

QUALITY IMAGE OF CONSUMER PRODUCTS AND ITS EFFECTS ON CUSTOMER LOYALTY AMONG ELECTRONIC COMMERCE IN INDONESIA

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ABSTRACT. *It is uncontested that consumer product illustration is an essential aspect of electronic commerce (e-commerce) in terms of the customer's satisfaction points of view. There are still rare studies that examine the perspectives towards the product image issues. This study was proposed to snapshot the status of e-commerce users in Indonesia and to predict the influences of the consumer products image quality towards customer loyalty. It was carried out for responding to the online shopping industry issue in the developing country. A purposive random sampling via a blended survey was selected in Jakarta and its four satellite cities around. We analyzed the data (n = 606) by employing the partial least squares structural equation modeling (PLS-SEM) method. The results revealed that the gender perspectives among the users have been an essential issue in the industry. It has also strengthened the prior study's findings around the effects of a product image quality towards customer loyalty through the trust and behavior intention factors. In terms of its limitations, the study may be one of the practical and theoretical consideration points for future works.*

Keywords: Image quality, Consumer product, Customer loyalty, E-commerce, Indonesia

1. Introduction. The graphical imagery of a product is a crucial aspect of the e-commerce industry [1-5]. It is related to the customer's cognition towards the online product display, how a product picture has a thousand meanings for people [2,6,7], where the physical assessment of the product is specifically infeasible. Di et al. [2] indicated that visual image is a powerful channel to convey crucial information towards online customers and their choice. Scholars [1,3,4] discussed this issue in terms of e-commerce customer loyalty, how people access, consider, and buy based on the image quality of a product, but most of the studies have performed by focusing on the technical issues, especially from the system developer points of view. We found that there are still rare researches that discuss the influences of product image quality referring to the customer perspectives, especially consumer products. In addition, many studies also tended to discuss the people's points of view in the developed countries which the findings may not represent the phenomena in the developing ones. The contextual gaps among each of the country groups may exist [8,9]. Concerning the phenomena, an explanatory study specifically using the e-commerce customer perceptions in a developing country may still be indispensable to be done.

This study was proposed to elucidate trends of e-commerce users and to predict their loyalty regarding the effects of the consumer product image quality in the capital area

of Indonesia. We believed that by the significant e-commerce growth in Indonesia [10], assessment of the image quality issues of consumer products may show a better loyalty improvement strategy via understanding the costumer's cognition and behavior. It is hoped that this study may be one of the references for the scholars and practitioners who are interested in e-commerce trends and influences of consumer product image, especially from developing countries, like Indonesia. Two questions were then proposed for guiding the research implementation: 1) What are the characteristics of e-commerce users in the capital area of Indonesia? 2) Does the image quality of the consumer products influence the loyalty of e-commerce's customers?

The rest of the article is structured within three sections. We elucidate the model and hypothesis developments and methodological overviews in the second section. The third section describes the results and its discussion referring to the research questions. The last section explains some concluding remarks and proposes possible future works.

2. Research Methods. In this study, we combined findings of prior studies [11-14] and then adapted them in terms of e-commerce customer loyalty context. The motivations were 1) customer loyalty is one of the most essential aspects for online businesses because the fast and furious mobility of the customer before making purchase decisions [15,16] and 2) image of consumer product is a powerful channel to convey crucial information towards online customers and their choice [1-5]. Figure 1 presents the proposed model and its 13 hypotheses with six variables, i.e., Image (IMG), Service Quality (SVQ), Satisfaction (STF), Trust (TRS), Behavior Intention (BHI), and Loyalty (LYT).

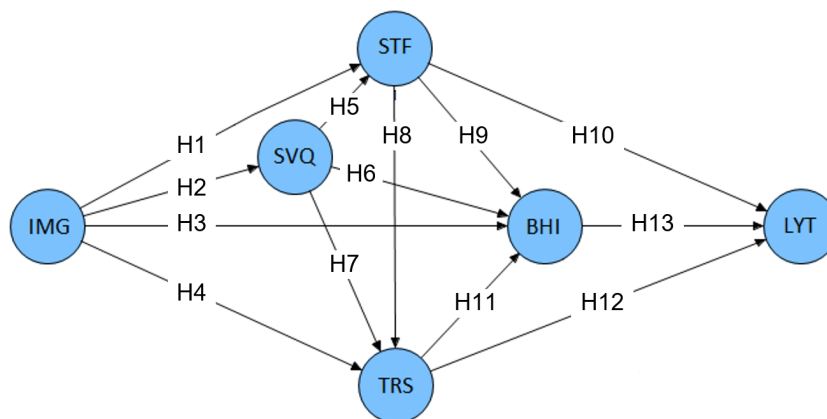


FIGURE 1. The research model [14]

The population was e-commerce users in Jakarta and its four satellite cities around, a territory with the highest e-commerce users in Indonesia. Purposive random sampling was chosen regarding the e-commerce use experiences. About 606 valid responses were then collected using online ($n = 598$) and paper-based ($n = 8$) questionnaires. The questionnaire set consisted of 39 questions, including six questions of the respondent profiles, four questions of the e-commerce experience profiles, and 29 five Likert scale questions. The analysis stage was done in two stages. Descriptive analysis was carried out based on the cross-tabulation method with chi-square using IBM SPSS 20 and inferential analysis based on PLS-SEM method [17,18] using SmartPLS 2.0 [19,20]. In the interpretation stage, results of the analysis stage were then interpreted by discussing the results with the previous findings and the used theories across the research design, model and instrument developments, data collection, and its analysis stages. We then discussed the practical and theoretical indications of the research contribution in the reporting stage. Besides that, we also elucidated the study limitations before proposing the related recommendations for future works.

3. Results and Discussion. In the descriptive analysis, Table 1 shows ten profiles of the respondents. They were dominated by females ($\pm 66\%$), most of them were among 21-25 years old ($\pm 54\%$), undergraduate students ($\pm 61\%$), under one million (IDR) revenue ($\pm 55\%$), capable in IT skills ($\pm 69\%$), and with a good e-commerce experience ($\pm 70\%$). It is consistent with the prior findings [21,22] around the e-commerce popularity among young people.

TABLE 1. Profiles of the respondents

Profiles	Characteristics	<i>f</i>	%	Profiles	Characteristics	<i>f</i>	%
Gender	Male	205	33.8	Revenue (IDR)	< 1,000,000	325	53.6
	Female	401	66.2		1,000,000-3,000,000	122	20.1
Age	< 20 years	182	30.0		3,000,000-5,000,000	92	15.2
	21-25 years	323	53.3		5,000,000-7,000,000	21	3.5
	26-29 years	28	4.6		> 7,000,000	46	7.6
	> 30 years	73	12.1	IT skills	Poor	17	2.8
Education	High School	151	24.9		Worth	174	28.7
	Undergraduate	370	61.1		Good	340	56.1
	Master	45	7.4	Skilled	75	12.4	
	Doctor	20	3.3	Not Good	4	0.7	
	Others	20	3.3	Experience	Worth	185	30.5
City	Jakarta	215	35.5		Good	344	56.8
	Depok	52	8.6		Very Good	73	12.0
	Bogor	33	5.4	Transaction frequency	< 1 month	209	34.5
	Tangerang	241	39.8		1-2 months	169	27.9
	Bekasi	22	3.6		4-6 months	44	7.2
Others	43	7.1	> 6 months		184	30.4	
Position	Public Emp.	52	8.6	E-commerce	Lazada	136	22.4
	Private Emp.	95	15.7		Tokopedia	144	23.8
	Businessman	15	2.5		Bukalapak	71	11.7
	Univ. Student	393	64.8		Shopee	171	28.2
	Others	51	8.4		Others	84	13.9

The cross-tabulation analysis with chi-square (χ^2) was done to present the associations between the respondent profiles (x) and the e-commerce site selection (y). The null hypothesis (H0: there is no association between x and y) acceptance criteria were if the calculated χ^2 value less than its χ^2 statistic table value and the *p*-value of χ^2 output less than 0.05. Inversely, the alternative hypothesis (H1): there is an association between x and y. Table 2 presents clearly that the e-commerce selection is associated with the gender, age, position, revenue, and experience characteristics of the respondents. The e-commerce selection is different among gender (Figure 2(a)). Despite Shopee seems to

TABLE 2. Cross tabulation results

E-commerce	Counted χ^2	<i>df</i>	χ^2 table	<i>p</i> < 0.05 (2-tailed)	<i>t</i> -test
Gender	84.472	4	9.4877	0.000	Rejected
Age	41.021	12	21.026	0.000	Rejected
Education	26.217	16	26.296	0.051	Accepted
Position	48.112	16	26.296	0.000	Rejected
Revenue	35.562	16	26.296	0.003	Rejected
IT skills	18.063	12	21.026	0.114	Accepted
Experience	40.702	12	21.026	0.000	Rejected

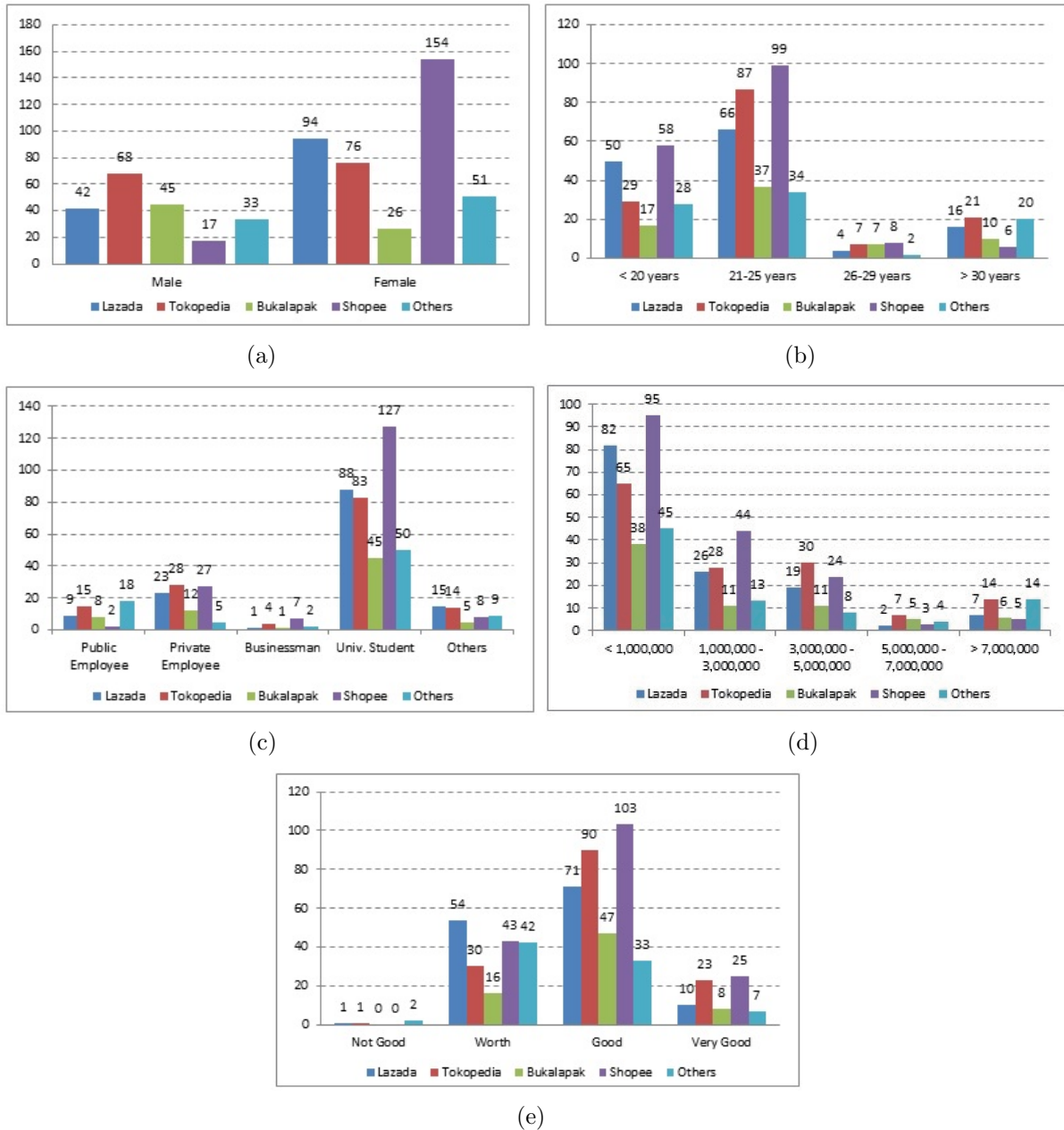


FIGURE 2. (color online) (a) Association between e-commerce and gender, (b) association between e-commerce and age, (c) association between e-commerce and positions, (d) association between e-commerce and revenue and (e) association between e-commerce and experience

be preferred by under 30 years old (Figure 2(b)), it seemed to be the least popular site for public employees (Figure 2(c)). The highest number of people with less than IDR 3,000,000 seems to choose Shopee (Figure 2(d)). It is revealed that the highest number of the adequate experience levels chose the Lazada site for their online shopping (Figure 2(e)). In short, we can see that the gender perspectives may have influenced the shopping behavior among e-commerce users in Indonesia, as was also indicated by the previous studies [10,23]. Moreover, several indications may not be consistent with the findings of the Internet penetration survey [24].

In the inferential analysis, the measurement model assessments were to assess the reliability and validity of the indicators [17,18]. Results demonstrate the psychometric properties of the outer model part with four indicator rejections (Table 3 and Table 4). 1) The

TABLE 3. Cross loadings, CR, AVE, and R²

Items	Cross loading						CR	AVE
	BHI	IMG	LYT	STF	SVQ	TRS		
BHI1	0.822	0.287	0.447	0.580	0.413	0.618	0.893	0.677
BHI2	0.844	0.308	0.434	0.623	0.490	0.600		
BHI3	0.870	0.303	0.512	0.610	0.377	0.574		
BHI4	0.752	0.246	0.607	0.443	0.342	0.465		
IMG1	0.285	0.815	0.156	0.247	0.191	0.256	0.839	0.635
IMG2	0.284	0.828	0.214	0.274	0.230	0.257		
IMG4	0.264	0.746	0.077	0.248	0.167	0.206		
LYT1	0.554	0.172	0.815	0.397	0.320	0.440		
LYT2	0.590	0.228	0.805	0.469	0.394	0.518	0.852	0.590
LYT4	0.304	0.050	0.742	0.151	0.230	0.331		
LYT5	0.292	0.068	0.705	0.173	0.228	0.297		
STF1	0.484	0.207	0.356	0.703	0.524	0.499		
STF2	0.555	0.256	0.297	0.790	0.427	0.481	0.863	0.558
STF3	0.555	0.341	0.316	0.807	0.454	0.507		
STF4	0.470	0.216	0.324	0.709	0.392	0.465		
STF5	0.495	0.173	0.311	0.720	0.498	0.465		
SVQ1	0.458	0.261	0.307	0.511	0.765	0.530	0.907	0.662
SVQ2	0.410	0.215	0.350	0.551	0.797	0.431		
SVQ3	0.373	0.166	0.313	0.465	0.848	0.424		
SVQ4	0.384	0.196	0.329	0.498	0.836	0.428		
SVQ5	0.363	0.148	0.320	0.465	0.820	0.389	0.902	0.698
TRS1	0.630	0.283	0.492	0.598	0.501	0.878		
TRS2	0.647	0.289	0.476	0.612	0.452	0.865		
TRS3	0.558	0.227	0.424	0.524	0.485	0.873		
TRS4	0.432	0.199	0.405	0.406	0.384	0.715		

TABLE 4. Fornell and Larcker’s [25] square root matrix

Variables	BHI	IMG	LYT	STF	SVQ	TRS
BHI	0.823					
IMG	0.348	0.797				
LYT	0.607	0.191	0.768			
STF	0.687	0.322	0.430	0.747		
SVQ	0.493	0.247	0.400	0.616	0.814	
TRS	0.687	0.302	0.539	0.649	0.547	0.836

indicator reliability was assessed using the threshold rate of the indicator loading values at least 0.7 and the linear comparison of each item cross-loading value in the cross-loading sheets (Table 3). Further, we evaluated the consistency reliability using composite reliability (CR) with a threshold level of 0.7 and above. Here, we deleted four indicators (i.e., IMG3, IMG5, TRS5, and LYT3) because of their threshold fulfillments. 2) The indicator validity was tested using the convergent validity test using the average variance extracted (AVE) values of each variable with a threshold of 0.5 or more (Table 3) and discriminant validity test using the Fornell and Larcker’s square root matrix of the AVE (Table 4).

The structural model assessments were to assess the latent coefficient (R²), path coefficient (β), effect size (f^2), hypothesis (t -test), predictive relevance (Q^2), and the relative impact (q^2) points of the model part [17,18]. The results describe 1) R² was assessed with three threshold criteria, i.e., substantial (S) in about 0.670, moderate (M) in around

0.333, and weak (W) in approximately 0.190 and lower. R^2 of BHI is the highest variance among the variances of the five target endogenous variables with a value of 0.581 (Table 5). 2) β was assessed to know the significance (Sg) of 13 paths with a threshold was 0.1 or above. Table 5 shows nine of the 13 paths are the significant (S) links and rest are insignificant (In). 3) f^2 was assessed to predict the influence of each relation path with threshold numbers of the examination was small (S) at about 0.02, medium (M) in around 0.15, or large (L) in approximately 0.35. Table 5 shows that $USF \rightarrow SIS$ is only the path with a large (L) effect and the rest have small effects. 4) t -test was performed using a threshold level of 5% (two-tailed, t -values = 1.96). Table 5 shows 11 of the 13 hypotheses are accepted (A) hypotheses and the rest ones are rejected (R). 5) Q^2 assessment was done to explain the predictive relevance (PR) of each path. Table 5 presents all of the paths presented with their predictive relevance (PR). 6) The q^2 examination was to know the relative impact of predictive relevance with threshold values of 0.02 for small (S), 0.15 for medium (M), or 0.35 for the large (L) effect sizes. Table 5 presents it is only $SVQ \rightarrow STF$ that has medium (M) effects.

TABLE 5. Results of the structural model examinations

Hypotheses	β	t	R^2	f^2	Q^2	q^2	Analysis results					
							β	t	R^2	f^2	Q^2	q^2
IMG→STF	0.180	4.621	0.411	0.052	0.226	0.022	Sg	A	M	S	PR	S
IMG→SVQ	0.247	5.477	0.061	0.065	0.039	0.040	Sg	A	W	S	PR	S
IMG→BHI	0.100	3.401	0.581	0.022	0.391	0.009	Sg	A	S	S	PR	S
IMG→TRS	0.092	2.544	0.463	0.014	0.317	0.004	In	A	M	S	PR	S
SVQ→STF	0.572	17.061	0.411	0.520	0.226	0.217	Sg	A	M	L	PR	M
SVQ→BHI	0.010	0.255	0.581	0.000	0.391	-0.001	In	R	S	S	PR	S
SVQ→TRS	0.231	5.711	0.463	0.062	0.317	0.031	Sg	A	M	S	PR	S
STF→TRS	0.477	12.327	0.463	0.247	0.317	0.128	Sg	A	M	M	PR	S
STF→BHI	0.390	8.664	0.581	0.174	0.391	0.081	Sg	A	S	M	PR	S
STF→LYT	-0.060	1.297	0.399	-0.002	0.214	0.001	In	R	M	S	PR	S
TRS→BHI	0.398	9.306	0.581	0.203	0.391	0.093	Sg	A	S	M	PR	S
TRS→LYT	0.252	5.344	0.399	0.034	0.214	0.022	Sg	A	M	S	PR	S
BHI→LYT	0.475	10.341	0.399	0.160	0.214	0.063	Sg	A	M	M	PR	S

It can be seen that the inferential analysis results show three highlighted points around the effect of the product image quality on e-commerce customer loyalty. 1) There is a small size of the IMG effects towards STF, SVQ, BHI, and TRS. 2) The moderate explanation ($\pm 40\%$) of the LYT variance by STF, TRS, and BHI. Although the influence and relative impact of the predictive relevance of the four first paths of IMG to LYT was classified within the small size, the results of the hypothesis and predictive relevance examinations were accepted and predictive relevant towards each endogenous variable (Table 5). It seems to strengthen the previous similar studies [11-13] used in model development. Referring to the hypothetical examination, the nine of 11 sequential paths between IMG towards LYT can be categorized as the influential links. It is in line with the previous similar studies [11-13,26-30]. 3) In the indirect relationships, it can be seen that LYT has been influenced by IMG at the moderate level via BHI and TRS in particular. This may have extended the basic theories/models of the model developments [11-13]. In summary, besides the above-mentioned points may strengthen and extend the previous research findings; the points may also be one of the practical considerations for the

e-commerce stakeholders in Indonesia. It is especially related to the image quality influences of e-commerce products towards customer loyalty based on user perspectives. Of course, although the findings cannot be generalized for the other works with a different context, methodology, and data; it may be a consideration point for future works. Therefore, it is recommended for the works to consider the limitations of the study.

4. **Conclusions.** Undeniably, the human cognition principle adoption has an important role in the e-commerce world, in the context of how to keep customer loyalty by considering the image quality effect of a product. Although many e-commerce studies have been conducted, most of the studies tend to only discuss technically how a product image is developed. There are only a few studies that have explained its relevance to customer loyalty based on their perceptions. This study specifically used e-commerce customer perceptions to predict how the image quality of the consumer products influences their loyalty. Concerning the research question guidance, we can state that the gender perspectives may have influenced the online shopping behavior among users. Also, the findings may have strengthened and extended the previous study findings of the influential relations between the consumer product image quality towards the e-commerce customer loyalty through mediations of the trust and behavior intention factors. Besides the above-mentioned theoretical contribution indications, the graphical perceptions of consumer products used in the study may also be the consideration points for the online shopping industry players. Several limitations may have also adhered to within the implementation of this research regarding the methodological and contextual points of the study; therefore, the findings cannot be generalized for the other different studies and may only be a consideration for further research.

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