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The Analysis and Improvement of Business Process at PT FMS (A Case Study of an Indonesian Telecommunication Company)

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ABSTRACT

Regarding the increase in telecommunication industry growth, every huge telecommunication company in Indonesia has authorized dealers in every region to help the company in distributing the products. PT FMS is one of the authorized dealers of PT Smartfren Telecom Tbk in Semarang where this research is limited to this company. For daily business activity, there is already a software system for tracking every activity, but the system is not fully integrated between each other. Furthermore, PT FMS has not yet created a written business process, which is an important role in the business itself. This research mainly focuses on the company's distribution process by evaluating the current business process and creating the improvement by using the five BPM phases and BPMN as the tools. For gathering data, the author will conduct interviews, do a direct office observation, and utilize the audited company's financial report 2021. The analysis explains that the root cause of the issues is that there is no written business process. Thus, the proposed solutions are by creating the written and improved business process by using BPMN and initiating a new fully integrated software system to make the business process become more efficient and effective.

Keywords : BPM; BPMN; Distribution; Telecommunication

1. INTRODUCTION

In this digital era, people spend most of their time using smartphones for daily life. This usage of internet cellular data is essential for accessing related smartphone applications, such as social media. Indonesia is the eighth country with the highest usage of internet cellular data in the first quarter of 2021, and Southeast Asia is the third country with the highest usage. This usage has been increasing due to the Covid-19 pandemic, with an increase of 3.7% for the usage of internet cellular data in Indonesia which means the telecommunication industry is growing.

Regarding the fact above, every huge telecommunication company in Indonesia has authorized dealers in every region to help the company in distributing the products. These authorized dealers will work as a distributor company in distributing the products to the retail stores and end users in the related region. PT FMS is an authorized dealer of PT Smartfren Telecom Tbk for the Semarang area. As an authorized dealer, PT FMS works on distributing Smartfren's product to the retail stores and end users. Every week, PT FMS receives an email about the product allocation or the amount of the products that should be bought from PT Smartfren Telecom Tbk. In one week, the products that are bought from Smartfren will arrive at the warehouse of PT FMS and are sold and distributed to the retail stores.

The process of ordering, shipping, and payment is handled by the sales staff. For daily business activity, there is already a software system for tracking every activity, but the system is not fully integrated between each other. PT FMS has not yet created a written business process, which is an important role in the business itself. Business process modeling is used to understand the key mechanism of an existing business, create appropriate information systems, improve the current business structure and operation, show the structure of an innovative business, identify outsourcing opportunities, and facilitate the alignment of business specifications with the technical framework. In this case, PT FMS needs to create a written business process as a form of visualization based on the existing business process. Additionally, the company needs to review and evaluate the business process to make it more efficient and effective.

2. LITERATURE REVIEW

2.1 Distribution

Distribution has been the main business process of PT FMS as an authorized dealer of Smartfren. According to Purva (2003), distribution shows how the entire business process can be managed in order to increase the efficiency of the organization. Effective distribution is critical for the success of any business, as it can affect production costs, pricing, and profitability.

2.2 Business Process

Business process is an organized group of interrelated activities that give value to customers. It can include a variety of tasks such as placing supply orders, dealing with customer complaints, processing bills, managing inventories, and

hiring new workers. According to Smith & Fingar (2003), there are eight characteristics of business processes: large and complicated, dynamic, long-running, adjusted across borders, widely distributed, automated, dependent on and supports human intelligence and judgment, and hard to visibly make. Coordination is the factor that affects business processes the most, as it is necessary for the process to function properly. Measures for business process models and execution are divided into two categories: measures for design and measures for execution.
Design measures deal with static properties of business processes, while execution measures quantify how the process is executed over time. Measures in the design stage can be used to improve the process in the early stages of its lifecycle, while measures in the execution stage quantify how the process is executed over time.

2.3 Business Process Management (BPM)

Business process management (BPM) is an approach, methodology, and instrument used to identify, evaluate, recreate, carry out, and keep track of business processes. It can improve a company's business process by resolving issues and making it more efficient. It is adaptable to change due to its four views: control-flow, data, resource, and task. Reducing the modification threshold makes it easier to add errors, so companies need to build appropriate analysis procedures. BPM is a business necessity that manages the full chain of choices and actions that bring value to the organization and its clients.
It integrates the business process with the company's goals and the needs of the customers. Before conducting BPM, there are six guidelines that must be followed: focusing on consumers, systems and written procedures, definition of aims and results, optimization strategy, best practices, and cultural transformation.

2.4 Business Process Modeling and Notation (BPMN)

BPMN is a method for modeling a business process within a company that enables Business Process Management (BPM). It is developed by the Object Management Group and is a bridge to the gap between business process design and implementation. It has several advantages over Unified Modeling Language (UML) for business process modeling, such as providing a method for process flow modeling that is more suited to the business analyst model and its strong mathematical foundation is made expressly to map business languages. BPMN consists of four components: Flow Objects, Connecting Objects, Swim-lanes, and Artifacts. Flow objects consist of events, activities, and gateways, while Swim-lanes consist of a pool and lane. Activities are shown as rounded rectangles, and a document is represented as a rectangle with one corner folded. The sequence of execution is determined by the connections between activities and control nodes.

Table 2.4.1 Basic Event Types in BPMN (Source: BPMN and Business Process Management 2003)

Event Notation	Type of Events	Function
	Start Event	Start or begin a process flow
	Intermediate Event	Occurs throughout a process flow in the middle of it
	End Event	End a process flow

Table 2.4.2 Event Trigger Types in BPMN (Source: BPMN and Business Process Management 2003)

Start Event Type	Intermediate Event Type	End Event Type	Description
Start Message 	Message 	End Message	A start message arrives from a participant and triggers the start or continues the process in the case of an intermediate event. An end message denotes a message generated at the end of a process
Start Timer 	Timer 	A Timer cannot be an end event.	A specific time or cycle can be set to trigger the start of the process or continue the process in the case of an intermediate event.
Start Rule 	Rule 	A Rule cannot be an end event.	Triggers when the conditions for a rule become true, such as "Stock price changes by more than 10% since opening."
Start Link 	Link 	End Link 	A link is a mechanism for connecting the end event of one process flow to the start event of other process flows.
Start Multiple 	Multiple 	End Multiple 	Start multiple events have multiple ways of triggering or confining the process, while end multiple events have multiple consequences of ending the process, all of which will occur.
A Compensation cannot be a start event.	Compensation 	End Compensation 	An end compensation event informs the process engine that compensation is necessary. This compensation identifier is used by an intermediate event when the process is rolling back.
An Exception cannot be a start event.	Exception 	End Exception 	An end exception event informs the process engine that a named error should be generated. This error will be caught by an intermediate exception event
An End Cancel event cannot be a start event.	An End Cancel event cannot be an intermediate event.	End Cancel	An end event means that the user has decided to cancel the process. The process ended with normal event handling.

Table 2.4.3 Types of Gateways

Gateway Stereotype	Explanation
Exclusive Decision	The gateway is used to model databases, with condition expressions determining the path it flows out on.
Exclusive Merge	Exclusive merge gateway has a meaning that there is only one of many inputs chosen to be output from the gate.
Inclusive Decision	Inclusive means one or more of the outgoing Sequence Flows from the decision may be taken. There cannot be zero output flows.
Inclusive Merge	Inclusive means that the process flow continues when the first input signal arrives from any of the input Sequence Flows.
Complex Decision	Specify a complex flow condition that references outgoing Sequence Flow names. The expression determines which output flow is taken.
Complex Merge	Specify a complex flow condition that references incoming Sequence Flow names and/or process data that is coming into the gateway. The expression determines when the task starts.
Parallel Forking	A Parallel gateway is also called an AND gateway. All Sequence Flows drawn out of the AND gateway are taken.
Parallel Joining	The AND gate must receive an input signal from all input Sequence Flows for the output flow to be taken. The process flow waits for all signals to arrive at the AND gateway before it can continue.

2.5 Previous Studies

In order to support this research, the author finds and uses some papers which are using BPMN method regarding the papers, below are the examples:

Table 2.5.1 Previous Studies Research

Author, Year	Title	Objective	Methodology	Result
Mariam Ben Hassen, Mohamed Turki, Faïez Gargouri (2022)	Extending BPMN Models with Sensitive Business Process Aspects	Develop BPMN4SBP which supports multi-dimensional modeling and visualization of SBPs for KM.	BPMN, SBP	The BPMN extension mechanism is used to design a valid BPMN4SBP extension based on a core domain ontology.
Laura Sánchez González, Félix García Rubio, Francisco Ruiz González, Mario Piattini Velthuis (2010)	Measurement in Business Processes: a Systematic Review	Analyze current state of art and trends in business process measurement through literature review.	BPM, secondary data of 19 articles	Measures for business processes have been applied to models, with most initiatives adapted from the software engineering field.
Karim Zarour and Djamel Benmerzoug (2019)	A Systematic Literature Review on BPMN Extensions	Determine the current state of the art of BPMN extensions and identify the gaps that should be filled in this research area.	BPMN, secondary data of 52 papers	Tables and graphs allowed authors to demonstrate positive points on extensions through concrete examples.
Marek Szelągowski, Piotr Biernacki, Justyna Berniak-Woźny, Cezary Radosław Lipiński (2022)	Proposal of BPMN Extension with a View to Effective Modeling of Clinical Pathways	Propose BPMN extensions which facilitate the transfer of information without compromising readability and usefulness.	DSRM, BPMN	BPMN extensions enable standardization of business processes to model clinical pathways.
Luise Pufahl, Francesca Zerbato, Barbara Weber, Ingo Weber (2022)	BPMN in healthcare: Challenges and best practices	Increase the application of BPMN and digital transformation for healthcare process modeling as a long-term goal.	BPMN, DMN	Domain-specific process fragments are useful for modelers with a basic understanding of BPMN and the healthcare domain.
Dwi Rahmawati, Retno Indah Rokhmawati, Andi Reza Perdanakusuma (2017)	Analysis and Modeling of Business Processes in Licensing Services Using the Business Process Model and Notation (BPMN)	Perform 12 business process analysis of licensing services in the field of licensing Malang City and find out some possible problems that occurred in the current business process.	BPMN	Initiate a new recommendation as a form of business process improvement based on the BPMN analysis.

After identifying and analyzing the previous studies above, the author decided to use BPMN as a tool to evaluate and design the business process in order to achieve the objectives of this research. BPMN will help the company to review its current business process since the company still does not have a written business process. Moreover, it will help the company to design a new and improved business process by creating a fully integrated software system so the business process will be more effective and efficient. Since the author will initiate a recommendation in the form of business process improvement, it means that it is similar to the last paper which was created by Dwi Rahmawati, Reto Indah Rokhmawati, Andi Reza Perdanakusuma (2017). The paper is about improving a business process that also adds new system information which makes their process more effective and efficient as it decreases the activities and time within the process.

3. RESEARCH METHODOLOGY

3.1 Research Design

In this research, the research design that is being used, for analyzing the whole process and obtaining the objectives, is shown below.

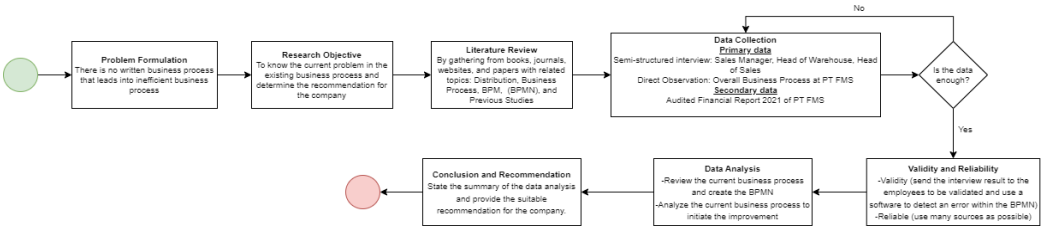

Figure 3.1 Research Design

Based on the figure above, the research will be started with a problem formulation, research objective, literature review, data collection (primary data and secondary data), then if the data is already enough, it will be continued to validity and reliability, data analysis, and conclusion and recommendation to improve the business process of PT FMS.

3.2 Research Methodology

This research will use BPM as a framework to summarize data analysis results and make recommendations for PT FMS to overcome the problem and for future research.

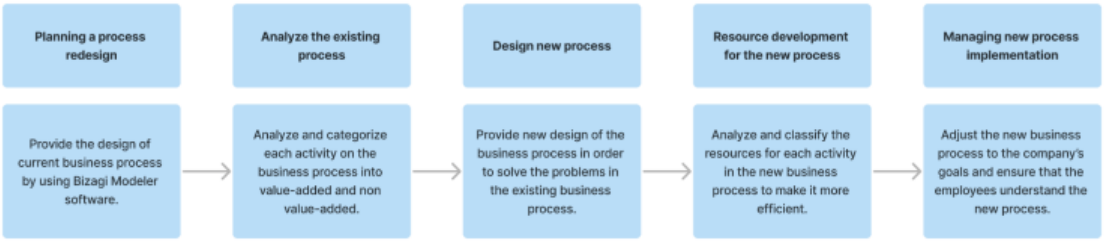

Figure 3.2 The Phases in BPM

3.2.1 Planning a Process Redesign

Business processes that are relevant to the addressed issue are identified and defined. During this phase, the author will provide the design of the current state of the business process that will give a summary of the processes and how they relate to one another inside an organization. The author will utilize Bizagi Modeler software to model the business process for this stage.

3.2.2 Analyze the Existing Process

The author will analyze and categorize each activity of the business process based on who is responsible, value-added and non-value-added classifications, and the impact of each problem. Value-added classification is used to identify unnecessary activities, while non-value-added classification is used to identify necessary activities.

3.2.3 Design New Process

The new design of the business process is an improvement to enable the company to achieve goals and solve the problems found during analyzing the existing process. The author will explain the improvement for each problem and provide a comparison between the existing and new design.

3.2.4 Resource Development for the New Process

The author will analyze and classify resources needed for each activity to make the business process more efficient. Employees may have new tasks due to the transformation, so the company should set up the appropriate resources as guidance.

3.2.5 Managing New Process Implementation

The last phase of the business process involves preparing and performing changes to the activities. The author will confirm and validate the new process to make it feasible and adjust with the company's goals. Employees must understand the new process to maximize performance. Corrective action is taken when errors occur.

4. RESULT/FINDING

4.1 Planning a Process Redesign

PT FMS is an authorized dealer company of PT Smartfren Telecom Tbk, which sells Smartfren's products to retail stores in the Semarang area. There are two ways in selling and distributing the products: physical products of internet voucher data, which are bought and distributed by the sales staff to small retail stores, and digital products called "eload", which are ordered by the big retail stores. There are 2 main activities of the business process within the company: buying and receiving the products from Smartfren and the process of selling and distributing the products to the customers. The company started its business process by ordering the products from Smartfren every week in the amount established by Smartfren. The business process involves three main actors: PT FMS, PT Smartfren Telecom Tbk., and the retail stores.

There are five divisions or roles involved in the business process: sales, warehouse, finance and accounting, and administration. The sales division is responsible for selling and distributing the products to the retail stores, while the warehouse division is responsible for receiving and checking the arrived products, organizing them in the warehouse, and doing the stock opname everyday. The finance and accounting division is responsible for receiving and checking the payment, while the administration division will help the sales division create the report for the sales activity everyday.

Based on the information that the author got from the interview which is already described above, the author creates the visualization of the business process in the form of BPMN (Business Process Modelling Notation) by using Bizagi Modeler software. There will be 4 BPMN figures to depict the business process within the company. The first BPMN will be the whole business process which can be seen in Figure 4.1.1. Then, the author will break down the whole business process into 3 sub-processes are ordering and receiving product sub-process (Figure 4.1.2), selling and distribution sub-process to the small retail stores (Figure 4.1.3), and selling and distribution sub-process to the big retail stores (Figure 4.1.4).

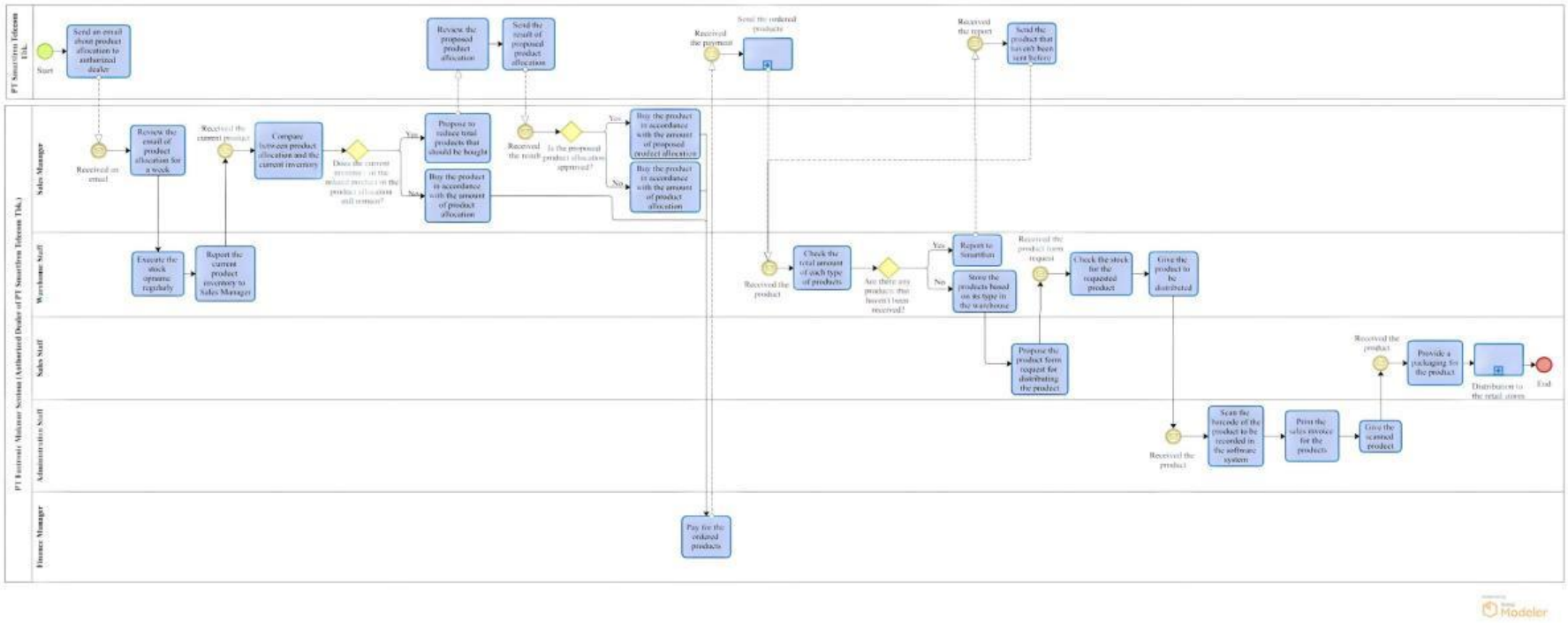

Figure 4.1.1 BPMN of the Whole Business Process

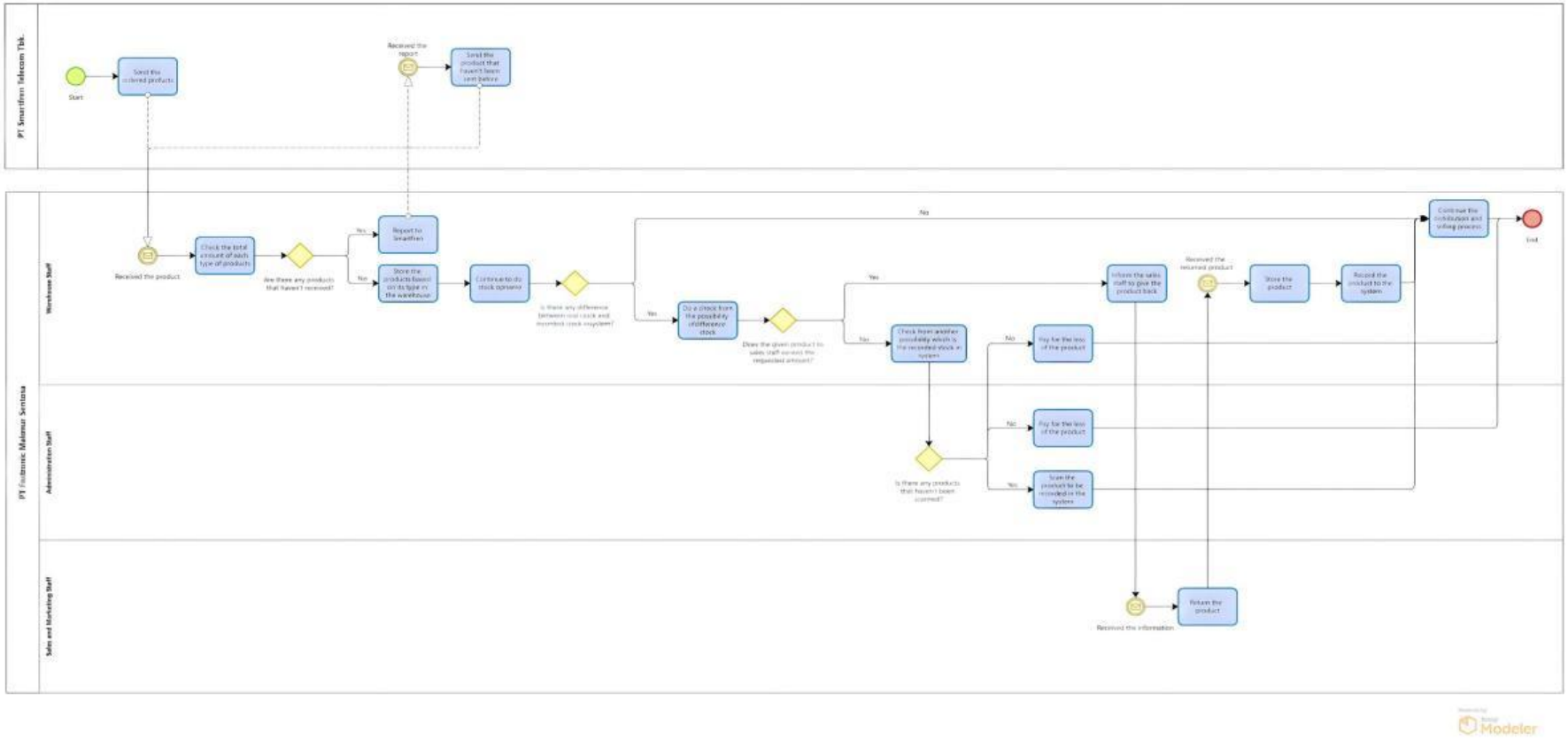

Figure 4.1.2 BPMN of Ordering and Receiving Product Sub-Process

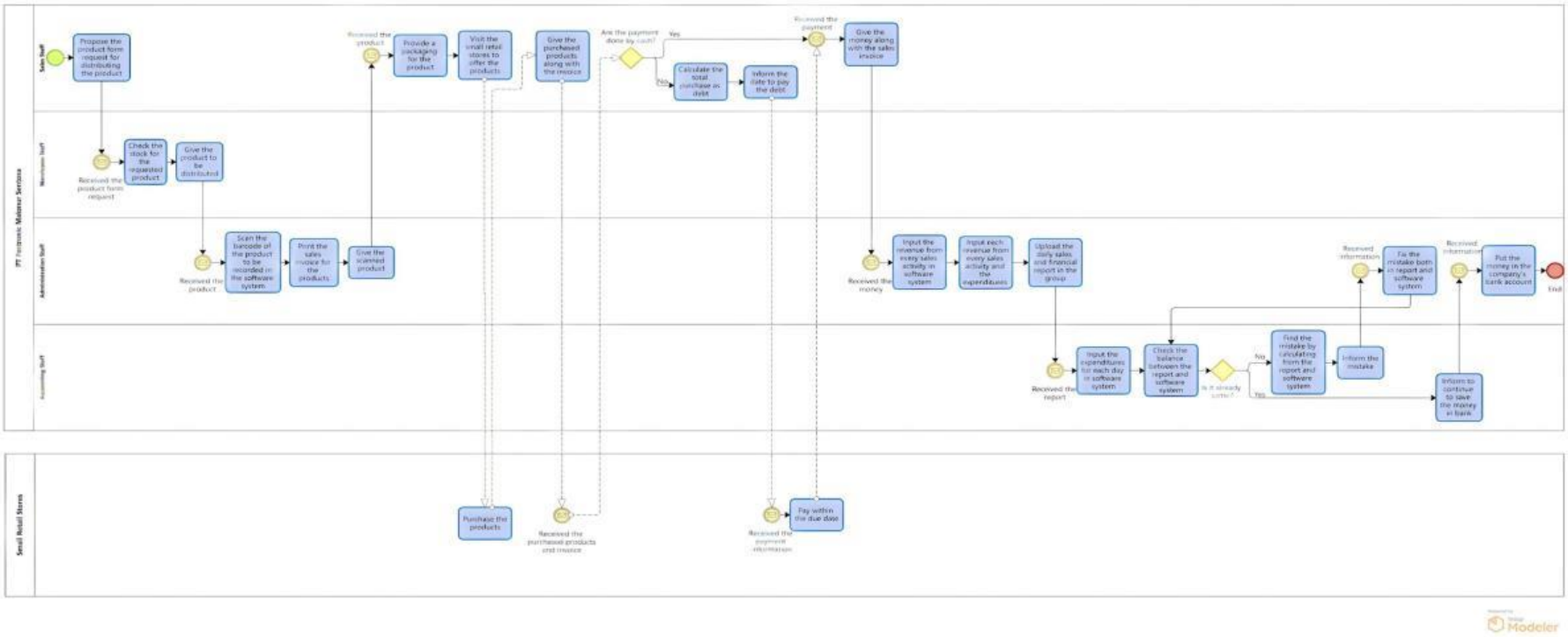

Figure 4.1.3 BPMN of Selling and Distribution Sub-Process to the Small Retail Stores

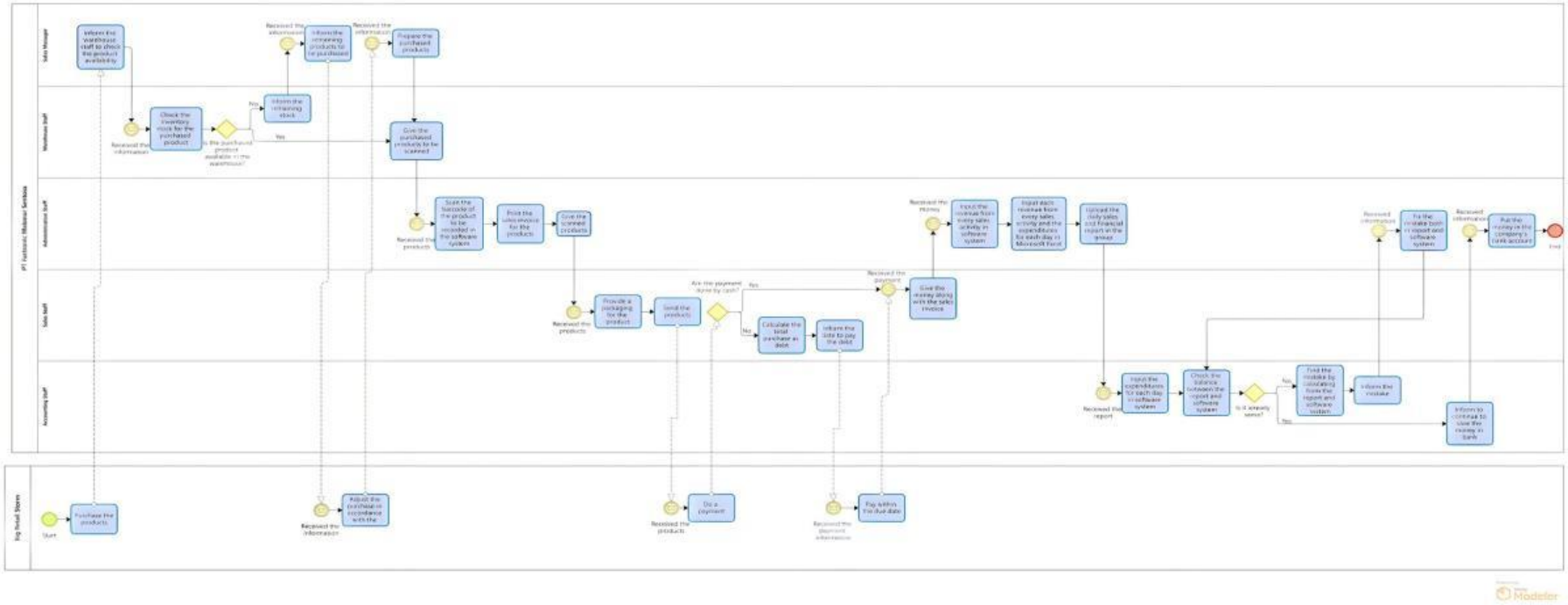

Figure 4.1.4 BPMN of Selling and Distribution Sub-Process to the Big Retail Stores

Figure 4.1.1 explains the flow of the business process in PT FMS. The product allocation is sent by email from Smartfren every week, and the company needs to buy the products in accordance with the product allocation. If the inventory for some products remains in a huge amount, the company can propose to reduce buying these products, but this needs to be approved by Smartfren first. After ordering and paying, the products are sent to the company's warehouse, where the warehouse staff is in charge of receiving and checking the products. For each day, the sales staff will propose a product form request for taking the products to distribute them to the retail stores. Before the products are bought by the sales staff, the barcode in the products will be scanned by the administration staff. The products will then be sold and distributed to the retail stores by the sales staff.
Figure 4.1.2 for ordering and receiving product sub-process involves checking whether the quantity and item are in accordance with the ordered products. If there are some products that have not been received, the company will report to Smartfren to ask for the products that have not been sent. After all the products are received, the warehouse staff will organize them based on their types and do a daily stock opname to check the inventory between the real stock in the warehouse and the recorded software system. If the different inventory stock is not caused by these two possibilities, the warehouse staff and the sales staff need to be responsible for paying the loss of the products that are lost.
Figure 4.1.3 shows the sub-process of selling and distribution to small retail stores. Every day, the sales staff bring products from the warehouse and the administration staff scans the barcode in the products to be updated in the software system. The sales staff then visit the stores to offer the products and pay directly to the sales staff in cash. When the working hours are done, the sales staff go back to the office to give the money as the income for the whole day's sales along with the sales invoice. From this, the administration staff will input the income from every sales activity in the software system and also input the sales activity and expenditures for each day in Microsoft Excel as a daily sales report. The accounting staff will input the expenditures for each day in the software system and the software system will generate the report and calculate the cash flow automatically. The next day, the income from each day will be brought to the bank to save the money in the company's bank account.
Figure 4.1.4 also explains the sub-process of selling and distribution, but for the big retail stores. Overall, the flow of this process is similar to the sub-process of small retail stores. However, there is a difference in selling and distributing the products between small retail stores and big retail stores. Instead of the sales staff visiting the big retail store in offering the products, the big retail store will contact the sales manager of the company by themself in order to buy the products since usually they buy products in a huge amount. Then, the products will be sent to its store by the sales staff.

4.2 Analyze the Existing Process

Based on the current business process of PT FMS that has been created into BPMN, the author will analyze each activity within the business process. These analyses will include the activity or task, activity code, the actor who is in charge of the related activity, the classification whether it is value-added or non-value added activity, the importance whether it is necessary or unnecessary activity, and the occurred problem within the activity. There will be 4 tables for analyzing the business process. Table 4.2.1 will explain the analysis of the whole business process. Table 4.2.2 will mainly talk about the ordering and receiving sub-process analysis. Table 4.2.3 will explain the analysis of the selling and distribution sub-process to the small retail stores. Last but not least, table 4.2.4 will explain the analysis of the selling and distribution sub-process to the big retail stores.

Table 4.2.1 The Analysis of the Whole Business Process

Activity	Activity Code	Actor	Classification (Value-added or Non-value Added Activity)	Importance (Necessary or Unnecessary)	Occurred Problem
Send an email about product allocation to authorized dealer	A1	PT Smartfren Telecom Tbk.	NVA	Necessary	-
Review the email of product allocation for a week	A2	Sales Manager	NVA	Necessary	-
Execute the stock opname regularly	A3	Warehouse Staff	VA	Necessary	Sometimes there is a different inventory stock between the real stock in the warehouse and the recorded inventory data in the software system.
Report the current product inventory to Sales Manager	A4	Warehouse Staff	VA	Necessary	-
Compare between product allocation and the current inventory	A5	Sales Manager	NVA	Necessary	-
If the current inventory of the related product in the product allocation still remain, propose to reduce total products that should be bought	A6	Sales Manager	VA	Unnecessary	-
Review the proposed product allocation	A7	PT Smartfren Telecom Tbk.	NVA	Unnecessary	-
Send the result of proposed product allocation	A8	PT Smartfren Telecom Tbk.	NVA	Unnecessary	-
If the product allocation is already in accordance with the current condition of inventory stock, buy the product in accordance with the amount of product allocation	A9	Sales Manager	NVA	Necessary	-
If the proposed product allocation is approved, buy the product in accordance with the amount of proposed product allocation	A10	Sales Manager	NVA	Necessary	-
If the proposed product allocation is not approved, buy the product in accordance with the amount of product allocation	A11	Sales Manager	NVA	Necessary	-
Pay for the ordered products	A12	Finance Manager	NVA	Necessary	-
Send the product	A13	PT Smartfren Telecom Tbk.	NVA	Necessary	-
Check the total amount of each type of products	A14	Warehouse Staff	NVA	Necessary	-
If there are any products that have not been received, report to Smartfren	A15	Warehouse Staff	VA	Necessary	-
Send the product that haven't been sent before	A16	PT Smartfren Telecom Tbk.	NVA	Necessary	-
If all of the products have already been received, store the products based on its type in the warehouse	A17	Warehouse Staff	NVA	Necessary	-
Propose the product form request for distributing the product	A18	Sales Staff	VA	Necessary	-
Check the stock for the requested product	A19	Warehouse Staff	NVA	Unnecessary	-
Give the product to be distributed	A20	Warehouse Staff	NVA	Necessary	-
Scan the barcode of the product to be recorded in the software system	A21	Administration Staff	VA	Necessary	-
Print the sales invoice for the products	A22	Administration Staff	VA	Necessary	-
Give the scanned product	A23	Administration Staff	NVA	Necessary	-
Provide a packaging for the product	A24	Sales Staff	VA	Unnecessary	-
Send the packaged product to the customer in accordance with the order	A25	Sales Staff	NVA	Necessary	-

Table 4.2.2 The Analysis of Ordering and Receiving Products Sub-Process

Activity	Activity Code	Actor	Classification (Value-added or Non-value Added Activity)	Importance (Necessary or Unnecessary)	Occurred Problem
Send the ordered profucts	B1	PT Smartfren Telecom Tbk.	NVA	Necessary	-
Check the total amount of each type of products	B2	Warehouse Staff	NVA	Necessary	-
If there are any products that have not been received, report to Smartfren	B3	Warehouse Staff	VA	Necessary	
Send the product that haven't been sent before	B4	PT Smartfren Telecom Tbk.	NVA	Necessary	-
If all of the products have already been received, store the products based on its type in the warehouse	B5	Warehouse Staff	NVA	Necessary	-
Execute the stock opname regularly	B6	Warehouse Staff	VA	Necessary	Sometimes there is a different inventory stock between the real stock in the warehouse and the recorded inventory data in the software system.
If there is any difference between real stock and recorded stock in system, do a check from the possibility of different stock	B7	Warehouse Staff	NVA	Necessary	-
If the given product to sales staff exceeds the requested amount, inform the sales staff to give the product back	B8	Warehouse Staff	NVA	Necessary	-
Return the product	B9	Sales Staff	NVA	Necessary	-
Store the product	B10	Warehouse Staff	NVA	Necessary	-
Record the product to the system	B11	Warehouse Staff	NVA	Necessary	-
If the given product to sales staff does not exceed the requested amount, check from another possibility which is the recorded stock in system	B12	Warehouse Staff	NVA	Necessary	-
If there are any products that haven't been scanned, scan the product to be recorded in the system	B13	Administration Staff	VA	Necessary	-
If the different inventory stock is not caused by those two possibilities, pay for the loss of the product	B14	Administration Staff	NVA	Necessary	
If the different inventory stock is not caused by those two possibilities, pay for the loss of the product	B15	Warehouse Staff	NVA	Necessary	-
Continue the distribution and selling process	B16	Warehouse Staff	VA	Necessary	-

Table 4.2.3 The Analysis of Selling and Distribution Sub-Process to the Small Retail Stores

Activity	Activity Code	Actor	Classification (Value-added or Non-value Added Activity)	Importance (Necessary or Unnecessary)	Occurred Problem
Propose the product form request for distributing the product	C1	Sales Staff	VA	Necessary	-
Check the stock for the requested product	C2	Warehouse Staff	NVA	Necessary	-
Give the product to be distributed	C3	Warehouse Staff	NVA	Necessary	
Scan the barcode of the product to be recorded in the software system	C4	Administration Staff	VA	Necessary	-
Print the sales invoice for the products	C5	Administration Staff	VA	Necessary	-
Give the scanned product	C6	Administration Staff	NVA	Necessary	-
Provide a packaging for the product	C7	Sales Staff	VA	Unnecessary	-
Visit the small retail stores to offer the products	C8	Sales Staff	NVA	Necessary	-
Purchase the products	C9	Small Retail Stores	NVA	Necessary	-
Give the purchased products along with the invoice	C10	Sales Staff	NVA	Necessary	-
Give the money along with the sales invoice	C11	Sales Staff	NVA	Necessary	-
If the payment are not done by cash, calculate the total purchase as debt	C12	Sales Staff	VA	Necessary	-
Inform the date to pay the debt	C13	Sales Staff	NVA	Necessary	-
Pay within the due date	C14	Small Retail Stores	NVA	Necessary	In the realization, even though there is already a due date for paying the debts, the retail stores usually still ask for more extended time for paying the debts which means they pay after the payment due date.
Input the revenue from every sales activity in software system	C15	Administration Staff	VA	Necessary	The process of inputting the income and expenditures is inefficient since it is done twice in the Microsoft Excel and software system. This process is also done by administration and accounting staff, which actually could be done only by 1 person.
Input each revenue from every sales activity and the expenditures for each day in Microsoft Excel	C16	Administration Staff	VA	Necessary	The process of inputting the income and expenditures is inefficient since it is done twice in the Microsoft Excel and software system. This process is also done by administration and accounting staff, which actually could be done only by 1 person.
Upload the daily sales and financial report in the group	C17	Administration Staff	NVA	Necessary	Some reports might be unrecognized since the administration staff just upload the photo of the report in the group chat which seems unorganized.
Input the expenditures for each day in software system	C18	Accounting Staff	VA	Necessary	The process of inputting the income and expenditures is inefficient since it is done twice in the Microsoft Excel and software system. This process is also done by administration and accounting staff, which actually could be done only by 1 person.
Check the balance between the report and software system	C19	Accounting Staff	NVA	Necessary	-
If the balance between the report and software system is not same, find the mistake by calculating from the report and software system	C20	Accounting Staff	NVA	Necessary	This activity is done manually since the accounting staff needs to check one by one.
Inform the mistake	C21	Accounting Staff	NVA	Necessary	-
Fix the mistake both in report and software system	C22	Administration Staff	NVA	Necessary	-
If the balance between the report and software system is already same, inform to continue to save the money in bank	C23	Accounting Staff	NVA	Necessary	-
Put the money in the company's bank account	C24	Administration Staff	NVA	Necessary	-

Table 4.2.4 The Analysis of Selling and Distribution Sub-Process to the Big Retail Stores

Activity	Activity Code	Actor	Classification (Value-added or Non-value Added Activity)	Importance (Necessary or Unnecessary)	Occurred Problem
Purchase the products	D1	Big Retail Stores	NVA	Necessary	-
Inform the warehouse staff to check the product availability	D2	Sales Manager	NVA	Necessary	-
Check the inventory stock for the purchased product	D3	Warehouse Staff	NVA	Necessary	-
If the purchased product is not available in the warehouse, inform the remaining stock	D4	Warehouse Staff	NVA	Necessary	-
Inform the remaining products to be purchased	D5	Sales Manager	NVA	Necessary	-
Adjust the purchase in accordance with the remaining stock	D6	Big Retail Stores	VA	Necessary	-
Prepare the purchased products	D7	Sales Manager	VA	Necessary	-
Give the purchased products to be scanned	D8	Warehouse Staff	NVA	Necessary	-
Scan the barcode of the product to be recorded in the software system	D9	Administration Staff	VA	Necessary	-
Print the sales invoice for the products	D10	Administration Staff	VA	Necessary	-
Give the scanned products	D11	Administration Staff	NVA	Necessary	-
Provide a packaging for the product	D12	Sales Staff	VA	Necessary	-
Send the products	D13	Sales Staff	NVA	Necessary	-
Do a payment	D14	Big Retail Stores	NVA	Necessary	-
If the payment are not done by cash, calculate the total purchase as debt	D15	Sales Staff	VA	Necessary	-
Inform the date to pay the debt	D16	Sales Staff	NVA	Necessary	-
Pay within the due date	D17	Big Retail Stores	NVA	Necessary	In the realization, even though there is already a due date for paying the debts, the retail stores usually still ask for more extended time for paying the debts which means they pay after the payment due date
Give the money along with the sales invoice	D18	Sales Staff	NVA	Necessary	-
Input the revenue from every sales activity in software system	D19	Administration Staff	VA	Necessary	The process of inputting the income and expenditures is inefficient since it is done twice in the Microsoft Excel and software system. This process is also done by administration and accounting staff, which actually could be done only by 1 person.
Input each revenue from every sales activity and the expenditures for each day in Microsoft Excel	D20	Administration Staff	VA	Necessary	The process of inputting the income and expenditures is inefficient since it is done twice in the Microsoft Excel and software system. This process is also done by administration and accounting staff, which actually could be done only by 1 person.
Upload the daily sales and financial report in the group	D21	Administration Staff	NVA	Necessary	Some reports might be unrecognized since the administration staff just upload the photo of the report in the group chat which seems unorganized
Input the expenditures for each day in software system	D22	Accounting Staff	VA	Necessary	The process of inputting the income and expenditures is inefficient since it is done twice in the Microsoft Excel and software system. This process is also done by administration and accounting staff, which actually could be done only by 1 person.
Check the balance between the report and software system	D23	Accounting Staff	NVA	Necessary	-
If the balance between the report and software system is not same, find the mistake by calculating from the report and software system	D24	Accounting Staff	NVA	Necessary	This activity is done manually since the accounting staff needs to check one by one.
Inform the mistake	D25	Accounting Staff	NVA	Necessary	-
Fix the mistake both in report and software system	D26	Administration Staff	NVA	Necessary	-
If the balance between the report and software system is already same, inform to continue to save the money in bank	D27	Accounting Staff	NVA	Necessary	-
Put the money in the company's bank account	D28	Administration Staff	NVA	Necessary	-

After creating the analysis as shown on the tables above, the author figures out some problems that are occurring within the company's business process. The first one is that sometimes there is a different inventory stock between the real stock in the warehouse and the recorded inventory data in the software system. There are 2 possibilities that can cause the different inventory stock in the warehouse and software system. The first one is that if the physical inventory stock in the warehouse is lower than the inventory in the software system, it means that the warehouse staff is giving the products to the sales staff that exceed the requested amount in the product form request. It is because usually the sales staff asks to get more additional products suddenly without using the requested form. The second possibility is that if the physical inventory stock in the warehouse is higher than the inventory in the software system, it means that there are still any products' barcodes that have not been scanned which means that those products are not recorded in the software system. However, the employee states that sometimes the different inventory stock is not caused by those two possibilities, it can be caused by the products that are lost.

The second problem is some retail stores pay off the debt over the payment due date. This could happen since there is no penalty if the retail stores are late in making the payment which means the sales and payment regulation still needs to be fixed. The third problem is that the activity of inputting each revenue from the sales activity and the expenditures of the company for each day is ineffective and inefficient. Another problem also comes from the selling and distribution sub-process. The created sales report is being uploaded in the group chat in order to make the sales manager control the sales activity everyday. However, since it is being uploaded in the group chat, it means that sometimes the report might be unrecognized due to many chats in the group. Moreover, it is because the administration staff just upload the photo of the report in the group chat which seems unorganized.

The last problem can also be seen from the activity of checking the balance between the report that is created in Microsoft Excel and the software system is done by the accounting staff to ensure that the amount of the debit and credit of those 2 reports are the same. However, the problem occurs if the amount is different between those 2 reports, the accounting staff needs to check and calculate one by one manually in order to find the mistake of why the amount

in the report and software system is different. Since it is done manually, it means that it took a longer time to do this activity.

4.3 Design New Process

The author will design a new process to improve the existing business process. Activities that are non-value added can be classified as either necessary or unnecessary, and those activities that are unnecessary can be reduced or abolished. The details of the problem and solution of improvement can be seen in the table and explanation below.

Table 4.3.1 The Solution of Improvement for the Existing Business Process

Problem	Solution of Improvement
There is a different inventory stock between the physical products stock in the warehouse and the recorded products stock in the software system.	There are 2 solutions for this problem since there are 2 possibilities that can cause a different inventory stock to happen. The first one is that the company must renew the regulation for the sales staff that all of the products that are brought to be distributed must be requested first by using product form request which means the sales staff could no longer ask for additional products suddenly. The second one is that to prevent the products from being forgotten to be scanned, the activity of scanning the products should be done in the beginning after the warehouse staff finish checking the products.
Some retail stores make a payment for paying off the debt over the payment due date.	Renew the regulation for the debt payment due date which will be a penalty for the retail stores if they pay the debts over the due date.
The ineffectiveness and inefficiency of inputting the sales income and expenditures of the company in both Microsoft Excel and software system which is done by 2 roles.	Integrate the software system by adding a feature to download the report in Microsoft Excel format, so the activity of inputting the sales income and expenditures of the company will be done only in the software system by 1 role.
The sales report that is uploaded in the group chat for keeping update and controlling the sales activity might be unrecognized.	Add a new feature in the software system for controlling the report. There will be a new notification when every report is finished, so the employees need to sign in by using their personal account in order to get the notification for viewing and checking the report. However, the only people who can edit the report are the administration staff, accounting staff, and sales manager. Since they are signing with a personal account, it could be checked the edit history along with the user who edited the report.
The activity for finding the imbalance amount of both 2 reports is still done manually.	With the integrated software system, there will be only 1 report from the software system itself. Thus, there will be no more finding the imbalance amount of 2 reports which means this activity is eliminated. Every sales income and expenditure invoice needs to be uploaded to the software system so the system will automatically recognize and give a notification if there is a sales income or an expenditure that has not been inputted.

With the solutions that have been proposed above, the author creates the new model of the company's business process in BPMN by still using Bizagi Modeler software. There will be 4 models of BPMN which as same as the current business process that will be divided into whole business process (Figure 4.3.1), ordering and receiving products sub-process (Figure 4.3.2), selling and distribution sub-process to the small retail stores (Figure 4.3.3), and selling and distribution sub-process to the big retail stores (Figure 4.3.4). Additionally, there will be a new sub-process of the integrated software system in creating the report which can be seen in Figure 4.3.5.

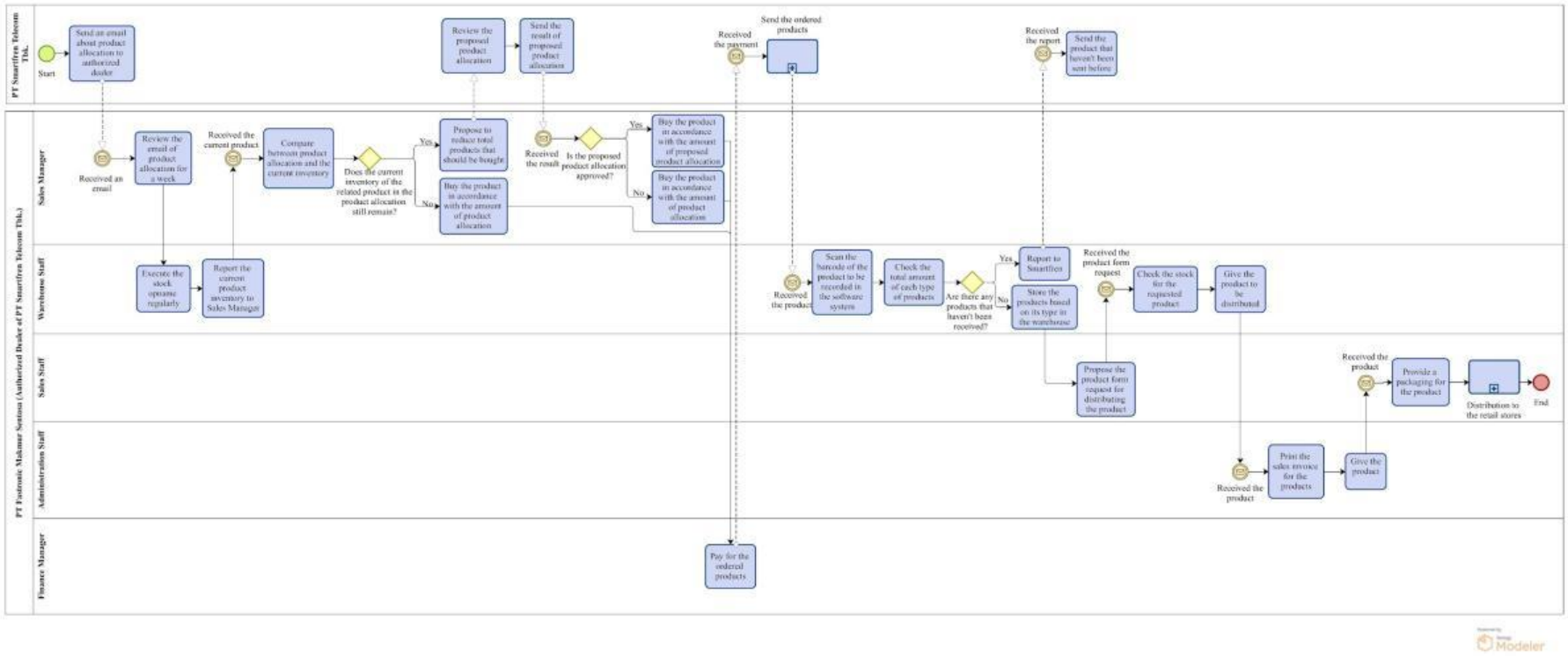

Figure 4.3.1 BPMN of the New Whole Business Process

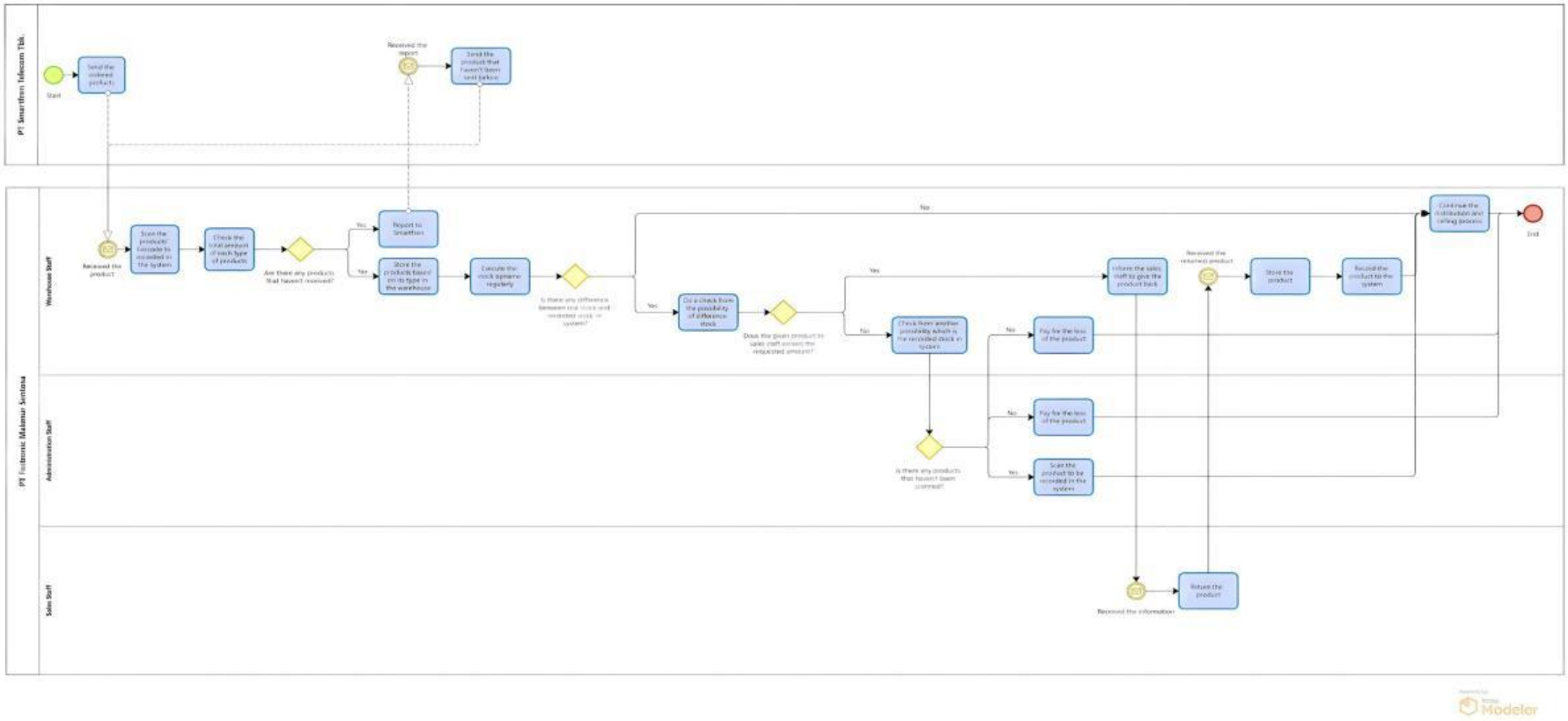

Figure 4.3.2 BPMN of the New Ordering and Receiving Products Sub-Products

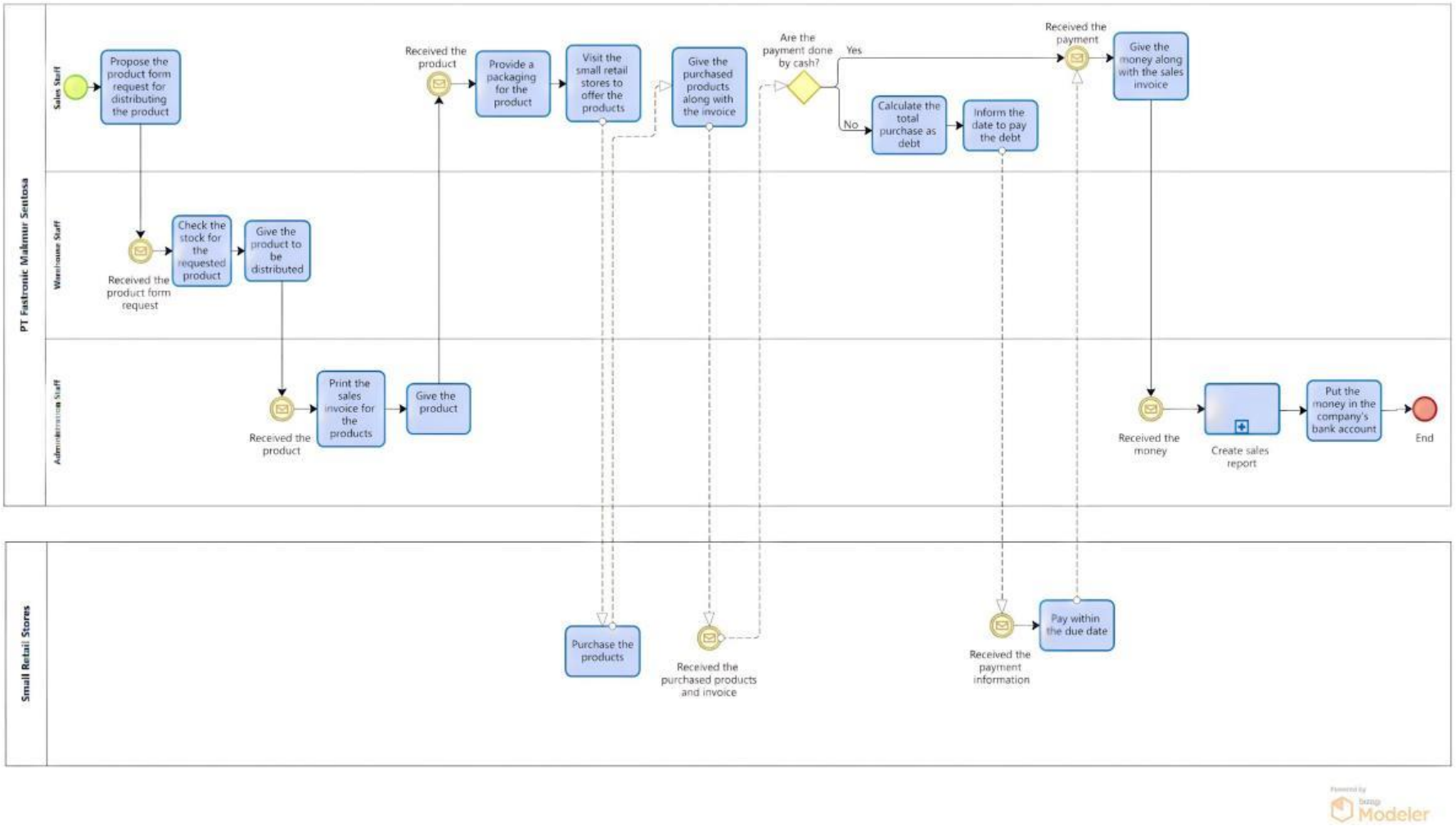

Figure 4.3.3 BPMN of the New Selling and Distribution Sub-Process to the Small Retail Store

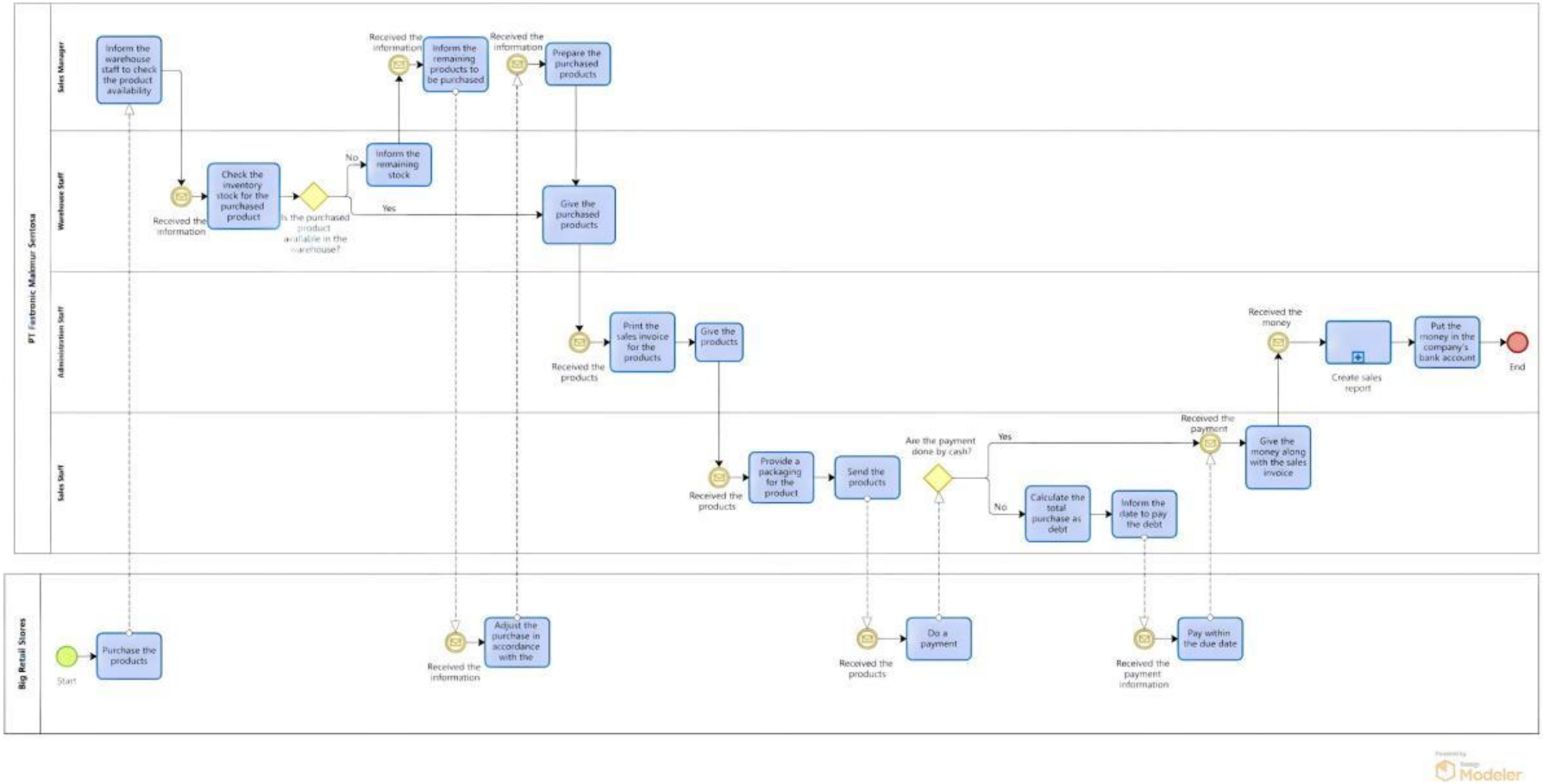

Figure 4.3.4 BPMN of the New Selling and Distribution Sub-Process to the Big Retail Store

Figure 4.3.1 shows the new design for the whole business process of the company. The overall business process still looks similar to the current business process. The difference is that when the ordered products from Smartfren arrive, the warehouse staff should do the activity of products scanning first in order to minimize the possibility of forgetting to scan the products. It means that this activity is done at the beginning which in the current business process, it is done by the administration staff when the products are going to be distributed by the sales staff.
Figure 4.3.2 explains the new design of the ordering and receiving products sub-process which is the change is a new task in the beginning as explained before in the whole business process. It can be seen that in the beginning, after the ordered products arrived, the activity that should be done by the warehouse staff is scanning the products' barcodes to be recorded in the software system.
Figure 4.3.3 and Figure 4.3.4 show the selling and distribution sub-process to the small retail stores and big retail stores in a new design. The difference between the new design and the current business process is the author eliminates some tasks starting from inputting the revenue of sales income in software system until the activity which involves the accounting staff to find the mistake in the imbalance amount of both 2 reports. These activities are eliminated and changed into a sub-process of creating a sales report by using the integrated software system which will be explained in detail in the next figure.

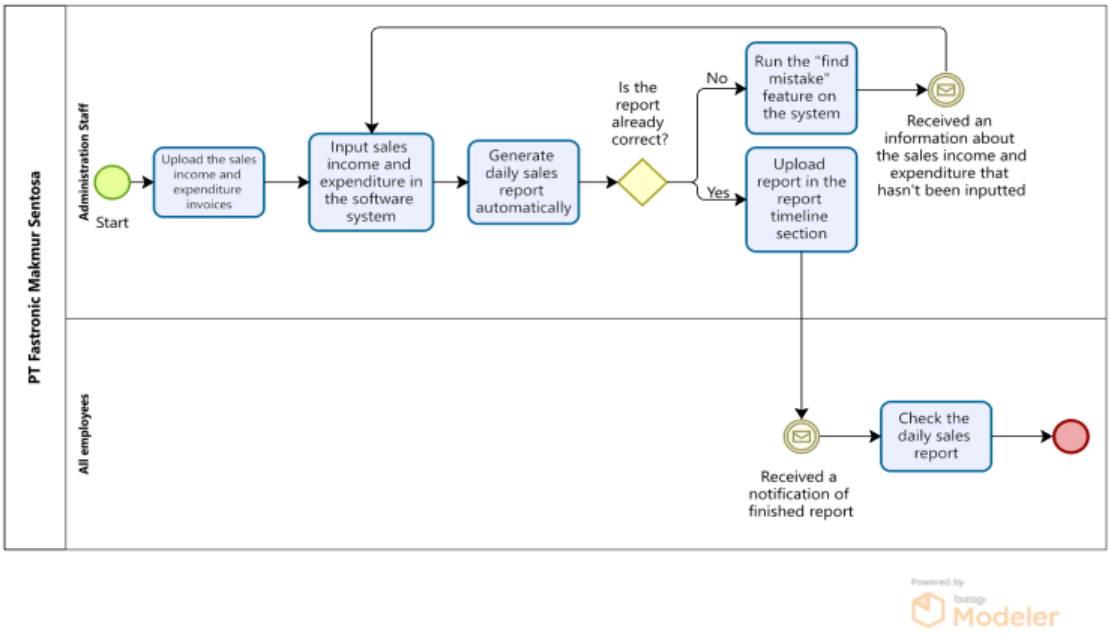

Figure 4.3.5 BPMN of the Integrated Software System in Creating Sales Report Sub-Process

Figure 4.3.5 shows the new sub-process of the implementation of a modified software system for integrating the system. This integrated software system could be accessed by all the employees by having a personal account. For creating the sales report, it is started with the administration staff by uploading the sales income and expenditure invoices. It is continued with inputting the sales income and expenditure amount in the software system. Then, the system will automatically generate the report. If the report is not correct, then it will show a notification alert where the administration staff can run the "find mistake" feature to know where the mistake is. The system will know the mistake by matching the amount from the invoices and the amount that has been inputted. If the report is already correct, the administration staff can upload the report in the timeline section, so all employees can check it by receiving a notification when the report is finished.

After creating the new design of the business process, the author also creates the comparison between the current business process and the new design of the business process by comparing the total elements in BPMN within each business process which can be seen in Table 4.3.2 and Table 4.3.3.

Table 4.3.2 The Total Elements of Current Business Process

Current Business Process					
Process	**Events**	**Gateways**	**Sub-Process**	**Tasks**	**Overall**
PT FMS - PT Smartfren Telecom Tbk.	3	0	1	4	8
PT FMS (Ordering and Receiving Products) - PT Smartfren Telecom Tbk.	2	0	0	2	4
PT FMS (Selling and Distribution) - Small Retail Stores	2	0	0	2	4
PT FMS (Selling and Distribution) - Big Retail Stores	4	0	0	4	8
Total	11	0	1	12	24
PT FMS - PT FMS	8	3	1	19	31
PT FMS (Ordering and Receiving Products) - PT FMS	4	4	0	14	22
PT FMS (Selling and Distribution) - PT FMS	10	2	0	22	34
PT FMS (Selling and Distribution) - PT FMS	11	3	0	24	38
Total	33	12	1	79	125
Overall	44	12	2	91	149

Table 4.3.3 The Total Elements of New Business Process

New Business Process					
Process	**Events**	**Gateways**	**Sub-Process**	**Tasks**	**Overall**
PT FMS - PT Smartfren Telecom Tbk.	3	0	1	4	8
PT FMS (Ordering and Receiving Products) - PT Smartfren Telecom Tbk.	2	0	0	2	4
PT FMS (Selling and Distribution) - Small Retail Stores	2	0	0	2	4
PT FMS (Selling and Distribution) - Big Retail Stores	4	0	0	4	8
Total	11	0	1	12	24
PT FMS - PT FMS	8	3	1	19	31
PT FMS (Ordering and Receiving Products) - PT FMS	4	4	0	15	23
PT FMS (Selling and Distribution) - PT FMS	7	1	1	13	22
PT FMS (Selling and Distribution) - PT FMS	7	1	1	13	22
PT FMS (Integrated Software System) - PT FMS	4	1	0	6	11
Total	30	10	3	66	109
Overall	41	10	4	78	133

Based on Table 4.3.2 and Table 4.3.3, it can be derived that the new design of the business process has fewer elements within the business process which means it is more efficient and effective to be implemented. As the new design has

fewer activities, it can ease the job of the employees so they can maximize their performance which also increases the company's performance.

4.4 Resource Development for the New Process

The new design of the business process has changed or eliminated some activities, easing the job for the employees. The administration staff is the most affected, as they will use a software system to create sales reports. The accounting staff will no longer have a responsibility in the sales report or selling and distribution process, and the other employees should adapt with the new integrated software system. The sales staff will also experience changes, such as no longer asking for additional products to be distributed suddenly and using product form requests to request products. Additionally, the sales staff will help the company announce the new regulation for the retail stores' payment by visiting the retail stores and asking them to sign the agreement statement.

4.5 Managing New Process Implementation

The author has proposed a new business process with the employees to ensure it is feasible for them to do. Before the new process is implemented, the author will explain the details of the related process to the sales manager and IT programmer. When the software system is ready, the sales manager will explain to all of the employees step by step the new implementation. The author has given the file of the business process in Bizagi Modeler software format, which can be used to modify the process if necessary.

5. CONCLUSION AND RECOMMENDATION

For the company, the researcher recommends the company to modify its business process with the proposed solution that the author has given from renewing its regulation for sales staff and retail stores related to payment, doing the activity of products scanning in the beginning when the products arrive, and creating the integrated software system which enables automation in order to implement the effective and efficient process. For further research, the researcher recommends making a comparison between the methods. By making a comparison, the research may know which method would be more suitable for the company that is going to be analyzed.

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