How Does Types of Information Affect Facebook's Audience? A Study Using an Eye Tracker Device

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ABSTRACT: *The internet causes the tendency of excess information faced by users. Therefore, the key for business now is how to deliver the right information for the targeted audience. The purpose of this research is to evaluate different types of information presented on a Facebook page. Three types of information are investigated, which are detailed information, interactivity information, and persuasive information. Experiment design is conducted using an eye-tracking device to find out the relationship between types of information and intention to buy. A Facebook page of a clothing company based in Bandung is used as the research object. Then, data collected are processed using Least Square Robust regression analysis. It is found that detailed information and interactivity information on Facebook post has a significant effect to trust. However, persuasive information does not have a significant effect on trust. Besides, trust has a significant effect on intention to buy.*

1. Introduction

Indonesian social media users reach 49% of the population internet users. Besides, the user of social media is increasing very fast. Regarding the social media users' growth, Indonesia is the third largest country with a growth rate of 23% or 24 million users in one year. Therefore, due to its widely used especially in Indonesia, many companies post their business in social media.

Therefore, social media audience is exposed by the abundance of information every day. The information provided in the social media exceed the ability of the audience to process. The audience tends to skip information that they think are not relevant or not important for them. Companies should be able to choose what kind of information should be provided in order to attract the audiences' attention.

Due to limitation provided in social media, delivering the right information will be the key to win audiences' attention. Former researches have investigated the characteristic of information delivered on social media. Li and Suh (2015) argue that one factor used by users of social media to filter information is information credibility, which is defined as perception on the degree of

believability of information conveyed. Using the Elaboration Likelihood Method (ELM) as their basic research model, they differentiate information credibility into two dimensions, which are the message and medium credibility. The result shows that argument strength determines the information credibility of a Facebook page. Further effect of information credibility on the users is not investigated in the paper. The effect of information conveyed in social media on viewers is investigated by Chung and Koo (2015). They also adopt ELM to investigate the effect of argument quality and source credibility on adoption behavior mediated by perceived usefulness and social relationships in the context of tourism. The result shows that argument quality and source credibility affects information adoption through perceived usefulness. The argument quality in this research is measured with its definiteness, completeness, accuracy, consistency, and timeliness.

Meyliana, Hidayanto and Budiardjo (2015) investigate student preferences on social media. They examine it through two aspects, which are information and service quality. Criteria used for information quality are relevance, timeliness, accuracy, comprehensiveness and usefulness. They find that information quality is more important in social media because the audiences place higher priority on information usefulness and comprehensiveness than system availability.

A more detailed investigation in terms of type of information conducted by Wan and Ren (2017). They differentiate information generated by marketers into three types, i.e., informative content, persuasive content, and promotional content. Informative content conveys product-pertinent facts, such as product origins, product specification, and product quality. Promotional content contains information about sales promotion or coupons. Persuasion and motivation to establish relationships with customers are expressed in persuasive information. Data of different type of information are gathered by coding post in microblogs of WeiTao.

Another study investigates the information delivered on the website regarding its quality, and it is measured using two dimensions, i.e., its accuracy and sufficiency (Ponte, Trujillo and Rodríguez, 2015). A questionnaire is used as a measurement instrument after the respondents surfed on two or three websites in the computer lab. It is found that information quality and security determine trust.

Moreover, several measurements are used in previous researches as an indication of the effectiveness of information conveyed in social media. A direct impact of information on performance is measured by product sales generation (Wan and Ren, 2017). They found that informative content is more likely in generating product sales than persuasive and promotional content. Other studies find an indirect impact of information in social media on users' action. The relationship between information and users' action is mediated by trust. Hajli (2014) identify a significant role of trust in mediating the relationship between user interaction through social media and intention to buy. Hong-Yu, John, John and Chung (2016) find the role of trust as a mediator in the relationship between perception of information from a social network and online buying behavior. A systematic literature review conducted by Hakansson and Witmer (2015) find eight among ten studies prove a positive relationship between social media and trust. Besides, among all of them, no studies find a negative relationship between information and trust. Moreover, the role of trust as a mediating variable between information and intention to buy also reveals in the context of a website (Kim, Ferrinb and Raoc, 2008; Ponte et al., 2015).

From the explanation above, it can be concluded that information quality is very important to attract audiences' attention. Moreover, information conveyed should be able to enhance trust because it is the main key to encouraging certain behaviors in the online context. A research gap exists in determining the kind of information conveyed in social media that can enhance users' trust, and ultimately influence users' further action. The answer to this question will be crucial for the organization to increase the likelihood that the information submitted in their social media is received and processed to the next stage by the viewers, and ultimately induce the intended objectives.

2. Methods

2.1. Research model and Research Hypotheses
This research uses an adjustment model from previous research from Hajli (2014) and Wan and Ren (2017). Hajli (2014) stated that there is a significant effect between social media and intention to buy with trust as a mediating variable. This model is then enriched by differentiating the type of information conveyed in social media as was done by Wan and Ren (2017).

A preliminary study is conducted and found factors of social media that affect trust. Model of this research is shown in Figure 1.
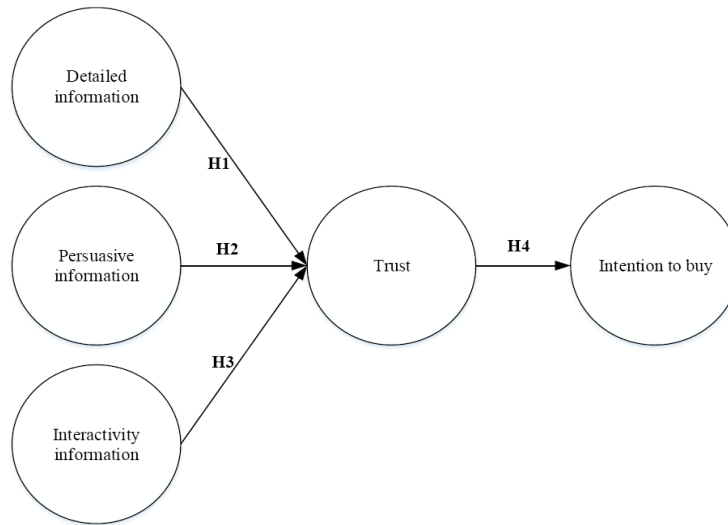
Figure 1. Research Model

This research aims to determine what kind of information provided on Facebook that can ultimately increase performance. The performance will be measured by the ability of different type of information in increasing intention to buy the products. Therefore, intention to buy becomes the dependent variable. Hajli (2014) on his research stated that trust is a mediating variable between interaction in social media and intention to buy. Hakansson and Witmer (2015) also stated in his research that eight articles emphasized a positive relationship between social media and trust. Hence, trust turns out to be the mediating variable.

Furthermore, identification of factors from social media that influence trust is determined by distributing preliminary questionnaire adopted from Li and Suh (2015) and Olapic (2016). The questionnaire is distributed to 30 respondents. Using descriptive statistic to analyze data from the questionnaire, it can be concluded three type of information that influence trust, i.e., detailed information, interactivity information, and persuasive information.

Detailed information on Facebook is complete information posted on Facebook about a product. For clothing products, detailed information on a Facebook post is information about available sizes, color, size catalog, and price. Hong-You et al. (2016) on his research found that there is a significant effect of information perception that accessed from social media on online behavior with trust as a mediating variable. Furthermore, Sari and Setiaboedhi (2017) stated that information on sites has a significant effect on trust. The hypothesis is stated as below:

H1: Detailed information has a significant effect on trust.

Aside from detailed information, persuasive information becomes one of the customers' considerations that influence trust. Persuasive information is a persuasion content from the company on the customer to do something. On this research, persuasive information is content that persuades the customer to tag other users in order to get a discount. The persuasive information that attracts customer's attention is by displaying profit received on the Facebook post. Persuasive information, as one of argument strength's indicator, on Facebook has a significant effect on information credibility that generates trust (Li & Suh, 2015). Therefore, it also can be stated that persuasive information could be one factor that influences trust. The hypothesis is stated below:

H2: Persuasive information has a significant effect on trust.

Another factor is interactivity. Interactivity can be defined as an interaction between users and owner of the online shop and other people at a Facebook post. Interaction on the Facebook page was an integral part of building trust, consumer loyalty, and brand awareness with fans (Foster, Francescucci, and West, 2010). Trust grew when customers interact on the Facebook page with retailers who owned the Facebook page (Weisberg, Te'eni and Arman, 2011). The hypothesis is stated below:

H3: Interactivity information has a significant effect on trust.

Previous researches in social media context show that trust predicts intention to buy (Xu, 2015) and online shopping behavior (Hong-You et al., 2016). Also, a positive effect between trust with online shopping behavior in website reveals in studies by Wijaya and Jasfar (2014); Sari and Setiaboedhi (2017). Furthermore, Hendratmoko, Guritnaningsih and Tjahjono (2016) finds that intention is significantly affect behavior.

H4: Trust has a significant effect on intention to buy.

2.2. Hypotheses Testing

Basically, the effect of different type of information are measured by attention paid on each of them. Sha and Lu (2015) state that attract users' attention is the first step in online community to get their further involvement. In this research, attention of users on certain information is measured using an eye tracker device. Furthermore, attention on certain type of information is measured by time spent and frequency in looking on area that contain the information.

Research hypotheses will be tested using the experimental design method using an eye tracker device. A small clothing company that produces clothes, jackets, accessories, and other types of cloth is used as a research object. The company was established in 2003 at Bandung and started using online marketing in 2007. Based on the data provided, its online sales have not reached the monthly sales target. Currently, online marketing media of the company are Facebook, Instagram, and Website. The results of the preliminary study show that Facebook has the smallest net marketing contribution compared to other online marketing media. Net marketing contribution is a value that shows whether the income generated from the implementation of a particular marketing strategy can cover its marketing cost.

Based on the research hypotheses, there are three factors and each has two levels, which are: detailed information (available vs. not available); interactivity information (available vs. not available); and persuasive information (available vs. not available). The combinations of these factors are then translated into dummy Facebook post as research stimuli. The stimuli were designed by choosing an existing Facebook post with the smallest coverage between January-March 2018, and then was added certain information according to certain combination.

The comparison of existing Facebook post with research stimulus is shown in Figure 2. Blue rectangle shows detailed information, red rectangle shows as persuasive information, and green rectangle shows as interactivity information. The number of combinations stimulus is eight combinations. The summary of all stimuli with combination factors is shown in Table 1.

Bojko (2013) explained there are two methods to present stimulus: between-subjects design and within-subjects design. Between-subjects design means that every participant is exposed to only one of the tested interfaces or stimulus. On the other hand, within-subjects design exposes every participant to all tested products or stimulus. This research uses within-subjects design as stimulus presentation method.

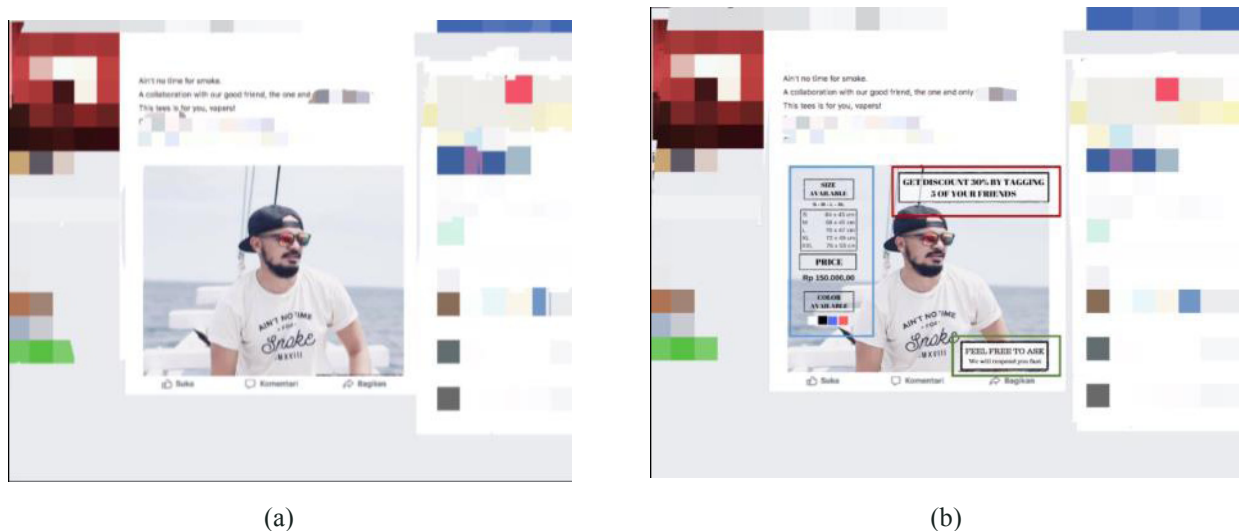(a)   (b)

Figure 2. The Facebook Post

The within-subjects design is used because it allows the experiment to be conducted with a smaller sample size than between-subjects design. Furthermore, it can also compare several stimuli and provide ranks for every stimulus.

Stimulus#	Combination Factors	Stimulus#	Combination Factors
1	Detailed information, interactivity information, persuasive information	5	Interactivity information and persuasive information
2	Detailed information and interactivity information	6	Interactivity information
3	Detailed information and persuasive information	7	Persuasive information
4	Detailed information	8	No information

Table 1. Number of stimulus and combination factors

However, there are some weaknesses of the within-subjects design method, one of which is carryover effects. There are methods to help offset them; it is by varying the order of stimulus. Bojko (2013) also explain three ordering methods that can be used for presenting the stimulus: complete counterbalancing, partial counterbalancing, and randomization.

This research uses the partial counterbalancing method because complete counterbalancing will generate many order results. The partial counterbalancing method is also more suitable and practical than complete counterbalancing (Bojko, 2013). The result of the presentation order of the stimulus using partial counterbalancing is shown in Table 2.

Stimulus#	Stimulus Order	Stimulus#	Combination Factors
1	1 2 8 3 7 4 6 5	5	5 6 4 7 3 8 2 1
2	2 3 1 4 8 5 7 6	6	6 7 5 8 4 1 3 2
3	3 4 2 5 1 6 8 7	7	7 8 6 1 5 2 4 3
4	4 5 3 6 2 7 1 8	8	8 1 7 2 6 3 5 4

Table 2. Presentation order of stimulus

A GP3 eye tracker device is used to capture the attention of participant to a different kind of information displayed on the stimuli. Data collected from this device are frequency and duration time of seeing Area of Interest (AOI). In this research, AOI is the area of a Facebook page that displays the different type of information (Figure 2). Trust and intention to buy are measured using a questionnaire, as can be seen in Table 3.

This research uses purposive sampling as sampling method in order to obtain participants that match with online target market of PT X and to generate unbiased data. Characteristics of participants are men, aged 18-24 years old, domiciled in Jakarta/Bandung, have not seen PT X Facebook before, and have done online shopping or sought product information from Facebook. The number of the sample in this research is 39 participants. The number of participants is based on previous research from Pernice and Nielsen (2009) that used 39 participants in their experiment using an eye tracker device. Besides, Bojko (2013) explained that 30 participants in eye tracker experiment testing would result in a stable heat map. Data was then collected at a Lab in the University

Factor	Source	Question
Trust	Gefen (2002)	I believe that X's products on its Facebook page corresponding to the original products.
		I really believe in X's Facebook page.
		I believe that X's Facebook page is trustworthy.
Intention to buy	Xu (2015)	Given a chance, I would consider getting products on X from its Facebook in the future.
Intention to buy		Given the opportunity, I intend to get products from X's Facebook.

Table 3. Final questionnaire

on 39 participants from May 21st – May 29th, 2018. Every stimulus is presented for 15 seconds to each participant. After stimuli exposure, several questions were asked to measure participants' trust and intention to buy.

2.3. Data Processing

Reliability and validity test are conducted to the questionnaire that measure trust and respondents' intention to buy. Validity testing uses a correlation test with the Pearson method, and reliability testing uses Cronbach's Alfa as the indicator.

Three factors predicted to have a significant effect on trust, i.e., detailed information, persuasive information, and interactivity information. At first, data normalization using min-max method is conducted to the frequency and duration of seeing AOI. Normalization is used because both of data (frequency and duration) have a different unit measurement. The equation of normalizing min-max is shown below:

$$NewData = \frac{(Data - MinData) \text{ x } (NewMaxData - NewMinData)}{(MaxData - MinData)} + NewMinData \qquad (1)$$

Afterward, Robust Least Square regression is used to test the research hypotheses because data is not normally distributed. The result and statistics interpretation will be explained in the next section.

3. Result and Discussion

From the heat map (Figure 3), participants in general pay more attention to detailed information and interactivity information. It is indicated with red color on the area of stimulus that contains that two information. On the other hand, the persuasive information did not get enough attention, indicating with a light blue color. A further statistical analysis is used to find out more about these phenomena.

After the measurement instrument passes the validity and reliability test, the effect of detailed information, interactivity information, and persuasive information on trust are done using software Eviews 8. The result is shown in Table 4. The regression equation can be written as follow:

$$Trust = 10,034 + 4,073 \text{ x } DetailInform + 1,492 \text{ x } InteractInfor + 0,438 \text{ x } PersContent \qquad (2)$$

From Table 4, It can be seen that detailed information and interactivity information have significance value less than 0.05. It can be concluded that detailed information and interactivity information have a significant effect on trust. In contrast, persuasive information has significant value more than 0.05. This implies that persuasive information has not a significant effect on trust.
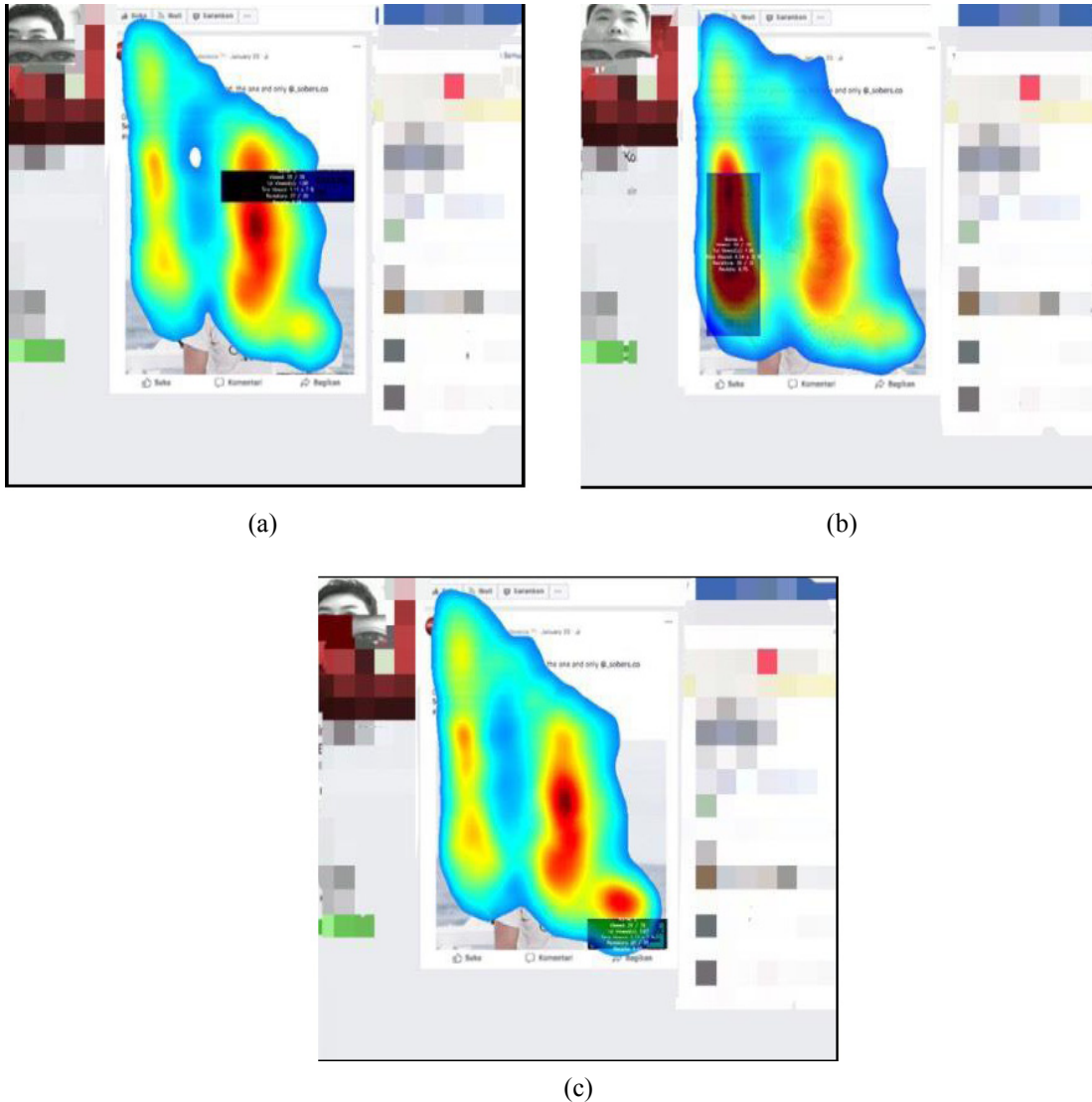
(a)　　　　　　　　　　　　　(b)

(c)

Figure 3. Heat map of (a) AOI persuasive information, (b) AOI detailed information, (c) AOI Interactivity information

Determination value (R^2) resulting from the calculation is 0.353. It means that 35, 3% from detailed information, interactivity information, and persuasive information factor explain variance from trust. This determination value can be categorized as significant according to Cohen (1988).

Factor	Response Variable	Significant Value	Conclusion
Detailed information	Trust	0.000	H_1 accepted
Interactivity information	Trust	0.013	H_2 accepted
Persuasive information	Trust	0.381	H_3 rejected
Trust	Intention to buy	0.000	H_4 accepted

Table 4. Calculation result from Eviews 8

Former research conducted by Wan and Ren (2017) in their study found that informative content affects product sales more effective than promotional and persuasive content for high involvement products. In this study, clothing products can be categorized as high involvement products because we need relatively more information before a decision making. This study enriches the former result that the effect of detailed product information will also increase trust. Also, information about a response that will be given for questions posted on Facebook will also increase trust. This result support a study by Weisberg dkk. (2011) who state that trust will grow when customers can interact on Facebook pages with the account owners. Therefore, these two types of information should be delivered in a Facebook page so that the intended objectives of the message, i.e., trust and product sales, will be achieved. On the other hand, it would be better not to display persuasive information on Facebook pages to prevent redundant information and to direct the attention of viewers on information that would produce a positive response.

Trust and intention to buy are measured using a Likert scale. Because the data of trust and intention to buy is not normal, robust regression is also used for calculating the effect of trust on intention to buy. The result is shown in Table 5. The regression equation can be written as in Eq. 3.

$$intension\ to\ buy = (0.553\ x\ trust) + 0.936 \tag{3}$$

From Table 4, we can see that trust has significance value less than 0.05. It can be concluded that trust has a significance value to intention to buy. Determination value (R^2) resulting from the calculation is 0.488. It means that 48,8% from trust factor explain variance from intention to buy and is categorized as large (Cohen, 1988).

These results are in line with the results of previous studies. The relationship between trust and intention to buy in an online context has been found by Xu (2015), Hajli (2014), Wijaya and Jasfar (2014), Hong-You et al. (2016) and Sari and Setiaboedhi (2017). This study also shows that the ability of trust to predict buying intention is relatively large. Therefore, it is imperative for the organization to get the audience's trust because it will primarily determine the next audience response which is the ultimate goal of the organization.

Based on this study, it can be concluded several implications. First, information that has been statistically proven has a significant effect to trust is detailed information on Facebook posts. Detailed information on clothing line company is information about available sizes, colors, prices, and size catalog of the clothing. Other case will need a different kind of detailed information. In general, detailed information is complete information about the product such as its specification, its price, and its quality.

Besides, interactivity information also statistically has a significant effect on trust. Interactivity information on the Facebook post is information that makes customers think they can ask questions to the business owner and other people so they will receive a fast response. Facebook page needs to display information that customers can ask directly through the page or through other online media. For this reason, organizations must always respond to each customer's questions quickly. The response that appears on the Facebook page can then be one of the factors driving the emergence of trust.

Another thing that can be learned from this study is audience pay more attention to the picture rather than the text message on a Facebook page. It can be seen from the heat map, where the area of picture covered with red color, in contrast with the area with text that accepts little or no attention. Therefore, placement of information in the part of the image will get greater attention. Further research can be conducted to test the impact of information containing online reviews from other customers. According to Chen (2015), the online recommendation influence purchase behavior rather than product awareness in Amazon.com.

4. Conclusion

In increasing sales on Facebook, a company should post Facebook with detailed and interactivity information. Detailed information is complete information in the Facebook post about a product. For clothing products, detailed information on the Facebook post is information about available sizes, color, size catalog, and price. Interactivity information can be defined as information about the interaction between users and owners of the online shop and other people at the Facebook post. Statistical analysis has proven that detailed information and interactivity information on Facebook post has a significant effect on trust. Also, trust also statistically has a significant effect on the intention to buy from customers.

5. Acknowledgement

References

[1] Barnes, S. (2015). Like, Follow, Share: Awesome, Actionable Social Media Marketing to Maximize Your Online Platform. California: Tycho Press.

[2] Bojko, A. (2013). Eye Tracking The User Experience: A Practical Guide to Research. New York: Rosenfield.

[3] Chen, H. M. (2015). Do Online Recommendations Matter? – A Multimodal Investigation of Amazon's Co-Purchase Network. *Journal of Digital Information Management,* 13(3) 176-84.

[4] Chung, N., Han, J., Koo, C. (2015). Adoption of travel information in user-generated content on social media: the moderating effect of social presence. *Behavior and Information Technology*, 14(9) 902-919.

[5] Cohen, J. (1988). Statistical Power Analysis for The Behavioral Sciences. New York: Lawrence Erlbaum Associates.

[6] Foster, M., Francescucci, A., West, B. (2010). Why users participate in social networks. *International Journal of e-Business Management*, 4, 3-19.

[7] Gefen, D. (2002). Customer loyalty in e-commerce. *Journal of The Association for Information Systems*, 3(1), Article 2.

[8] Hajli, M. N. (2014). A study of the impact social media on consumers. *International Journal of Market Research*, 56 (3) 387-404.

[9] Hakansson, P., Witmer, H. (2015). Social media and trust — A systematic literature review. *Journal of Business and Economics*, 6(3) 517-524.

[10] Hendratmoko, P., Guritnaningsih, Tjahjono, T. (2016). Analysis of interaction between preferences and intention for determining the behavior of vehicle maintenance pay as a basis for transportation road safety assessment. *International Journal of Technology*, 1, 105-113.

[11] Hong-You, H., John, J., John, J., Chung, Y. (2016). Temporal Effects on Information from Social Networks on Online Behavior. *Internet Research*, 26(1) 213-235.

[12] Kim, D. J., Ferrinb, D. L., Raoc, R. H., (2008). A trust-based consumer decision-making model in electronic commerce: The role of trust, perceived risk, and their antecedents. *Decision Support Systems*, 44(2) 544-564.

[13] Li, R., Suh, A. (2015). Factors Influencing Information credibility on Social Media. *Procedia Computer Science*, 72, 314-328.

[14] Meyliana, Hidayanto, A. N., Budiardjo, E. K. (2015). Evaluation of Social Media Channel Preference for Student Engagement Improvement in Universities Using Entropy and Topsis Method. *Journal of Industrial Engineering and Management,* 8(5) 1676-1697

[15] Olapic. (2016). Consumer Trust: Keeping It Real. New York: Olapic.

[16] Pernice, K., Nielsen, J. (2009). How to conduct eyetracking studies. Research Report. Nielsen Norman Group. Retrieved February 23rd, 2019, from www.nngroup.com/reports/how-to-conduct-eyetracking-studies

[17] Ponte, E. B., Trujillo, E. C., Rodríguez, T. E. 2015. Influence of trust and perceived value on the intention to purchase travel online: Integrating the effects of assurance on trust antecedents. *Tourism Management*, 47, 286-302.

[18] Sari, H., Setiaboedhi, A. P. (2017). Faktor-faktor yang Mempengaruhi Minat Beli Pangan Organik Melalui Situs Online. *Jurnal Manajemen & Agribisnis*, 14(1) 54-64.

[19] Sha, Y., Lu, L. (2015). Users' Attention Behaviors and Features in Internet Forum. Journal of Industrial Engineering and Management, 8(5) 1380-1395.

[20] Weisberg, J., Te'eni, D., Arman, L. (2011). Past purchase and intention to purchase in e-commerce: the mediation of social presence and trust. *Internet Research*, 21(1) 82-96.

[21] Wijaya, M., & Jasfar, F. (2014). Pengaruh Rancangan Situs, Harga, Kepercayaan, dan Keamanan terhadap Pembelian Produk Fashion Melalui Online Shopping. Jurnal Manajemen dan Pemasaran Jasa, 7(2), 32-62.

[22] Xu, Y. (2015). Understanding Local Facebook Yard Sales Communities: The Relationship Between Trust, Facebook Use, and Sense of Community. Thesis. Bowling Green State University.