Development of Taxation Application for Start-up based on Cloud Computing following MSMEs Tax Regulation

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Abstract: The level of participation of taxpayers, especially Start-ups in Indonesia, is still a relatively low, cause of the lack of understanding of taxation and administration. The purpose of designing the application is to be able to make sound financial governance such as recording transactions, calculating gross circulation every month and year, and helping in taxation and administration, such as calculating the Final Income Tax according to Government Regulation No. 23 of 2018 and making a report as supporting documents for the Annual Agency Tax Return report. Tax applications for start-ups are developing in cloud computing. This application development stage refers to the Waterfall development model through the requirements, analysis, design, implementation, testing, and maintenance. The requirements stage reinforces by applying the User-Centred Design method. Black-box testing on application functionality shows that the application is running well, and the output produced in this application successfully displays the Final Income Tax attachment output that can use for Annual Agency Tax Return reporting. This research can help MSMEs / Start-ups to manage Final Income taxation and administration.

1 INTRODUCTION

Indonesia is one of the developing countries and needs funds to finance the country's development. The country's most significant source of income comes from taxes. Taxation is a dynamic fiscal policy instrument. Its application must always follow the economy's dynamics, both domestic and international (Rosdiana, 2015). According to Law No. 16 of 2009 concerning Income Tax article 1 paragraph 1, tax is a mandatory contribution to the state-owned by individuals or entities that are coercive based on the Act, with no direct compensation and used for the state's needs for the greatest prosperity of the people.

The level of taxpayer participation, especially MSMEs or Start-ups in Indonesia, is still relatively low; at least two things cause it, according to the Directorate General of Taxes, first the MSME turnover rate is very high, second the lack of financial literacy. Financial literacy is related to tax administration. Tax revenue in developing countries, especially in Indonesia, is still not optimal; the reduced tax administration influences it (Rudiati et al., 2013).

Having good financial governance can be a tax administration solution for MSMEs or Start-ups. An example of good financial governance is that MSMEs or Start-ups can record transactions so that later they can produce useful financial reports. Quality financial reports can present accurate, honest, relevant, reliable, comparable, and understandable information. Quality financial statements are relevant because they will use as a basis for decision making (Roychowdhury et al., 2019). The use of technology for every financial governance activity in the Start-up will also be a factor in the Start-up's success and progress. The utilization of accounting software can be a solution for start-ups who do not have an accountant.

Applications Widely used by MSMEs are currently limited to recording transactions and have not helped start-ups about taxation, especially in the Final Income Tax for MSMEs (Supardianto et al., 2019). The technology that is the solution is still limited to single-tenancy-based applications and cannot yet become the primary solution because it still requires users to invest in infrastructure; while Start-up is in the development phase, it is essential to save additional costs. With the use of cloud

computing by utilizing software-as-a-service, every user can access it through the internet without installing software.

2 LITERATURE REVIEW

2.1 Taxation for Start-ups in Indonesia

Every individual, MSME, or Start-up who earns income from goods trading business or service management, must be taxed. Every MSME has obligations related to income tax.

The relevant government regulation on Income Tax and MSME is the issuance of Government Regulation No. 23 of 2018, which came into effect on July 1, 2018, replacing Government Regulation No 46 of 2013 for income from businesses received or obtained by taxpayers who have a particular gross circulation. Taxpayers whose business activities have a turnover below Rp. 4.8 Billion in one tax year will be subject to the Final Income Tax of 0.5% of the total turnover. The flowchart for the Final Income Tax can be seen in Figure 1.
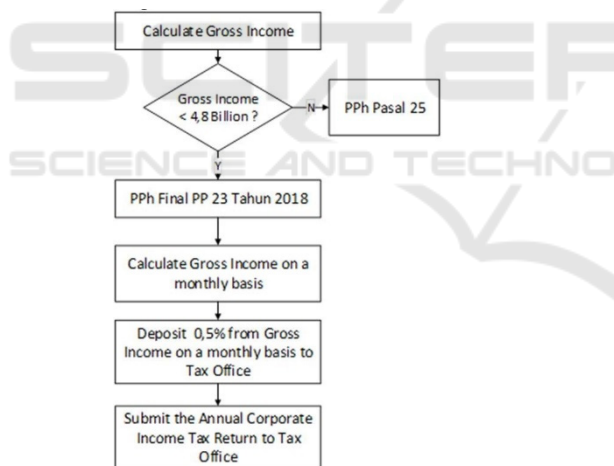

Figure 1: Flowchart Final Income Tax.

Start-ups only need to pay 0,5% Final Income Tax on the Gross Income every month, and Start-ups must deposit the 0,5% Final Income Tax on that particular month at the latest on the 15th of the following month to the state treasury account. Start-ups must submit the Annual Corporate Income Tax Return at the latest on the 4th month of the following fiscal year to the tax office (Supardianto et al., 2019).

The Ministry of Cooperatives and Small and Medium Enterprises noted the number of MSMEs in Indonesia numbered 59 million business operators.

Based on data from Statistics Indonesia, the contribution of MSMEs to the national gross domestic product (GDP) reached 57 percent or 1,537 trillion rupiahs. However, seen from the MSME participation value of the tax revenue report in the Annual Tax Reporting for the 2019 tax year, only 1.3 million actors out of the total MSMEs. At least two things cause the low level of participation of MSMEs taxpayers; according to the Directorate General of Taxes, the MSME turnover rate is very high, second the lack of financial literacy. In contrast to large companies, Start-up / MSMEs generally do not have specialized divisions that handle their tax obligations because they are still at the development stage and have not considered the tax.

2.2 Page Setup

The need for technology-based administration is that there is still much work, such as manual recording and calculation. Manual recording and calculation is not a problem if there are only a few transactions, but they are undoubtedly prone to errors if there are many transactions and repeated. Companies that deal with the import of goods, with the number of goods that enter, the calculation of import tax on these goods is carried out one by one so that it is inefficient because it takes a long time so that it often experiences difficulties (Anggraeni et al., 2017).

This manual management and calculation also occur for the PPh 21 tax type for recitation in several small companies. Processing like this is still not considered optimal, so it needs the role of an information system to be able to handle it [6,7]. For some work types, an employee or employee's income tax deduction is still carried out by the company. So that there are still many employees who do not clearly understand how to calculate PPh 21 on the income they get from their work (Sari et al., 2015).

The role of technology can convey information so that many people can find out about information quickly. Lack of taxation information is the cause of the low level of taxpayer participation. Land and Building Tax is a tax taken by a region that must be paid by taxpayers in that area. However, the low level of participation causes the low income received from these taxes (Sidharta & Mirna Wati, 2015). Land and building tax are a source of income that helps increase local revenue. So that the administration cannot be carried out manually because it is vulnerable to manipulation (Azhar et al., 2016). One of the most widely used technology uses today is the use of cloud computing.

2.3 Cloud Computing

The use of technology in tax administration intends to increase the number of taxpayers and increase tax revenue. The use of this technology makes it possible to automate and gather information better (Cotton & Dark, 2017). Cloud computing technology can be used as the best alternative to creating systems that can realize these problems.

Cloud computing can change the outlook on infrastructure investment in terms of computing technology. Previously investment in computing technology was seen as an asset, but cloud computing could see as an investment in computing as a service provider (De Paula & De Figueiredo Carneiro, 2016). Cloud computing technology is a blend of technology and business, where cloud computing has become a promising commercial computing model. The aim is to reduce the complexity of infrastructure management from users.

Cloud computing is a computing technology where resources are dynamic and scalable and can be used to share virtually and access via the internet (Wu et al., 2010). Cloud computing is a computing method where the role of the internet is the main thing. Cloud can interpret as a shared resource, where applications and information are provided to users on demand. In general, the use of cloud computing technology is using online applications. The user does not install the application because the application is already available on the internet. Service on Cloud Computing can be seen in Figure 2.
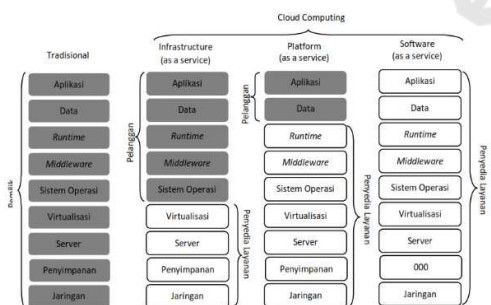

Figure 2: Service on Cloud Computing.

Cloud computing has three services offered, i.e. Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS) (Zhang et al., 2010). SaaS is a service that provides applications, so users do not need to install and access through the internet; users also do not need to think about how data is stored, and manage applications.

PaaS is intended for developers or developers to develop an application on a platform that can be customized. IaaS aims to bring virtual hardware technology to users, so users do not need to place their hardware at the office physically, but can be accessed or remotely via the internet network.

SaaS service is a model that makes it easy for clients to use and rent applications from providers without installing them on their PCs (Rani & Student, 2014). SaaS allows clients to access applications through cloud infrastructure through interfaces from thin/thick clients such as Mozilla Firefox, Internet Explorer, Google Chrome. SaaS is a service where the actual development of software and applications occurs on a platform provided by the PaaS layer. SaaS deals with end-users because end-users can access and use applications created by cloud providers (E & R, 2013; Katyal & Mishra, 2013).

SaaS technology has several advantages, i.e., users do not directly manage or control cloud infrastructure, including networks, servers, operating systems, storage media, or even individual application capabilities, with the possibility of exceptions from limited circuits of users with specific application configurations. This model can provide very beneficial benefits for both users and providers of cloud computing services (Youseff et al., 2008). SaaS services have several advantages, among others (Kulkarni et al., 2012; Mather et al., 2009; Thakral & Singh, 2014):

- Reducing application software license fees
- The SaaS model allows applications to be run by many clients at the same time.
- The application provider is responsible for the control and restrictions on the use of the application
- SaaS users do not need to buy infrastructure because they already use infrastructure from the cloud service provider.
- Applications with the SaaS model can configure by the API but do not fully adjust.

3 RESEARCH METHOD

3.1 Research Tools and Material

The tools used to support this research are as follows:
- Microsoft Visio 2016 as software for designing UML system modelling.
- PHP and HTML as a programming language used to develop web-based systems.
- MySQL as a DBMS that is used to manage databases.

The materials used in this study are as follows:

- Government Regulation regarding taxation for MSMEs regarding Final Income Tax.
- Information regarding the Agency's Annual SPT Report.
- The final income tax calculation is following the applicable Income Tax.
- Knowledge of the design and development of cloud-based applications with software-as-a-service services.

3.2 How to Research

It is developing an application system that aims to design and develop cloud-based taxation applications that can be used for MSMEs and Start-ups to calculate the Final Income Tax according to the applicable Income Tax for MSMEs and provide attachments or documents needed at the time of the Annual Agency Tax Return.

3.3 Application System Development

The taxation application system for start-up uses cloud computing technology with software-as-a-service. The application will place on the cloud side for users to then access through a browser on an internet network.

The application was used to calculate the Final Income Tax, like making monthly transaction reports and making reports to support the Agency's Annual Tax Return report. This application develops using cloud computing technology with software-as-a-service. The system development method used is SDLC using the Waterfall model consisting of planning, analysis, design, implementation, testing, and system maintenance. At the requirement stage, the User-centred Design method uses to get a better picture of the user needs to perform at the requirement stage. The flow diagram of the application system development can be seen in Figure 3.
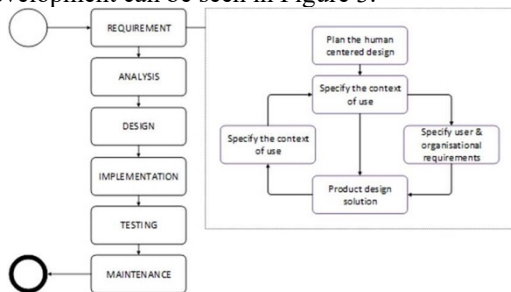

Figure 3: Service on Cloud Computing.

3.3.1 Requirement Phase

The process of gathering needs is to find out what users need so that software can understand what is needed by the user. The user needs at this stage are carried out on the UCD method. The following description is at the UCD stage:

- Plan the human-centred design
  At this phase, the researcher conducts a fundamental analysis of theory, a method that aims to explore this research's needs. In the fundamental analysis of the theory, books and journals reinforce the theories used by researchers.
- Specify the context of use
  This stage is to understand who the application users are designed, identify stakeholders, or be directly or indirectly involved in the system or application development process. Application users are pioneering Start-up or MSMEs businesses in Indonesia.
- Specify user and organizational requirements
  At this stage, an interview activity is carried out, which is useful for knowing the application's functionality to be designed. From the results of interviews conducted at Yogyakarta KPP Pratama, three things must be done by taxpayers who use Final Income Tax, i.e., calculating transactions or incoming money, depositing taxes every month, and reporting the Annual Tax Return every year.
  Based on a survey of several Start-ups, there are still Start-ups that do not record transactions and do not do tax processing because the tax knowledge is still lacking so that it has difficulty in making the attachments needed at the time of the Annual Tax Report.
- Product Design Solution
  From the results of these interviews and surveys, conclusions can be drawn from the user's needs. The above results' solution is to create features that can overcome the needs of these users in the application that will be designed by creating functional and non-functional requirements and making user interface designs built.
- Evaluate Design Against User Requirements
  This stage is the process after design. Researchers conducted usability testing.

3.3.2 Analysis Phase

System analysis is carried out by observing, surveying, and studying literature on tax problems, calculation, and reporting of tax returns both in theory and application. After conducting a literature study,

survey, and direct observation of the existing process, it can be formulated that the problem that occurs is that there is no transaction recording at the new Start-up, which makes it difficult to calculate the Final Income Tax for the Start-up, and causes the Start-up's participation to carry out tax reporting is still low.

With the development of a taxation application for Start-up with cloud computing technology can provide convenience and solutions for existing Start-ups in calculating Final Income Tax and provide supporting reports as part of the Annual Agency Tax Return.

3.3.3 Design Phase

The process of designing a cloud-based taxation application, among others, by making UML diagrams consisting of use case diagrams, activity diagrams, making database schemes, and designing the interface design that will develop.

3.3.4 Implementation Phase

Stages of implementation include making a database, making applications based on system designs prepared previously. Data analysis results show that the creation of taxation applications for cloud computing-based start-ups requires a database as user data storage.

This application program's coding is done using IDE Visual Studio Code software with the PHP programming language and using Zilla and Putty File software to place applications in the cloud.

3.3.5 Testing Phase

Stages of application system testing are done by functional testing of each module section of the program, whether it is running following the system design functions. Testing using black-box testing focuses on logic, functionality, and to minimize errors and ensure the resulting output is as expected.

3.3.6 Maintenance Phase

Maintenance stage serves to support the operational application system that has been implemented so that it can accommodate any changes that occur.

4 RESULT AND DISCUSSION

4.1 System Overview

The system description of the tax application for cloud-based start-ups that will design is shown in the Figure4.

Figure 4: System overview.

Note:
1. Start-ups who use the application only need to record transactions that occur through invoice recording. The results of the recording will then be sent and stored in the database server.
2. The application will retrieve invoice data from Start-up that has been stored for later calculation, and the user can generate results in the form of reports that can be used by tax-related start-ups.
3. The administrator's role is to add the Final Income Tax taxation rules if the new Final Income Tax is published or change the tariff if there is a change in the tariff and provide information to the user.
4. The application can display users who have registered.

There are four main processes contained in the taxation application for this cloud-based start-up, i.e.:

- The process of recording transactions.
  The first step taken by the application user is to record the transactions that occur in his business. This transaction recording process requires the user to provide a number for each transaction that occurs. This number intends to make each transaction have an identity.
- The process of calculating the final Income Tax is following the applicable MSMEs Taxation.
  After the transaction is made and saved, the application will calculate the Final Income Tax following the applicable MSME Taxation Tax regulations.
- The process of making a final income tax report
  After the calculation has been done and the application calculates per month, the application displays these calculations according to each user's tax year.
  Each user can generate attachments to the Final Income Tax report every month for one tax year by selecting the desired tax year.

- The Process of Managing Taxation Regulations and Providing Information
Administrators can add and change taxation rules according to MSMEs' taxation conditions that apply. The user will use the tax rules for each of his tax periods.

4.2 System Requirements Analysis

4.2.1 Functional Requirements Analysis

Functional requirements analysis identifies the processes that will be carried out by the system. The functional requirements of taxation applications for cloud-based start-ups are as follows:
1. Administrator
   - Provide information to users.
   - View registered users.
   - Add new legislation related to taxation Final Income Tax.
2. User
   - Record transactions in the form of e-invoice transactions.
   - Displays recorded e-invoices that have been recorded.
   - Displays details of each recorded e-invoice.
   - Displays information on the amount of monthly Final Income Tax.
   - Displays information on the amount of final income tax annually.
   - Make changes to the tax rules used.
   - Displays information in the form of gross circulation graphs of recorded e-invoices.

4.2.2 Non-functional Requirement Analysis

Analysis of non-functional requirements identifies the behaviour properties owned by the system. The needs of non-functional tax applications for start-ups as an online taxation service for a start-up are as follows:
- Availability

  Availability is a system to be able to provide services to users. The system can run for 24 hours without stopping, except for system maintenance or system updates.

  Availability ensures that users can get information at any time, and access the application at any time.
- Ergonomic

  Ergonomic is the interaction between users of the system or application. The application built must be able to be used efficiently or user friendly. That

is because application users are general users who are not all accustomed to computers.
- Portability

  Applications can access on any platform or operating system that can run web-based applications. It is intended that users can access applications through any device.
- Security

  The browser used by the user must be able to receive an SSL certificate from the system to ensure data security. Access to the system is limited via the internet, and offline access trials cannot be served.

4.3 Design System

4.3.1 Use Case Diagram

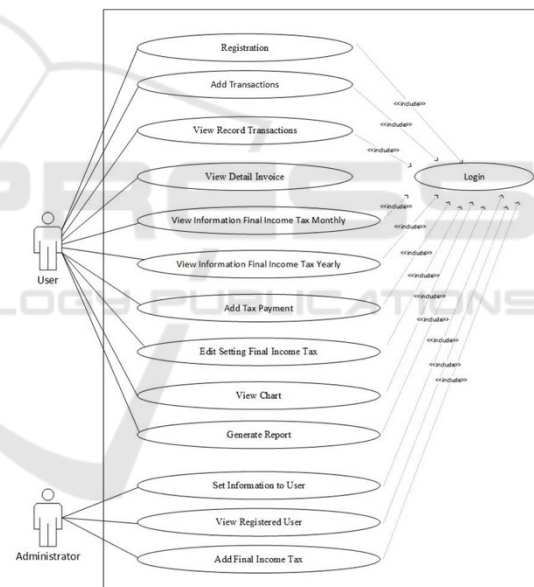The tax application use-case diagram for cloud-based start-ups can be seen in Figure 5.

Figure 5: Use-case diagram.

4.3.2 Design Table

The database used in the development of taxation applications for cloud-based start-ups is a MySQL database consisting of several tables as follows:
- Table TB user
  Table 1 contains user data (start-up / MSMEs) that register to be able to use the application

Table 1: Design table TB user.

No.	Field	Data Type	Note
1	id_user	int(11)	An auto-increment that use as the id of the user
2	nama_usaha	Varchar (50)	The name of the user's business
3	email	Varchar (50)	Full email from user
4	password	Varchar (50)	The password used by the user
5	tahun_berdiri	Int (4)	Years of the user's business stood
6	status_usaha	Varchar (20)	The legal status of the business of the user
7	deskripsi_ usaha	text	Description of the user's business

- Table TB_invoice
  Table 2 contains invoice data recorded by the user in the form of transaction activities of the ongoing business.

Table 2: Design table TB invoice.

No.	Field	Data Type	Note
1	id_faktur	int(11)	An auto-increment that use as the id of a transaction invoice
2	id_user	int(11)	Foreign key from table TB_user
3	no_faktur	Varchar (50)	Invoice number used on each invoice
4	tgl_faktur	Date	The date the invoice transaction occurred
5	nama_ pembeli	Varchar (50)	The name of the buyer of the transaction that occurred
6	jumlah	Bigint (11)	The nominal value of the transaction
7	keterangan	text	Information about the transaction

- Table TB_deposit
  Table 3 contains data from the tax payments that users have made to be then recorded into the application.

Table 3: Design table TB Deposit.

No	Field	Data Type	Note
1	id_setoran	int(11)	An auto-increment that use as the id of a tax deposit
2	id_user	int(11)	Foreign key from table TB_user
3	masa_pajak	Varchar (10)	The tax period is deposited in the tax month and year
4	id_billing	Varchar (20)	The user's billing id
5	jumlah_ setoran	Int (11)	Deposit Amount
6	no_ntpn	varchar(16)	State revenue transaction number
7	tgl_setoran	date	Deposit date

- Table TB_tax
  Table 4 contains data on the final Income Tax legislation available. Data added by administrator.

Table 4: Design table TB tax.

No	Field	DataType	Note
1	id_pajak	int(11)	It is an auto-increment which is used as the id of the tax
2	nama_pajak	varchar(100)	Foreign key from the TB_user table that is used as a marker of the user's tax settings
3	tahun_terbit	varchar(10)	The tax year
4	tarif_pajak	float	Final Income Tax rate

- Table TB_Setting_tax
  Table 5 contains tax regulation data in the form of the active tax year and the tax regulations that are used.

Table 5: Design table TB setting tax.

N o.	Field	Data Type	Note
1	id_setting	int(11)	An auto increment that is used as the id of a tax deposit
2	id_user	int(11)	Foreign key from the TB user table
3	id_pajak	int(11)	Foreign key from the TB pajak table
4	bulan_buka buku	varchar(4)	Active tax year from users
5	bulan_tutup buku	float	Final Income Tax rate
6	status	int(4)	Tax period status and active tax rules

- Table TB_info
  Table 6 contains information that is entered by the administrator who will appear to the user.

Table 6: Design table TB setting tax.

No.	Field	Data Type	Note
1	id_info	int(11)	An auto-increment that is used as the id
2	title_info	int(11)	Title of information
3	isi_info	int(11)	Is the content of information
4	date_info	varchar(4)	Date when information was given

4.4 Implementation System

4.4.1 Page Register

Figure 6 displays a registration form that allows users to register to be able to use the application.

Figure 6: Page register.

4.4.2 Page Login

Figure 7 displays a login form that users can use to enter the application. On the login page, the user will be validated whether the user is registered or not.

Figure 7: Page login.

4.4.3 Page Dashboard

Figure 8, there will be information in the form of the total number of invoices for one active tax year, the total final income tax that has been paid, the application menu list, and the list of invoices that have records.

Figure 8: Page dashboard.

4.4.4 Page Add Product

Figure 9 displays an added product form. Used for user who want to add product, and will use to in add transactions. So, any kind of MSMEs can use this application, because it does not depend on one type of product.

Figure 9: Add product.

4.4.5 Page Add Transactions

Figure 10 displays an added transaction form. Used for users who want to record transactions and will be saved as e-invoices.

Figure 10: Page add transaction.

4.4.6 Page Invoice List

Figure 11 display a list of transactions that have records. Users can search for transactions quickly on this page.

Figure 11: Page invoice list.

4.4.7 Page Final Income Tax

Figure 12 contains information in the form of a total Final Income Tax for one tax year and a list of the Final Income Tax number in the monthly tax period. On this page, the user can also generate an Annual Agency Tax Return attachment.

Figure 12: Page final income tax.

4.4.8 Page Add Tax Payment

Figure 13 is a page used by users to record or record proof of tax payments made through banks, post offices, or third parties. It intends that users can easily search when needed. Users need to know about the billing id obtained on the director general's website, as well as the state revenue transaction number obtained after the user has successfully paid the Final Income Tax.

Figure 13: Page add tax payment.

4.4.9 Page Chart Gross Income

Figure 14 displays gross income information that has records on the previous invoice and then grouped in monthly periods during the active tax year. This page can use as an evaluation material and see trends in the user's business.

Figure 14: Page chart gross income.

4.4.10 Page Tax Setting

Figure 15 is used to make settings for users of tax rules that will use in the application. The user must enter the tax period data that will be active according to the tax year.

Figure 15: Page add tax setting.

4.4.11 Output Attachment for Annual Corporate Tax Returns

Figure 16 is an interface implementation in the form of an output attached to the Annual Corporate Tax Return that can be used.

Figure 16: Output attachment.

4.5 Testing System

Functionality testing is done using the black-box testing methods by observing the execution (output) results through test data and checking the functionality of the taxation application for cloud computing-based start-ups. The results of functionality testing conducted by the testers show that the application has useful functionality

4.6 Discussion

This application development helps MSMEs to record sales transactions. This application also helps MSMEs to find out the total gross income of their business for one month. This gross income is used to get the amount of tax each month paid by MSMEs when using Final Income Tax. This application also helps users save proof of tax payments made to be used if one day there is an inspection by the Directorate General of Taxes.

This application also helps users to provide attachments to the agency's annual tax return. The attachment contains the gross income and the amount of tax each month for one year. Based on this application's many conveniences, it is hoped that it

can increase MSMEs' participation in paying taxes and reporting them.

5 CONCLUSIONS

Based on the results of the development and evaluation of applications that have been carried out, conclusions are as follows:

1. Taxation applications that have been built follow the MSMEs tax laws that apply in Indonesia.
2. The application can manage transactions and calculate the Final Income Tax, as well as make an attachment that is used for the Annual Corporate Tax Return.
3. The application can help MSMEs / Start-ups to manage Final Income Tax taxation and administration.

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