Influence of Stock Application Attributes on Consumer Choice Decision (Case Study of Stockbit Consumer Choice)

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ABSTRACT: The development of stock investment in Indonesia has experienced significant growth from year to year, according to the President Director of KSEI (Indonesia Central Securities Depository), Uriep Budhi Prasetyo said, "The growth of stock investors is one of the benchmarks for the achievement of the Indonesian stock market, growth occurs significantly during the Covid-19 pandemic, this shows that the Indonesian people are increasingly aware of the importance of investment, especially in the stock market. In the current era of digitalization, almost all daily activities can be done online and most of them can be easily accessed via their personal mobile phones. The number of mobile applications for stock investment has tightened competition. Not only securities from bank companies but also from non-bank companies also enliven the competition in this sector. The many alternative choices of course provide flexibility for consumers in choosing which application suits the needs of each consumer. Through this research, the authors aim to determine what factors influence consumer decisions when choosing stock applications. This study will use the choice modeling analysis method by providing 28 scenario-stated preferences resulted from NGENE software in the form of questionnaires to 200 respondents, in each of these questionnaires there are several attributes of stock applications as consideration for consumers in choosing stock applications including application performance, completeness of features, user security and privacy, transaction fees, and application appearance (UI). The results of this questionnaire are processed using the Multinomial Logit (MNL) method which is run using Python-Biogeme. The results of the study show that in general there are 4 attributes that significantly influence consumer decisions in choosing stock applications, including application performance, completeness of features, user security and privacy, and transaction fees. In addition, this research also shows several attributes that are elastic to consumers in certain applications, namely the user security & privacy and transaction fees in the Ajaib application and in the IPOT application is completeness of feature and transaction fees.

KEYWORDS: Customer Choice Decision, Choice Modelling, Mobile Application, Multinomial Logit, Stock Application.

INTRODUCTION

The development of stock investment in Indonesia has experienced significant growth from year to year, according to the President Director of KSEI (Indonesia Central Securities Depository), Uriep Budhi Prasetyo said, "The growth of stock investors is one of the benchmarks for the achievement of the Indonesian stock market, growth occurs significantly during the Covid-19 pandemic, this shows that the Indonesian people are increasingly aware of the importance of investment, especially in the stock market
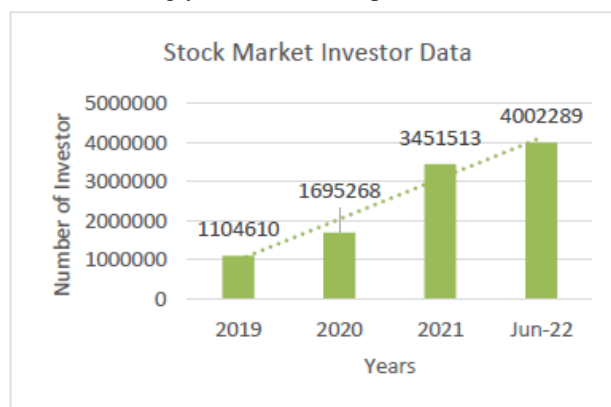

Figure 1. Stock Market Investor Data

According to press reports published by KSEI (Figure 1), the number of stock investors in Indonesia in June 2022 exceeded 4 million, which increased by 15.96% compared to last year. KSEI also said that 95% of the increase in the number of investors was due to the convenience of opening accounts online which greatly helped the public to become investors in the stock market.

In the current era of digitalization, almost all daily activities can be done online and most of them can be easily accessed via their personal mobile phones There are several official applications registered with the OJK that allows users to open customer fund accounts (RDN) and trade stock on the Indonesia Stock Exchange, including Ajaib, Stockbit, IPOT, MOST by Bank Mandiri, BIONS by BNI, BCAS Best Mobile, etc. The number of these applications certainly provides alternatives and flexibility for the consumers to determine which applications they like or trust to buy and sell shares so that every company in this industry needs to know what investors consider important in a stock trading application to be able to attract and make investors interested in using the application. This is in line with the results of research conducted by Ahmad R. A in 2021 which states that the stock application feature has a positive effect on interest in investing online.

As many stock buying and selling applications as previously mentioned, there are 5 best applications according to a survey conducted by Jakpat in 2022, this survey was conducted on 2333 respondents aged 15-44 years in Indonesia. The result of this survey show Ajaib was the best application with a percentage of 67%, followed by IPOT 31 %, Stockbit 31%, BIONS and MOST with 19%. This means that currently, Stockbit is still not the first choice of consumers in choosing stock applications. Therefore, it is important for Stockbit to know consumer needs related to stock applications as a basis for building business and marketing strategies in the future. This is in accordance with the statement Green & Srinivasan (1978, 1990) that for many years conjoint analysis has been used to estimate the importance of various product attributes for consumers purchasing decisions.

LITERATURE REVIEW

A mobile application is a software or set of programs that run on a mobile device to perform certain tasks for its users. Mobile applications have a wide range of uses ranging from calling, sending messages, browsing, buying and selling, gaming, playing audio or video. A large number of mobile applications are pre-installed on the phone and some can be used by downloading from the internet or mobile application provider platforms such as playstore or app store (Islam, 2010). Product attributes are the development of a product or service that involves the benefits that the product or service will offer, product attributes including product information, quality, and prices had a positive effect on purchase intention (Kotler and Armstrong, 2012). Basically, consumers will go through 5 stages in the purchasing decision process, starting from need recognition, information search, evaluation of alternatives, purchase decisions, and finally post-purchase behavior. Consumers can skip this stage or even reverse the process on the regular or routine purchase process (Kotler & Keller, 2012). Therefore, the researcher determines the hypothesis as follows, **HI: Product Attributes have a positive effect on consumer decision**

From the explanations and hypotheses determined above, this study will analyze the effect of product attributes on consumer decisions on choosing stock applications. Several studies have shown several attributes in viewing consumer behavior toward applications, as in research conducted by Tam, C., & Oliveira, T. (2016) which states that the attributes of system quality, information quality, and service quality have an important role in consumer behavior on mobile banking applications. To support this research, the authors conducted exploratory research on respondents about what attributes are taken into consideration in choosing stock applications. Based on the results of this research, there are 5 attributes that according to respondents are important and are taken into consideration in choosing stock applications, including user security and privacy, application appearance (UI), completeness of features, transaction fees, and application performance quality. Based on previous research and preliminary research, the authors formulated a conceptual framework that illustrates the relationship between the 5 attributes and consumer decisions in selecting stock applications, as illustrated in Figure 2.
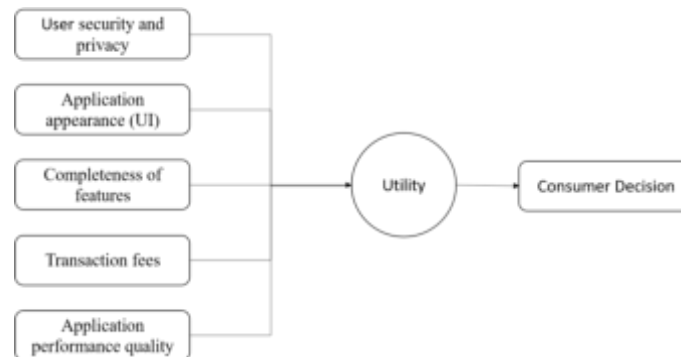
Figure 2. Conceptual Framework

METHODOLOGY

In this research authors use the choice modeling analysis method by providing 28 scenario-stated preferences resulted from NGENE software in the form of questionnaires to 200 respondents. Stated Preference is an experiment to find out preferences about an alternative compared to other alternatives. Respondents' or user preferences will indicate whether they like or dislike a product or service (Kotler, 1997). In each scenario, the author will attach several attributes of stock applications as considerations for consumers in choosing stock applications including application performance, completeness of features, user security and privacy, transaction fees, and application appearance (UI). The data obtained from the survey will be analyzed and processed using the choice model method. This model will calculate which attribute is important by using several steps. This model will be processed using multinomial logit (MNL) modeling techniques with python-biogeme as the software (Bierlaire 2016). The use of Biogeme can perform hypothesis testing about parameters and can estimate research parameter models (Washington.Edu, 2019). According to Koppelman and Bhat (2006), Utility is an important aspect of this method. and alternatives are selected if their utility is greater than the utility of other alternatives in the choice set. To support this research, the authors also asked a number of questions related to the demographics of respondents such as name, gender, age, domicile, occupation, income and expenses per month, amount of investment per month, and what stock applications have been or are being used.

RESULT AND DISCUSSIONS
Respondent Profile
A. Gender
Based on the survey that was conducted, it was found that the gender distribution of the respondents was as follows:

Table 1. Respondent Gender Summary

Gender	Frequency (respondent)	Percentage (%)
Male	145	72,5
Female	55	27,5
TOTAL	200	100

Based on Table 1, the distribution of stock application users based on gender is dominated by males with a total of 145 users or 72.5% of 200 respondents, while female stock application users only contributed 27.5% or as many as 55 people. This percentage is arguably in line with the demographic data of stock investors published by the Indonesia Central Securities Depository (KSEI) in February 2022, where male investors have a percentage of 62.8% and female investors 37.2%.

B. Age
Consumer needs and interests change with age (Solomon, 2004). Therefore, it is important for companies to know the age distribution of their users. In this study the authors divided the age group into 6 groups with at least 17 years of age. Table 4.2 displays a summary of the age distribution of the respondents.

Table 2. Respondent Age Summary

Age (years)	Frequency (respondent)	Percentage (%)
17-24	114	57
25-34	65	32,5
35-44	17	8,5
45-54	3	1,5
55-64	1	0,5
>65	0	0
TOTAL	200	100

Based on the results of the survey that was conducted, it can be seen that most respondents came from the age group of 17-24 years with 114 people or 57% of the total respondents, followed by the age group 25-34 years with 32.5% or as many as 65 respondents. 35-44 years with 8.5% of total respondents, and the rest are from the older age group. When compared, the age distribution of respondents who use the stock application is quite in line with the statement published by the Indonesia Central Securities Depository (KSEI), where at the end of semester 1 of 2022 the majority of stock investors are Gen Z and millennials or aged under 40 years with a percentage reaching 81. 64%.

C. Domicile

The distribution of domiciles for stock application users is quite widespread at this time, as illustrated by the survey of 200 respondents in Table 3.

Table 3. Respondent Domicile Summary

City	Frequency (respondent)	Percentage (%)	City	Frequency (respondent)	Percentage (%)
Jabodetabek	84	46	Batam	1	0,5
Bandung	61	33	Cirebon	1	0,5
Surabaya	5	3	Palembang	1	0,5
Malang	5	3	Wageningen	1	0,5
Semarang	4	2	Kudus	1	0,5
Yogyakarta	4	2	Gorontalo	1	0,5
Enschede	4	2	Tanjung Redeb	1	0,5
Karawang	4	2	Palu	1	0,5
Sidoarjo	2	1	Bondowoso	1	0,5
Bali	2	1	Bengkulu	1	0,5
Makassar	2	1	Surakarta	1	0,5
Medan	2	1	Bantaeng	1	0,5
Papua	2	1	Banyumas	1	0,5
Sumedang	2	1	Riau	1	0,5
Pekanbaru	2	1	Kep. Riau	1	0,5
TOTAL				200	100

The results of a survey of 200 respondents showed that most of them came from Jabodetabek with 84 respondents or 46% of the total respondents, followed by Bandung City with 61 people (33%), and the rest came from other cities in Indonesia and outside Indonesia. This is in line with the results of a survey conducted by the Financial Services Authority (OJK) on a national survey of financial literacy and inclusion in 2016. The results stated that the highest financial literacy index was occupied by DKI Jakarta with a percentage reaching 40%, followed by West Java. with a percentage of 39%.

D. Occupation

Based on a survey to the respondents, Table 4 shows an overview of the characteristics of respondents based on their occupation.

Table 4. Respondent Occupation Summary

Occupations	Frequency (respondent)	Percentage (%)
Student College	82	41
Private Employees	71	35,5
Public Servant	14	7
Freelancer	10	5
Entrepreneur	8	4
BUMN Employees	7	3,5
Student	3	1,5
Housewives	2	1
Lawyers	1	0,5
Ojek Online Driver	1	0,5
Fresh Graduate	1	0,5
Total	200	100

Based on Table 4, the characteristics of the 200 respondents based on occupation are divided into 11 types, where respondents with student college occupations are the largest number with 82 respondents or 41% of the total 200 respondents, apart from that private employees also have quite a large number with 71 respondents or 35.5 %. Respondents with public servant totaled 14 people or 7%, followed by freelancers with 10 people or 5%. And the remainder or 11.5% of respondents came from quite a variety of occupations ranging from entrepreneurs, BUMN employees, students, housewives, lawyers, ojek online drivers, and fresh graduates.

E. Monthly Income

The following is monthly income data from 200 respondents which aims to see the financial capabilities of respondents, the data is shown in Table 5.

Table 5. Respondent Monthly Income Summary

Monthly Income (IDR)	Frequency (respondent)	Percentage (%)
Less than 1.000.000	28	14
1.000.001 - 5.000.000	76	38
5.000.001 - 10.000.000	51	25,5
More than 10.000.000	45	22,5
TOTAL	200	100

Based on the data in Table 5, respondents are divided into income groups whose numbers do not differ much from one group to another, where the IDR 1,000,001 - IDR 5,000,000 income group has the highest number with 76 respondents or with a percentage of 38% from total respondents, then as much 51 respondents or 25.5% are the IDR 5,000,001 - IDR 10,000,000 monthly income group, following by the income group of more than IDR 10,000,000 is the third most income group with 45 respondents or with a percentage of 22.5%, and the last 28 respondents or 14% are the monthly income group of less than IDR 1,000,000.

F. Monthly Expenses

The author also divides the monthly expenditure of respondents into 4 expenditure groups. Table 6 displays survey data for respondents regarding monthly expenses.

Table 6. Respondent Monthly Expenses Summary

Monthly Expenses (IDR)	Frequency (respondent)	Percentage (%)
Less than 1.000.000	40	20
1.000.001 - 5.000.000	112	56
5.000.001 - 10.000.000	31	15,5
More than 10.000.000	17	8,5
TOTAL	200	100

Based on Table 6 it can be seen that the majority of the 200 respondents or as many as 112 respondents (56%) claimed to have monthly expenditures of IDR 1,000,001 - IDR 5,000,000, followed by the group of monthly expenditures of less than IDR 1,000,000 with 40 respondents or 20% from total respondents. The third majority, as many as 31 respondents or 15.5%, is included in the monthly expenditure group of IDR 5,000,001 - IDR 10,000,000. then the remaining 17 respondents have a monthly expenditure of more than IDR 10,000,000.

When compared with the amount of income per month, it can be seen that there is an increase in the IDR 1,000,001 - IDR 5,000,000 and less than IDR 1,000,000 monthly expenditure group, as well as a decrease in respondents in the IDR 5,000,001 - IDR 10,000,000 and more than IDR 10,000,000 monthly expenditure group. So, it can be said that the majority of respondents have monthly expenses that are smaller than their monthly income.

G. Monthly Investment

Every stock investor certainly has their own portion in allocating the amount of investment. Table 7 displays the amount of investment per month from the respondents.

Table 7. Respondent Monthly Investment Summary

Monthly Investment (IDR)	Frequency (respondent)	Percentage (%)
Less than 10.000.000	175	87,5
10.000.001 - 50.000.000	16	8
50.000.001 - 100.000.000	2	1
100.000.000 - 200.000.000	1	0,5
More than 200.000.000	6	3
TOTAL	200	100

Based on Table 7 it can be seen that the majority of respondents or as many as 175 respondents (87.5%) invest per month with an amount of less than IDR 10,000,000, then as many as 16 respondents or 8% of the total respondents invest IDR 10,000,001 – IDR 50,000,000, it is quite interesting when we see that the third majority or as many as 6 respondents (3%) make investments per month with an amount of more than IDR 200,000,000, then as many as 2 respondents (1%) make investments per month of IDR 50,000.001 – IDR 100,000,000, and the last 1 or 0.5% of respondents make a monthly investment of IDR 100,000,000 – IDR 200,000,000.

Application Attribute Analysis

After conducting a survey by distributing questionnaires to 200 respondents, the authors processed the existing data using multinomial logit modeling techniques (MNL) using Python-Biogeme (Bierlaire, 2020). By using this method, the writer can find out which attributes have a significant influence on the respondent's decision in determining the alternative stock application. Table 8 shows the results of the Biogeme simulation.

Table 8. Simulation Biogeme Result

Name	Value	Rob. Std err	Rob. t-test	Rob. p-value
Ajaib	-6,523	2,904	-2,25	0,02
IPOT	18,089	4,360	4,15	0,00

Ajaib_Application Performance	0,210	0,032	6,56	0,00
Ajaib_Completness of Feature	0,118	0,030	3,86	0,00
Ajaib_User Security and Privacy	0,272	0,036	7,56	0,00
Ajaib_Transaction Fees	0,236	0,103	2,29	0,02
Ajaib_Application Appearance (UI)	0,060	0,056	1,06	0,29
IPOT_Application Performance	-0,006	0,071	-0,08	0,94
IPOT_Completness of Feature	-0,243	0,072	-3,38	0,00
IPOT_User Security and Privacy	-0,016	0,071	-0,23	0,82
IPOT_Transaction Fees	-0,755	0,159	-4,76	0,00
IPOT_Application Appearance (UI)	0,037	0,024	1,51	0,13
Stockbit_Application Performance	0,214	0,026	8,16	0,00
Stockbit_Completness of Feature	0,078	0,031	2,51	0,01
Stockbit_User Security and Privacy	0,187	0,051	3,69	0,00
Stockbit_Transaction Fees	-0,104	0,090	-1,15	0,25
Stockbit_Application Appearance (UI)	0,012	0,046	0,27	0,79

From the results of the biogeme simulation above, it can be seen that there are several attributes and constants that are significant and not, where significant attributes are marked in red, which means that this attribute has a t-test value $x > 1.96$ or P-values with values $x < 0.05$. The author selects significant attributes into Table 9.

Table 9. Significant Attribute and Constant

No	Name	Value	Rob. Std err	Rob. t-test
1	Ajaib	-6,523	-2,25	0,02
2	IPOT	18,089	4,15	0,00
3	Ajaib_Application Performance	0,210	6,56	0,00
4	Ajaib_Completness of Feature	0,118	3,86	0,00
5	Ajaib_User Security and Privacy	0,272	7,56	0,00
6	Ajaib_Transaction Fees	0,236	2,29	0,02
7	IPOT_Completness of Feature	-0,243	-3,38	0,00
8	IPOT_Transaction Fees	-0,755	-4,76	0,00
9	Stockbit_Application Performance	0,214	8,16	0,00
10	Stockbit_Completness of Feature	0,078	2,51	0,01
11	Stockbit_User Security and Privacy	0,187	3,69	0,00

Based on the data in Table 9, the survey results from 200 respondents can be interpreted as follows:
- Constant Ajaib with a t-test value of -2,25 which is more than 1,96 shows a significantly negative, which means that respondents tend not to prefer Ajaib over Stockbit.

- Constant IPOT with a t-test value of 2,56 which is more than 1,96 shows a significantly positive, which means that respondents will tend to prefer IPOT over Stockbit.
- The attribute of application performance quality in the Ajaib application has a t-test value of 6,56 where this value is greater than 1,96 (significantly positive) meaning that the better the quality of the application performance of the Ajaib application, the respondents will prefer to choose the Ajaib application.
- The completeness of features attribute in the Ajaib application has a t-test value of 3,86 where this value is greater than 1,96 (significantly positive) meaning that the more complete the features in the Ajaib application, the respondents will prefer to choose the Ajaib application.
- The attribute user security and privacy in the Ajaib application has a t-test value of 7,56 where this value is greater than 1,96 (significantly positive) meaning that the safer the user security and privacy of the Ajaib application, the respondents will prefer to choose the Ajaib application.
- The transaction fees attribute for the Ajaib application has a t-test value of 2,29 where this value is greater than 1,96 (significantly positive) meaning that the higher the Ajaib application transaction fees, respondents will prefer to choose the Ajaib application.
- The completeness of features attribute in the IPOT application has a t-test value of -3,38 where this value is greater than 1,96 (significantly negative) meaning that the more complete the features in the IPOT application, the less likely respondents will choose the IPOT application.
- The transaction fees attribute for the IPOT application has a t-test value of -4.76 where this value is greater than 1,96 (significantly negative) meaning that the higher the IPOT application transaction fees, the less likely respondents will choose the IPOT application.
- The attribute of application performance quality in the Stockbit application has a t-test value of 8,16 where this value is greater than 1,96 (significantly positive) meaning that the better the quality of the application performance of the Stockbit application, the respondents will prefer to choose the Stockbit application.
- The completeness of features attribute in the Stockbit application has a t-test value of 2,51 where this value is greater than 1,96 (significantly positive) meaning that the more complete the features in the Stockbit application, the respondents will prefer to choose the Stockbit application.
- The attribute user security and privacy in the Stockbit application has a t-test value of 3,69 where this value is greater than 1,96 (significantly positive) meaning that the more secure the user security and privacy of the Stockbit application, the respondents will prefer to choose the Stockbit application.

After obtaining a number of significant attributes, the authors measure the elasticity of each significant attribute of each application. This measurement was carried out using Python Biogeme where when the elasticity value of an attribute is greater than 1 then this attribute is elastic, and if the elasticity value of an attribute is less than 1 then it is included in the inelastic category (Kenton, 2020).

Table 10. shows the results of elasticity measurements. Table 10 Attribute Elasticity Result

No	Alternative	Attribute	Elastic Standard	Elasticity Value	Result
1	Ajaib	Application Performance	x ≥ 1	0,605581	Inelastic
2	Ajaib	Completness of Feature	x ≥ 1	0,483843	Inelastic
3	Ajaib	User Security and Privacy	x ≥ 1	1,508529	Elastic
4	Ajaib	Transaction Fees	x ≥ 1	2,305403	Elastic
5	IPOT	Completness of Feature	x ≥ 1	-1,373943	Elastic
6	IPOT	Transaction Fees	x ≥ 1	-10,134 4	Elastic
7	Stockbit	Application Performance	x ≥ 1	0,550939	Inelastic
8	Stockbit	Completeness of Feature	x ≥ 1	0,245374	Inelastic
9	Stockbit	User Security and Privacy	x ≥ 1	0,674033	Inelastic

Based on the data in Table 10, the survey results from 200 show that there are several attributes that categorized as elastic and not. So, below is an interpretation of the attributes included in the elastic category:

- If there is a 10% increase in the user security and privacy of the Ajaib application, then there is a possibility that consumers will increase by 15% to choose Ajaib.
- If there is a 10% increase in the Ajaib application transaction fee, then there is a possibility that consumers will increase by 23% to choose Ajaib.
- If there is a 10% increase in the completeness of features in the IPOT, then there is a possibility that consumers will decrease by 13,7% to choose IPOT.
- If there is a 10% increase in the IPOT application transaction fee, then there is a possibility that consumers will decrease by 10% to choose IPOT.

CONCLUSION

The development of the current digital era has also been felt by the investment sector, especially stock investment in Indonesia. This is one of the reasons behind the increasing number of stock investors in Indonesia, where it will be easier for everyone to get access to become investors. Seeing this development, many stock applications have sprung up to facilitate the needs of investors. Out of the many choices, of course, consumers have their own considerations in determining which application to use. Through this research, the authors draw a number of conclusions regarding consumer behavior in determining stock applications, including:

1. In general, there are 4 attributes that have a significant influence on consumer decisions in choosing stock applications, including application performance, completeness of features, user security and privacy, and transaction fees. Application appearance (UI) is the only attribute that does not have a significant effect on consumers in choosing stock applications.
2. For the Stockbit brand, there are 3 significant attributes, namely application performance, completeness of features, user security and privacy.
3. For Ajaib brands, there are 4 significant attributes, namely application performance, completness of feature, user security and privacy, and transaction fees.
4. For the IPOT brand, there are 2 significant attributes, namely the completeness of features and transaction fees.

Based on the results of this study PT Stockbit Sekuritas Digital can take steps to develop the Stockbit application according to the attributes that show significant. In addition, demographic data such as gender, age, domicile, occupation, and financial ability can also be used as a reference for companies in determining future business strategies. It is hoped that the company can adjust the Stockbit application as an better investment medium so that it can meet the needs of stock investors.

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