Journal of Emerging Information Systems and Business Intelligence
ISSN: 2774-3993
Journal homepage: https://ejournal.unesa.ac.id/index.php/JEISBI/

Reengineering The Return Submission Business Process In E-Commerce Using The Business Process Reengineering Method

Yonathan Setiagita[1], Aries Dwi Indriyanti[2]

[1,2]*Surabaya State University, Surabaya, Indoensia*

Yonathan.20009@mhs.unesa.ac.id, *ariesdwi@unesa.ac.id*

ABSTRACT

The process of submitting returns on Ruparupa e-commerce faces problems related to effectiveness which impacts the level of user satisfaction. Based on Ruparupa internal data from January to September 2023, there were 21,538 refund applications, and most of these applications experienced obstacles in terms of timely completion according to SLA (Service Lever Agreement). This research purpose to re-engineer the return submission business process using the Business Process Reengineering (BPR) method integrated with the omnichannel-based Customer Relationship Management (CRM) concept. This approach can provide convenience for customers in choosing return options, either through direct returns at a physical store or pickup by courier to the registered address. Business process analysis was performed using Process Model and Nation (BPMN) simulated using the Bizagi application. Process improvements were carried out using Systematic Reengineering techniques based on the ESIA (Eliminate, Simplify, Integrate, Automate) principle. The research results show that omnichannel CRM integration in the form of alternative business processes successfully increases the efficiency of process time and resource allocation, and can provide more flexibility for customers. Is not only increase the overall effectiveness of the return submission process, the resulting alternative business processes also hoped increase customer satisfaction and loyalty.

Keyword: BPR, CRM, Omnichannel, Modeling and Simulation, Refund Application.

Article Info:
Article history:
Received February 19, 2026
Revised February 26, 2026
Accepted April 27, 2026

Corresponding Author
Yonathan Setiagita
Surabaya State University, Surabaya, Indonesia
yonathan.20009@mhs.unesa.ac.id

1. INTRODUCTION

Increasingly fierce competition in the e-commerce industry requires companies to continue to innovate to improve service quality and maintain customer satisfaction [1]. One of the main challenges in e-commerce is managing the returns process. An inefficient returns process often leads to customer dissatisfaction and negatively impacts the company's reputation. Ruparupa, an e-commerce platform managed by PT Omni Digitama Internusa, is facing similar problems. Based on internal data from January to September 2023, 21,538 returns were recorded, with a significant number exceeding the Service Level Agreement (SLA) deadline, indicating inefficiencies in the process.

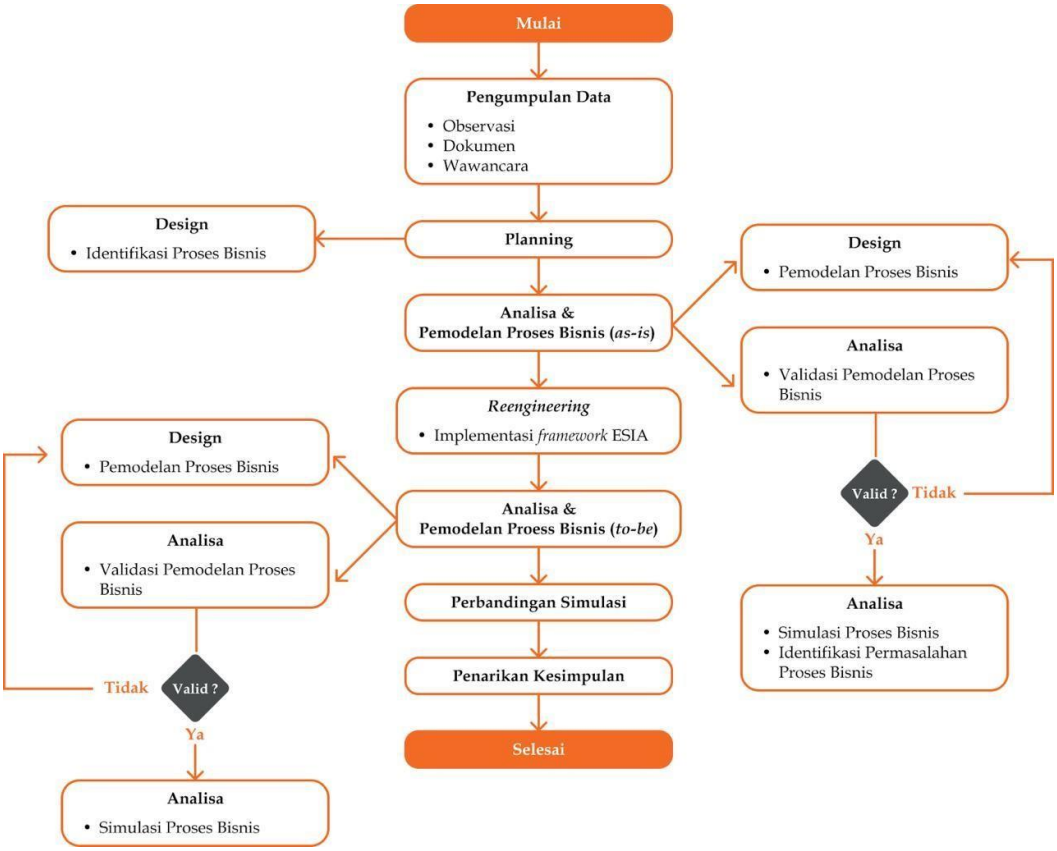
To overcome this problem, the implementation of business process reengineering or Business Process Reengineering (BPR) is needed to increase effectiveness and efficiency in a

business process [2]. One proposed strategic solution is the implementation of omnichannel-based Customer Relationship Management (CRM). Omnichannel CRM provides a better customer experience through the integration of online and offline services [3], possible to customers to choose the return method, either by sending the item to a physical store or having it picked up by a courier.

The BPR method enables companies to redesign the return process more effectively [4], through the application of Systematic Reengineering techniques which focus on eliminating non-value-added processes, simplification, integration, and automation of processes by utilizing information technology [5]. By modeling business processes using Business Process Model and Notation (BPMN) and conducting simulations using the Bizagi application [6], this study aims to identify and improve problems in the return process at Ruparupa. The results of this study hoped can provide a significant contribution to increasing customer satisfaction and operational efficiency.

2. METHODS

The research was conducted in several stages as shown in Picture 1.



Picture. 1 Research Steps

2.1 Identification of Problems

At this stage, researchers identify problems that exist in the refund application process. After delving deeper into the existing problems, two problem formulations were formulated as follows:

a. How can we redesign the return submission business process in Ruparupa e-commerce to increase its effectiveness?
b. How are the results of improvements using the business process reengineering (BPR) method in increasing the effectiveness of the return submission process in the Ruparupa e-commerce?

2.2 Data Collection

This stage will involve collecting data related to the business process of submitting returns in the Ruparupa application, with the aim of finding additional data used in the research. Data collection was carried out by means of observation using the direct return submission feature, reading documents such as return submission report data, and interviews conducted with related parties.

2.3 Planning

Planning is the initial stage in the BPR method. This stage involves identifying the current (as-is) business processes. The results of the identification will then be used as a reference for researchers in analysing and improving business processes.

2.4 Analysis and Modeling of Business Process (as-is)

This stage is focused on creating the current return submission business process, so that the modeling results can analysed the causes of problems in the business process. In this stage, three stages were carried out, namely business process modeling using the Bizagi application, business process validation carried out by Ruparupa's Lead UI/UX designer as a validator, and identification of business process problems obtained from the results of data collection.

2.5 Reengineering

This stage is the second phase of the BPR methodology, following the planning phase. During this stage, reengineering process business process of filing returns by determining the appropriate technique. In this study, the systematic reengineering technique used by the ESIA framework approach as a technique used in reengineering the business process of submitting returns.

The ESIA framework (Elimitate, Simplify, Integrate, and Automate) consists of four steps, namely:

a. Step one, remove or eliminate all activities that are considered not to add value.
b. Step two, determining activities that can be simplified.
c. Step three, considering and selecting activities that can be integrated.
d. Step four, selecting activities that can be automated using information technology.

2.6 Analysis and Modeling of Business Process (to-be)

This stage is carried out after obtaining the results from implementing the ESIA technique in the form of recommendations for the business process for submitting returns. The business process analysis and modeling (to-be) stage consists of three stages, namely business process modeling using the Bizagi application, business process validation carried out by Ruparupa's Lead UI/UX designer as a validator, and business process simulation.

2.7 Comparison of Simulation

After completing the simulations of the (as-is) and (to-be) business processes, a comparative analysis of the efficiency of each business process is performed. This comparison is made by examining the results of the time and resource analysis.

2.8 Conclusion

The conclusion-drawing process is carried out after all stages have been completed. This will briefly explain about the initial stages of the research through the final stage, namely the comparison in the conclusion.

3. RESULTS AND DISCUSSION

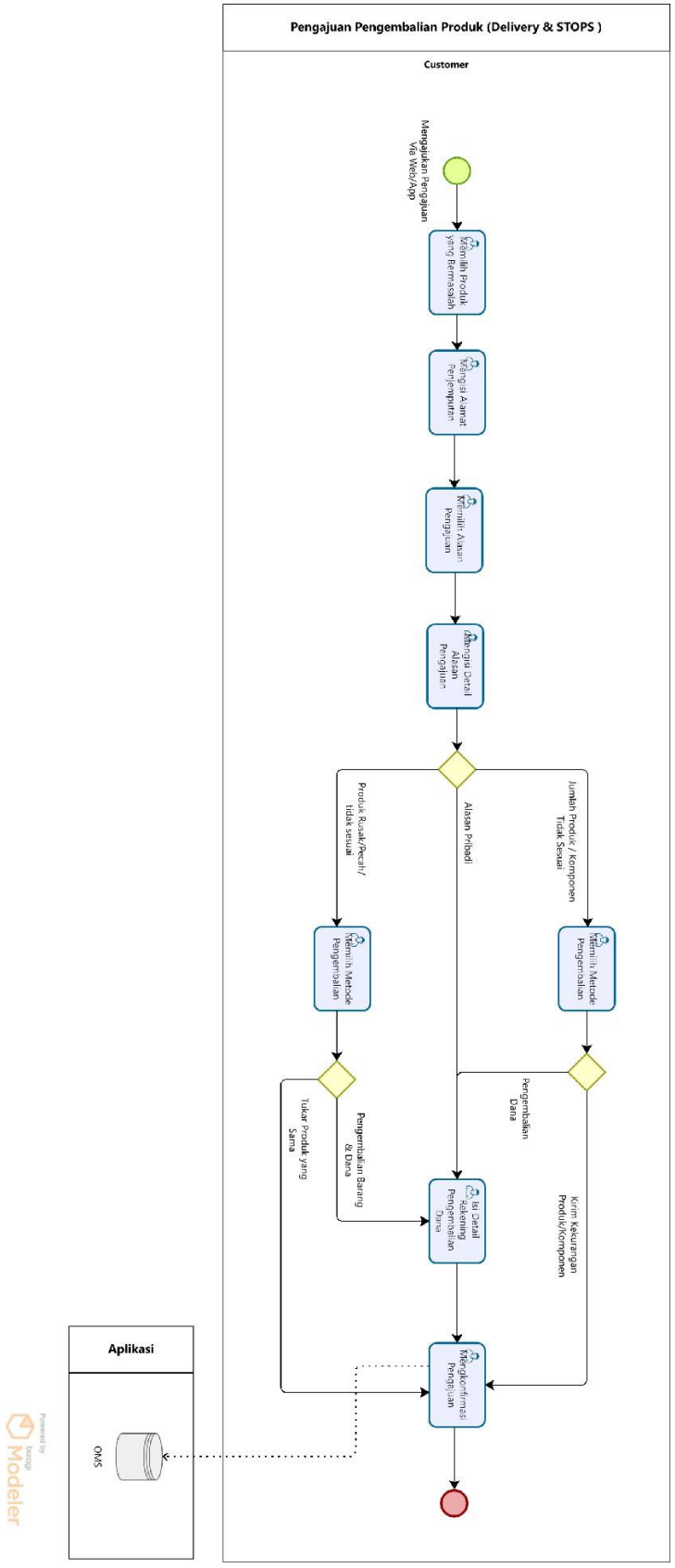
3.1 Modeling and Business Process (as-is)

The first step in business process reengineering is mapping or modeling the current business processes. Researcher used the Bizagi application to model the submitting a return process for consumers submitting return business process, as well as the verification and approval process for product exchange requests.

In the business process of submitting a return request by a consumer, the only actor involved is the consumer. This business process includes:

a. Consumers submit on the Ruparupa platform by selecting the problematic product.
b. Consumers fill in the pick-up address.
c. Consumers choose the reason for the application.
d. Consumers fill in the details of the reasons for the request, which consist of the number of unsuitable products/components, personal reasons, and defective products (defect/cracked/unsuitable).
e. If the consumers are choosing of number unsuitable products/components, the solutions are sending the shortage products/components and refund the money. After that, consumer could confirm the request.
f. If the consumer chooses personal reasons, the solution that can be provided is a return of goods and funds and the consumer confirms the application.
g. If the consumer chooses a defective product (defect/cracked/unsuitable), the solution that can be provided is a return of the goods and funds or an exchange for the same product and the consumer confirms the application**.**
h. If the consumer chooses a defective product (defect/cracked/unsuitable), the solution that can be provided is a return of the goods and funds or an exchange for the same product and the consumer confirms the application.
i. The submission is complete and the data will be entered into the database in the Order Management System (OMS) application.

The explanation of the business process for submitting a return request by a consumer is depicted in the modeling in Picture 2.

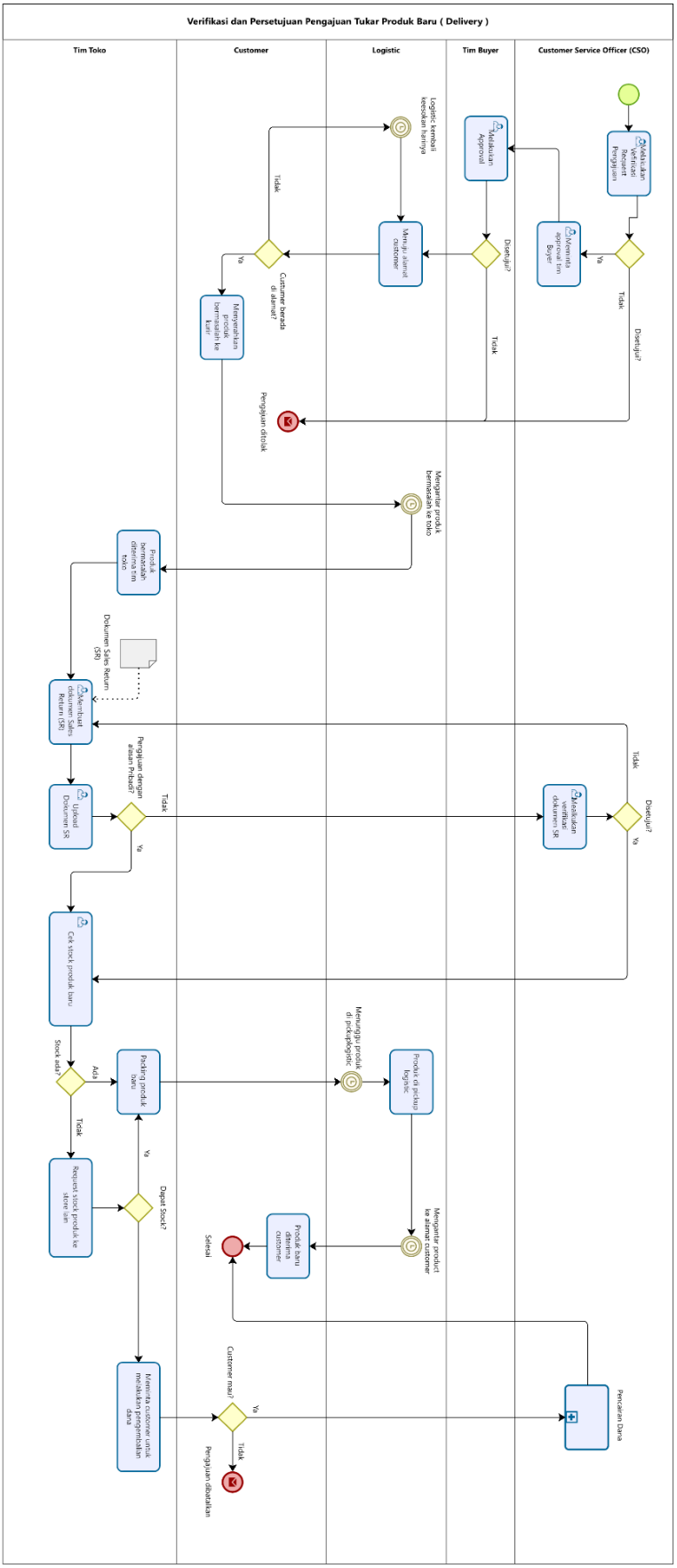


Picture 2. Modeling of Business Process (as-is) of Consumer Return Submission

In the business process of verifying and approving new product exchange requests, the actors involved include the store team responsible for creating SR documents and preparing new products, consumers, logistics responsible for shipping or delivering products, the buyer team responsible for approving requests, and the Customer Service Office (CSO) responsible for the file verification process. This business process includes:

a. Customer Service Officer (CSO) is verifying the application request.
b. If application request is not approved, the consumer will receive a notification that the application has been rejected.
c. If application request is approved, the CSO will ask for approval from the buyer team.
d. If application request is not approved, the consumer will receive a notification that the application has been rejected.
e. If approved, the buyer team will assign the logistics team (courier) to pick up the problematic product at the consumer's address.
f. If the consumer is not at the address when the logistics team arrives, the logistics team will return the next day to pick up the problematic product at the address the consumer previously registered.
g. If the consumer is at the address, the logistics party asks the consumer to hand over the problematic product.
h. After receiving the problematic product, the logistics team delivers the product to the store.
i. After the problematic product is received by the store team, they will write a document in the form of a sales return (SR) which is used as proof that there is a request for an exchange for a new product.
j. After writing the SR, the shop will upload the SR document to the CSO.
k. If the consumer chooses a reason other than personal reasons in their application, the SR document will be verified first by the CSO. If it is not approved, the CSO will ask the store to rewrite the SR document.
l. When the SR has been approved, the CSO asks the store to check the availability of new product stock.
m. When a product is out of stock, the store will request stock from another store. If there is still no stock available, the store will ask the customer for a refund. If the customer is approved to request a refund, the refund process will proceed. However, if the customer is disagreed, the request will not proceed.
n. If new product stock is available, the shop will pack the new product.
o. After packing, the shop asked the logistics team to continue pick up process the product.
p. After pick up process is completed, the logistics team going to send the product to the consumers address.
q. The new product is successfully accepted by consumers.

The explanation of the business process for verifying and approving new product exchange applications is illustrated in the modeling that can be seen in Picture 3



Picture 3. Modeling of Business Process (as-is) Verification and Approval of New Product Exchange Application

3.2 Business Process Simulation Results (as-is)

The simulation was carried out in two stages, namely time simulation and resource simulation which was carried out using the Bizagi application. The simulation results of the business process time for consumer return requests require an average time of 25.56 minutes, a minimum time of 24 minutes, and a maximum time of 27 minutes. Meanwhile, the simulation results of the business process time for verification and approval of new product exchange applications require an average time of 8,312.4 minutes, a minimum time of 120 minutes, and a maximum time of 42,420 minutes.

The results of the simulation of business process resources for consumer return requests include 100% utilization of consumer resources. Meanwhile, the results of the simulation of business process resources for verification and approval of new product exchange requests include the utilization of Customer Services Officer (CSO) resources of 24.72%, buyer team of 85.69%, logistics of 75%, consumer of 1.11%, and store team of 18.06%.

3.3 Identifying Business Process Problems

The previously business processes analysed, and then identified for issues related to each task before improvements were made. Problem identification was conducted by reviewing interview, time analysis, and resource utilization analysis results, as described in the following table:

Table 1. Identification of Problems in The Consumer Return Application Process

Tasks	Problems	Risk
Fill in the pickup address.	Currently, consumers are only given the option to wait for the courier to pick up the problematic product.	A miscommunication occurred between the courier and the customer regarding the pickup and delivery schedule for the customer's product. This caused the application process to take longer than expected.
Fill in the details of the reason for the application.	When asked to upload documentary evidence of a problematic product, consumers are only given the option to upload photos. Furthermore, consumers are required to upload at least three photos for each problematic product.	Ruparupa sometimes struggles to verify applications because the photos uploaded by consumers don't meet the requirements. Furthermore, the requirement of a minimum of three photos for each problematic product makes it difficult for consumers if they have a lot of multiple problematic products.

Table 2. Identification of Problems in The Verification and Approval Process for New Product Exchange Applications

Tasks	Problems	Risk
Request approval from the buyer team, and carry out approval.	The buyer team sometimes has difficulty in carrying out approval because the documentation uploaded by the consumer does not comply with the provisions.	The approval process took longer than it should have because the buyer team could not see the condition of the problematic product directly.
To the consumer's address, logistics or courier will back the next day, handing over the problematic product to the logistics or courier.	There was a miscommunication between the courier and the consumer regarding the pick-up or delivery address for the product.	Incorrect addresses, consumers who are not at the location when the courier arrives, make the product pick-up or delivery process take longer.
Problematic product received by the store team.	Information related to applications or purchases at Ruparupa will be entered into the OMS system. Stores should periodically check the OMS for any new applications or information related to Ruparupa. However, currently, store teams are more focused on direct sales activities in offline stores. This can be the stores are busy with offline sales. This results in some store teams not regularly checking the OMS eturn requests.	The process is taking longer than the established SLA.

3.4 Implementation of the ESIA Framework

After identifying problems in each business process (as-is), the next step is to implement the ESIA framework which consists of the process of elimination, simplification, integration, and automation of business processes as a reference in providing recommendations for business processes (to-be) or recommendation business processes. Overall, the business process recommendation process is made by implementing the Customer Relationship Management (CRM) concept in the form of omnichannel integration or integration between online (using the Ruparupa application) and offline (coming directly to the store) which can be seen in the following table:

Table 3. Implementation of ESIA in Consumer Return Applications

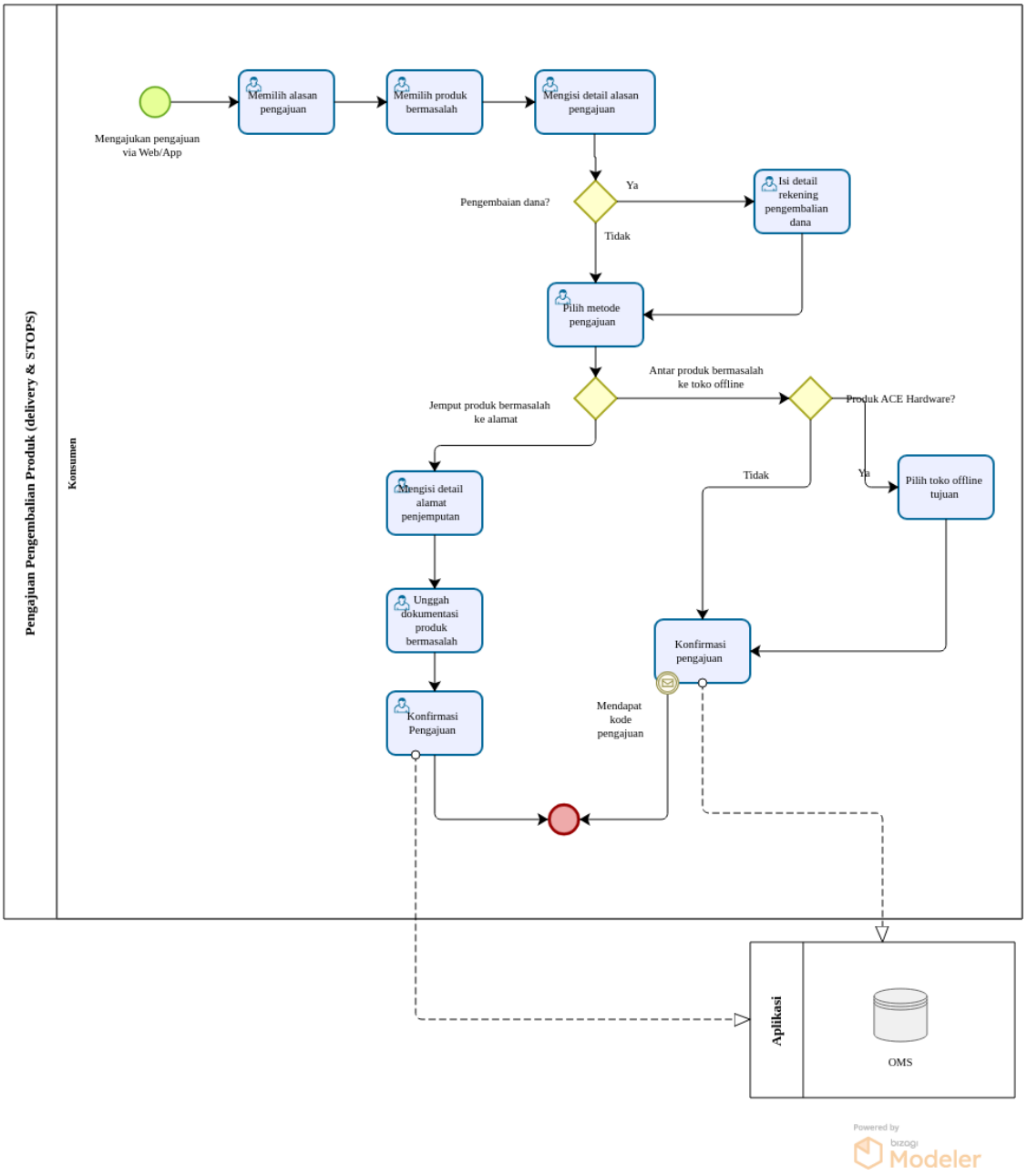
Problems	Implementation ESIA	Evidence
Currently, consumers are only given the option to wait for the courier to pick up the problematic product.	Integration	Provides the option for customers to deliver problematic products to offline stores.
When asked to upload documentary evidence of a problematic product, consumers are only given the option to upload photos. Furthermore, consumers are required to upload at least three photos for each problematic product.	Simplification	Providing new provisions or SOP (Standard Operating Procedures) regarding uploading problematic products namely, 'The consumers are required to upload at least one photo and one video per invoice'.

Table 4. Implementation of ESIA in The Verification and Approval Process for New Product Exchange Applications

Problems	Implementation ESIA	Evidence
The buyer team sometimes has difficulty in carrying out approval because the documentation uploaded by the consumer does not comply with the provisions.	Elimination	The approval process is carried out directly by the party or store team.
There was a miscommunication between the courier and the consumer regarding the pick-up or delivery address for the product.	Elimination	Consumers bring and pick up their products directly from offline stores.
Information related to applications or purchases at Ruparupa will be entered into the OMS system. Stores should periodically check the OMS for any new applications or information related to Ruparupa. However, currently, store teams are more focused on direct sales activities in offline stores. This can be the stores are busy with offline sales. This results in some store teams not regularly checking the OMS for return requests.	Simplification	The store will be more aware and responsive to return requests at Ruparupa because consumers come directly to the offline store.

3.5 Modeling of Business Process (to-be)

The results of the ESIA framework implementation are then visualized in picture notation using the Bizagi application which complies with BPMN standards as follows:

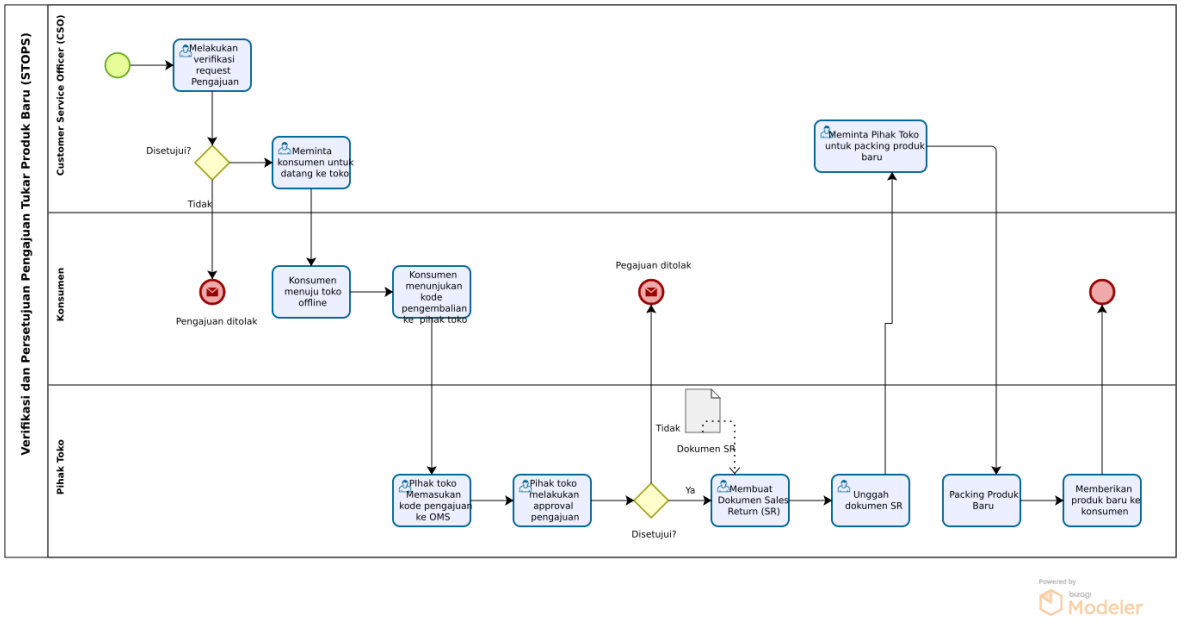


Picture 4. Modeling of Business Process (to-be) Submissions by Consumers

The explanation of Picture 4 regarding the business process modeling (as-is) for verification and approval of new product exchange applications is as follows:

a. Consumers submit on the Ruparupa platform by selecting the reason for the submission, which consists of the number of unsuitable products/components, personal reasons, and defective products (defect/cracked/unsuitable).
b. Consumers choose problematic products.
c. Consumers fill in the details of the reason for the application.
d. Consumers choose complaint solutions.
e. If the consumer chooses a refund solution, the consumer is asked to fill in the account details.

f. Consumers choose the complaint method between carry the problematic product to an offline store or wanting the problematic product to be picked up at the consumer's address by the courier.
g. If the consumer chooses to pick up the problematic product at the address, they are asked to upload documentation of the problematic product in the form of photos and videos and fill in the pickup address.
h. If consumers choose to send problematic products to an offline store, they can choose the destination offline store if the problematic product is a product from ACE Hardware, with a list of stores that have replacement product stock. Otherwise, consumers must go to an offline store that has been designated by Ruparupa due to the availability of replacement product stock.
i. The consumer confirms the application.
j. After confirming, consumers will receive a submission code if they select point 7.



Picture 5. Modeling of Business Process (to-be) Verification and Approval of New Product Exchange Application

The explanation of Picture 5 regarding modeling of business process (to-be) verification and approval of new product exchange application is as follows :

a. Customer Service Officer (CSO) verifying application
b. If approved, the CSO will ask the consumer to come to the offline store to process the application.
c. If it is not approved, the consumer will receive a notification that the application has been rejected.
d. Consumers come to the offline store and show the application code to the store.
e. The store will enter the application code into OMS.
f. When the code has been entered into the OMS, the store can carry out approval by checking the condition of the problematic product directly in front of the consumer.
g. Once approved, the shop will write a document in the form of a sales return (SR) which is used as proof to Ruparupa that there is a refund request.

h. Document SR uploaded to CSO.
i. If the consumer selects a reason other than personal reasons in their application, the SR document will first be verified by the CSO. If it is not approved, the CSO will ask the store to rewrite the SR document.
j. After the document of SR approved, CSO will ask the store to pack new products.
k. After that, the shop gives new products to consumers.

3.6 Hasil Simulasi Proses Bisnis (to-be)

Table 5. Comparison of the Simulation Analysis of Processing Time for Return Applications by Consumers

Time	As-is (m)	To-be (m)	% Difference
Min. Time	24	12	50%
Max. Time	27	42	-55%
Avg. Time	25,56	27,9	-9,1%
Total Time	1.278	1.395	-8,4%

The table above shows that the total application time has increased by 8.4%. This is because consumers must complete more application forms than before. The additional forms include options for application methods and new requirements for uploading video documentation of problematic products. While this increase in processing time, however will impact the comparison of the verification and approval process, as seen below.

Table 6. Comparison of Simulation Analysis of Verification and Approval Processing Time for New Product Exchange Applications

Time	As-is (m)	To-be (m)	% Difference
Min. Time	120	120	0%
Max. Time	42420	1865	96%
Avg. Time	8312.4	608.3	93%
Total Time	313860	30415	90%

The table above shows that the total verification and approval process time has decreased by 90%. This is due to the faster approval process and the absence of couriers or logistics personnel delivering or picking up consumer products. With the implementation of omnichannel, the verification and approval process has become more effective in terms of time.

Table 7. Comparison of Simulation of Resource Analysis of Development Submission Process by Consumers

Resource	As-is (m)	To-be (m)	% Difference
Consumers	100%	100%	0%

The table above shows that the utilization of application resources has not increased. This is because the only resource involved in this business process is consumers, who the consumers submit return requests through various websites or Ruparupa applications.

Table 8. Comparison of Simulation of Resource Analysis of Verification and Approval Process of New Product Exchange Application

Resource	As-is (m)	To-be (m)	% Difference
Customer Services Officer (CSO)	24.72%	20.89%	3.83%
Buyer	85.69%	-	-
Logistic or Courier	75.69%	-	-
Consumers	1.11%	63.45%	-62.34%
Store Tim	18.06%	19.98%	-1.92%

The table above shows that implementing omnichannel, or integration between online (using various applications) and offline (physical stores) in the alternative business process (to-be), reduces the workload of the buyer team. This is because approvals, previously handled by them, are now handled by the store team. Furthermore, logistics or couriers are no longer necessary because consumers bring the products to the offline store. However, this has resulted in a 62.34% increase in consumer resource utilization. Utilizing consumer resources speeds up the verification and approval process, as seen in the resource analysis results in the previous chapter. Furthermore, with this alternative business process, consumers have two options for processing their requests: delivering problematic products directly to the store or having the problematic products picked up by the store courier.

CONCLUSION

The product return process after being received by the consumer consists of business stages that need to be improved because the SLA level exceeds Ruparupa's limits. The process includes a return request by the consumer, verification and approval of the return of goods and funds, verification of the exchange of new products, and verification of the delivery of missing products. Improvements are made through analysis of existing business processes (as-is), identification of problems such as long verification times and ineffective communication, and modeling and simulation of business processes to measure the effectiveness of improvements.

The resulting improvement is an alternative (to-be) process that implements an omnichannel concept to enhance CRM. Consumers can choose to have problematic products delivered directly to an offline store. This process results in changes in time and resource allocation, and with the alternative business process, consumers can choose between having products picked up or they could deliver by themselves to the store.

REFERENCE

[1] S. D. Lestari, F. M. Leon, S. Widyastuti, N. A. Brabo and A. Putra, "Antecedents and Consequences of Innovation and Business Strategy on performance and Competitive Advantage of SMEs," *Journal of Asian Finance*, vol. 7, no. 6, pp. 365-378, 2020, doi: 10.13106/jafeb.2020.vol7.no6.365.

[2] M. Hammer and J. Champy, "Reengineering the corporation: a manifesto for business revolution," *Business Horizon*, vol. 36, no. 5, pp. 90-91, 1993, doi: 10.1016/s0007-6813(05)80064-3.

[3] H. H. Chang, "Critical factors and benefits in the implementation of customer relationship management," *Total Quality Management & Business Excellence,* vol. 18, no. 5, pp. 483-508, 2007, doi: 10.1080/14783360701239941.

[4] M. Dumas, M. La Rosa, J. Mendling and H. A. Reijers, Fundamentals of Business Process Management, 2013, doi: 10.1007/978-3-642-33143-5.

[5] B. Andersen, Business Process Improvement Toolbox, 2nd ed., 1999. Available: https://openlibrary.org/books/OL11118012M/Business_Process_Improvement_Toolbox

[6] Bizagi Coorporation, t.thn. Overview: About Bizagi Modeler. Available: https://help.bizagi.com/process-modeler/en/index.html?running_your_workflow. [Accessed 20 June 2024].