Concise Consumer Needs for Women Muslim Fashion by Integrating Online Product Reviews and Designer Voice

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Abstract

Consumer needs in Muslim Clothing product development have become the basic needs of designers developing products. Muslim clothes are a product that is growing very fast in Indonesia. One tool to determine the needs of consumers today is Online Product Reviews (OPRs). OPRs are written by consumers and tell about their satisfaction with the products that they have purchased. OPRs are also useful for online shops on e-commerce platforms to support purchasing decisions, build consumer trust, and show shop reputation. This paper aims to examine the use of OPRs from an e-commerce business perspective capable of influencing consumer buying decisions in an online and offline store and knowing whether OPRs influence the designers in developing Muslim clothing product design. In this research findings, OPRs and star ratings influence consumer's buying decisions. For designers, OPRs might affect in design development. It provides information product requirements from consumers from positive or negative reviews. Some statements in OPRs were incompatible with the personal opinion of the designer. This review provides new insights for the upcoming study in the field of online shop user rankings, evaluations and designers.

Keywords
Consumer, Fashion, OPRs, Muslim, Woman

1. Introduction
Some well-known e-commerce platforms in Indonesia, such as Shopee, Bukalapak, Tokopedia, Lazada, and others, grow significantly in Indonesia. In e-commerce, exciting things to be observed are written review and product rating in the form of numerical value and star rating. Product reviews are writings from consumers that indicate the level of customer satisfaction. If satisfied, write positive sentiments, if disappointed, write negative sentiments (Constantinides and Holleschovsky 2016). The level of customer satisfaction is not only revealed in the form of sentence reviews, but consumers also showed with star rating. Star rating consists of five types, started from one star showing disappointment to five stars showing satisfaction on product or services (Von Helversen et al. 2018). Two-way communication from consumers and shop owners is interesting to discuss (Ketelaar et al. 2015). The different nature of reviews, with unstructured language when written OPRs, the question is how other customers able to use information sources from OPRs to make decisions about buying products (Von Helversen et al. 2018). Another question is whether reviews on OPRs can help designers to develop their product design as customers' requirements or product features. In OPRs, consumers are free to write negative or positive statements.

In this study, the OPRs data were taken from 200 data reviews from online shop brand x, then those reviews confirmed to 35 offline consumers on the same product brand. This online consumer voice was a new kind of customer relationship management (Wang 2016). The research question is how OPRs can influence the decision to buy products with the same brand for online and offline consumers. The next research question is whether OPRs based on positive

and negative sentiments can affect the development of new product features for fashion designers. These two research questions are also supported by previous research. Those previous studies support this research, especially in the field of OPRs for product development, and OPRs can affect consumers buying decisions (Von Helversen *et al.* 2018; Ketelaar *et al.* 2015). From the results of OPRs using the platform e-commerce displayed, then asked offline buyers, showing OPRs are the source of information used as customer references. However, some customers did not affect the results of OPRs because this kind of customer groups was a loyal group that already believes in the quality of fashion products brand (Xiao *et al.* 2017). OPRs is used as consideration as buying decisions. Previous research studies the orientation and detailed review of product features. Both positive and negative reviews give information about product details, such as quality, speed of delivery, and image similarity to products. These reviews give impact to other consumers or potential customers (Willemsen *et al.* 2012). It prooved that OPRs affects purchasing decisions (Constantinides and Holleschovsky 2016; Von Helversen *et al.* 2018). However, OPRs also has a negative impact, it turns out the negative review carried out because of the competitors' negative reaction. OPRs also have weaknesses, which can be hacked by robots, both writing positive hack reviews and writing negative hack reviews. For positive reviews written by robots, they are used to influence potential buyers, while competitors can do negative reviews. The other aspect that can influence consumers besides OPRs is a star rating. The distribution of star rating scores becomes a unique research subject. Consumers satisfied with text reviews but gave a 1-star rating, not five stars, but some consumers are dissatisfied but give five stars. As average studies show, 1-2 stars are equal with negative sentiments, 3 stars are neutral, and 4-5 stars are positive sentiment (Ireland and Liu 2018). Table 1 shows the survey questions and constructs and hypotheses related to consumers.

Table 1. Survey questions and constructs and hypotheses related to consumers.

Statement to offline consumers	Hypothesis	Question	Selection
Level of confidence	1	Q1: How significant are OPRs for your purchasing decisions?	Not important, rather not important, neutral, somewhat important, important
	2a	Q2: Which source of info did you use before purchasing a product online?	Open question
	2b	Q3: How frequently do you recite product reviews before buying products online?	Never, rarely, sometimes, regularly, often
	2c	Q4: Do you frequently associate positive and negative reviews?	Yes No
	2d	Q5a: Has one negative review ever been a motive for you not to purchase a product?	Yes No
		Q5b: Has one positive review ever been a purpose for you to purchase a product?	Yes No
The desire to contribute to OPRs	3	Q6a: Have you ever inscribed OPRs?	Yes No
		Q6a: Have you ever make or write OPRs?	Positive, neutral, negative

This study uses Muslim women as Muslim fashion consumers as a case study, based on Indonesia has Islam as the most significant religion (Utami *et al.* 2019).

2. Methods

In this study, to understand how consumers use OPRs, a survey of 35 women who buy offline has been done, but they also have purchased online on the same brand product. From a designer's perspective, we collaborated with nine fashion designers, with over ten years of experience working in the field of Muslim fashion—this research conducted in 2019, with data collection from September 2019 to December 2019. The research question was whether OPRs can influence potential online and offline buyers, and what is considered essential features for consumers? The second question is, how can OPRs influence designers in designing fashion products according to the features that have reviewed on OPRs? To respond to this question, we made several hypotheses for our survey. This study has similar aims to the previous research, which finds factors affects consumer's trust in OPRs (Racherla *et al.* 2012). Table 2 shows the survey questions and answers selections. The Survey was constructed based on hypotheses 1, 2, and 3.

Table 2. Survey questions and constructs and hypotheses on fashion designers.

A statement from a fashion designer	Hypothesis	Question	Selection
The level of designer trust in the features written on OPRs.	1	Q1: How important are online product reviews for your product development improvement decisions?	Not important, rather not important, neutral, somewhat important, important
Make decisions on developing products from OPRs.	2a	Q2: Which source of information did you use before developing the product?	Open question
Make decisions on developing products from OPRs.	2b	Q3: How often do you read product reviews before developing new products?	Never, rarely, sometimes, regularly, often
	2c	Q4: Do you usually relate positive and negative reviews?	Yes No
	2d	Q5a: Has one negative review ever been a reason for you not to develop a new product?	Yes No
		Q5b: Has one positive review ever been a reason for you to develop a new product?	Yes No
The desire to make OPRs a means of voice of customers.	3	Q6a: Have you as a designer ever written product reviews online?	Yes No
		Q6b: If so, what is the total rating of your review?	Positive, neutral, negative

Hypothesis 1:
OPRs can increase the level of consumer confidence. The criteria for review in OPRs become a factor of consideration before buying and trusting an online store.

Hypothesis 2:
OPRs were an essential source of online transaction information. Consumers trust OPRs and star ratings. The level of interest indicator considers the following aspects:
a) Awareness   : Consumers are aware that OPRs and valuations are useful and consciously influence product buying decisions.
b) Frequency   : OPRs on online stores are very active, and star ratings are high
c) Comparison   : The interests of consumers by reading OPRs in more detail and detail
d) Impact of reviews : Reviews considered critical if consumers are affected by OPRs.

Hypothesis 3:
Consumers are willing to contribute to reviewing OPRs. Consumer reviews and ratings are subsequently classified as a service. Thus, an essential aspect of reviews and ratings is the enthusiasm of consumers to contribute.

The questionnaire design in Table 1 shows the relationship between constructive questions and hypotheses. In question, Q1 is used to obtain information on whether OPRs are capable of influencing online and offline purchasing decisions. If consumers assume that OPRs are essential or significant factors, then they consider the results of the positive and negative reviews given. However, if the consumer is loyal to the brand, then there is no review, and they are still more trusting in online brand vendors.

Questions Q2 through Q5 are to find answers to hypothesis 2. What is the actual usage relationship? Question Q2 is designed as an open-ended question, using a written system, to search for specific information that consumers need before buying certain brand products online or offline.

Question Q3 aims to find out the frequency of consumers reading OPRs before buying a product. Question Q4 aims to determine whether consumers are happy to compare the results of one review with other reviews — questions Q5a

and Q5b to get the consequences of negative and positive OPRs results. Q6a and Q6b are used to determine whether consumers like to write product reviews on OPRs tools and what ratings they provide to e-commerce vendors.

This questionnaire was filled with 35 participants, with a total sample of adult women. The age range of participants is 18-60 years with the distribution of age groups, as seen in Figure 1. From this picture, this study participated by mostly young women 18 to 25 years, 65% and 25 to 35 years, 24%.
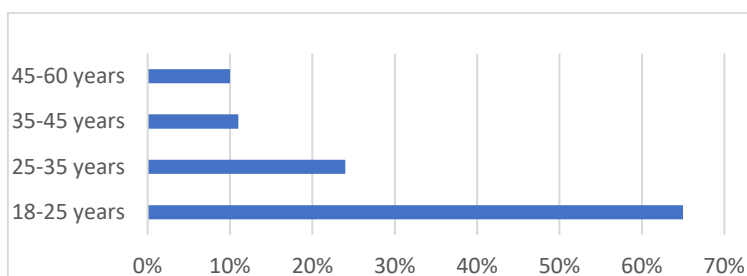

Figure 1. Distribution of participants by age.

All participant demographics were people who buy in offline stores for the same brand products. In this study, we determined three big brands: brands A, B, and C. We did not intentionally mention the brand because the brand owner objected to being written in this paper. Fashion designers who have involved in this study were nine local fashion designers, although not the designers of the three brands above, they have more than ten years of experience in the fashion world and observers of these three fashion brands.

3. Result

The survey results show in Table 3, and the answers were given from the offline survey results for consumers, in the first question (Q1), it turns out that OPRs were considered essential or very important as much as 37.4%, whereas 2% of consumers think that an OPRs was not needed. Of this 36 %, designers said OPRs needed to be taken into consideration, 28.7% said it was essential to see OPRs, 20% said designers were neutral or not affected by OPRs, 15.3% said OPRs were not significant.

The second question (Q2) addressed to consumers about information sources or sources of reviews obtained from which shows that participants are looking for product or OPRs with 20% of results obtained from search engines, 25% of information from OPRs on e-commerce platforms, 15% looking for reviews on other sources such as Instagram or Twitter social media, and 10% of product ad reviews. From the designer's point of view, when searching for product review information, 10% of search engines, 30% of online shops, and 25% of designers get negative or positive reviews from friends or other customers. 30% information to the designer about OPRs from social media, each brand has a social media that opens a column of comments from customers.

Table 3. Responses of the survey with relative frequency for customers and designers.

	The answer	Relative frequency (customers)	Relative frequency (designers)	Gap
Q1	Very important	0,374	0,36	0,014
	Important	0,3714	0,287	0,0844
	Neutral	0,2	0,2	0
	Rather unimportant	0,028		0,028
	Not important	0,0266	0,153	-0,1264
Q2	Search engine	0,2	0,1	0,1
	OPRs online shop	0,25	0,3	-0,05
	Family and friends	0,3	0,25	0,05
	Social media (Instagram, WhatsApp, Twitter, Facebook)	0,15	0,3	-0,15
	Commercials	0,1	0,05	0,05
Q3	Very often	0,35	0,1	0,35
	Often	0,34	0,1	0,14
	Sometimes	0,08	0,3	-0,22
	Rarely	0,23	0,3	-0,07
	Never	0	0,2	-0,2
Q4	Yes	0,8	0,4	0,4
	No	0,2	0,6	-0,4
Q5a	Yes	0,88	0,8	0,08
	No	0,12	0,2	-0,08
Q5b	Yes	0,6	0,8	-0,2
	No	0,4	0,2	0,2
Q6a	Yes	0,6	0,3	0,3
	No	0,4	0,7	-0,3
Q6b	Positive	0,7	0,6	0,1
	Neutral	0,1	0,2	-0,1
	Negative	0,2	0,2	0

On the 3rd question (Q3) about the frequency of reading product reviews before buying, 35% of survey participants said that this consumer reads the OPRs several times before making a purchase either online or offline. 34% often read reviews, 8% sometimes read reviews, and 2.3% rarely read reviews. This study's results are similar to previous studies that customers buy products based on previous buyers' experience (Mo *et al.* 2015). It turns out that the frequency of reading OPRs from the designer side is 20% saying often, 30% quite often, 30% sometimes reading, and 20% not reading.

On question 4 (Q4) Of the survey participants who read it, 80% compared the positive sentiments and the negative sentiments written on the OPRs. 20% say they can only be influenced by one negative review, so they do not buy the product. Consumers were influenced to buy if there are positive reviews. This purchase is made online or offline at official outlets of the A, B, and C brands. Unlike consumers, only 60% of designers say they are affected by OPRs, and the rest are not affected.

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From the results of Q5a, 88% of consumers can be influenced not to buy the product even though negative reviews are only one review. While 12% said they would still buy the product despite negative reviews. However, if there are negative reviews, 80% of designers respond immediately to improvements, despite only one negative review. Based

on Q5b results, 60% of consumers are affected by buying products due to positive reviews from previous consumers. Furthermore, 40% are not concerned about buying, despite having read positive reviews.

Based on Q6a, it turns out that of 35 respondents offline consumers, 60% of consumers write product reviews after making online purchases. This review reveals the expression of satisfaction after using the product or the standard of the response of online stores. The responses were such as delivery speed, packaging conditions, and the compatibility between the image and the original product. 70% of designers answered in the review, considered not too important. Based on data from Q6b questions, it turns out that 70% of consumers write positive responses, 10% are neutral, and 20% write negative sentiment responses. The results obtained are following what was revealed that marketing products are driven by technology. The online market becomes a bridge to understanding customer needs and experiences collected, analyzed for company improvement (Yoon and Jetter 2015). Almost the same with consumers, if the designer writes product reviews, then 60% of designers write positive reviews, but some answer if there is a disability given an honest answer of 20%.

4. Discussion

4.1 Differences in The Perspectives of Consumers and Designers on The Importance of OPRs
From the results of offline interviews of consumers who also make online purchases, there are several things that designers think differently. The results of the relative frequencies appear in Figures 2 and 3.
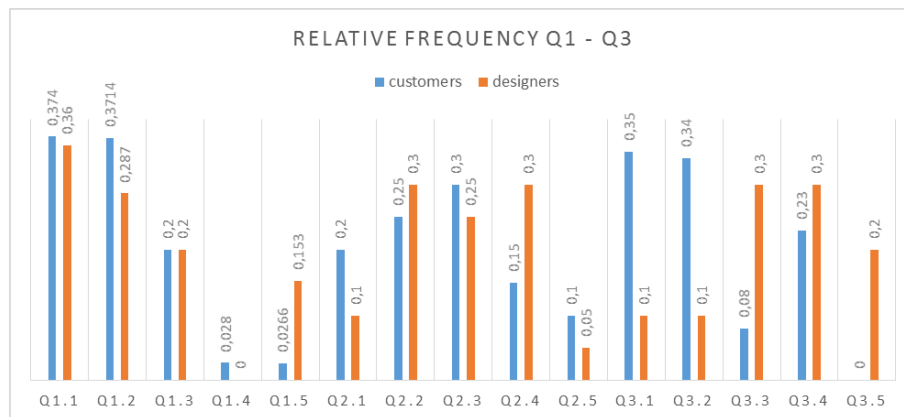

Figure 2. Relative frequency from Q1 to Q3 between customers and designers.

Figure 2 shows a significant difference in Q2.4 questions. In terms of consumers, 15% see social media, and 30% of designers see social media. In terms of frequency of seeing reviews, 35% of consumers see reviews very often, while designers only 10%. Q3.5 shows 100% of consumers read and are affected by OPRs, whereas only 20% of designers are affected by OPRs.
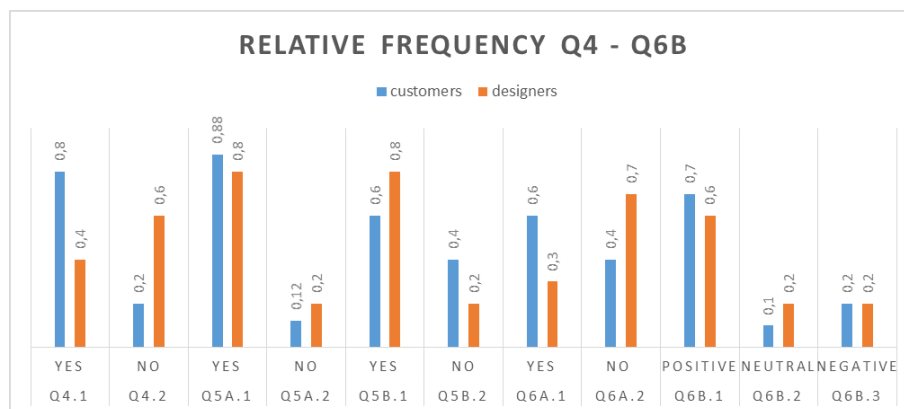
Figure 3. Relative frequency from Q4 to Q6b between customers and designers.

Figure 3 shows that in Q4, consumers are strongly influenced by OPR reviews, while designers are not so affected by OPR reviews. Several things cause a big gap, namely 1) the age of respondents varies from adolescents and adults to influence buying decisions differently, 2) the age of the designer is almost the same, namely adult women between 35-55 years. The results of studies show that OPRs are very influential in buying decisions for consumers, so designers should look at consumers' voices in designing fashion products. The effect of consumer reviews on online purchasing decisions in older and younger adults can be the difference. The previous researcher has conducted the usefulness of OPRs, for example, on online purchasing based on age (Helversen *et al.* 2018). OPRs can predict online data sales based on promotion strategies and sentiments (Chong *et al.* 2016). Nevertheless, OPRs may not be easily trusted because the negative emotional expression could not be the real expression (Xiao *et al.* 2017; Folse *et al.* 2016). For expertise, OPRs do not have a significant impact on making the decision (Ketelaar *et al.* 2015). If OPRs data is massive, they need machine learning to ease the voice of customer analysis (Perera *et al.* 2018). The effect of OPRs in purchasing behavior (Mo *et al.* 2015).

4.2 The Effects of Star Ratings in Buying Decision

In the previous sub-chapter, data shows that user reviews are critical in customer decision making. However, something is interesting that it turns out that consumers compare positive and negative reviews among respondents. We show that the star rating system can be inefficient compared to user reviews. Instar reviews, consumers may be disappointed with the product, but give 4 or 5 stars, and vice versa. However, in the OPRs review, there are specific criteria that consumers expect. In this study, OPRs quoted on shopee.com and a star rating from the review. Figure 4 shows the appraised usefulness of Shopee reviews and also star rating given by the consumer.
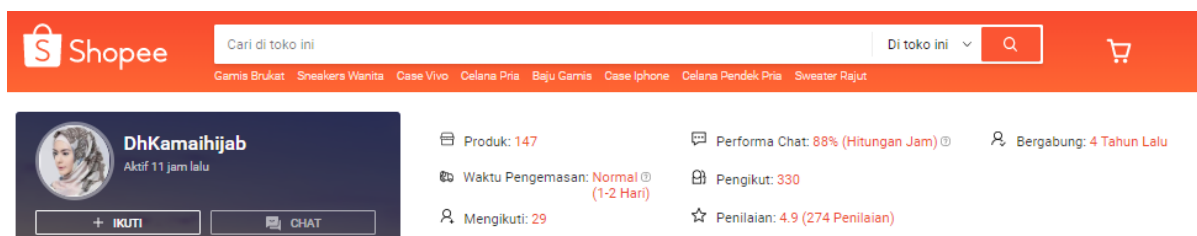

Figure 4. Appraised usefulness of a Shopee review
(source : www.shopee.com)

The results of this study of the creative process between consumers, OPRs can be described in general, as shown in Figure 5. Offline consumer voice and online consumer voice as much as possible, put together, and made adjustments. The needs of offline consumers, namely consumers who buy products from outlets or shops, have different needs from online consumers. For online consumers, product reviews written on the OPRs platform influence buying decisions, but not so much for offline consumers. Another uniqueness became the findings of this study. If founds that OPRs on online shop platforms and other social media are not only read by consumers but also read by designers. The results of these OPRs turned out to influence the designer's decision in designing, although this study had not yet measured how much influence the OPRs had on the design.
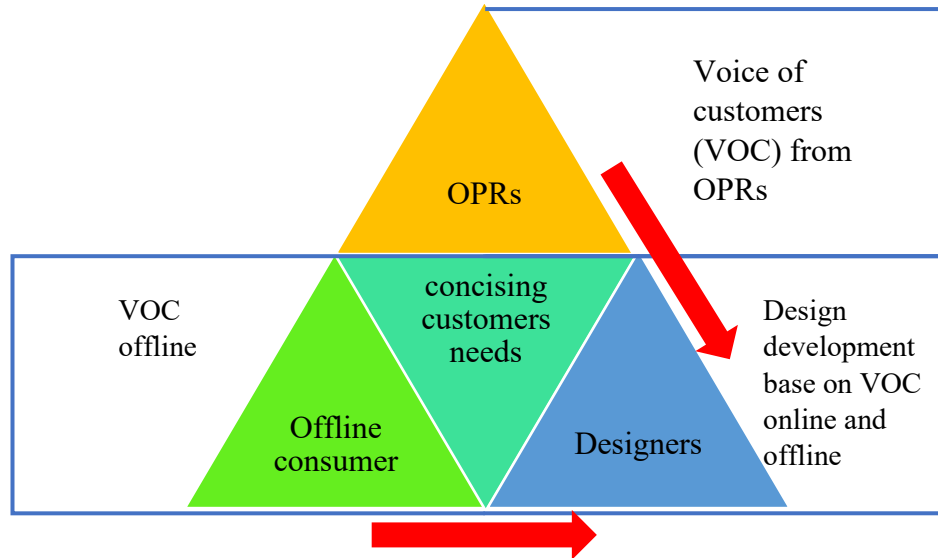
Figure 5. Judgement creation process between consumer, OPRs and designers.

5. Conclusion

This study shows that OPRs can influence consumer decisions in buying Muslim clothing products, both online and offline. This study is consistent with research conducted by (Constantinides and Holleschovsky 2016; Helversen *et al*. 2018; Ketelaar *et al*. 2015). This study also proves that OPRs are a collection of information directly from consumers about opinions after using the product, as well as information that replaces the stage of extracting consumer voices in the product development cycle. This study corroborates the idea of previous research that uses OPRs as a supporter of consumer voices (Wang 2016; Xiao *et al*. 2017; Willemsen *et al*. 2012; Ireland and Liu 2018).

In this study, it turns out that from the designer side, distrust of OPRs is caused by no objective review, the involvement of robotics systems in OPRs that are not purely the voice of consumers. This is consistent with the previous theory, which says that there is a possibility of OPRs being hijacked by computer systems or robots. However, OPRs, as part of big data technology, are very influential on consumers and business systems in general. This is according to the previous theory delivered by (Racherla *et al*. 2012; Mo *et al*. 2015; Chong *et al*. 2016; Folse *et al*. 2016).

OPRs can influence business processes, become a tool to attract markets, and influence consumers as a tool to compete with each other writing reviews. If it aims to bring down, competitors write negative reviews on the e-commerce platform. This is in line with the theories conveyed by (Perera *et al*. 2018; Cooper 2018; Nurcahyanie *et al*. 2020). Future research can use big data analysis with specific algorithms that indicate the suitability of consumer needs and the interests of designers.

References

Chong, A. Y. L., Li, B., Ngai, E. W. T., Ch'ng, E., and Lee, F., Predicting online product sales via online reviews, sentiments, and promotion strategies, *International Journal of Operation and Production Management*, vol. 36, no.4, pp. 58–83, 2016.

Constantinides, E. and Holleschovsky, N. I., Impact of Online Product Reviews on Purchasing Decisions, *Proceeding of 12th International Conference Web Information System Technology*, vol. 1, pp. 271-278, 2016.

Cooper, R. G., The drivers of success in new-product development, *Industrial Marketing Management*, vol. 76, pp. 1–12, 2018.

Folse, J. A. G, Porter III, M., Godbole, M. B., and Reynolds, K. E., The effects of negatively valenced emotional expressions in online reviews on the reviewer, the review, and the product, *Psychology and Marketing*, vol. 33, no.9, pp. 747-760, 2016.

Ireland, R. and Liu, A., Application of data analytics for product design: Sentiment analysis of online product reviews, *CIRP Journal of Manufacturing Science and Technology*, vol. 23, pp. 128-144, 2018.

Ketelaar, P. E., Willemsen, L. M., Sleven, L., and Kerkhof, P., The good, the bad, and the expert: How consumer expertise affects review valence effects on purchase intentions in online product reviews, *Journal of Computer-Mediated Communication*, vol. 20, no. 6, pp. 649-666, 2015.

Mo, Z., Li, Y-F., and Fan, P., Effect of online reviews on consumer purchase behavior, *Journal of Service Science and Management*, vol. 8, no. 3, pp. 419-424, 2015.

Nurcahyanie, Y. D., Singgih, M. L., and Dewi, D. S., Conceptualizing DFSS an analysis of 107 studies, *IOP Conference Series: Materials Science and Engineering*, vol. 722, no. 012055, 2020.

Perera, W. K. R., Dilini, K. A., and Kulawansa, T., A Review of big data analytics for customer relationship management, *The 3rd International Conference of Information Technology Research* (ICITR), Moratuwa, Sri Lanka, pp. 1–6, 2018.

Racherla, P., Mandviwalla, M., and Connolly, D. J., Factors affecting consumers' trust in online product reviews, *Journal of Consumer Behavior*, vol. 11, no. 2, pp. 94–104, 2012.

Utami, V., Maulida, E., Nurbaeti, E., Cholilawati, Muslim fashion trends: Analysis and perspective, *KnE Social Science*, vol. 3, no. 12, pp. 596-602, 2019.

Helversen, B. V., Abramczuk, K., Kopeć, W., and Nielek, R., Influence of consumer reviews on online purchasing decisions in older and younger adults, *Decision Support System*, vol. 113, pp. 1–10, 2018.

Wang, L., The new trend and application of customer relationship management under big data background, *Modern Economy*, vol. 7, no. 8, pp. 841-848, 2016.

Willemsen, L. M., Neijens, P. C., and Bronner. F., The ironic effect of source identification on the perceived credibility of online product reviewers, *Journal of Computer-Mediated Communication*, vol. 18, no. 1, pp. 16–31, 2012.

Xiao, Y., Zhang, H., and Cervone, D., Social functions of anger: A competitive mediation model of new product reviews, *Journal of Product Innovation Management*, vol. 35, no. 3, pp. 367-388, 2017.

Yoon, B. S and Jetter, A. J., Connecting customers with engineers for the successful fuzzy front end: Requirements of tools, *2015 Portland International Conference on Management of Engineering and Technology* (PICMET), Portland, pp. 1585-1595, 2015.