The Moderation Effect of e-Trust and Big Data Quality in e-Grocery: An Empirical Research from Outside of Java Island.

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Abstract: E-grocery is the next big thing that change grocery retail landscape. Even in Indonesia still in the pilot phase towards success, e-grocers have started to retain e-loyalty of their customers. Although e-loyalty in e-grocery is important but it is less explored in e-commerce literature. Big data as part of industry 4.0 has been utilized in many retail include e-grocery and it plays important role to understand of consumer motivation and attract new customers. The purpose of this paper is to investigate the effect of e-trust and big data quality as moderating variable that help in building e-loyalty towards e-grocery business. An online survey was distributed to more than 130 respondents from many major cities outside of Java Island in Indonesia. Structural equation modeling was used and its results reflect the impact on e-loyalty. The main findings of this research are related with the importance of big data quality whether strengthen or not the relation between e-tailing quality and consumer motivation as antecedents of e-satisfaction that fostering e-loyalty in e-grocery business..

1. Introduction

It is undeniable the growth of internet connections and smartphone have increased the number of digital transactions around the globe. Various types of e-commerce platforms have emerged in Indonesia with various types of convenience, comfort and security that can impend the supremacy of conventional retail in the las decade [1]. Therefore, this has encouraged grocery retailers to reshape their business and transform into e-grocery so as to provide various access for customers easier to transact anywhere and anytime, safely and conveniently [2] [3]. Although the number of e-grocery transactions in Indonesia is growing rapidly, especially during the Covid-19 pandemic [4], organic e-loyalty has not yet been created. The majority of customers buy e-grocery only at the beginning of the implementation of Large-scale Social Restrictions in many cities and attractive discounts provided by e-tailer or banks[5].

Throughout time and with economic growth, especially in Indonesia, e-grocery is slowly creeping-up the ladder of fame among customers [6]. But without an organic e-loyalty, it will be difficult for e-grocers to retain customers. Previous research shows that e-satisfaction and e-loyalty can be formed through the presence of hedonic factors [7] which in this study are part of consumer motivation. Consumer motivation, which is divided into hedonism, utilitarianism, and virtue, plays an important role in increasing customer intention to make repeat purchases, which leads to e-loyalty [8] [9].

One of key in every e-grocery business is a customer trust where e-grocers must maintain Previous study by [10] has developed a research framework where trust is a part of a moderation variable that can strengthen the relationship between e-satisfaction and e-loyalty. Security should be considered by e-grocers because online transactions are very prone to cybercrime, in the form of manipulation, fraud actions such as credit card hacking, or hacking user access so that they make transactions without the knowledge of the account owner. Thus, customer trust in online business is mainly related to data security and financial transactions [11].

The other moderation variable is big data as a part of industry 4.0 which has been widely applied by e-grocers [12]. Big Data can provide recommendations to management and customers [1]. From management's perspective then big data can provide information about customers' spending habits and attract new customers. Thus, management can manage supply chain needs, personalize shopping to create a better shopping experience, and provide an overview of customer shopping journey analysis [13]. Therefore, it is necessary to have a deeper investigation of what factors can increase e-loyalty organically so that in the end it can increase the financial income of e-grocers [14].

2.Theoretical Background

Currently, only limites literature discusssion about e-loyalty in the e-grocery business although knowledge of e-loyalty related to the e-grocery business is quite important [15]. There is research on the development of models related to e-loyalty in the e-grocery business and this has become a starting point for a holistic model [16] but there are still limitations in understanding the concept of e-loyalty in the e-grocery business. E-loyalty is always an interesting topic because e-grocers will try their best to maintain it. This is because e-grocers know that organic e-loyalty is difficult to obtain, and they have tried to gain a competitive advantage so that conventional grocery customers are willing to buy through their online channels [17].

In the context of online platforms, it has been proven that there are antecedents related to e-loyalty where website quality [18], e-service quality [19] [20], or e-tail quality [21] are part of the antecedent. This is reflected in various previous studies that have discussed the relationship between e-loyalty, e-satisfaction, and e-tailing quality. In fact, [7] continued the research model conducted by [20] by modifying the model and adding hedonic factors. Added by [11], e-trust is moderation that can support the creation of e-loyalty. Meanwhile, in several other works of literature, it is explained that big data can help retailers increase their inventory and sales capabilities [13] although there are still few studies that combine big data quality into a unified model along with e-tailoring quality, consumer motivation, e-satisfaction, e-trust. and e-loyalty. Therefore, this research is important to understand the moderating role of big data quality so that in the end customer e-loyalty is created organically.

2.1.E-Loyalty

Customer loyalty in every e-grocery transaction is a must that should be maintained and it has became the main aim of any e-grocers as part of business continuity, therefore, e-grocers can sustain and win the market competition [22] [23]. Customer loyalty can be a parameter for the success of e-grocers so that customers are interested and become loyal [24]. There are various factors that affect loyalty, however, e-grocers that have been trusted by customers due to added value outside of the products or services offered are one of the determining factors for e-loyalty [25]. Added by [22] which explains that e-loyalty is a level of customer trust in the existence of e-grocer. The higher the level of customer confidence in an e-grocer, the higher the e-loyalty to the e-grocer.

Table 1. Primary literature review of e-loyalty

Reference	Country	Comments
[10]	Global	Empirical research provesd e-satisfaction is greatly influenced by e-tailing quality. e-grocers are required to provide an interactive system, a wide selection of products and good personalization so that customers feel comfortable and safe.
[26]	China	Empirical research proved CRM as part of customer service and marketing can form the e-loyalty. E-grocers should focus on security and convenience as factors for customer to do online transactions.
[27]	USA	Empirical research shows customers expereinced satisfaction through good relationships with e-grocers can affect the quality of relationships and ultimately and form the e-loyalty. Same as trust and security will increase e-loyalty as well.
[28]	China	Empirical research shows that e-loyalty can be formed along with e-tailing quality mediated by e-satification and e-trust. E-trust dan e-satisfaction will increase as customers through safe and convenience which leads to the form of e-loyalty.
[29]	Italy	Empirical research shows website design and security which are dimensions of e-tailing quality has a greatly affect to e-trust and e-satisfaction to form e-loyalty.

2.2.E-Satisfaction

Refer to [10] e-satisfaction is a judgement from a customer point of view in every online transaction. When e-grocers can accommodate customer's pleasure from a series of online transactions then it will foster a thorough evaluation so as to build e-satisfaction. [31] found e-satisfaction can have significant impact to customers when e-grocers provide effective delivery and fabulous platfrom design. Meanwhile, satisfaction is described as affactive condition [32] when customers are emotionally obtaining happiness, surprise or joy during shopping as a pleasant experience [33]. [28] also has same perception that e-satisfaction is a customers satisfaction to their previous purchase experience at particular e-grocer. Almost existing literature studies have concluded that there is a

significant impact between e-satisfaction on e-loyalty [3]. Meanwhile, [34] explains that e-grocery customers are not only users who are associated with a platform and do browsing, searching, finding, selecting, comparing, and evaluating existing products but finally they transact and wait for the order arriving.

Table 2. Literature review utama terkait e-satisfaction

Reference	Country	Comments
[22]	USA	Empirical research prooved customers believe will receive many benefits from e-tailing quality as long as e-tailers guarantee their data privacy and security otherwise customers will easily switch to other e-tailers
[10]	USA	Empirical research about consumer motivation has significant role to increase e-satisfaction and e-loyalty preceded by e-tailing quality. Any e-tailer facing difficulties to build e-trust. It is necessary to have business partnership to increase e-satisfaction and e-loyalty.
[35]	Korea	Empirical research that e-tailing quality that affected by great technology will increase customer's confidence. A good e-tailing quality will increase e-satisfaction as well.
[36]	USA	Empirical research shows that e-grocery transactions can increase due to consumer motivation related to stimuli, organics and responses. E-tailing quality is very important to keep customers sensing the e-satisfaction. Repurchase increament will effect to e-satisfaction.
[37]	Indonesia	Empirical research proved that customers are willing to repurchase when their e-satisfaction is fulfilled. This research also proved that dimensions of e-tailing quality can affect e-satisfaction and it is proven that e-tailing quality greatly affects consumer motivation and increases e-satisfaction.

2.3.E-Trust

Trust is a crucial thing in online business and e-grocers obligated to maintain it to attract customers' attention to purchase [22]. Also [38] explained e-trust is a customer's willingness for any deficiencies that occur in online transactions based on the customers' positive expectations to an e-grocer in the future. e-trust has a very important role in the process of achieving satisfaction and this is what both e-grocers and customers expect in every online transaction. Trust plays a key role in creating satisfaction and is an expected result in online transactions [39] [40]. Added by [41] that customers must have a sufficient level of e-trust when customers make transactions by providing financial data and other personal data. Thus, a conclusion can be drawn based on the opinion of [40] and [42] that the higher the degree of e-trust felt by the customer, the more confident the customer will be to make a purchase.

Table 3. Literature review utama terkait e-trust

Reference	Country	Comments
[43]	Australia	Empirical research on e-trust and e-interactivity show that customers believe in the e-grocers, especially those who already have physical outlets, thereby increasing consumer motivation to shop online compared to customers who shop directly at pure online stores.
[23]	European Union	Empirical research shows that although e-trust does not directly affect e-loyalty, without e-trust, customers will be reluctant to shop online. E-gorocers can provid e-trust through a safe, reliable, and reliable platform. It also proves that e-tailing quality and consumer motivation are factors that support e-trust.
[44]	USA	Conceptual research about an e-trust model where e-trust is assisted by the presence of a brick and mortart store. When e-grocers can provide easy access to products, orders, tracking orders, and after-sales service then e-trust will be formed.
[45]	Korea	Empirical research shows e-trust will be increased when e-grocer provides chat and forum features. Customers confidence will be

		increased when read post purchase reviews from other customers and information from the mass media.
[46]	Jordania	Empirical research proves that without a good & reliable e-tailing quality, e-trust will decrease and affects e-satisfaction. E-grocer must assure that security is the main thing for customers when making transactions.

2.4.Big data quality

The existence of big data is undeniedable and very helpful for business [12]. E-grocers are often faced with problems in operating their business related to supply chain management effectively and efficiently due to a lack of data to understand sales performance [48]. Currently, many e-grocers have processed big data to assist them predict customer interest and provide attractive product search results so that customers are interested in shopping on the e-grocery platform [48]. Moreover, e-grocers need to manage the supply chain efficiently so that e-grocers can understand their sales results effectively. Research conducted by [49] shows that with a good understanding of purchasing decisions by customers and sales performance, e-grocers can manage supply purchases and develop strategies to increase sales so that they have one of the competitive advantages.

E-grocery as part of modern retail is characterized by many data chains that are useful for large data analysis purposes, but most e-grocers only have much smaller data and thus have few resources to collect and analyze data and to take full advantage of great data opportunities [50]. E-grocery is not only related to the supply chain and customers but also involves investors, the government as policymakers, and even fellow e-grocery related to B2B [12]. This results in a huge amount of data kept by e-grocers. At the smallest level, individual customers are data producers every time they make purchase transactions such as through credit cards, loyalty cards, browsing the web that leaves a track record [51].

In supporting the availability of data related to the e-grocery business, the e-grocery mobile application platform is one of the channels that contribute greatly to providing data. The search engine for products in the e-grocery platform is one of the gateways for customers to make transactions and the more precise the search results will lead to e-loyalty [52]. The role of big data in the e-grocery platform is to provide recommendations for customers with personalization opportunities according to customer characteristics by the products and services being reviewed, to improve integration between the supply chain and partners so that it will increase e-satisfaction and in the end, e-loyalty can be created [53].

2.5.Consumer Motivation

Another point of view from the customer side regarding to motivation to buy e-grocery [54]. These motivations include a variety of motivations for e-grocery shopping according to what the customers expect. In line with this, [55] [56] [57] describes customer motives and various nconditions that trigger customers to shop e-grocery, where there is a process of searching for information, evaluating alternatives, and selecting products.

The research resulted in an explanation of several motives that encourage customers to shop online. The most prominent customer group is the economical buyer group. Customers like this include utilitarian customers, [58] concluding that utilitarian are more inclined to the type of customers who shop online according to their needs instead of for fun or fad.

Then there is the customer group who is very price sensitive. In general, these customers are hedonic [9] [57]. In addition to product prices, e-grocery customers also view the image of e-grocery as the main determinant of purchasing decisions, thereby affecting the customer experience when shopping online [59].

Thus, positive perceptions and familiarity of customers with e-grocery generally indicate a positive perception because e-grocers can reduce concerns regarding the possibility of mismanagement of information and the security of customers' data [60] [61]. In addition to customers who feel comfortable with the image that e-grocer has, customers trust certain brands because it is a factor that mainly affects customer choices in buying and reflects customer behavior [62].

2.6.E-Tailing Quality

The definition of e-tailing quality itself is a metamorphosis of various terms that have been developed previously. E-grocery business includes offering services to customers. Previous research models regarding service can refer to [63] which explains through exploratory research about the measurement of service quality. Then followed by a similar study [64] which produced 22 scales related to service quality and it was also proven that service quality has a significant effect on satisfaction.

Time passed and technology began to penetrate the retail world, including grocery. In its journey, the service quality model has evolved to keep up with the era. Then [19] explained that service quality is closely related to the quality of the website as an online transaction service provider platform. This is in line with [65] which explains that WebQual is a foundation that contains several dimensions that become the basis for online service quality. Furthermore, [20] conducted a study that resulted in twelve dimensions related to e-service quality or they called it e-SQ.

In subsequent developments, many researchers began to examine the role of e-SQ or WebQual. [21] conducted research related to e-service quality in the retail business and described their research model as e-TailQ and produced four dimensions. Then [7] adopted the research model of [21] and made a few modifications, namely breaking the dimensions of website quality into web layouts and web info. Both [7] and [21] have proven that e-tailing quality has an active role in e-satisfaction and can increase e-loyalty.

Table 4. The scale of e-tailing quality refer to [21]

Scale	Definition
Platform quality	customer experience related to the site, browsing, personalization, product search and selection, and order completion.
Fulfillment quality	accurate product descriptions so that customers receive what they are looking for, including providing products on time.
Privacy quality	regarding security in payment systems and privacy when sharing information.
Customer service quality	Regarding responses, assistance and answering customer questions

Research Methodology

3.1.Scale Development.

The research design is a quantitative research approach because includes the way to quantify or express an amount in numbers related to data collection and analysis which is formed through a deductive approach by the presence of theory testing [66]. The data collection was carried out through an online survey which was answered by selected respondents. [67] explained that the questionnaire is part of a survey as a way to collect data from respondents to describe, compare, and explain existing knowledge, attitudes, and behaviors.

The method commonly used in questionnaires is a question using a Likert scale. There are several opinions regarding how many Likert scales are used in a questionnaire but [68] explains that if the scale is below four, the validity and reliability values will be bad, whereas if the scale used is above seven, the results of the validity and reliability are not much different. As for the need to process and analyze research data, the method used is PLS-SEM (Partial Least Square-Structural Equation Modeling) through the SmartPLS application. This is because SmartPLS can process data with a limited amount of data but the results are still optimal because SmartPLS can compute data via bootstrap.

In determining the respondent, it refers to the customer data owned by some e-grocers and also the followers of the e-grocers' social media. Furthermore, the selected respondents come from areas outside Java, because Java has a very good level of internet network infrastructure compared to outside Java. Therefore, this study is to determine how much e-tailing platform is used for e-grocery shopping in areas outside Java so that in the end this research can be useful for e-grocers management.

3.2.Proposed Model & Hypothesis

The main objective basically to determine the level of organic e-loyalty of e-grocery customers outside Java island by analyzing all the supporting factors, namely e-satisfaction, e-trust, big data quality, and e-tailing quality. There are several research models related to these factors. The relationship between e-loyalty, e-satisfaction, and e-tailing quality can be concluded from research [63] and [64], then moving forward to the internet era, the research model [19] related to Service Quality with websites emerged, which was later refined through research [20] on ES-Qual. Furthermore, there is the development of the E-S-Qual model that was initiated by [21] which was later developed by [7] by adding a hedonic factor based on suggestions for further research conducted by [64].

Thus, there are various kinds of different hypotheses that can be proposed because they come from strong theoretical and literary backgrounds. The relationship between the variables that underlie this research has been combined into a conceptual model for further testing. The existence of the e-satisfaction factor of customers as a mediation against e-tailing with e-loyalty and the moderating role of e-trust and big data quality related to customers e-loyalty, both have been carefully investigated so that they can be used in this study. As for the connection that occurs between e-tailing quality and e-satisfaction used in this study, it refers to the model created by [7] which continues previous research by [21], even though the two studies define it as eTailQ, however, it is a variable that is similar to the research model [20] and is closely related to the research model [65]. From all these studies, a conclusion can be drawn to be the reference for the hypothesis in this study.

H1: *e-tailing quality has a direct influence on e-satisfaction*

Still related to the research model [7], although there are modifications to the eTailQ variable, basically this continues the research [20] where hedonic factor can influence customers to increase the linkage between eTailQ and e-Satisfaction. In this study, the hedonic factor is transformed into a dimension that is part of the consumer motivation variable along with the utilitarian and virtue dimensions. Thus, the hypotheses that can be formulated as:

H2: *consumer motivation has a direct influence on e-satisfaction*

Through previous research, especially the research model [7], together with e-tailing quality, consumer motivation and e-satisfaction are closely related to e-loyalty. And it is emphasized by [69] that e-satisfaction has a direct correlation to e-loyalty and it is stated that e-satisfaction is indeed one of the dominant factors in establishing e-loyalty in every online transaction, including the e-grocery business. Thus, the hypotheses that can be formulated as:

H3: *e-satisfaction has a direct influence on e-loyalty*

The role of big data is essential in business activities, including e-grocery. In the research conducted by [12], it is explained that there is a link between big data and e-tailing quality and e-satisfaction because big data quality can provide benefits to customers. In line with this, [13] also explained that the dimensions of big data quality are proven to be suitable for use in the online retail business, including e-grocery. Thus, the hypotheses that can be formulated as:

H4: *big data quality as moderation has a direct influence on the relationship between e-taling quality and e-satisfaction.*

But on the other hand, [70] concluded that customers need personalization in the online platform regarding product offerings according to the customer's personality. Accurate data about shopping history and customers activities are necessary matter. The data usually shows a pattern in customers' habits which is reflected in the consumer motivation variable. Thus, the hypotheses that can be formulated as:

H5: *big data quality as moderation has a direct influence on the relationship between consumer motivation and e-satisfaction.*

Research conducted by [28] shows that e-trust has a direct role in e-loyalty. Even so, the research conducted by [37] and [47] shows that e-trust has a significant direct impact on e-loyalty. In this study, the hypothesis is formulated based on the previous literature review but with a different industry, namely e-grocery. Thus, the hypothesis that can be formulated as:

H6: *e-Trust has a direct influence on e-loyalty*

Then based on previous research conducted by [10], it was explained through his research model that e-Trust is a part that has a moderating effect between e-satisfaction and e-Loyalty. This is also supported by [45] through his research model that used e-Trust as moderation for online business activities. Thus, the hypotheses that can be formulated as:

H7: *e-Trust as moderation has a direct influence on the relationship between e-satisfaction and e-loyalty.*

[45] has proven that e-trust can influence e-loyalty as a moderating factor, then there is a development of a hypothesis that was inspired by research conducted by [71] regarding recommendation quality which is part of big data quality in this study. The research has proven that there are significant results between recommendations and e-loyalty moderated by e-trust. Therefore, it can also be researched about the possibility that big data quality can affect the connection between e-trust and e-loyalty. Thus, the hypotheses that can be formulated as:

H8: *big data quality as moderation has a direct influence on the relationship between e-trust and e-loyalty.*

Exclude of many developments in e-service quality or e-tailing quality models that have been studied in the previous literature, this study sees that big data quality is a new thing that can be combined and analyzed together with other factors mentioned above. Thus, the model proposed to map the interaction between e-loyalty variables with big data quality and e-trust as moderators and other antecedent variables, namely e-satisfaction and e-tailing quality, is a conceptual model.
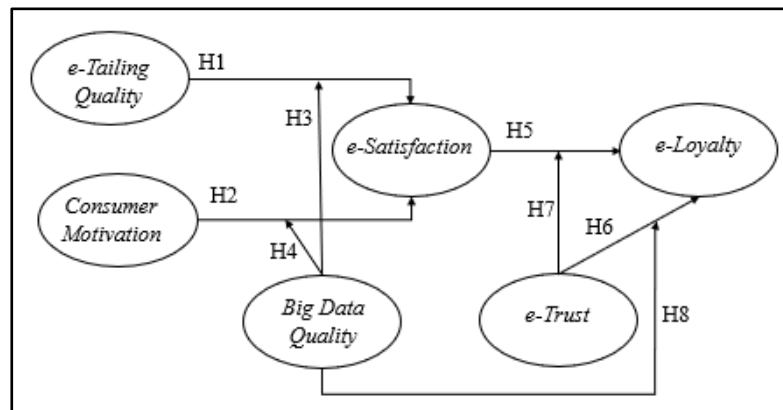

Fig.1. Conceptual Model

4 Result

The results analysis is needed to answer research questions regarding big data quality and e-trust as a moderating factor that plays a significant role in influencing customer intentions so that e-loyalty is formed in the e-tail grocery business in areas outside Java in Indonesia. The analysis variables are used to answer teh research question using SEM techniques which are developed starting from the path analysis as an extension of multiple regression in various regression models or equations that can be estimated simultaneously but still provide a more effective way to determine the direct or indirect effect model [72]. SEM with PLS is an alternative technique in conducting SEM analysis where the data used does not have to have a multivariate normal distribution. By using the SME-PLS, it is possible to estimate the value of the latent variable with a linear combination of the manifest variables associated with a latent variable and is treated to replace the manifest variable.

4.1.Data Collection

The Primary data for this research is using customers data from several e-grocers in Indonesia using random sampling technique random. The distribution of questionnaires were online distributed from October to November 2020 where the respondents are e-grocery customers who had shopped at least twice within last three months. There are 130 valid respondents from around 151 respondents who answered the questionnaire, from Bali, Balikpapan, Pontianak, Banjarmasin, Medan, Palembang, Batam, and Makassar.

Table 4. Profile of respondents

Characteristic	Frequency
Gender	
- Male	48
- Female	82
Age	
- < 20	0
- 21-30	41
- 31-40	65
- 41-50	24
- > 50	0
E-grocery monthly spending (in IDR)	
- < 1,000	28
- ≥ 1,000 - 3,000k	54
- > 3,000k	22
Respondents distribution	

- Sumatera island		52
- Borneo island		26
- Lesser sunda island		34
- Celebes island		16
- Papua island		2

Based on the respondents' data profile, females dominate e-grocery purchasing. This is understandable because grocery products, such as food, beverage, health, and beauty products are mostly purchased by females, although not necessarily consumed by them. Furthermore, the 31–40-year age group dominates e-grocery purchases, this is generally because customers in this group are financially stable where it is reflected in the monthly expenditure costs, which many spend in the range of IDR 1 million - 3 million. Covid-19, which is endemic around the world, has changed human habits. In general, females have a higher level of anxiety than males, hence, this makes females reduce their mobility to go outside, especially just to shop for groceries. To reduce the danger of being exposed to the covid-19 virus, many females decide e-groceries due to convenience and comfort, especially when the PSBB is implemented in several big cities in Indonesia.

4.2.Analysis

This study uses the Smart-PLS application to analyze existing data. The first stage is to evaluate the measurement model (outer model). At this stage, the convergent validity and reliability tests are carried out. Validity testing for reflective indicators can be done by using a correlation between the indicator score and the construct score. Measurements with reflective indicators show that there is a change in an indicator in a construct if other indicators in the same construct change, which then refers to the results of outer loading.

This research model consists of indicators or as a manifest. Then the 1st order is the dimension, and the 2nd order is the variable. There are 11 constructs where seven of them are the main variable and four are the moderating variables, then there are 23 constraints as dimensions and 49 indicators. At the initial stage, the calculation is done with the PLS Algorithm with a maximum iteration of 500. The results show that there are several indicators whose Cronbach's Alpha value is quite small, so the next step is to get rid of indicators that have small outer loadings values. Smart-PLS requires that the minimum value of Cronbach's Alpha is ≥ 0.7 but [73] explains that a value between 0.4 - 0.6 is still considered quite reliable. After adjusting, some indicators are removed and make the dimensions disappear so that the Cronbach's Alpha value of a variable meets the set conditions.

The PLS-Algorithm calculation results show that there are only three constructs that have a Cronbach's Alpha value below 0.7, namely Commitment which is a dimension of e-loyalty with a value of 0.69, then Merchandise which is a dimension of e-satisfaction with a value of 0.65 and FQ which is a dimension of e-tailing quality with a value of 0.69. The Cronbach's Alpha value of the three constructs that serve as these dimensions is still within reliable limits because it is closer to 0.7. Thus, the results of the PLS-Algorithm calculation after subtracting a few constructs with small outer loading values, show that all the remaining constructs are reliable enough to be used. In addition to being reliable which refers to Cronbach's Alpha, it is also necessary to pay attention to the validity value, which refers to the value AVE (Average Variance Extracted) under the condition that AVE is ≥ 0.5. The results of the PLS-Algorithm calculation show that all constructs have a minimum AVE value of 0.5, namely the construct eTQ and eTru. Thus, all constructs are valid.

Table 5. Construct Validity and Reliability

Constructs	Cronbach's Alpha	Composite Reliability	AVE
Ability	1.00	1.00	1.00
BDQ	0.76	0.84	0.51
Benevolence	0.74	0.89	0.79
Channel	0.78	0.90	0.82
CoM	0.79	0.86	0.54
Commitment	0.69	0.83	0.71
Complaint	0.91	0.96	0.92

Convenience	1.00	1.00	1.00
CSQ	1.00	1.00	1.00
eLo	0.75	0.84	0.51
eSa	0.78	0.85	0.54
eTQ	0.65	0.79	0.50
eTru	0.83	0.88	0.50
FQ	0.69	0.87	0.76
Hedonis	0.74	0.89	0.80
Integrity	0.88	0.94	0.89
ME_BDQ-CoM	1.00	1.00	1.00
ME_BDQ-eLo	1.00	1.00	1.00
ME_BDQ-eTQ	1.00	1.00	1.00
ME_eTru-eSa	1.00	1.00	1.00
Merchandise	0.66	0.86	0.75
PQ	1.00	1.00	1.00
Platform Design	1.00	1.00	1.00
Predictability	0.69	0.87	0.77
Product	0.75	0.89	0.80
Recommend	1.00	1.00	1.00
Security	1.00	1.00	1.00
Time	1.00	1.00	1.00
Utilitarian	1.00	1.00	1.00
Virtue	0.77	0.90	0.81

After calculating using PLS-Algorithm, the next step is the calculation by Bootstrapping with a configuration of 1,000 subsamples with the type of test is two-tailed and the significant level is 0.05. While the iteration remains with a configuration of 500 with a stop criterion of 7.
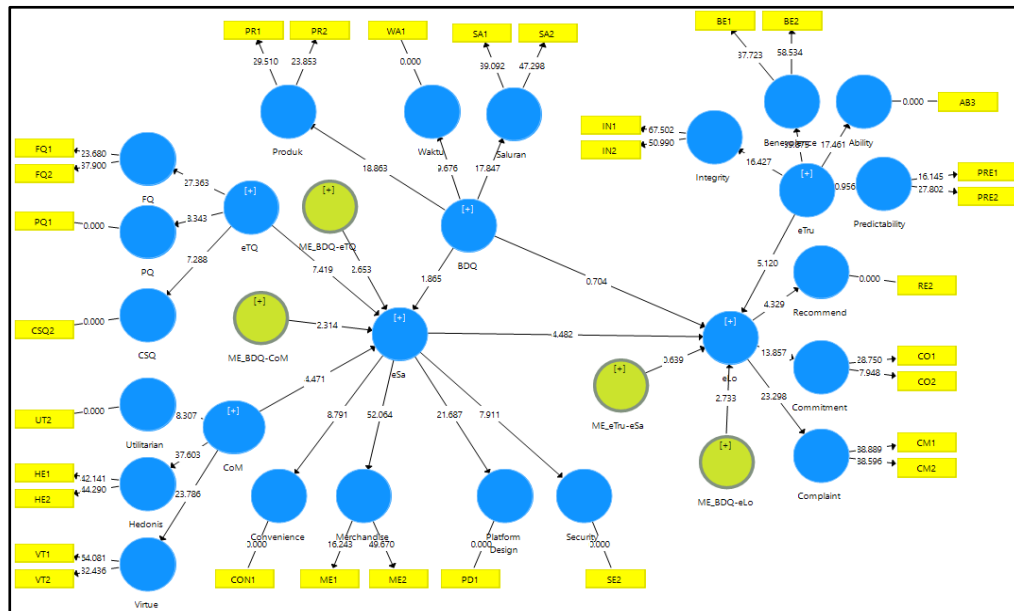
Fig.2. Measurement Model

Note: eTQ = e-tailing quality; BDQ = big data quality; eTr = e-Trust;

eSa= e-Satisfaction; eLo = e-Loyalty

The measurement model after being calculated using the bootstrapping algorithm in Smart-PLS is configured with several types where the data group is configured as a complete data set. The T-value in the Smart-PLS bootstrap result is the result of configuring the inner model and outer model. Including the construct configured as R square. For a deeper analysis of the relationship between all existing constructs, refer to the path coefficient table which contains details about the mean, STDEV, T-Values, P-Values. The t-statistic value is a way of testing an independent variable partially to determine whether there is a positive effect on a dependent variable or not. A T-statistic value can be declared to have a significant effect if the result of the t-value is greater than or equal to 1.96 or if the P-value is less than or equal to 0.05. The proof of the hypothesis in this study is obtained through structural equations which are processed based on structural model analysis.

Table 6. Path Coefficients

	M	STDEV	T Statistics	P Values
BDQ -> eLo	0.055	0.091	0.704	0.482
BDQ -> eSa	-0.128	0.074	1.865	0.063
CoM -> eSa	0.347	0.077	4.471	0.00
ME_BDQ-CoM -> eSa	-0.176	0.082	2.314	0.021
ME_BDQ-eTr -> eLo	-0.047	0.077	2.733	0.044
ME_BDQ-eTQ -> eSa	0.214	0.086	2.653	0.008
ME_eTru-eSa -> eLo	-0.064	0.095	0.639	0.523
eSa -> eLo	0.528	0.117	4.482	0.00
eTQ -> eSa	0.533	0.072	7.419	0.00
eTru -> eLo	0.627	0.11	11.12	0.00

Note: M= Median Sample; STDEV = Standard Deviation

H1 (hypothesis 1) which is represented through the structural model eTQ -> eSA shows that the t-statistic value is 7,419 ≥ 1.96 and P-Values 0.00 ≤ 0.05, which is under the rules of the significance of a construct based on SmartPLS calculations. This proves that eTQ plays a positive role in eSA so that the higher the eTQ through eSA, there will be an increase in e-loyalty and vice versa. These results are in line with research conducted by [7]

and [20] that the platform quality which is a technology contributes significantly to increasing consumer satisfaction.

H2 (hypothesis 2) represented by CoM -> eSa shows the t-statistic result of 4.471 ≥ 1.96 and P-values 0.00 ≤ 0.00 meaning that the consumer motivation variable has a positive and significant effect on e-Satisfaction and e-loyalty. This proves that CoM plays a positive role in eSA so that the higher the CoM through eSA, there will be an increase in e-loyalty and vice versa. Previous literature [7], [9], and [58] also showed similar results. It is the nature of customers as humans to buy groceries as a daily necessity even though there is also an aspect of hedonism in customers when buying expensive branded grocery products such as formula milk. In this study, there is also a virtue aspect that makes customers feel social by buying e-grocery products intended for their loved ones such as parents, siblings, and others. Thus, it is in line with research conducted by [74].

H3 (hypothesis) represented by eSa -> eLo shows a t-statistic result of 4.4.82 ≥ 1.96 and P-values 0.00 ≤ 0.05 so that the e-satisfaction variable has a positive and significant effect on e-Loyalty. This proves that e-Sa plays a positive role in eLo so that the higher the eSa, the eLo will increase and vice versa. The results of this study are in accordance with most previous studies such as [7], [9], [10], [37], and [44] which have proven that e-satisfaction has a significant effect on e-loyalty.

H4 (hypothesis 4) is a moderating variable represented by ME_BDQ-eTQ -> eSa and shows a t-statistic result of 2.653 ≥ 1.96 and P-Values 0.008 ≤ 0.05 so that the big data quality variable as moderation has a role in strengthening the relationship between e-Tailing quality with e-satisfaction. This finding is new because research [1] shows different results. This could have happened because the number and location of the samples are different. The research [1] was conducted in the Jabodetabek area, while this study used respondents who were e-grocery customers that are living outside Java. Added by [75], big data quality can play a better role in e-tailing quality if it is supported by good security and system quality.

Besides H4, H5 (hypothesis 5) is also a moderating variable for big data quality represented by ME_BDQ-CoM -> eSa which shows a t-statistic value of 2,314 ≥ 1.9 6 and P-Values of 0.021 ≤ 0.05. Thus, the big data quality variable contributes to strengthening the connection between consumer motivation and e-Satisfaction. Then the other moderating variables are found in H8 (hypothesis 8) which is represented by ME_BDQ-eTr -> eLo which has a t-statistic value of 2.653 ≥ 1.96 and P-Values 0.008 ≤ 0.05 so that big data quality also has a positive effect on the relationship between variable e-Trust with e-Loyalty.

The trust factor is one of the important things in this study. There are two hypotheses related to e-trust, namely H6 (hypothesis 6) and H7 (hypothesis 7). On H6 which is represented by eTru -> eLo which has a t-statistic value of 11.12 ≥ 1.96 and P-Values 0.00 ≤ 0.05 so that e-trust has a positive and significant role in e-loyalty. This proves that eTru plays a positive role in eLo so that the higher eTru, the increase in eLo will occur and vice versa. The results of this study are in line with research conducted by [37], that e-Trust provides a large share of repeat purchases because only loyal customers will repurchase. Meanwhile, the e-Trust capacity as a moderating variable is represented by ME_eTru-eSa -> eLo where the results show that the t-statistic is 0.639 ≤ 1.96 and P-Values ≥ 0.523, meaning that e-Trust as a moderating variable will weaken the relationship between e-Satisfaction and e. - Loyalty. Research conducted by [10] has indeed created a framework related to the relationship between e-satisfaction and e-loyalty where e-trust acts as moderation, but other research such as [37] shows that e-trust will have a direct effect on e-loyalty, not as moderation.

Although H7 shows insignificant results, it does not mean that e-trust as a moderating variable does not have a significant role. According to [76] there are four types of moderation variables, namely predictors moderation, potential moderation, quasi moderation, and pure moderation. The results showed that there were three pure moderations, namely H4 represented by the ME_BDQ-eTQ -> eSa pathway, then H5 represented by the ME_BDQ-CoM -> eSa pathway, and H7 represented by the ME_BDQ-eTru -> eLo pathway. Meanwhile, there is one potential moderation (homologizer moderation), namely H8 which is represented by the ME_eTru-eSa -> eLo pathway.

5. Conclusion

5.1. Theoritical Implication

This research has implications for both science and implications for e-tailer management. As stated earlier that there are two independent variables, five moderating variables, one mediating variable, and one dependent variable where the research model is a development of research conducted by [7] and [71] by taking respondents outside Java to see their level of e-loyalty towards e-grocery.

This study proves that e-tailing, consumer motivation, big data quality, and e-satisfaction have a big influence on the level of e-loyalty. The results of this study are in line with research conducted by [7], [20], and [21] that the

trio of e-tailing quality, e-satisfaction, and e-loyalty will depend on each other. The better the appearance of a platform, fast fulfillment, transaction security, and customer service which are dimensions of e-tailing quality, will increase e-satisfaction so that ultimately e-loyalty can be created. Then related to consumer motivation, the results of this study are also in line with research conducted by [7], [9], and [74] that the aspect of hedonism remains in all spectrum of e-tailing including e-grocery because some customers feel proud to buy e-grocery products at high prices. The t-statistic value for the utilitarian dimension is low compared to hedonism and virtue, which shows that most customers do not all have more interest in e-grocery shopping than offline grocery shopping.

The results of this study also show that big data quality has been proven to provide benefits and strengthen the relationship between variables. This is in line with research [71], that product recommendations that are part of big data quality can play a positive role. On the other hand, the results of this study are contrary to the research conducted by [10] where the result shows that product recommendations do not produce a positive outcome. In another study conducted by [37], e-trust can play a positive role in e-loyalty, but not as a moderating variable but as a mediating variable. However, in establishing e-loyalty in the e-tailing business, e-trust is still needed because it can make customers do repurchases.

5.2.Managerial implication

This research shows that most respondents are females withins 31-40 years old who purchased a lot of e-grocery followed by females within 20-30 years old. This can be a reference for grocery e-tailers to pay more attention to female customers by giving several rewards and special prices to loyal customers, especially during the Covid-19 pandemic, rather than providing promotions but aiming for general customers. Another thing that e-tailers can do through the results of this research is that the e-tailing platform must be made as easy, comfortable, and safe as possible. An attractive User Interface, fast loading, and precise product searches can provide a good User Experience compared to a product-filled UI that makes customers confused. Even today, e-tailing platforms are required to be able to provide personalization so that the products and services offered to each customer has different characteristics and it is closely related to the usage of big data.

E-grocers are also required to pay attention to fulfillment so that all customers orders can be fulfilled, especially during the current Covid-19 pandemic. Big data is not only helping e-tailers for inventory stock but also able to record customers shopping history based-on location, time, gender, and commonly purchased products so that e-tailers can provide promotions that are more accurate and can be used for marketing activities. other. Furthermore, the results of this study show that e-tailers need to pay more attention to data and transaction security issues. It is often found that customers' data is scattered on the internet, so this is very troubling for customers, especially females because they are not too aware of security issues when shopping online. Therefore, e-grocers are obliged to ensure all activities in the platform run safely.

6.Acknowledgment

References

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