be seen in Table 1 and Table 2 respectively. From the analysis, we can conclude that the data is stated valid and reliable already. Also, we can conclude that five out of eight hypothesizes are accepted, they are H1, H2, H4, H5 dan H8.

H1: System quality positively affects satisfaction

This relationship observes the impact of the indicators relating to the user's ease of use, functionality, display and comfort on using LINE TODAY towards their level of satisfaction (DeLone & McLean, 2003). Based on the statistical test results, this hypothesis is accepted as it has a positive impact on the path coefficient value of 0.104 as well as it significantly impacts the T-statistic value of 2.003. Several previous research studies have also supported the same result relating to this relationship that the design impact on news application affects the user's level of satisfaction (Constantinides et al., 2015; Heuer & Breiter, 2018). This is line with the contextual interview findings which stated that the display LINE TODAY was mentioned to possess sleek, clean and user-friendly display. Apart from having user-friendly display, the limited placement of promotional advertisements on the application also affects the user's level of satisfaction (Constantinides et al., 2015). Such advertisements banner used to gain a profit of the application (Fu, 2019). Based on the research, there are several factors that affect the advertisement placement towards the user satisfaction namely the position, size and color of the advertisements (Cantoni et al., 2013). Certainly, an advertisement that is not too flashy and does not entirely disrupts the reading experience of the news application would increase the user satisfaction, such cases could be supported by the statements mentioned by several respondents of the contextual interview that the placement of advertisements at LINE TODAY was not disturbing. The combination between a user-friendly design, smooth application as well as limited number of advertisement placement that are disturbing become positive value that affects the user's level of satisfaction on using the LINE TODAY application.

H2: Information quality positively affects satisfaction

This relationship indicated the size relating to the accuracy, compatibility with time, completeness, relevancy and consistency on the data in the system (DeLone & McLean, 2003). In the context of online news applications, several indicators such as whether or not the news headline attracts the readers or the content articles have met the expectations of the readers. Based on the statistical test results, this hypothesis could be accepted as it has a positive impact with a path coefficient value of 0.358 as well it significantly affects the T-statistic value of 4.448. This finding is supported by the contextual interview results from several respondents relating to the impact of the information quality on LINE TODAY. First, based on the interview results, LINE TODAY has great breaking news contents. On the LINE TODAY application, breaking news will appear on the front page and at the very top to attract the readers regarding the important news at that time, this helps users to access that information. The importance of the breaking news feature in online news applications was mentioned in the research (Thorsen & Jackson, 2018). Apart from breaking news, the diverse information gathered in the LINE TODAY application brought positive value. This was seen from the various topic categories available such as sports, politics, economy news, even contents outside of news such as short stories and horror stories that could attract even more

elements of readers (Kim et al., 2016). Such findings from the contextual interview were supported that rich content in an online news application affects the user satisfaction on using the application, the more diverse the contents bring, appropriate content length as well as the use of multimedia would increase the value of the user satisfaction (Brien & Mckay, 2014; Z. Li et al., 2016).

H3: Services quality positively affects satisfaction

This relationship stated the indicators such as service, security and customer services/feedback mechanism available in the online news application of whether or not it affects the value of the user satisfaction. The services quality variable is deemed as one of the variables that affects satisfaction in the latest IS Success Model (DeLone & McLean, 2003). Moreover, this hypothesis is deemed to have a significant impact (M. Li & Luo, 2020). However, after conducting the statistical test, the data indicated that based on this research, the hypothesis could not be accepted as the coefficient value is negative: -0.059 as well as having love significance value of 0.609. Thus, this hypothesis is rejected for this research. Based on the evaluation of the qualitative data gathering, it was revealed that when reading news in online applications, the probability of encountering application errors, faulty functions requiring to provide reporting or customers services was very low. Therefore, it could be concluded that the services quality variable does not have significantly affect the value of user satisfaction.

H4: Brand awareness positively affects satisfaction

Brand awareness is one of the crucial aspects of brand equity and is often presented as measuring instrument to observe such brand value from the customer's point of view and understand its value. The relationship regarding brand awareness towards the application's satisfaction value could be assessed through the KANO model (M. Li & Luo, 2020). For this research, the statistical test results indicated that this hypothesis could be accepted as it has a positive impact with a path coefficient value of 0.183 as well it significantly affects the T-statistic value of 2.975. Additionally, based on the analysis of the contextual interview, it was revealed that there is a connection between a brand relating to the news contents and the impact on the user's choice of choosing the news application. In the context of LINE TODAY, it could be concluded that respondents felt familiar with the LINE TODAY brand as a news aggregator implying that it is reliable as a credible source of information. News source and source credibility will affect the user's interest of reading in the online news application (Thorsen & Jackson, 2018).

H5: Enthusiasm positively affects satisfaction

Enthusiasm stated the user participation on using a product was based on their enthusiasm and high interest. On this research, the statistical test results stated that this hypothesis could be accepted as it has a positive impact with a path coefficient value of 0.514 as well it significantly affects the T-statistic value of 4.285. Based on the analysis of the contextual interview session results, the reason why this hypothesis could be accepted was due to the user's intention to read was based on their own desire to find certain information. Furthermore, we found several sources that could increase the reader's enthusiasm such as the impact of social media (Bentley et al., 2019; Husin, 2018) word of mouth as well as notifications within the application.

H6: Conscious positively affects satisfaction

Conscious participation which is defined as how significant the user role is in contributing to present the product value (Vivek, 2009). This value measures how far users would like to find out on their own about the value of a product. For this research, the statistical test results revealed that this hypothesis could not be accepted as it has a positive impact with a path coefficient value of -0.035 as well as it significantly affects the T-statistic value of

0.353. The results of such data processing are supported by the analysis of the contextual interview where the majority of the respondents stated that in terms of using or consuming news contents on online news applications, users are catered with many options. Therefore, as the bargaining power on the user's side is greater, thus on the news application's (supplier) side, they must compete to promote their products so that user could know about the benefits that they offer.

H7: Social interaction positively affects satisfaction

Social interaction refers to the communication or interaction regarding the opinions, ideas as well as feelings exchanged by users relating to use of the product (Hall, 2018). The high interaction value in a community could attract high interests of other users to also discuss with each other. The statistical test results stated that this hypothesis could not be accepted as it has positive impact with a path coefficient value of -0.015 as well as it significantly affects the T-statistic value of 0.184. Such findings were also supported with a conclusion from the interview which stated that the respondents were not affected by anyone when choosing to read the news. This is interesting because after further analysis, the variables from the information system such as system quality, information quality as well as brand awareness serving as point of consideration for users to choose their news source application.

H8: Satisfaction positively affects stickiness

The hypothesis of this relationship serves to observe whether or not the level of user satisfaction on using the application would affect the stickiness in the future. Based on the statistical test results, this hypothesis could be accepted and has the strongest relationship value among other hypothesis with a path coefficient value of 0.656 and the level of significance of 8.330. Therefore, it could be concluded that when an application has a good level of satisfaction or user comfort, it is most likely that users would keep using the application.

Out of eight hypothesizes, we can accept five (H1, H2, H4, H5 and H8) hypothesizes. Besides on statistic data, the qualitative information gathered from interview also strengthens the result. From the product variables, there are three factors that affects stickiness which are system quality, information quality, and brand awareness while from the user side, enthusiasm from the user itself will affect the stickiness of LINE TODAY App.

Furthermore, this research has two implications, for the theory and for LINE Corp itself. For the theory, as this research combine two grand theories in making the research framework namely Information System Success Model and Customer Engagement Theory, both of theories contribute in providing variable that affects stickiness of mobile news application. From the product factor, this research strengthens the findings that system quality and information quality positively affects stickiness (Xu et al., 2018). Besides those two variables, there is also brand awareness who positively affects the stickiness. Align with the previous research that states it (M. Li & Luo, 2020). In the user factor, this research strengthens the finding that enthusiasm positively affecting stickiness (Zhang et al., 2017). Moreover, from the R-square test, we find that the value of satisfaction is 81% while stickiness has 43%. That means this research already covers majority of the factor that affection satisfaction, but there are other factors that still not covered yet in the research. For stickiness, this research only covers 43% factors that affects it. That means not only satisfaction that affects stickiness, there are other variables. Therefore, further research could explore more about it. While for LINE Corp, this research can be used as a reference to improve the stickiness of LINE TODAY App, there are some suggestions that can be done. Firstly, because system quality is important in affecting the stickiness, the performance of the application needs to be maintained even improved. Even though the quality of the application is

considered already good, there are some inputs from participants that the application sometimes crashes. The application size also can be reduced to save the user's storage. The product division and business division also can work together to find unique feature that will differentiate LINE TODAY App from its web version. Secondly, from the information quality factor, LINE TODAY can provide more content in the product. It is important because LINE TODAY has a unique content categories, namely horror story and short story that are not available in other competitors. Third, from the brand awareness variable, it is important to constantly introduce the product to the user. Because the competition in the news app category is high, LINE TODAY App need to do more and constant marketing so that people will know more about the existence of the product or new feature so that they can turn into user later on. Besides that, other initiative that can be done to improve brand awareness is to provide important news in the social media of LINE TODAY. By sharing news in the social media, LINE TODAY can gain more exposure from it. This may be due to most of mobile user spent their time accessing social media (Kemp, 2021). Social media can be a bridge to bring user in using the main application later on. Finally, from enthusiasm variable, the team can improve the notification system of the application. But this practice needs to do properly. Notification can be a double sword edge. If the amount of notification is good, the user will find it useful while too much notification will make the user unpleasant and could bring the possibility of uninstalling the app.

CONCLUSION

This research reveals factors that affect stickiness of LINE TODAY App come from both product factors also from user factors through an intermediate variable satisfaction. From product factors, there are system quality, information quality, brand awareness that affect stickiness while enthusiasm is the only factor from user side that affect stickiness.

System quality is a variable that describes indicators related to ease of use, functionality, appearance and usability in using the LINE TODAY app. These have an effect because of the good design, easy-to-understand navigation and the lack of advertisements in the application, making users feel more comfortable in using the application, especially for reading news itself. In addition, good system quality also indicates the system is running properly, without any damage such as applications closing suddenly or certain functions not working properly. Therefore, this variable greatly affects the level of user satisfaction and can increase application stickiness.

The information quality variable on the LINE TODAY application is related to the quality of the content in the application. This includes news headlines, news quality, news length and the variety of content categories available. This study found that the variety of existing content, the speed at which the news appears, the relationship between the title and the news content determines the level of user satisfaction and can increase application stickiness.

Brand awareness refers to the user's understanding of the brand or brand of a product against the value obtained. In online news applications, a brand of news sources will affect the user's perception of the quality of the information obtained whether it is true or not. In the LINE TODAY App case study, because the application shows the news sources, it increases the credibility of the application.

In enthusiasm variable, this study found that the reader's enthusiasm greatly influenced the stickiness of the application. In other word, LINE TODAY App users generally open applications based on their own desires without being influenced by others. However, the notification feature in the application also has an effect on triggering the enthusiasm of users in reading news

This research has several suggestions that can be made in further research in terms of methodology and practice. From a methodological perspective, this study has

limitations in its short data collection time and the limited number of research samples. In addition, the scope of research is the LINE TODAY app. Subsequent research can examine larger objects such as some of the largest online news reading applications in Indonesia. Qualitative data retrieval can also be improved by performing usability testing. By doing usability testing, researchers can find deeper root causes rather than contextual interviews. Related to the research framework, further research can also explore the theory that suggests the effect of mobile phone memory on the use of an application because many of the respondents mentioned it. However, this research framework can be used as a reference for designing further research models to determine the stickiness factor in online news applications.

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