Comparative Analysis of Fintech Software Quality Against MSMEs Using the ISO 25010:2011 Method

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***Abstract*—** *Utilization of technology is used to facilitate every transaction carried out in every organization or company. Utilization of technology is a challenge for MSMEs to survive in the current era. The technology that is often used for the needs of this transaction process is fintech. Fintech is an abbreviation of financial technology, which can act as a tool or technology to facilitate the transaction process between buyers and sellers and can reduce gaps or fraud in the transaction process. The difficulty of getting information about which fintech device is better for use by MSME owners and users is one of the problems that arise due to the many alternatives to current fintech brands. The purpose of this study is to compare the two fintechs, namely Gopay and Ovo. Comparisons were made to see the quality of the application software using the ISO 25010:2011 method with 6 characteristics and 17 sub-characteristics. The Analytical Hierarchy Process (AHP) is used to rank to obtain information about which fintech device is better for use by MSME owners and users. The results showed that the Gopay application got a percentage of 93.8% and the Ovo application got a percentage of 95.1% of the total characteristics of Functional suitability, performance efficiency, compatibility, reliability, security and usability.*

***Keywords*—** *Analytic Hierarchy Process, Fintech, Gopay, ISO 25010:2011 , Ovo, Software Quality Assurance.*

I. Introduction

Micro, Small and Medium Enterprises (MSMEs) are currently developing very rapidly in recent times. In Indonesia itself, especially the City of Tangerang, has a special culinary tour which is one of the centers of MSMEs, namely the Old Market. Various forms of MSMEs grow by themselves without the need for guidance from an institution. Facilities and knowledge to run MSMEs can be found in various facilities. Utilization of technology is a challenge for MSMEs to survive in the current era. The main function of using technology is to facilitate every transaction made. Unfortunately in Indonesia, this facility is underutilized by business people and their customers. A study on the problems of MSMEs states that the problem of using and utilizing technology is still a major problem for MSMEs (Maier, 2016). The technology that is often used for the needs of this transaction process is fintech.

Fintech stands for financial technology, a form of technology-based financial services that is developing in the world. This technology or service is a form that can be an alternative for financial institutions and their users in providing and obtaining services. The technology that is often used for the needs of this transaction process is fintech. Public interest in transactions using Fintech has also begun to

increase since 2018 (Immawati, Dadang, 2019). From a survey conducted by CNBC Indonesia in 2019 it can be seen that Gopay and Ovo occupy the top positions for the most popular fintechs. Gopay is a service and application created by the nation's children to make it easier for us to make payments via online or internet networks, and can make cash and non-cash transactions. Ovo is a smart application that offers online payment and transaction services. Gopay and Ovo, including E-money products that have been recognized by Bank Indonesia (BI), can legally and safely be used as payment instruments for transactions. This indicates that Gopay and Ovo are in great demand by the Indonesian people, because the percentage produced is higher than the others (CNBC Indonesia.2019). It is difficult to get information about which fintech device is better for MSME owners and users to use. Software assessment analysis is needed to conduct a detailed assessment of the two fintech software so that MSME actors and users, especially the Tangerang City area can be sure and trust in choosing the use of the two fintech software.

Software Quality Assurance (SQA) is a planned and systematic pattern needed to ensure the product complies with the technical requirements that have been set. Software Quality Assurance (SQA) is also a series of evaluation activities designed to develop or produce a product. SQA is based on the planning and execution of various actions that are integrated into all stages of the software development process. This is done to support user confidence that the software product will meet all technical requirements (Galin, D. 2004). Software Quality Assurance (SQA) has several choices of quality methods that can be used to measure software quality assurance. International quality methods that are often used are McCall Quality Method (1977), Boehm Quality Method (1978), and ISO 9126 Quality Method (2001) (Milicic, D. 2005). Quality comparison of McCall, Boehm, ISO 9126 and ISO 25010:2011. ISO/IEC 25010 is a software and system quality method that replaces ISO/IEC 9126 on software engineering.

The analysis of the Gopay and Ovo fintech software involving active users is expected to provide information related to the quality of the two fintech software. One way to perform software analysis can use the ISO 25010:2011 method. The ISO 25010:2011 method performs a specific software analysis where the process refers to the intrinsic characteristics of a software product. For analysis from the user's perspective, the USE Questionnaire of Lund, A.M. (2001). The characteristics of the ISO 25010:2011 method

include functional suitability, performance efficiency, compatibility, usability, reliability, security, maintenability and portability.

This study will analyze the fintech software Gopay and Ovo on MSMEs in Tangerang with the criteria for "small" businesses in accordance with Law no. 20 of 2008, namely the criteria for businesses that have assets of Rp 50,000,000 to Rp 500,000,000 excluding land and buildings for business premises, and have an annual turnover of Rp 300,000,000 to Rp 2,500,000,000. This "small" criterion was chosen because there are many phenomena that occur, the business is still in the development stage, not too mature in having an entrepreneurial nature so that it can be seen the margin or difference between businesses that implement fintech or not.

II. Research Method

A. ISO/IEC 25010:2011

ISO/IEC 25010 is a software and system quality method that replaces ISO/IEC 9126 on software engineering. Product quality is also used for three different quality methods for software products, among others (Iqbal, 2016):
1. Quality in the method of use,
2. Product quality method,
3. Data quality method.

The product quality method consists of eight characteristics related to the static nature of the software and the dynamic nature of the computer system. The characteristics and sub-characteristics provide a consistent terminology for defining, measuring and evaluating the quality of systems and software. They also provide a set of quality characteristics that conform to quality requirements that are comparable for completeness (ISO/IEC, 2011). The Product Quality dimension consists of eight quality characteristics, namely Functional suitability, Performance efficiency, Compatibility, Usability, Reliability, Security, Maintainability and Portability (ISO/IEC, 2011). The following are the characteristics and sub-characteristics used in this study.

1. Functional Suitability

    The extent to which software can provide functions that meet the needs that can be used in certain conditions. These characteristics are divided into several sub characteristics.
    a. Functional completeness,
    b. Functional correctness,
    c. Functional appropriateness. (Nugeraha and Kurniawati, 2020).

2. Performance Efficiency

    Performance is relative to the resources used in certain conditions. These characteristics are divided into several sub characteristics.
    a. Time behaviour,
    b. Resource utilization,
    c. Capacity. (Nugeraha and Kurniawati, 2020).

3. Compatibility

    The extent to which a product, system, or component can exchange information with a product, system, or component and/or perform other functions required

simultaneously when sharing the same hardware and software environment. These characteristics are divided into several sub characteristics.
    a. Co-existence,
    b. Interoperability. (Nugeraha and Kurniawati, 2020).

4. Usability

    The extent to which a product or system can be used by users to achieve goals with effective, efficient, and certain satisfaction in the context of use. These characteristics are divided into several sub characteristics.
    a. Appropriateness recognizability,
    b. Learnability,
    c. Operability,
    d. User error protection,
    e. User interface aesthetics,
    d. Accessibility. (Nugeraha and Kurniawati, 2020).

5. Reliability

    The extent to which a system, product, or component can perform certain functions under certain conditions for a specified period of time. These characteristics are divided into several sub characteristics.
    a. Maturity,
    b. Availability,
    c. Fault tolerance,
    e. Recoverability. (Nugeraha and Kurniawati, 2020).

6. Security

    The extent to which a product or system protects information and data so that someone or other systems can access data according to the type and level of authorization that is owned. These characteristics are divided into several sub characteristics.
    a. Confidentiality,
    b. Integrity,
    c. Non-repudiation,
    d. Accountability,
    f. Authenticity. (Nugeraha and Kurniawati, 2020).

B. Analytical Hierarchy process (AHP)

AHP is a decision support model that this decision support model will break down complex multi-factor or multi-criteria problems into a hierarchy (Saaty,2001). Hierarchy is defined as a representation of a complex problem in a multi-level structure where the first level is the goal, followed by the level of factors, criteria, sub-criteria, and so on down to the last level of alternatives. With hierarchy, a complex problem can be broken down into groups which are then arranged into a hierarchical form so that the problem will appear more structured and systematic. AHP is often used as a method of solving problems compared to other methods for the following reasons: (Pressman, Ph.D. Roger S, 2010).

a. The hierarchical structure, as a consequence of the chosen criteria, reaches the deepest sub criteri.

b. Take into account validity up to the tolerance limit of the inconsistencies of various criteria and alternatives chosen by decision-makers.

c. Take into account the resilience of the decision making sensitivity analysis output.

C. Blackbox Testing

Black Box Testing is also called behavior testing, focusing on the functional requirements of the software. That is, the black box testing technique allows you to create several sets of input conditions that will fully do all the functional requirements for the program. Black box testing is not an alternative technique for black boxes. Instead, this is a possible complementary approach to uncovering a different class of error than that revealed by the white box method. Black box testing attempts to find errors in the following categories:

1. Incorrect or missing function,
2. Interface error,
3. Errors in data structures, external database access,
4. Error in behavior or performance,
5. Initialization and termination errors. (Pressman, 2010:597)

D. Stress Testing

Stress Testing is carried out to ensure that the system will not crash under a crisis situation. Under Stress Testing, AUT is emphasized for a short time to find out the capacity to endure. The most prominent use of stress testing is to determine the boundary, where the system or software or hardware is damaged. It also checks whether the system shows effective error management in extreme conditions. Stress testing is also very important for the following reasons, to check whether the system is working in abnormal conditions. Displays the exact error message when the system is under pressure. System failure in extreme conditions can result in huge loss of income. Better to prepare for extreme conditions by executing Stress Testing (Ferry, 2019).

E. Performance Testing

Performance testing is the process of determining the speed or effectiveness of a network, computer program, software or device. This process may involve quantitative tests performed in a laboratory, such as measuring response times or the number of MIPS (Millions of Instructions per Second) on system functions. Qualitative attributes such as reliability, scalability and interoperability can also be evaluated. Performance testing is often done in conjunction with stress testing. Performance Testing can verify that the system meets the specifications claimed by the manufacturer or vendor. This process can compare two or more devices or programs in terms of parameters such as speed, data transfer rate, bandwidth, throughput, efficiency or reliability. The main goal is not to find bugs, but to eliminate performance bottlenecks (Permatasari, D. I. 2020).

F. USE Qesionare of Lund 2001

USE Questionnaire consists of Usefulness Criteria, Easy of Use, Easy of Learning and Statisfaction (USE, Lund, 2001). USE Questionnaire is used to measure the subjective usefulness of a product or service. The USE Questionnaire consists of 30 question items that examine the four criteria of Usefulness, Easy of Use, Easy of Learning and Statisfaction. This metric can be applied to a variety of usability assessment

scenarios because it is non-proprietary and technology-agnostic. Items in USE are also very good in validity scores with unambiguous and relevant descriptions (Gao, M., Kortum, P., & Oswald, F. 2018). using a formula:

$$\text{Percentage of Eligibility}(\%) = \frac{Observation\ Score}{Expected\ Score} \times 100\%$$

The collected data were analyzed using quantitative descriptive analysis techniques revealed in the distribution of scores and percentages of the rating scale categories determined in quantitative values as the table below.

TABLE I. Skala Likert Score

No	Category	Score
1.	Sangat Setuju	5
2.	Setuju	4
3.	Kurang Setuju	3
4.	Tidak Setuju	2
5.	Sangat Tidak Setuju	1

After the presentation in the form of a percentage, then describe and draw conclusions about each aspect indicator in the development of learning media, for assessment can use the percentage interpretation table below:

TABLE II. Reliability testing intervals and criteria

No	Intervals	Category
1.	Questionnaire Eligibility 81 - 100%	Strongly agree
2.	Questionnaire Eligibility 61 - 80 %	Agree
3.	Questionnaire Eligibility 41 - 60%	Disagree
4.	Questionnaire Eligibility 21 - 40%	Do not agree
5.	Questionnaire Eligibility 0 - 20%	Strongly Disagree

III. RESULT AND DISCUSSION

A. Determination of the Characteristic Method Weights ISO 25010:2011

Determination of characteristic weights and sub-characteristics of ISO 25010:2011 method using Analytical Hierarchy Process (AHP) method using website-based AHP tools with url: http://bpmsg.com/academic/ahp_calc.php. In this study used 6 characteristics of 8 characteristics. The characteristics used are functional suitability, Performance efficiency, Compatibility, Usability, Reliability, and Security. From 6 characteristics used will be given a value of 100%, then the value of 100% is divided into 6 existing characteristics according to the needs of the software to be tested for quality. Of the 6 characteristics there are 17 Sub-characteristics of the assessment criteria. The step to calculate the weight of a sub-characteristic is the same as calculating the characteristic weight, i.e. using the AHP method to determine the weight of the characteristics and sub-characteristics.

Cat		Priority	Rank	(+)	(-)
1	Functional Suitability	17.9%	3	11.1%	11.1%
2	Performance Efficiency	18.1%	2	5.4%	5.4%
3	Compatibility	8.5%	6	4.0%	4.0%
4	Usability	27.5%	1	13.1%	13.1%
5	Reliability	12.6%	5	3.9%	3.9%
6	Security	15.4%	4	5.9%	5.9%

Fig. 1. Result of Determining the Characteristic weight

The result of determining the priority weight of ISO 25010:2011 standard characteristics was obtained that usability characteristics occupied the first position with a priority value of 27.5%. Performance Efficiency characteristics came in second place with a priority value of 18.1%. Functional Suitability characteristics came in third place with a priority value of 17.9%. Security characteristics ranked fourth with a priority value of 15.4%. The reability characteristics placed fifth with a priority value of 12.6%. The compatibility characteristics placed sixth with a priority value of 8.5%.

B. Determination of the SubCharacteristics Method Weights ISO 25010:2011

Sub-characteristic weighting is done the same as weighting on characteristics using ISO 25010:2011 method.

Cat		Priority	Rank	(+)	(-)
1	Functional Completeness	40.5%	2	6.9%	6.9%
2	Functional Correctness	48.1%	1	8.2%	8.2%
3	Functional Appropriateness	11.4%	3	1.9%	1.9%

Fig. 2. Result of Determining the sub-characteristic weight of the Performance Suitability characteristics

The result of determining the priority weight of *Functional Suitability Sub-characteristics* was obtained that the Functional *Correctness Sub-characteristic* occupied the first position with a priority value of 48.1%. *The Functional Completeness sub-characteristics* came in second with a priority value of 40.5%. *Functional Appropriateness sub-characteristics* came in third with a priority value of 11.4%.

Cat		Priority	Rank	(+)	(-)
1	Time Behaviour	42.9%	1	0.0%	0.0%
2	Resource Utilization	42.9%	1	0.0%	0.0%
3	Capacity	14.3%	3	0.0%	0.0%

Fig. 3. Result of Determining the sub-characteristic weight of the Performance Efficiency characteristics

The result of determining the weight of Performance Efficiency Sub-characteristics was obtained that the Time Behavior Sub-characteristics and Resource Utilization Sub-characteristics ranked first with a priority value of 42.9%. Capacity sub-characteristics placed second with a priority value of 14.3%.

Cat		Priority	Rank	(+)	(-)
1	Co-Existence	25.0%	2	0.0%	0.0%
2	Interoperability	75.0%	1	0.0%	0.0%

Fig. 4. Result of Determining the sub-characteristic weight of the Compatibility characteristics

The result of compatibility sub-characteristic priority weight was obtained that Interoperability occupied the first position with a priority value of 75.0%. Co-Existence came in second with a priority value of 25.0%.

Cat		Priority	Rank	(+)	(-)
1	Maturity	21.5%	3	11.3%	11.3%
2	Availability	29.8%	1	15.2%	15.2%
3	Fault Tolerance	20.6%	4	18.4%	18.4%
4	Recoverability	28.1%	2	19.2%	19.2%

Fig. 5. Result of Determining the sub-characteristic weight of the Reliability characteristics

The result of the Priority Weight of the Reliability Sub-characteristic is obtained that Availability occupies the first position with a priority value of 29.8%. Recoverability came in second with a priority value of 28.1%. Maturity came in third with a priority value of 21.5%. Fault Tolerance placed fourth with a priority value of 20.6%.

Cat		Priority	Rank	(+)	(-)
1	Confidentiality	29.0%	1	19.3%	19.3%
2	Integrity	22.6%	2	10.4%	10.4%
3	Non-repudiation	11.3%	5	4.1%	4.1%
4	Accountability	18.5%	3	6.0%	6.0%
5	Authenticity	18.5%	4	6.0%	6.0%

Fig. 6. Result of Determining the sub-characteristic weight of the Security characteristics

The result of priority weighting from The Security Sub-characteristic was obtained that Confidentiality occupied the first position with a priority value of 29.0%. Integrity came in second with a priority value of 22.6%. Accountability came in third with a priority score of 18.5%. Authenticity placed fourth with a priority value of 18.5%. Non-Repudiation placed fifth with a priority value of 11.3%.

Cat		Priority	Rank	(+)	(-)
1	Usefulness	19.8%	4	3.0%	3.0%
2	Ease of Use	20.9%	3	8.8%	8.8%
3	Ease of Learning	34.5%	1	11.4%	11.4%
4	Satisfaction	24.8%	2	10.6%	10.6%

Fig. 7. Result of Determining the sub-characteristic weight of the USE Questionnaire characteristics

The priority weight result of USE Qestionnaire of Lund, A.M. (2001) was obtained that easy of learning ranked first with a priority value of 34.5%. Statisfaction placed second with a priority value of 24.8%. Easy of use came in third with a priority value of 20.9%. usefulness placed fourth with a priority value of 19.8%.

C. Gopay and Ovo Testing

1. Characteristics of Functional Suitability

Functional Completeness Sub-characteristic testing on Gopay and Ovo fintech applications has been conducted using Blackbox testing method. The purpose of testing is to determine the extent to which the function includes all the specific tasks and objectives of the user.

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Functional Correctness Sub-characteristic testing on Gopay and Ovo fintech applications is conducted using Blackbox testing method. The purpose of testingis to determine the extent to which the product or system provides the correct results as needed.

Functional Appropriateness Sub-characteristic testing on Gopay and Ovo fintech applications is conducted using Blackbox testing method. The purpose of testing is to determine the extent to which the functions provided are able to facilitate the completion of certain tasks and objectives.

Total value of Functional Suitability Characteristics After evaluating each sub-characteristic contained in the specified Functional Suitability characteristics, values are obtained as the table below.

TABLE III. Result Characteristics of Performance Efficiency

No	Sub-characteristics	Value	Score		Total	
			Gopay	Ovo	Gopay	Ovo
1.	Functional Completeness	40.5	5	5	2.02	2.02
2.	Functional Correctness	48.1	5	5	2.41	2.41
3.	Functional Appropriateness	11.4	5	5	0.57	0.57
				Total	5	5

2. Characteristics of Performance Efficiency

Time Behavior Sub-characteristic testing on Gopay and Ovo applications is done using Blackbox testing and performance testing methods with the help of Testproject Tools. The purpose of testing is to determine the extent to which the response and processing time of the product or system can meet the requirements when carrying out the function.

Sub-characteristics of Resource Utilization testing in Gopay and Ovo applications is done using Blackbox testing method and assisted with Apptim tools. The purpose of testing is to determine the extent to which the amount and type of resources used by the product or system can meet the requirements when carrying out functions.

Capacity Sub-characteristic testing on Gopay and Ovo applications is done using Blackbox testing and testing using Apptim tools. The purpose of testing is to determine the extent to which the maximum parameters of the product or system can meet the requirements.

Total Value of Performance Efficiency Characteristic After evaluating each sub-characteristic contained in the Performance Efficiency characteristics, values are obtained as shown in the table below.

TABLE IV. Result Characteristics of Performance Efficiency

No	Sub-characteristics	Value	Score		Total	
			Gopay	Ovo	Gopay	Ovo
1.	Time behaviour	42.9	5	5	2.14	2.14
2.	Resource utilization	42.9	4.5	4.5	1.93	1.93
3.	Capacity	14.2	4	3.5	0.56	0.49
				Total	4.63	4.56

3. Compatibility Characteristics

Co-Existence Sub-characteristic testing on Gopay and Ovo applications is done using Blackbox testing and compatibility testing using Apptim tools. The purpose of testing on The Co-Existence Sub-characteristic is to find out how far the system is able to perform more efficient functions by sharing environments and resources between one system and another.

Sub-characteristic Interoperability testing on Gopay and Ovo applications is conducted using Blackbox testing and Compatibility Testing methods. The purpose of testing the Interoperability Sub-characteristics is to find out how the system can exchange data and use previously exchanged information without affecting the previous circumstances.

Total value of Compatibility Characteristics After evaluating each sub-characteristic contained in the specified Compatibility characteristics, values are obtained as the table below.

TABLE V. Result Characteristics of Compatibility

No	Sub-characteristics	Value	Score		Total	
			Gopay	Ovo	Gopay	Ovo
1.	Co-Existence	25.0	5	5	1.25	1.25
2.	Interoperability	75.0	5	5	3.75	3.75
				Total	5	5

4. Characteristics of Reliability

Maturity Sub-characteristic testing on Gopay and Ovo applications is done using Blackbox and Stress testing methods. The tools used for this characteristic are Apptim. The purpose of testing on maturity sub-characteristics is to find out how far the system, product/creation or element that complements the need for excellence in standard operation.

Availability Sub-characteristic testing on Gopay and Ovo applications is done using Blackbox and Stress testing methods. The purpose of testing Availability Sub-characteristics is to find out how far a system, product/creation or element is ready to be accessed when needed for use.

Sub-characteristic Fault Tolerance testing on Gopay and Ovo applications is done using Stress testing method. The purpose of testing on Fault Tolerance Sub-characteristics is to find out how far the system, product/creation or element will operate as it is even if there is a hardware or softwarefailure.

Recoverability Sub-characteristic testing on Gopay and Ovo applications is done using Blackbox testing method. The purpose of testing on the Recoverability Sub-characteristic is to find out how far, when things happen to the continuity of obstacles or obstacles, a system or structure can restore data that is directly damaged and can reshape to the desired system.

Total Value of Reliability Characteristic After evaluating each sub-characteristic contained in the Reliability characteristics, values are obtained as shown in the table below.

TABLE VI. Result Reliability Characteristics

No	Sub-characteristics	Value	Score		Total	
			Gopay	Ovo	Gopay	Ovo
1.	Maturity	21.5	5	5	1.07	1.07
2.	Availability	29.8	5	5	1.49	1.49
3.	Fault Tolerance	20.6	5	5	1.03	1.03
4.	Recoverability	28.1	5	5	1.41	1.41
	Total				5	5

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5. *Security Characteristics*

Confidentiality Sub-characteristic testing on Gopay and Ovo applications is conducted using Blackbox testing and MobSF Tools methods. The purpose of testing on the Confidentiality Sub-characteristic is to find out how far the product ensures that the data can only be entered by the authorities.

Integrity Sub-characteristic testing on Gopay and Ovo applications is done using Blackbox testing method and MobSF Tools. The purpose of testing on Integrity Sub-characteristics is to find out how far the system prevents invalid entry routes, program changes or data. Testing is performed using predefined scenarios.

Non-Repudiation Sub-characteristic testing on Gopay and Ovo applications is conducted using Blackbox testing method and MobSF Tools. The purpose of testing on Non-Repudiation Sub-characteristics is to test the security of the software in recording user activity while performing actions within the software.

Accountability Sub-characteristic testing on Gopay and Ovo applications is conducted using Blackbox testing methods and MobSF tools. The purpose of testing on Accountability Sub-characteristics is to find out how far the actions of an identity can be tracked and traced.

Authenticity Sub-characteristic testing on Gopay and Ovo applications is done using Blackbox testing method and MobSF tools. The purpose of testing authenticity sub-characteristics is to find out how far a person's identity can be proven as claimed.

Total Value of Security Characteristic After evaluating each sub-characteristic contained in the Security characteristics, values are obtained as shown in the table below.

TABLE VII. Result Security Characteristics

No	Sub- Characteristics	Value	Score		Total	
			Gopay	Ovo	Gopay	Ovo
1.	*Confidentiality*	29.0	5	5	1.45	1.45
2.	*Integrity*	22.6	3	5	0.67	1.13
3.	*Non-Repudiation*	11.3	5	5	0.57	0.57
4.	*Accountability*	18.6	5	5	0.93	0.93
5.	*Authenticity*	18.5	5	5	0.92	0.92
				Total	**4.54**	**5**

6. *Characteristics of Usability*

In this study will use 4 Sub-characteristics contained in USE Qestionnaire of Lund, A.M. (2001) to test Gopay application namely, Usefulness, Easy Of Use, Easy Of Learning and Statisfaction. Here is an explanation of the testing of Gopay and Ovo applications.

a) *Research Sample Selection*

The study used Slovin's approach with a 10% limit on tolerable errors. Based on online media sources pelitabanten.com published on December 21, 2020 with the title "Pelaku UMKM Kota Tangerang Terima BSMUM Senilai Rp 1 juta" it is known that the number of MSMEs in Tangerang city as many as 100,083 in 2020 in 13 subdistricts in tangerang city. Here's a sampling of the selection. The

number of MSMEs in Tangerang in 2020 is 100,083. The calculation uses the formula below.

$$n = \frac{N}{1 + Ne^2},$$

Information:

n : Samples to be used for research.

N : Research population.

e : Percentage of accuracy allowance due to sampling errors that are still being recorded (1%, 5%, 10%).

After doing the calculation using slovin approach obtained the number 99.9 done rounding to 100. The number 100 will be used as the number of samples that will be used in the dissemination of questionnaires to MSMEs actors and users who use Gopay and Ovo fintech.

b) *Validity Testing Using SPSS*

Validity testing is used to find out which questionnaires have been filled by valid respondents or not, validity testing using SPSS tools by entering questionnaire data, Here are the results of Validity testing. Results From the validity test found valid because the value obtained exceeds the value of r table with N = 100 at a significance of 5% with a value of r of 0.196. Here is a table of test results.

TABLE VIII. Validity Testing

No	Question	R Count		R Table	Status
		Gopay	Ovo		
1.	*Usefulness*	0.702	0.654	*0.196*	Valid
2.	*Usefulness*	0.530	0.583	*0.196*	Valid
3.	*Usefulness*	0.606	0.662	*0.196*	Valid
4.	*Usefulness*	0.607	0.659	*0.196*	Valid
5.	*Usefulness*	0.633	0.685	*0.196*	Valid
6.	*Usefulness*	0.523	0.605	*0.196*	Valid
7.	*Usefulness*	0.673	0.725	*0.196*	Valid
8.	*Usefulness*	0.666	0.659	*0.196*	Valid
9.	Easy Of Use	0.795	0.726	*0.196*	Valid
10.	Easy Of Use	0.793	0.749	*0.196*	Valid
11.	Easy Of Use	0.713	0.701	*0.196*	Valid
12.	Easy Of Use	0.606	0.547	*0.196*	Valid
13.	Easy Of Use	0.682	0.692	*0.196*	Valid
14.	Easy Of Use	0.727	0.708	*0.196*	Valid
15.	Easy Of Use	0.513	0.514	*0.196*	Valid
16.	Easy Of Use	0.524	0.550	*0.196*	Valid
17.	Easy Of Use	0.632	0.652	*0.196*	Valid
18.	Easy Of Use	0.737	0.767	*0.196*	Valid
19.	Easy Of Use	0.782	0.762	*0.196*	Valid
20.	*Easy Of Learning*	0.704	0.732	*0.196*	Valid
21.	*Easy Of Learning*	0.751	0.705	*0.196*	Valid
22.	*Easy Of Learning*	0.739	0.729	*0.196*	Valid
23.	*Easy Of Learning*	0.714	0.641	*0.196*	Valid
24.	*Statisfaction*	0.765	0.642	*0.196*	Valid
25.	*Statisfaction*	0.652	0.655	*0.196*	Valid
26.	*Statisfaction*	0.728	0.722	*0.196*	Valid
27.	*Statisfaction*	0.766	0.775	*0.196*	Valid
28.	*Statisfaction*	0.755	0.713	*0.196*	Valid
29.	*Statisfaction*	0.703	0.682	*0.196*	Valid
30.	*Statisfaction*	0.808	0.745	*0.196*	Valid

c) *Reliability Testing*

Using SPSS Reliability testing is done if the questionnaire is said to be valid from validity testing. This step is done after testing the validity of using SPSS Tools, with the results as shown below.

Fig. 8. Reliability Statistics of Gopay (Left) and Ovo (Right)

On the Reliability test there are intervals and reliability test criteria. Intervals and criteria test reability to know the degree of correlation that results in cronbach's alpha value. The interval table and reliability test criteria can be seen in the Table forward.

TABLE IX. Reliability Test Interval

Interval	Criterion
0.000 – 0.200	Very Low Correlation
0.200 – 0.400	Low Correlation
0.400 – 0.600	Sufficient Correlation
0.600 – 0.800	High Correlation
0.800 – 1.000	Very High Correlation

Based on Gopay's Reliability test obtained a result of 0.960 and Ovo got a result of 0.957 on Cronbach's alpha, according to the Reliability index criteria table get very high correlation criteria so it can be concluded that the questionnaire that has been filled out by respondents is reliable.

d) *Usefulness Criteria Testing*

Testing usefulness criteria on Ovo application using questionnaire method. This test is done to find out how far the wearer is able to recognize the product, whether it is appropriate for their needs or not appropriate. In this study, questionnaires were given to 100 respondents. The usefulness criteria consists of 8 questions with a total of 800 votes.

TABLE X. The Result of Usefulness Criteria

No	Total Suara		Status
	Gopay	Ovo	
1.	276	289	Strongly agree
2.	340	328	Agree
3.	166	165	Neutral
4.	17	17	Do not agree
5.	1	1	Strongly Disagree
Total	800	800	

e) *Easy of Use Criteria Testing*

Testing of easy of use criteria on Ovo application using questionnaire method. This test is performed to find out how far the product has the capability that makes the product easier to use. In this study, questionnaires were given to 100 respondents. The easy of use criteria consists of 11 questions with a total of 1100 votes.

TABLE XI. The Result of Easy of Use Criteria

No	Total Suara		Status
	Gopay	Ovo	
1.	321	362	Strongly agree
2.	469	479	Agree
3.	271	226	Neutral
4.	36	31	Do not agree
5.	3	2	Strongly Disagree
Total	1100	1100	

f) *Easy of Learning Criteria Testing*

Testing easy of learning criteria on Ovo application using questionnaire method. This test is conducted to find out how far the product can be used by users in order to achieve the learning that has been determined in the use of the product. Especially it takes the achievement of effectiveness, efficiency, freedom from risk and satisfaction in certain uses. In this study, questionnaires were given to 100 respondents. The easy of learning criteria consists of 4 questions with a total of 400 votes.

TABLE XII. The Result of Easy of Learning Criteria

No	Total Votes		Status
	Gopay	Ovo	
1.	150	172	Strongly agree
2.	183	191	Agree
3.	61	36	Neutral
4.	6	1	Do not agree
5.	0	0	Strongly Disagree
Total	400	400	

g) *Satisfaction Criteria Testing*

Testing of satisfaction criteria in Ovo application using questionnaire method. This test is done to find out how far the product can give satisfaction to the user. In this study, questionnaires were given to 100 respondents. On the satisfaction criteria consists of 7 questions with a total of 700 votes.

TABLE XIII. The Result of Satisfaction Criteria

No	Total Votes		Status
	Gopay	Ovo	
1.	167	163	Strongly agree
2.	282	308	Agree
3.	241	203	Neutral
4.	35	25	Do not agree
5.	2	1	Strongly Disagree
Total	700	700	

h) *Result Characteristics of Usability*

Total value of Compatibility Characteristics After evaluating each sub-characteristic contained in the specified Compatibility characteristics, values are obtained as the table below.

TABLE XIV. The Result of Usability Characteristics

No	Sub- Characteristics	Value	Score		Total	
			Gopay	Ovo	Gopay	Ovo
1.	*Usefulness*	19.8	4	4	0.79	0.79
2.	*Easy Of Use*	20.9	4	4	0.83	0.83
	Easy Of Learning	34.5	4	4	1.38	1.38
	Statisfaction	24.8	4	4	0.99	0.99
				Total	3.99	3.99

D. *Calculation of ISO 25010:2011 Characteristic Assessment Results on Research Objects*

At this stage, the test results will be recapitulated based on the tests that have been done on the Gopay and Ovo applications. The recapitulation results of gopay and Ovo application testing can be seen in the following table.

TABLE XV. The Recapitulation of Application Testing on Gopay and Ovo

No	Karakteristik	Sub-Karakteristik	Value		Persentase (%)	
			Gopay	Ovo	Gopay	Ovo
1.	*Functional Suitability*	*Functional Completeness*	2.02	2.02	40.4	40.4
		Functional Correctness	2.41	2.41	48.2	48.2
		Functional Appropriateness	0.57	0.57	11.4	11.4
		Total	**5**	**5**	**100**	**100**
2.	*Performance Efficiency*	Time Behaviour	2.14	2.14	42.8	42.8
		Resource Utilization	1.93	1.93	38.6	3.86
		Capacity	0.56	0.49	11.2	9.8
		Total	**4.56**	**4.56**	**92.6**	**91.2**
3.	*Compatibility*	*Co-Existence*	1.25	1.25	25	25
		Interoperability	3.75	3.75	75	75
		Total	**5**	**5**	**100**	**100**
4.	*Usability*	*Usefulness*	0.79	0.79	15.8	15.8
		Easy Of Use	0.83	0.83	16.6	16.6
		Easy Of Learning	1.38	1.38	27.6	27.6
		Statisfaction	0.99	0.99	19.8	19.8
		Total	**3.99**	**3.99**	**79.8**	**79.8**
5.	Reliability	*Maturity*	1.07	1.07	21.4	21.4
		Availability	1.49	1.49	29.8	29.8
		Fault Tolerance	1.03	1.03	20.6	20.6
		Recoverability	1.41	1.41	28.2	28.2
		Total	**5**	**5**	**100**	**100**
6.	*Security*	*Confidentiality*	1.45	1.45	29	29
		Integrity	0.67	1.13	13.4	22.6
		Non-Repudiation	0.57	0.57	11.4	11.4
		Accountability	0.93	0.93	18.6	18.6
		Authenticity	0.92	0.92	18.4	18.4
		Total	**4.54**	**5**	**90.8**	**100**
	Total Nilai Pengujian				**93.8%**	**95.1%**

For comparison of the results of the assessment of Fintech Applications Gopay and Ovo obtained the following details. Based on the total testing value of fintech applications Gopay gets a total percentage of 93.8%. The test results are obtained with the following details, functional suitability characteristics get a total percentage of 100%. Performance Efficiency characteristics get a total percentage of 92.6%. Compatibility characteristics get a total percentage of 100%. Characteristics of Usability get a total percentage of 79.8%. Performance Reliability characteristics get a total percentage of 100%. Security characteristics get a total percentage of 90.8%. As for the Ovo application, a total percentage of 95.1%. The test results are obtained with the following details, functional suitability characteristics get a total percentage of 100%. Performance Efficiency characteristics get a total percentage of 91.2%. Compatibility characteristics get a total percentage of 100%. Characteristics of Usability get a total percentage of 79.8%. Performance Reliability characteristics get a total percentage of 100%. Security characteristics get a total percentage of 100%. The histogram for the percentage of gopay and Ovo application test results can be seen in the following figure.
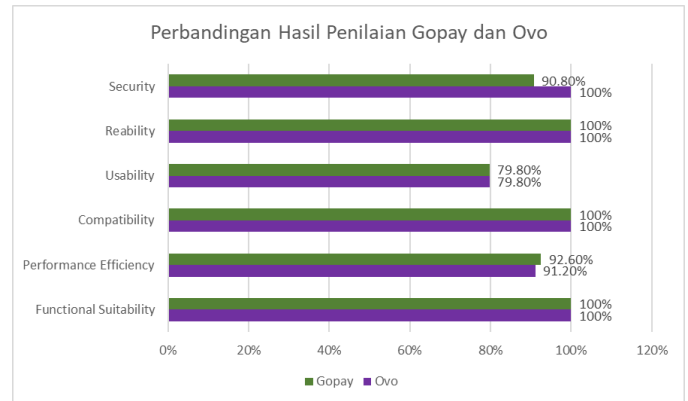

Fig. 9. The Percentage of Application Testing Result on Gopay and Ovo

E. Recommendations Based on ISO 25010:2011 Characteristic Assessment Results on Research Objects.

Based on the results of testing and assessment of characteristics in the ISO 25010:2011 method gopay application needs to make improvements to the characteristics of Usability, Security and Performance Efficiency. Usability characteristics get a percentage value of 79.8% because for each criterion in USE Qestionnaire of Lund, A.M. (2001) Gopay application still no criteria to reach the maximum value of 5. As a recommendation, Gopay can pay more attention to the level of satisfaction of the application user in order to achieve the best criteria. Security characteristics get a value of 90.8% because for integrity sub-characteristics in MobSF testing is not detected for its network security status. Gopay should list the status of network security if it is in accordance with certain standards. Performance Efficiency characteristics get a value of 92.6% because of the large use of Ram and Memory needed to install the Gojek application on The Capacity Sub-characteristics. Gopay should resize ram and memory usage such as image load and others to minimize ram and memory usage.

Based on the test results and characteristic assessment on iso 25010:2011 method Ovo application needs to evaluate the usability and Performance Efficiency criteria. The usability criteria in testing Ovo applications achieved a percentage value of 79.8%. Usability criteria get a percentage value of 79.8% because all the criteria in USE Qestionnaire of Lund, A.M. (2001) Ovo application still no criteria to reach the maximum value of 5. Therefore, as a recommendation of Ovo application evaluation advice need to pay attention to the level of user satisfaction so that the application can be more maximal. Performance efficiency characteristics get a value of 91.2% given the large use of Ram and Memory needed to install Ovo applications on Sub-characteristics Capacity. Ovo should conduct additional evaluations related to application capacity such as, resize ram and memory usage such as image load and others to minimize the use of Ram and Memory.

IV. CONCLUSION AND SUGGESTION

A. Conclusion

Based on the results of the research that has been described in the previous chapter, it can be concluded that the measurement of the quality of Gopay and Ovo fintech

applications using ISO 25010:2011 method that uses 6 sub-characteristics with 17 sub characters gets the results:

1. Gopay application gets a percentage of 93.8% of the total characteristics of Functional suitability, performance efficiency, compatibility, reliability, security and usability. On functional suitability characteristics get a percentage result of 100%. On the characteristics of performance efficiency get a percentage yield of 92.6%. On the compatibility characteristics get a 100% percentage result. On the characteristics of usability get a percentage yield of 79.8%. On the characteristics of reliability get a 100% percentage yield. In security characteristics get a percentage yield of 90.8%.

2. Ovo application gets a percentage of 95.1% of the total characteristics of Functional suitability, performance efficiency, compatibility, reliability, security and usability. On functional suitability characteristics get a percentage result of 100%. On the characteristics of performance efficiency get a percentage yield of 91.2%. On the compatibility characteristics get a 100% percentage result. On the characteristics of usability get a percentage yield of 79.8%. On the characteristics of reliability get a 100% percentage yield. On security characteristics get a 100% percentage result.

3. The comparison between Gopay and Ovo fintech software obtained results for Gopay Application got a percentage of 93.8% and Ovo application got a percentage of 95.1% of the total testing characteristics. Gopay application needs to evaluate the characteristics of Usability, Security and Performance Efficiency. Ovo application needs to evaluate the characteristics of Usability and Performance Efficiency.

The results of the research can be used as consideration for gopay and Ovo application management to correct the shortcomings and improve the quality of the application.

B. Suggestions

For further research, there are some suggestions that can be given such as comparing with more varied Fintech applications. Expand the reach or area of research. Determine the priority of Characteristics and Sub-characteristics based on expert advice. Suggestions are given so that further research can focus more on the quality of the application with more complete indicators so as to get more accurate results.

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