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The Effect of Product Quality, Service Quality, Environment Quality, and Product Assortment on Customer Loyalty trough Customer Satisfaction of BCA Mobile Application

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ABSTRACT: The spread of the Covid-19 virus which is still increasing requires the Indonesian government to issue a policy to limit mobility for the sake of the nation'srecovery. In the end, community activity in public places decreased and community activity in the house increased. This causes an increase in internet usage traffic, including digital transactions. Banking is one of the industries that also plays a major role in digital transactions, one of which is Bank BCA which has been the largest and most trusted private bank in Indonesia since 1957. The study will use six variables, namely product quality, service quality, environment quality, product assortment, customer satisfaction, and customer loyalty on the BCA Mobile application.

This study uses a quantitative approach with Structural Equation Model (SEM) analysis techniques and AMOS 22.0 software. Collecting data in this study using an online questionnaire to 100 respondents with the characteristics of men and women who live in Surabaya and aged 18-60 years who have used the BCA Mobile application at least three times in the last six month.

The results of this study indicate that product quality has a significant effect on customer satisfaction with a regression coefficient of 0.354 but product quality has no significant effect on customer loyalty with a regression coefficient of 0.059, service quality has a significant effect on customer satisfaction with a regression coefficient of 0.520 and service quality also has a significant effect. on customer loyalty with a regression coefficient of 0.283, environment quality has a significant effect on customer satisfaction with a regression coefficient of 0.480 and environment quality also has a significant effect on customer loyalty with a regression coefficient of 0.287, product assortment has no significant effect on customer satisfaction with a regression coefficient of 0.060 and product assortment also has no significant effect on customer loyalty with a regression coefficient of 0.097, and customer satisfaction has an effect significant to customer loyalty with a regression coefficient of 0.312.

KEYWORDS: Product Quality, Service Quality, Environment Quality, Product Assortment, Customer Satisfaction, Customer Loyalty, BCA Mobile Application

I. INTRODUCTION

Referring to data from the World Health Organization or WHO, in the period 12 to 18 July 2021, Covid-19 cases globally experienced an increase of 12% compared to the previous week to reach 3.42 million cases of transmission, with an average of 400,000 cases per day increasing to 490,000. cases per day. This was also followed by the death rate during that period which also increased by 1% compared to the previous week to reach 56,767 cases of death per day. The number of Covid-19 cases globally accounts for more than 190 million cases and it is very likely to exceed the 200 million mark in the next three weeks (https://newssetup.kontan.co.id downloaded on July 25, 2021).

In the same period, this also happened in the Western Pacific region which also experienced an increase of up to 30% and Europe 21%. Table 1.1 shows that the increase in the number of virus transmission has put Indonesia in the rank of one country in the world with the highest Covid-19 cases. A drastic increase of 44% compared to the previous time, in the period 12 to 18 July 2021 the transmission of the Covid-19 virus had reached 350,273 cases (https://newssetup.kontan.co.id downloaded on 25 July 2021).

It's been about a year and a half that the Covid-19 virus has hit Indonesia, but that doesn't stop the virus from spreading, and the cases are still growing. Even on July 24, 2021, as many as 45,416 people were infected with the Covid19 virus again, so

that the number of Covid-19 victims in Indonesia reached 3,127,826 since March 2020, where this virus began to enter and hit the country. This is also followed by the number of patients dying from Covid-19 in Indonesia, which is still increasing. On the same day, there were still 1,415 additional deaths due to Covid-19 per day, bringing the total number of Covid-19 victims who died in Indonesia has reached 82,013 people (https://nasional.kompas.com downloaded on July 25, 2021).

With the increase in cases of the new variant of Covid19 growing very quickly, therefore the government finally decided to impose an PPKM Darurat (Pemberlakuan Pembatasan Kegiatan Masyarakat) which initially started on July 3 to 20, 2021 for the Java and Bali regions, has now been extended and even applies for areas outside Java-Bali. President Joko Widodo announcing this and confirms that this decision is based on studies from ministers, health experts, to regional heads and aims to save the Indonesian nation by preventing an increase in the transmission of the Covid-19 virus. Jokowi hopes that the public remains calm and alert and disciplined in complying with provisions such as implementing health protocols and supporting state officials and volunteers in dealing with the Covid-19 pandemic (https://setkab.go.id downloaded on July 25, 2021).

The decrease in community activities outside the home caused by the PPKM Darurat which was implemented since July 3, 2021. Activities in public open spaces decreased by 12.6% and public transportation decreased by 36%. In addition, activity in shopping centers and tourist attractions also decreased by 11.7% and the same with activity in the workplace which also decreased by 25% due to the implementation of WFH (work from home) or working from home in several work sectors determined by the government. This is supported by an increase in mobility in residential or housing, which is 10.7%, but the mobility of people to supermarkets and pharmacies increases by 19%, this is possible because people pay more attention to their needs when they are at home and buy medicines and vitamins to maintain their health. However, the public must also remain disciplined in implementing the 3M health protocol, namely maintaining distance, wearing masks, and washing hands (https://databoks.katadata.co.id downloaded on 25 July 2021).

It can be estimated that the PPKM Darurat which has been in effect since July 3, 2020 will increase traffic using the internet by up to 20% due to the increasing number of online activities. Data from BPS (Badan Pusat Statistik) states that 10.92% internet users in 2010 increased significantly to 43.52% in 2019. This PPKM Darurat is increasing the trend of digital economy transactions because people are increasingly thinking about how to keep their needs met. even under these conditions. Based on data from Google and the Ministry of Commerce, since the beginning of the pandemic in March 2020, digital consumers have increased by 37% throughout 2020. This has caused the valuation of Indonesia's digital economy to increase by more than 40% per year since 2015, even digital service providers have processing transactions totaling US$ 40 billion by mid-2020 (https://www. Suaramerdeka.com downloaded on 26 July 2021).

This was also followed by digital banking transactions in Indonesia, which also accelerated as a result of increased public activities for shopping online. Bank Indonesia (BI) stated that digital banking transactions in April 2021 increased by 60.27% from the previous year to reach 572.8 million transactions. Likewise, the transaction value reached Rp 3,114.1 trillion, or jumped 46.36%. In the midst of these conditions, BI will continue to push the digitalization system of the economy towards more inclusive and efficient finance. In addition, BI is also expanding the electronification of the distribution of social assistance and local government financial transactions (https://keuangan.kontan.co.id downloaded on July 31, 2021).

One of the largest private banks and has been trusted by millions of Indonesians, namely Bank Central Asia or Bank BCA which originally came from the name NV Bank which has officially changed its name to PT Bank Central Asia on February 21, 1957, founded by Soedono Salim or who is also known as Liem Sioe Liong and is part of the Salim Group, is now fully owned by Robert Budi Hartono and Michael Bambang Hartono who are also one of the owners of cigarette manufacturers in Indonesia, namely Djarum (https://www.cnnindonesia.com/ Ekonomi downloaded on July 31, 2021).

In 1977, Bank BCA became a foreign exchange bank because it had merged with other banks, one of which was the Bank of the Indonesian Armed Forces Welfare Foundation, namely Bank Gemari. In the 1980s, with the status of a foreign exchange bank, Bank BCA asked for permission from Bank Indonesia to launch a credit card that would be applied internationally. In the same year, Bank BCA also issued Tabungan Hari Depan or Tahapan BCA. Continuous development is carried out such as expanding the information technology system, expanding the branch office network, maximizing ATM technology, continuing to develop various products and services with the aim of reaching more people. By the early 2000s, BCA had gone much further by developing many of its business systems. Bank BCA also continues to make drastic developments, such as launching the Flazz prepaid card, mobile banking, internet banking, as well as disbursing home, car and other loans through Bank BCA's subsidiary, BCA Finance. Currently, Bank BCA has eight banking subsidiaries engaged in various other sectors (https://www.cnnindonesia.com/economy downloaded on July 31, 2021).

Bank BCA is the number one private bank with the third largest and most trusted in Indonesia, but this does not prevent Bank BCA from also feeling the impact of the Covid19 pandemic, for example, many bad loans and certainly very detrimental to

the bank. However, this does not make Bank BCA careless, precisely because Bank BCA has been trusted by millions of people, BCA must take part in saving the people's economy. Therefore, Bank BCA continues to strive so that the community's economic activities can continue to run normally amidst the PPKM which is being implemented by the government for the sake of the nation's recovery. Bank BCA's operational activities must continue, but Bank BCA continues to implement health protocols for customers and employees, for example, such as physical distancing, checking body temperature, and implementing rotating work from home and so on (https://www.cnbcindonesia.com downloaded on July 31, 2021).

In accordance with Bank BCA's commitment to always being by the customer's side and providing the best service to customers, Bank BCA has heard of the increasing need for customers to transact digitally because of the PPKM. Bank BCA conducts the #BankingFromHome campaign by trying to maximize banking services through various online channels with the aim of providing customer satisfaction. What Bank BCA does is increase the daily transaction limit, including mobile banking through BCA Mobile and internet banking through Klik BCA to Rp 500 million, which is equipped with a BCA Key as a security system to ensure the security of customer transactions. In addition to making large transfers and paying bills, customers can also enjoy various features, such as blocking ATM cards, opening accounts, viewing account mutations for the last five years, and buying investment products, all of which can be done online so that customers can make payments. digital transactions more easily because they can be done anywhere and anytime. Now customers can feel the convenience of transacting in just one hand without the need to go to ATMs or branch offices as well as Halo BCA services that are ready to serve customers 24 hours (https://www.theiconomics.com downloaded on July 31, 2021).

Bank BCA's digital application performance is ranked second in Indonesian banking, so the authors see that there is continuity in academic research on customer satisfaction and customer loyalty. Therefore, the authors include several variables in this study such as product quality, service quality, environment quality, and product assortment from BCA Mobile.

Product quality is the strength of a product showing its overall ability, both in terms of durability, reliability, accuracy, ease of use, and product repair (Kotler and Armstrong, 2008). Product quality can be used as a strategy that can beat competitors. The products offered by BCA Mobile are application products of good quality, both in terms of the ease of use of the application, the speed of the application, and the application is not easy to error.

Service quality is related to the size of the comparison between the level of service provided and customer expectations (Wijaya, 2014). The services provided by BCA Mobile are transfer services in real time, display transaction data accurately, and provide security for customer transaction data.

Environment quality is everything that is judged by sight, for example, such as color, shape, model, and others (Lovelock et al., 2010). The appearance of the BCA Mobile application uses a blue color that is comfortable to look at and unobtrusive, the use of icons according to the features provided, and the appearance of the application looks simple and uncomplicated.

Product assortment is the entire product offered by sellers to consumers (Kotler and Keller, 2015). BCA Mobile has a variety of features to suit customer needs. It can be concluded that BCA Mobile provides various banking transactions such as balance checks, account mutation checks, transfers, bill payments, new account openings, and others; providing various non-banking transactions such as daily shopping, airline/train tickets, hotels, donations, and others; has a variety of interesting features such as cardless transactions.

Customer satisfaction is behavior where consumers compare service performance with consumer expectations (Kotler in Indrata et al., 2017). Meanwhile, customer loyalty is the willingness of consumers to make repeated purchases of the same brand (Tjiptono, 2011). BCA Mobile customer loyalty will be created from product quality, service quality, environment quality, and product assortment perceived by consumers through customer satisfaction.

From the background that has been written, the author is interested in conducting research on the BCA Mobile application because this application contains all the variables to be studied and also because the use of the BCA Mobile application is currently still increasing and is increasingly needed, especially because of the Covid-19 pandemic that has not yet been released. completed, coupled with the implementation of mobility restrictions that require people to reduce activities outside the home and maximize activities at home, including digital transactions.

In addition, this research is also motivated by a research gap as in previous research conducted by Bei and Chiao (2006) which stated that product quality did not significantly affect customer satisfaction in the banking industry, while research conducted by Agus et al. (2016) show that product quality has a significant effect on customer satisfaction in the RTS (Rail Ticketing System) application. There is also a research gap between Bei and Chiao's (2006) research which states that service quality has no significant effect on customer loyalty in the gas station industry, while research conducted by Dwi Aryani et al. (2012) which states that service quality has a significant effect on customer loyalty in restaurants.

Therefore, the authors decided to conduct this research in order to determine the effect of product quality, service quality, environment quality, and product assortment on customer loyalty through customer satisfaction on the BCA Mobile application.

II. LITERATURE REVIEW

A. *Product Quality*

Product quality is the strength of a product that shows its overall ability, both in terms of durability, reliability, accuracy, ease of use, and product repair (Kotler and Armstrong, 2008). Meanwhile, according to Assauri in Arumsari (2012), product quality includes things that affect an item to suit the purpose of making the item. Kotler and Armstong (2018) also mention that the purpose of product quality is to get attention, use or consumption that can provide satisfaction and meet customer needs. According to Daniel Hunt in Sony Santosa (2010), product quality is the suitability of product use in meeting needs and desires that will create customer satisfaction. There are four ratings of the quality of a product, including low, medium, good, and very good quality (Kotler in Arumsari, 2012).

H1: Product quality has a significant effect on customer satisfaction.

H2: Product quality has a significant effect on customer loyalty.

B. *Service Quality*

Service quality consists of two words, namely quality and service. Tjiptono and Sunyoto (2012) explain that quality is related to products, services, processes, environments that are in accordance with or even more than expected. Service is an activity provided by one party to another (Kotler in Liu, 2016). Meanwhile, according to Tjiptono (2011) service is a collection of activities that are not visible, usually occur in service providers who provide solutions to consumer needs. Comparison of service quality arises from the comparison of a service provider with a service provider, seen from the attitudes and expertise of its employees (Lovelock and Wirtz, 2011). The theory is also present from Wijaya (2014) which explains that service quality is a measure of how the level of service provided is compared to customer expectations. **H3: Service quality has a significant effect on customer satisfaction.**

H4: Service quality has a significant effect on customer loyalty.

C. *Environment Quality*

The physical environment or physical appearance is the first element that is felt in the use of the product (Tuzunkan, D. et al., 2016). Physical appearance is related to the exterior and interior facilities of a product (Wood, 2009). Display quality is everything that is judged by sight, for example, such as color, shape, model, and others (Lovelock et al., 2010). According to Ryu (2005) physical appearance is very influential for consumers, designing the display will produce a person's feeling in making a purchase. The creation of a beautiful physical appearance can make consumers interested in buying or using it (Kotler, 2007). Physical appearance conditions will provide an experience that can increase or even reduce the level of consumer satisfaction (Lovelock et al., 2010).

H5: Environment quality has a significant effect on customer satisfaction.

H6: Environment quality has a significant effect on customer loyalty.

D. *Product Assortment*

Product assortment is the design and management of variants carried out by a company or seller of a product group (Vinci, 2009). According to Kotler and Keller (2015) product assortment is all products offered by sellers to consumers. Product assortment can be distinguished based on appearance, size, price, and so on (Tjiptono, 2008). Mikell P. Groover (2010) states that product variations are referred to as products with different types or designs and are produced by 15 companies. So, product assortment has many different types and designs that are produced or provided by a company (Grover, 2010). In the end, when making transactions, consumers often make transactions that were not previously planned. It can also be concluded that product assortment can influences consumer purchasing decisions (Madiha Zaffou, 2010).

H7: Product assortment has a significant effect on customer satisfaction.

H8: Product assortment has a significant effect on customer loyalty.

E. *Customer Satisfaction*

Satisfaction is a feeling that arises after a person experiences an experience (Lovelock and Wirtz, 2011). Consumer satisfaction is a behavior where consumers compare service performance with consumer expectations (Kotler in Indrata et al., 2017). According to Kotler and Keller (2007), customers will feel happy when they are satisfied and conversely, customers will feel disappointed when they are not satisfied. Customers will feel disappointed when the performance results that occur are

below their expectations. On the other hand, customers will feel happy if the performance results that occur meet and even exceed their expectations which ultimately make customers feel satisfied (Kotler, 2006). Of course, consumers will feel satisfied when their needs and desires can be fulfilled in accordance with their expectations (Tjiptono, 2012) because business actors who focus on customer satisfaction will help the company have a positive image (Felix, 2017).

H9: Customer Satisfaction has a significant effect on customer loyalty.

F. *Customer Loyalty*

Loyalty relates to feelings of security, support, belonging, and building a bond of one's feelings (Kartajaya, 2007). According to Gibson (2005), customer loyalty is the motivation to make repeated purchases of goods/services created or provided by a company. Tjiptono and Chandra (2011) state that customer loyalty is a customer's commitment to a brand or store based on his consistent attitude in making repeated purchases. Customer loyalty, which can also be referred to as customer loyalty, is the willingness of consumers to make repeated purchases of the same brand (Tjiptono, 2011). Sutisna (2003) also said that loyalty is a feeling of pleasure towards a particular brand so that they make repeated purchases for a long time. According to Griffin (2005), doing a way with the aim of giving satisfaction is related to customer attitudes, while customer loyalty is related to behavior resulting from customer attitudes.

G. *Previous Research*

This study uses a reference journal by Porral and Mangin (2016) with the title "Specialty Food Retailing: The Role of Purchase Frequency and Determinants of Customer Satisfaction and Loyalty".

The reference journal discusses the functions of purchase frequency, determinants of satisfaction, and customer loyalty. Almost the same as the latest research which also discusses the determinants of customer satisfaction and loyalty but does not discuss the frequency of purchases. However, the most visible difference is that previous studies used the object of a specialty food retailer store, while the object used in this study was a digital banking application.

The variables used in the previous research discussed product perceived quality, service, environment, assortment to customer loyalty through customer satisfaction. Recent research has replaced product perceived quality into product quality.

The difference is in the sample due to differences in objects and locations or countries. The sample of the previous study used customers and occasional consumers of whole foods or whole foods specialist stores in the United States, while the current study used BCA Mobile customers in Surabaya.

Both studies are causal studies that discuss the relationship between independent variables and variables. Both of these studies also used quantitative methods which were carried out by distributing questionnaires. Previous researchers got 592 valid questionnaires. While the number of samples used in the latest research is 100.

The results of previous studies show that all independent variables (product perceived quality, service, environment, and assortment) have a significant impact on the dependent variable (customer satisfaction and customer loyalty).

III. RESEARCH METHODS

A. *Type of Research and Data*

This type of research is a type of causal research that shows the relationship and measures the strength of the independent variables with related variables (Silalahi, 2012). This research uses quantitative methods which will study the relationship between variables and will be measured and analyzed using statistical procedures with the aim of testing existing theories (Noor, 2011).

This study uses primary data types. Primary data is based on first-hand information, namely the researchers themselves, obtained from individual respondents, focus groups, and online questionnaires (Uma Sekaran, 2011). In this study, data will be obtained through the distribution of online questionnaires to respondents who have used the BCA Mobile application.

B. *Population and Sample*

The population discusses the place or area of generalization of objects or subjects with characteristics that have been determined by researchers to be studied with the aim of drawing conclusions (Sugiyono, 2017). The population used in this study is BCA Mobile customers who live in the city of Surabaya.

The sample is part of the number and characteristics of the population that have been determined by the researcher. If the population is deemed too broad, in the end it is impossible for researchers to study everything because of limitations on researchers, both energy, time, costs and others, so researchers can take samples from a predetermined population (Sugiyono, 2017).

Actually there are two types of sampling methods, namely probability sampling and non-probability sampling. In this study, the author uses the nonprobability sampling method, meaning that not all members have the opportunity to be selected as samples (Sujoko Efferin, 2019). The researcher uses this method because the researcher does not know in detail the number of populations who use the BCA Mobile application, meaning that the samples taken are not necessarily found in all respondents.

The technique used by the researcher is snowball sampling in which the initial sample determination is small, then the sample is directed to choose friends to serve as other samples (Sujoko Efferin, 2019). Questionnaires were distributed to BCA Mobile customers who were selected as samples and started by distributing them to samples known to the researcher. The distribution will be carried out in this way. The area where the questionnaire was distributed is the city of Surabaya.

The characteristics of the respondents determined were male and female respondents with domicile in Surabaya aged 18-60 years where that age was early adulthood (Kotler and Armstrong, 2010) and had used the BCA Mobile application at least three times in the last six months.

The basis of sample size depends on the number of indicators on all variables. The way to determine the number of samples is the number of indicators used in this study multiplied by five to 20 with an estimate of 100-200 samples (Ferdinand, 2002). There are 18 indicators in this study, so the estimated number of samples is 90-180 samples. This study will use 100 samples.

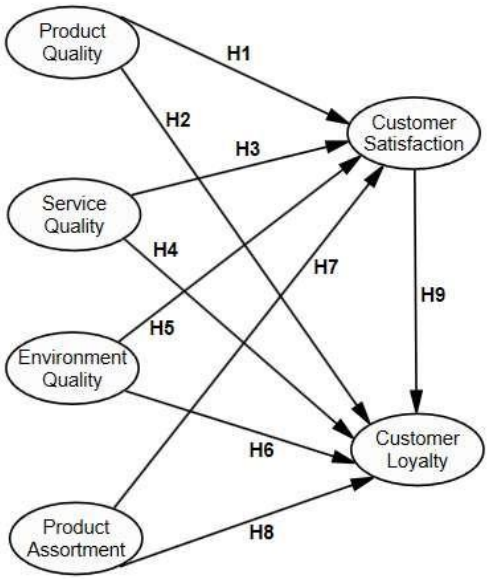


Figure 1. Research Method

Source: Processed data (2021)

C. ***Method of Collecting Data***

In collecting data, the researcher used a questionnaire method. The questionnaire will be given a number of questions that are given to respondents to be answered (Sugiyono, 2011). In the midst of a pandemic like this, it is not possible to distribute the questionnaires directly, so the distribution of the questionnaires will be done online via Google Form with the aim of making it easier to reach a wider range of respondents. The questionnaire is considered valid if the questionnaire is completed completely and in accordance with the instructions for filling out. After the selection stage, the questionnaire that is considered valid will be processed further.

In this study, the questionnaire will be divided into two parts. The first or initial section contains questions about the general information of the respondents to ensure that the characteristics of the respondents are in accordance with the predetermined sample criteria. The question in the second part is aimed at obtaining research data, namely the effect of product quality, service quality, environment quality, and product assortment on customer loyalty through customer satisfaction. The researcher provides a Likert scale from 1-5, namely from strongly disagree (STS = Sangat Tidak Setuju) to strongly agree (SS = Sangat Setuju).

IV. RESEARCH RESULT

A. *General Description of Respondents*

Table 1. Respondent Profile by Age

No.	Age	Frequency	Precentage
1.	18-34 years old	100 people	100%
2.	35-49 years old	0 people	0%
3.	50-60 years old	0 people	0%
	Total	**100 people**	**100%**

Source: Processing of questionnaire data using SPSS 22.0 (2021)

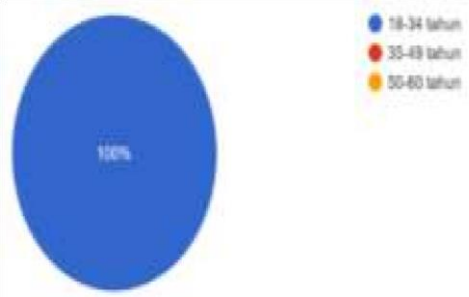


Figure 2. Diagram of Respondent Profile by Age

Source: Processing of questionnaire data using Google Form (2021)

Table 1 and Figure 2 show that all 100 respondents were aged between 18 and 34 years.

Table 2. Respondent Profile by Gender

No.	Gender	Frequency	Precentage
1.	Man	44 people	44%
2.	Woman	56 people	56%
	Total	**100 people**	**100%**

Source: Processing of questionnaire data using SPSS 22.0 (2021)

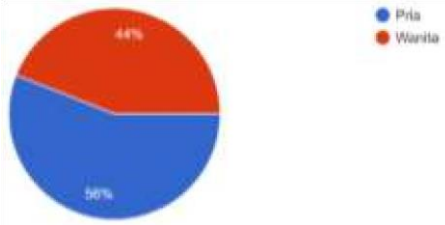


Figure 3. Diagram of Respondent Profile by Gender

Source: Processing of questionnaire data using Google Form (2021)

Table 2 and Figure 3 show that the majority of respondents are female with a percentage of 56% with a total of 56 people out of a total of 100 people. While male respondents as many as 44 people or 44%.

Table 3. Respondent Profile by Domicile

No.	Domiciled in Surabaya	Frequency	Precentage
1.	Yes	100 people	100%
2.	No	0 people	0%
	Total	**100 people**	**100%**

Source: Processing of questionnaire data using SPSS 22.0 (2021)

Figure 4. Diagram of Respondent Profile by Domicile
Source: Processing of questionnaire data using Google Form (2021)

Table 3 and Figure 4 show that all 100 respondents domiciled in Surabaya, according to the specified criteria.

Table 4. Respondent Profile by Income

No.	Age	Frequency	Precentage
1.	< Rp 4 million	12 people	12%
2.	Rp 4 – 8 million	69 people	69%
3.	Rp 8 – 12 million	15 people	15%
4.	> Rp 12 million	4 people	4%
	Total	**100 people**	**100%**

Source: Processing of questionnaire data using SPSS 22.0 (2021)

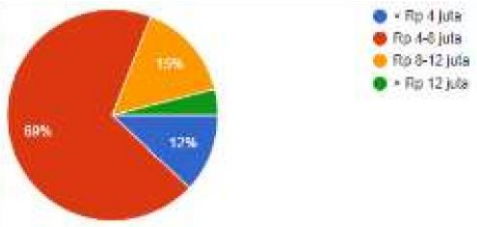


Figure 5. Diagram of Respondent Profile by Income
Source: Processing of questionnaire data using Google Form (2021)

Table 4 and Figure 5 show that more than half of the total respondents, namely 69 people, have an income of IDR 4-8 million and have a percentage of 69%. Respondents with an income of IDR 8-12 million are in second place with a percentage of 15% or as many as 15 people. Respondents with income below IDR 4 million are in the third rank, namely 12% or as many as 12 people. Respondents who earn above Rp 12 million are in the last rank with a percentage of 4% or as many as four people.

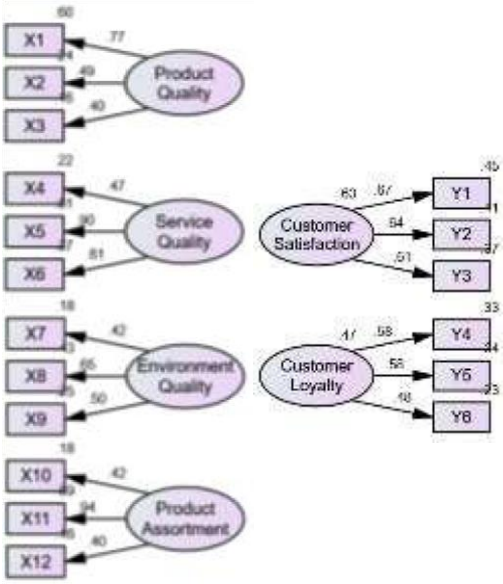
B. *Validity Test*

The validity test uses CFA (confirmatory factor analysis) with a minimum value of ≥ 0.40. Statements with appropriate CFA values are considered valid.

Customer Satisfaction			
1.	Saya puas dengan pelayanan BCA Mobile.	0,67	Valid
2.	Saya puas dengan biaya yang ditawarkan BCA Mobile.	0,64	Valid
3.	Saya puas dengan fitur BCA Mobile secara keseluruhan.	0,61	Valid
Cust omer Loyalty			
1.	Saya mau terus menggunakan BCA Mobile.	0,58	Valid
2.	BCA Mobile merupakan satusatunya *mobile banking* pilihan utama saya.	0,58	Valid
3.	Saya akan merekomendasikan BCA Mobile kepada orang lain.	0,48	Valid

Source: Processed data (2021)

All statements in this study are valid, as evidenced by Figure 6 and table 5 where the CFA value of all variables has a value of 0.40.



Source: Data processing using AMOS 22 (2021)

Figure 6. CFA Value

C. *Reliability Test*

This is the construct reliability formula used to test the

Table 5. Validity Test

No.	Statement	CFA	Desc.
Prod uct Quality			
1.	BCA Mobile mudah untuk digunakan.	0,77	Valid
2.	BCA Mobile bekerja dengan cepat.	0,49	Valid
3.	BCA Mobile memiliki tingkat *error* yang rendah.	0,40	Valid
Serv ice Quality			
1.	BCA Mobile memberikan layanan transfer secara *real time*.	0,47	Valid
2.	BCA Mobile menampilkan detail transaksi saya dengan akurat.	0,90	Valid
3.	BCA Mobile memberikan jaminan keamanan data transaksi saya.	0,61	Valid
Envi ronment Quality			
1.	BCA Mobile menggunakan warna yang nyaman untuk dipandang.	0,42	Valid
2.	Penggunaan *icon* fitur BCA Mobile sesuai dengan fitur yang diberikan.	0,65	Valid
3.	Tampilan BCA Mobile tidak rumit.	0,50	Valid
Prod uct Assortment			
1.	BCA Mobile menyediakan transaksi perbankan yang bervariasi (cek saldo, cek mutasi rekening, transfer, pembayaran tagihan, pembukaan rekening baru, dll).	0,42	Valid
2.	BCA Mobile menyediakan transaksi non-perbankan yang bervariasi (belanja harian, tiket pesawat/kereta, hotel, donasi, dll).	0,94	Valid
3.	BCA Mobile memiliki beragam fitur yang menarik (*cardless transaction*).	0,40	Valid

All statements in this study are valid, as evidenced byFigure 6 and table 5 where the CFA value of all variables has a value of 0.40.

C. Reliability Test

This is the construct reliability formula used to test the level of reliability on each variable and what is acceptable is ≥ 0.7.

$$CR = \frac{\left[\sum \text{Standardize Loading}\right]^2}{\left[\sum \text{Standardize Loading}\right]^2 + \sum \varepsilon_j}$$

λ = The known loading factor value in the research variable

e = *Measurement error* is calculated by the formula (1- λ2)

Table 6. Reliability Test

Indicator	λ	λ2	*Error*	*Construct Reliability*
Product Quality				
PQ1	0,772	0,5960	0,4040	0,7533221
PQ2	0,490	0,2401	0,7599	
PQ3	0,401	0,1608	0,8392	
Total (∑)	1,663		2,4209	
Service Quality				
SC1	0,467	0,2181	0,7819	0,7635576
SC2	0,899	0,8082	0,1918	
SC3	0,610	0,3721	0,6279	
Total (∑)	1,976		2,2389	
Environment Quali ty				
EQ1	0,419	0,1756	0,8244	0,7175424
EQ2	0,654	0,4277	0,5723	
EQ3	0,497	0,2470	0,7523	
Total (∑)	1,570		2,2521	
Product Assortment				
PA1	0,424	0,1798	0,8202	0,7268512
PA2	0,944	0,8911	0,3775	
PA3	0,403	0,1624	0,8376	
Total (∑)	1,771		1,9410	
Customer Satisfacti on				
CS1	0,668	0,4462	0,5538	0,7064922
CS2	0,642	0,4122	0,7034	
CS3	0,608	0,3697	0,6303	
Total (∑)	1,918		1,8499	
Customer Loyalty				
CL1	0,578	0,3341	0,6659	0,7479345
CL2	0,584	0,3411	0,6589	
CL3	0,480	0,2304	0,7696	
Total (∑)	1,642		2,1003	

Source: Processed data (2021)

All variables in this study were declared reliable and acceptable, as evidenced by table 6 which shows all variables have a construct reliability value of ≥ 0.7.

D. *Normality Test*

The normality test aims to examine whether the data distribution is normal or not. The test is seen from the C.R (Critical Ratio) value with a limit of ± 2.58 and a significance level of 1%. However, if the C.R value is outside ± 2.58, it is stated that normality is not met. The following are the results of the normality test of data processing using AMOS 22.0.

Table 7. Data Normality Test

Var	Min	Max	Skew	C.R.	Kur tosis	C.R.
Y6	1.000	5.000	-.486	-1.986	.550	1.122
Y5	1.000	5.000	-.506	-2.068	-.323	-.660
Y4	1.000	5.000	-1.375	-1.615	3.674	2.499
Y3	2.000	5.000	-.615	-2.509	-.426	-.869
Y2	3.000	5.000	-.312	-1.272	-.683	-1.393
Y1	2.000	5.000	-.876	-2.576	.283	.577
X10	2.000	5.000	-.085	-.348	-.580	-1.183
X11	2.000	5.000	-.427	-1.742	.099	.201
X12	3.000	5.000	.182	.742	-.688	-1.405
X7	2.000	5.000	-1.068	-2.361	1.302	1.657
X8	2.000	5.000	-.528	-2.155	-.355	-.725
X9	2.000	5.000	-.410	-1.674	-.402	-.820
X4	3.000	5.000	-.265	-1.082	-.635	-1.297
X5	2.000	5.000	-.452	-1.846	.091	.186
X6	1.000	5.000	-.826	-2.372	.970	1.981
X1	1.000	5.000	-.990	-2.042	.582	1.187
X2	3.000	5.000	-.338	-1.380	-.899	-1.835
X3	3.000	5.000	-.130	-.531	-1.006	-2.054
Multivariate					**15.823**	**2.007**

Source: Processed data (2021)

Table 4.20 states that all C.R values are in the range of -2.58 to 2.58. This shows that the data distribution meets the criteria for normality and is suitable for use in subsequent evaluations.

E. *Goodness of Fit Index*

Table 8. Evaluation of the Goodness of Fit Index Criteria

Criteria	Critical Value	Result	Model Evaluation
X^2 - Chi Square	Smaller the better	216,033	*Marginal*
Probability	≥ 0,05	0,000	*Marginal*
RMSEA	≤ 0,08	0,070	*Fit*
GFI	≥ 0,90	0,816	*Marginal*
AGFI	≥ 0,90	0,756	*Marginal*
CMIND/DF	≤ 2,00	1,511	*Fit*
TLI	≥ 0,95	0,798	*Marginal*
CFI	≥ 0,95	0,831	*Marginal*

Source: Processed data (2021)

Table 7 states that almost all measurements of the Goodness of Fit Index are good or fit. Therefore, the research model developed from the conceptual theory is stated to have been supported by data from the results of filling out questionnaires by respondents.

F. *Outliers Evaluation*

Outliers are unique data among other observations, seen from the form of extreme values in single or combination variables (Ghozali, 2011). Evaluation of outliers is divided into two, namely the analysis of univariate outliers and multivariate outliers.

1) *Univariate Outliers*

The univariate outliners test is carried out by determining the threshold value that will be used as an outliner by converting the research data values into a standard score or z-score which has an average of zero with a standard deviation of one. The guideline for large samples (above 80 observations) is that the z-score threshold range is -4 to 4.

Table 9. Statistic Descriptive Z-score

	N	Minimum	Maximum	Mean	Std. Deviation
Zscore(X1)	100	-2.80620	1.23150	.0000000	1.00000000
Zscore(X2)	100	-1.77181	1.10918	.0000000	1.00000000
Zscore(X3)	100	-1.53086	1.27806	.0000000	1.00000000
Zscore(X4)	100	-2.06169	1.15970	.0000000	1.00000000
Zscore(X5)	100	-3.30000	1.20000	.0000000	1.00000000
Zscore(X6)	100	-3.67239	1.15970	.0000000	1.00000000
Zscore(X7)	100	-3.21154	.92349	.0000000	1.00000000
Zscore(X8)	100	-2.79095	1.10340	.0000000	1.00000000
Zscore(X9)	100	-2.73260	1.20865	.0000000	1.00000000
Zscore(X10)	100	-2.08502	1.57291	.0000000	1.00000000
Zscore(X11)	100	-2.54912	1.47580	.0000000	1.00000000
Zscore(X12)	100	-1.27263	1.79395	.0000000	1.00000000
Zscore(Y1)	100	-2.73640	.96144	.0000000	1.00000000
Zscore(Y2)	100	-2.00970	1.13045	.0000000	1.00000000
Zscore(Y3)	100	-2.78000	1.01091	.0000000	1.00000000
Zscore(Y4)	100	-3.77715	.87628	.0000000	1.00000000
Zscore(Y5)	100	-3.23592	1.10760	.0000000	1.00000000
Zscore(Y6)	100	-3.80943	1.28680	.0000000	1.00000000
Valid N (listwise)	100				

Source: Data processing using SPSS 22.0 (2021)

Table 9 shows that all the minimum and maximum values in the z-score conversion results in this study are in the range of -4 to 4 so that there are no univariate outliers in this study.

2) *Multivariate Outliers*

Multivariate outliers are obtained from the mahalonbis distance test which explains the distance of an observation from the average of all variables in a multidimensional space. The criterion for the mahalonbis distance is that it is at the level of $p < 0.001$. The mahalonobis distance test uses X2 to a degree equal to the number of indicators, which is 48. If the mahalonobis distance < 84.4031, it can be said that the data are multivariate outliers.

Table 10. Mahalonbis Distance

Observation number	Mahalanobis d-squared
25	62.638
13	34.593
66	33.517
63	32.667
19	31.488
22	31.289
40	30.554
18	27.997
2	27.742
58	27.239

Source: Data processing using AMOS 22.0 (2021)

Table 10 is part of the evaluation of the mahalanobis distance sorted by the d-squared mahalanobis value. The data shows that the value of mahalanobis d-squared <84.4031 so that there are no multivariate outliers in this study.

G. *Confirmatory Factor Analysis*

1) *CFA of Exogenous Variables*

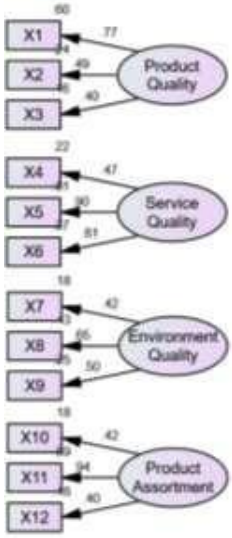


Figure 7. Exogenous Variables

Source: Data processing using AMOS 22 (2021)

Confirmatory analysis of exogenous variables was carried out to evaluate the suitability of the model and the unidimensionality of the constructs. The measurement model includes four independent variables, namely product quality, service quality, environment quality, and product assortment.

Table 11. Value Test and Lamda Loading Weight of Exogenous Variables

	Estimate	C.R.	P	Std. Estimate
X3 <--- *PQ*	1.000			.401
X2 <--- *PQ*	1.189	2.756	.006	.490
X1 <--- *PQ*	2.676	2.070	.038	.772
X6 <--- *SQ*	1.000			.610
X5 <--- *SQ*	1.188	3.473	***	.899
X4 <--- *SQ*	.575	3.474	***	.467
X9 <--- *EQ*	1.000			.497
X8 <--- *EQ*	1.333	2.577	.010	.654
X7 <--- *EQ*	.804	2.434	.015	.419
X12 <--- *PA*	1.000			.403
X11 <--- *PA*	2.675	2.511	.031	.944
X10 <--- *PA*	1.322	3.014	.003	.424

Source: Data processing using AMOS 22.0 (2021)

Table 11 shows that all exogenous variables consisting of product quality, service quality, environment quality, and product assortment have a C.R value of more than 2.00. So that all indicators are significantly indicators of latent factors so that all indicators can be accepted. The value of lamda loading on all variables is ≥ 0.40 so all indicators present the undimensionality of the latent variable.

2) *CFA of Endogen Variables*

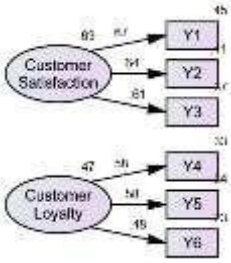


Figure 8. Endogen Variables
Source: Data processing using AMOS 22 (2021)

Confirmatory analysis of endogenous variables was carried out to evaluate the suitability of the model and the unidimensionality of the constructs. The measurement model includes four dependent variables, namely customer satisfaction and customer loyalty.

Table 12. Value Test and Lamda Loading Weight of Endogen Variables

	Estimate	C.R.	P	Std. Estimate
Y1 <--- *CS*	1.000			.668
Y2 <--- *CS*	.757	5.415	***	.642
Y3 <--- *CS*	.896	5.320	***	.608
Y4 <--- *CL*	1.000			.578
Y5 <--- *CL*	1.314	3.371	***	.584
Y6 <--- *CL*	.929	3.252	.001	.480

Source: Data processing using AMOS 22.0 (2021)

Table 12 shows that all endogenous variables consisting of customer satisfaction and customer loyalty have a C.R value of more than 2.00. So that all indicators are significantly indicators of latent factors so that all indicators can be accepted. The value of lamda loading on all of these variables is ≥ 0.40 so all indicators present the undimensionality of the latent variable.

H. *Measurement and Structural Model Analysis* 1) *Measurement Analysis*

Table 13. Product Quality Measurement Model Analysis

Standardized Regression Weights	***Estimates***
PQ1 <--- *Product Quality*	0,772
PQ2 <--- *Product Quality*	0,490
PQ3 <--- *Product Quality*	0,401

Source: Data processing using AMOS 22.0 (2021)

Table 13 shows that the first statement has the highest estimated value of 0.772, meaning that the statement that BCA Mobile is easy to use is considered the indicator that is most capable of explaining product quality.

Table 14. Service Quality Measurement Model Analysis

Standardized Regression Weights	***Estimates***
SQ1 <--- *Service Quality*	0,467
SQ2 <--- *Service Quality*	0,899
SQ3 <--- *Service Quality*	0,610

Source: Data processing using AMOS 22.0 (2021)

Table 15 shows that the second statement has the highest estimated value of 0.899, meaning that the statement that BCA Mobile accurately displays my transaction details is considered the indicator that is most capable of explaining service quality.

Table 16. Environment Quality Measurement Model Analysis

Standardized Regression Weights	***Estimates***
EQ1 <--- *Environment Quality*	0,419
EQ2 <--- *Environment Quality*	0,654
EQ3 <--- *Environment Quality*	0,497

Source: Data processing using AMOS 22.0 (2021)

Table 16 shows that the second statement has the highest estimate value, which is 0.654, meaning that the statement that the use of the BCA Mobile feature icon is in accordance with the features provided is considered the most capable indicator of explaining environment quality.

Table 17. Product Assortment Measurement Model Analysis

Standardized Regression Weights	***Estimates***
PA1 <--- *Product Assortment*	0,424
PA2 <--- *Product Assortment*	0,944
PA3 <--- *Product Assortment*	0,403

Source: Data processing using AMOS 22.0 (2021)

Table 18 shows that the second statement has the highest estimated value, which is 0.944, meaning that the statement that BCA Mobile provides various non-banking transactions (daily shopping, airplane/train tickets, hotels, donations, etc.) is considered the most capable indicator of explaining product assortment.

Table 18. Customer Satisfaction Measurement Model Analysis

Standardized Regression Weights	***Estimates***
CS1 <--- *Customer Satisfaction*	0,668
CS2 <--- *Customer Satisfaction*	0,642
CS3 <--- *Customer Satisfaction*	0,608

Source: Data processing using AMOS 22.0 (2021)

Table 18 shows that the first statement has the highest estimated value of 0.668, meaning that the statement that I am satisfied with BCA Mobile services is considered the indicator that is most able to explain customer satisfaction.

Table 19. Customer Loyalty Measurement Model Analysis

Standardized Regression Weights	***Estimates***
CL1 <--- *Customer Loyalty*	0,578
CL2 <--- *Customer Loyalty*	0,584
CL3 <--- *Customer Loyalty*	0,480

Source: Data processing using AMOS 22.0 (2021)

Table 19 shows that the second statement has the highest estimated value of 0.584, meaning that the statement that BCA Mobile is the only mobile banking of my choice is considered the indicator that is most able to explain customer loyalty.

2) Structural Model Analysis

Structural model analysis was conducted with the aim of showing a causal relationship or causality between variables. This relationship will explain the effect of product quality, service quality, environment quality, and product assortment on customer loyalty through customer satisfaction.

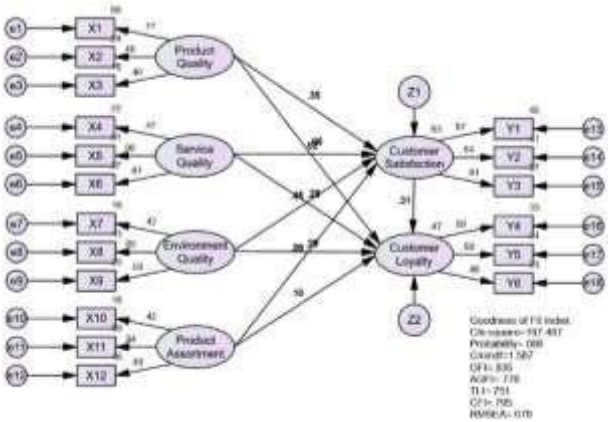


Figure 9. Regression Weights Full Structural Equation Model
Source: Data processing using AMOS 22 (2021)

Product quality has a coefficient value of 0.354 which means that there is a positive relationship to customer satisfaction. So the higher or lower the respondent's assessment of product quality, the higher or lower the respondent's assessment of customer satisfaction.

Product quality has a coefficient value of 0.059 which means that there is a positive relationship with customer loyalty. So the higher or lower the respondent's respondent's assessment of customer loyalty.

Service quality has a coefficient value of 0.520 which means that there is a positive relationship to customer satisfaction. So the higher or lower the respondent's assessment of service quality, the higher or lower the respondent's assessment of customer satisfaction.

Service quality has a coefficient value of 0.283 which means that there is a positive relationship with customer loyalty. So the higher or lower the respondent's assessment of service quality, the higher or lower the respondent's assessment of customer loyalty.

Environment quality has a coefficient value of 0.480 which means there is a positive relationship to customer satisfaction. So the higher or lower the respondent's assessment of environment quality, the higher or lower the respondent's assessment of customer satisfaction.

Environment quality has a coefficient value of 0.287, which means that there is a positive relationship with customer loyalty. So the higher or lower the respondent's assessment of environment quality, the higher or lower the respondent's assessment of customer loyalty.

Product assortment has a coefficient value of 0.060 which means that there is a positive relationship with customer satisfaction. So the higher or lower the respondent's assessment of product assortment, the higher or lower the respondent's assessment of customer satisfaction.

Product assortment has a coefficient value of 0.097 which means that there is a positive relationship with customer loyalty. So the higher or lower the respondent's assessment of product assortment, the higher or lower the respondent's assessment of customer loyalty.

Customer satisfaction has a coefficient value of 0.212, which means that there is a positive relationship with customer loyalty. So the higher or lower the respondent's assessment of customer satisfaction, the higher or lower the respondent's assessment of customer loyalty.

Table 20. Regression Weights Full Structural Equation Model

	Estimate	**S.E.**	**C.R.**	**P**	**Std. Estimate**
Customer Satisfaction <-- Service Quality	.530	.148	3.582	***	.520
Customer Satisfaction <-- Environment Quality	.652	.260	2.510	.012	.480
Customer Satisfaction <-- Product Assortment	.118	.266	.445	.656	.060

Customer Satisfaction <--- Product Quality	.636	.350	2.819	.069	.354
Customer Loyalty <--- Environment Quality	.303	.305	2.995	.320	.287
Customer Loyalty <--- Product Assortment	.148	.206	.717	.473	.097
Customer Loyalty <--- Service Quality	.224	.191	2.176	.240	.283
Customer Loyalty <--- Product Quality	.082	.309	.267	.789	.059
Customer Loyalty <--- Customer Satisfaction	.243	.311	2.779	.436	.312

X3 <--- *Product Quality* 1.000 .401

Source: Data processing using AMOS 22.0 (2021)

In addition to showing the full structural equation, table 20 also shows the C.R value for each relationship between variables. The causal relationship between variables which include product quality on customer satisfaction, service quality on customer satisfaction, service quality on customer loyalty, environment quality on customer satisfaction, environment quality on customer loyalty, and customer satisfaction on customer loyalty has a significant relationship because it has a CR value. above 2.00. While the causal relationship between variables which include product quality on customer loyalty, product assortment on customer satisfaction, and product assortment on customer loyalty has a C.R value below 2.00 so the relationship is not significant.

V. CONCLUSION

A. *Research Summary*

This research model was compiled and developed with the aim of examining the effect of product quality, service quality, environment quality, product assortment on customer loyalty through customer satisfaction on BCA Mobile customers. This research model is formed from the relationship of influence by six constructs, namely product quality, service quality, environment quality, product assortment, customer satisfaction, and customer loyalty.

The model was tested based on the results of questionnaire data by 100 male and female respondents who had used the BCA Mobile application at least three times in the last six months. Banking is an industry related to finance where most of the users must already have an income so that all respondents are 18-34 years old where that age is the productive age to work and almost 70% of all respondents have an income of IDR 4-8 million rupiah per month. it is also supported by one of the characteristics of the respondent who is a resident of Surabaya where the 2021 Surabaya UMK is IDR 4.3 million.

However, from the results of this study, it cannot be concluded that BCA Mobile is a banking application for the middle class because the questionnaire was distributed using the snowball sampling method, which was initiated by distributing a known sample where the age of the researcher was 22 years old, which is the age to start working.

Based on the results of descriptive statistical processing, it is known that the highest mean value indicates that the respondents strongly agree with the customer satisfaction variable. However, the results show that the average respondents agree on almost all variables, namely service quality, environment quality, customer loyalty, product quality, and finally the product assortment variable with the lowest value. This shows that the average customer perception of each construct is satisfactory. So what the company needs to do is maintain or even improve it so that customers are more satisfied with BCA Mobile and change the response from agreeing to strongly agreeing on each construct.

Before testing the hypothesis, an evaluation of the data that will be used is carried out to ensure that the data meets the tests of validity, reliability, normality, goodness of fit, and outlier tests consisting of multicollinearity and singularity. Based on this assessment, the data used in this study meet all of these assumptions.

Then, confirmatory factor analysis was conducted to test for unidimensionality and measure the strength of the dimensions that explained each latent factor. In addition, factor loading and regression weight analysis was carried out and it was found that all variables in the endogenous construct were considered to have dimensions with other variables to explain latent variables.

Analysis of the full structural equation model and goodness of fit index shows that the model as a whole meets the requirements and is acceptable so that there is no need to make further modifications to the research model. The results of causality testing in this research model prove that there are six relationships that are accepted and there are three relationships that are rejected.

B. *Conclusion on Research Problems*

The results of this study explain that product quality only has a significant effect on customer satisfaction but has no significant effect on customer loyalty, service quality and environment quality has a significant effect on customer satisfaction and customer loyalty, product assortment has no significant effect on customer satisfaction and customer loyalty, and it can be concluded also that customer satisfaction has a significant effect on customer loyalty BCA Mobile.

This study proves that the significant influence of the service quality variable on customer satisfaction is the first biggest influence when compared to the influence of other variables because the banking industry is closely related to finance, therefore customers really need trust such as transparency and data confidentiality.

The second highest influence is the significant effect of the environment quality variable on customer satisfaction because the clarity of the appearance and application features are also one of the reasons for convenience for customers in making transactions.

The third highest influence is the significant effect of the product quality variable on customer satisfaction because consumers' thinking is getting more mature in considering the quality of a product so that companies are also required to continue to improve the quality of their products.

The fourth highest influence is the significant influence of the customer satisfaction variable on customer loyalty because satisfaction is an important factor that affects loyalty. Customers who feel increased satisfaction will also experience loyalty.

The fifth highest effect is the significant effect of the environment quality variable on customers because customers feel that BCA Mobile is the clearest and uncomplicated application compared to other banking applications, so customers choose to transact using BCA Mobile.

The sixth highest effect is the significant effect of the service quality variable on customer loyalty because customer trust in the performance of banking applications makes customers continue to be loyal to using the application.

The seventh highest effect, namely the insignificant effect of the product assessment variable on customer loyalty, is also supported by the insignificant effect of the product assessment variable on customer satisfaction which is the eighth highest influence because product variations, for example, things that are not too related to finance are not the main thing. in banking because customers are more focused on conducting financial transactions.

This study also proves that the insignificant effect of the product quality variable on customer loyalty and being the ninth highest variable or the one with the least effect compared to the influence of other variables, can occur because the products offered by BCA Mobile are relatively the same as the products offered by other banking applications.

Product quality only has a significant effect on customer satisfaction, but has no significant effect on customer loyalty. This shows that product quality is able to influence customer loyalty, but it cannot directly, but must go through customer satisfaction first because product quality needs to form an emotional form of satisfaction felt by customers first, then new customers will be able to feel loyal to BCA Mobile. So, even though product quality does not have a significant effect on customer loyalty, product quality must still be improved because it still has an effect even though the effect is very small. In addition, because product quality has a significant effect on customer satisfaction, which in the end customer satisfaction can also increase customer loyalty in the BCA Mobile application.

C. *Implication*

1) *Theoretical Implications*

Theoretical implications are carried out to compare previous research and current research with the aim of strengthening the findings of previous studies.

The results of the study stated that product quality only had a significant effect on customer satisfaction but had no significant effect on customer loyalty. This means that recent research only supports Porral and Mangin's (2016) research that product quality has a significant effect on customer satisfaction but does not support Porral and Mangin's (2016) research that product quality has a significant effect on customer loyalty.

The results of the study stated that service quality had a significant effect on customer satisfaction and had a significant effect on customer loyalty. That is, recent research supports Porral and Mangin's (2016) research that service quality has a

significant effect on customer satisfaction and supports Porral and Mangin's (2016) research that service quality has a significant effect on customer loyalty.

The results of the study stated that environment quality had a significant effect on customer satisfaction and had a significant effect on customer loyalty. That is, recent research supports Porral and Mangin's (2016) research that environment quality has a significant effect on customer satisfaction and supports Porral and Mangin's (2016) research that environment quality has a significant effect on customer loyalty.

The results of the study stated that product assortment had no significant effect on customer satisfaction and no significant effect on customer loyalty. That is, recent research does not support Porral and Mangin's (2016) research that product assortment has a significant effect on customer satisfaction and does not support Porral and Mangin's (2016) research that product assortment has a significant effect on customer loyalty.

The results of the study also state that customer satisfaction has a significant effect on customer loyalty. That is, the current research supports Porral and Mangin's (2016) research that customer satisfaction has a significant effect on customer loyalty.

2) *Managerial Implications*

Managerial implications discuss management policies that should be paid more attention to based on research results. This managerial implication has practicality in application so that it can be used as a guide for restaurant management in improving the quality of applications from several aspects.

First, product quality can be improved by focusing on simplicity of use, analyzing error and defect data, and regularly updating applications.

Second, service quality can be improved by increasing the transaction mutation period from 30 days to five years, such as BCA internet banking, following BI standards in the duration of money transfers, and maintaining the security of customer transaction data.

Third, the environment quality can be improved by not focusing on unnecessary colors and ornaments that confuse customers, the display must be kept simple so that customers can understand it easily.

Fourth, product assortment can be increased by maintaining existing banking or non-banking transactions and attractive features.

Fifth, customer satisfaction can be improved by improving product quality, service quality, and the display quality of the BCA Mobile application, maintaining the variety of existing products, and prioritizing the service quality of the application because that is the customer's main goal.

Sixth, customer loyalty can be improved by increasing customer satisfaction by improving product quality, service quality, and the display quality of the BCA Mobile application, and satisfaction will increase customer loyalty.

Based on the research results, the most important indicator in the most important variable (service quality) is X5 (BCA Mobile displays my transaction details accurately). Therefore, this indicator is the most important thing to pay attention to and improve with the aim of maintaining trust so that customers become satisfied and loyal to BCA Mobile. This can be improved in one way, namely increasing the mutation period, where currently BCA Mobile can only see mutations for the last 30 days, which can be increased to the last five years, as is the case with BCA internet banking. In addition, the following are some steps that can be taken to increase the level of service quality of the BCA Mobile application.

D. *Research Limitations*

Researchers found that this study still has limitations. Researchers only use respondents who are domiciled in Surabaya, so that further research can use a wider range of respondents to get more general results regarding the factors that affect customer loyalty.

The results of the questionnaire in this study also showed that all respondents aged 18-34 years and almost 70% of respondents had an income of IDR 4-8 million. However, when compared with the reality, BCA Mobile application users are not only limited to their age and income. This is evidenced because researchers work at BCA and get customers aged 18-60 years or less than 18 years or even more than 60 years. In addition, researchers also found customers with less income and even more than IDR 4-8 million. However, because this study applies the snowball sampling method, which distributes questionnaires to known people where the age of the researcher is in the 18-34 age group and has just started a job and has an income of IDR 4-8 million, so that the respondents in this study are limited to that age. In future research, it is better not to use the snowball sampling method for sampling, but can distribute questionnaires in public places so that the respondents in the study are much wider.

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