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## **Business Process Digitization in “Marbil Collection” Home Industry Using Business Process Model and Notation**

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### **ABSTRACT**

Digital transformation has become an essential requirement for small and medium enterprises, including home industries engaged in handicrafts such as bag production. However, most home industry players still run business processes manually, potentially causing various operational problems such as production delays, distribution inaccuracies, and order recording errors. This research aims to analyze and re-model business processes at Marbil Collection, a home-based business that produces bags on a make-to-order basis. The approach used was Business Process Model and Notation (BPMN), a visual standard for systematically describing business workflows. This research identified four main processes in operations, namely ordering, procurement of raw materials and production, distribution and order completion, and employee payroll. These processes were mapped in the current business process model (as-is), and then redesigned into a proposed model (to-be) that supports automation and digitization. The results of the modeling showed significant gaps in the manual system used, especially in terms of service speed, transparency, and documentation. The proposed digital process design provides a structured solution to improve efficiency, accuracy, and customer experience. This research is expected to be the basis for developing a simple information system that suits the needs of the home industry, as well as making a practical contribution to similar businesses that want to start digitalization from an understanding of their own business processes.

**Keyword:** Business Process, Business Process Management, Business Process Model and Notation, Modelling and Simulation, Home Industry, Bizagi Modeler

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## **1. INTRODUCTION**

Information technology has significantly transformed various aspects of daily life, including commercial activities. Digitalization is now a necessity not only for large enterprises but also for small-scale businesses such as home industries. In the handmade bag and wallet sector, many processes are still done manually, leading to delays, data inaccuracy, and inefficiencies. Marbil Collection, a home-based business in Tanggulangin, Sidoarjo, is one such example. Although it has a growing market, its core business processes—including

ordering, procurement and production, distribution, and payroll—remain conventional, requiring a structured digital transformation effort. This study adopts Business Process Model and Notation (BPMN) to visualize and redesign Marbil Collection's workflows. BPMN is a standardized graphical notation that helps document, analyze, and optimize business processes, making them more understandable and accessible to both technical and non-technical stakeholders. The research maps existing (as-is) processes, identifies operational gaps, and proposes improved (to-be) models that align with the business's capacity for gradual digital implementation. The novelty of this research lies in applying BPMN to a micro-scale home industry context, where such methodologies are rarely used. By initiating digital transformation from basic workflow modeling, this study shows that even small businesses can embrace digitalization without complex investments. The results contribute to both practical improvements for Marbil Collection and to broader academic discourse on BPMN implementation in the micro-enterprise sector.

## **2. METHODS**

This research uses a qualitative descriptive method with a case study approach to analyze the business processes running in the Marbil Collection home industry and design a suitable digitization model using the Business Process Model and Notation (BPMN) approach. According to Cresswell, a qualitative approach is used to construct an understanding of reality based on a constructivism perspective, while case studies allow researchers to explore in depth a phenomenon in a real-life context. Data collection was conducted through direct interviews with business owners to gain a thorough understanding of their business practices, barriers faced, and digitalization needs. In addition, observations were made directly to see how the business process takes place from ordering, production, to distribution and payroll. Literature and literature study techniques were also used to enrich the analysis, both from the theoretical side related to the digitization of small businesses and business processes, as well as from the conceptual side by examining the basic principles of BPMN as a visual business process modeling approach. By combining these data collection techniques, this research not only describes the actual conditions, but also formulates solutions based on real needs and a strong theoretical framework.

## **3. RESULTS AND DISCUSSION**

Based on the data collected through interviews, direct observations, and simple documentation studies of business activities, it is known that business processes at Marbil Collection home industry run manually and have not been documented systematically. These processes include activities starting from the customer placing an order until the product is finished and delivered, as well as internal processes such as procurement of raw materials and employee payroll.

The identification results show that there are four main business processes that run repetitively and are interrelated, namely:

### **1. Order process from customers**

All buying and selling activities in the Marbil Collection home industry begin with the ordering process. Prospective customers usually contact the business owner directly, either through text messages or calls, then usually a face-to-face meeting will be scheduled between the prospective customer and the business owner to further discuss the available products. After the dialog between the prospective buyer and the

business owner, confirmation of the order is made after an agreement between the two parties. The business owner will then record the number and type of orders in a commonly used book while conveying the price details, agreeing on the length of the production process and the delivery date of the product after manual calculation. The following is a visualization of the ordering process between business owners and potential customers:

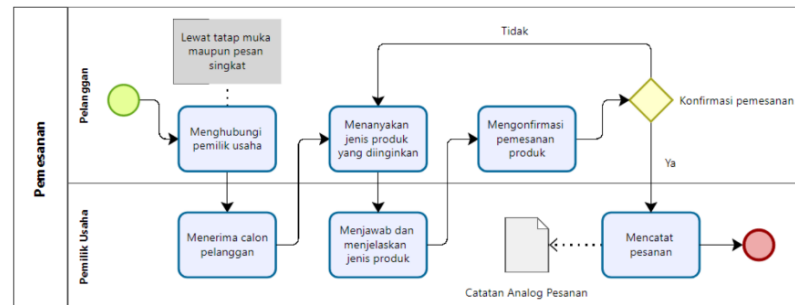


Figure 1. Current model of ordering process

## 2. The process of procuring raw materials and making products

Once the order is confirmed by the customer, the business owner will then start writing down the list of raw materials needed while checking what stock may still be left in the warehouse. In the absence of a proper raw material procurement system or schedule, it is common to find some stocks scattered around, some of which are at risk of being unusable due to improper storage. The business owner will assign an employee to make purchases to suppliers. This usually takes a long time because the employee has to go around to more than one supplier to get the complete raw materials. This process is again not well-documented and risky because it is usually done with only notes on small pieces of paper, the assigned employee may have to repeatedly come and go if it turns out that the raw materials purchased previously are not suitable. Production will only begin when the employee returns from the supplier and the business owner ensures the completeness of the raw materials. Here is a visualization of the raw material procurement and production process:

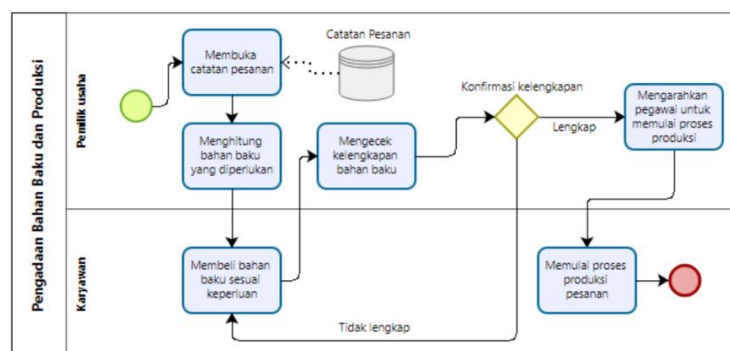


Figure 2. Current model of materials procurement and production

## 3. The process of distributing products to customers and completing orders as a whole

Before the finished product is sent to the customer, there will be a quality control process. All products that have left the production room will be checked again for their eligibility value. If there is a defect, it will be sent back to the production room for repair. After all products are deemed suitable and complete according to the order

records, the business owner will contact the shipping service to submit the shipment, the business owner must also contact the customer to confirm that the ordered product will be sent immediately. When the finished product has been received by the customer, checking will be carried out again to make sure that the goods sent are appropriate. The business owner can only consider the order completed if the customer has confirmed receipt of the product. Here is a visualization of the order distribution and completion process:

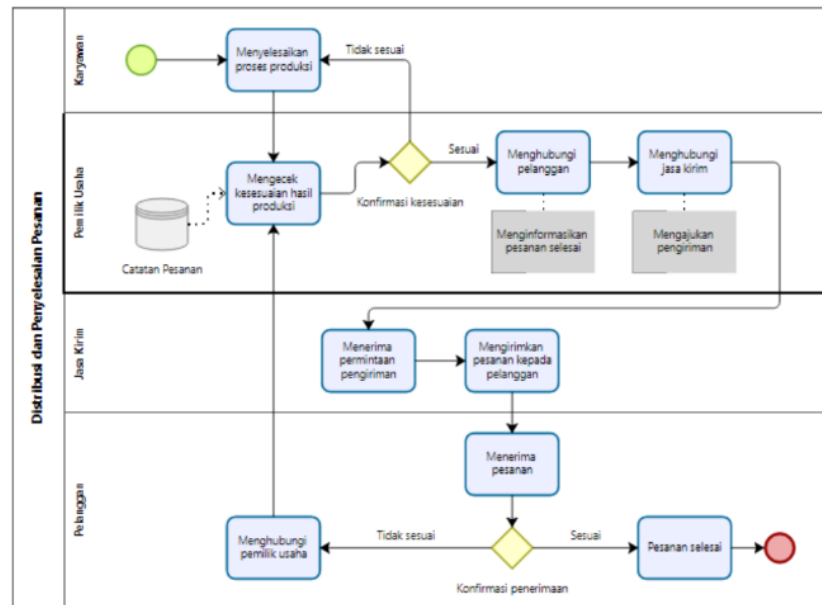


Figure 3. Current model of distribution and order completion

#### 4. Employee payroll process based on work completed

At the end of the work period, business owners usually gather employees in one place. Afterward, there will be a check on attendance during the period. Wages will be distributed directly in the form of cash that is put into an envelope. This process does not use digital records and is not automated, making it quite time-consuming. Employees who happen to be absent are also at risk of delayed salary receipt. Here is a visualization of the employee payroll process:

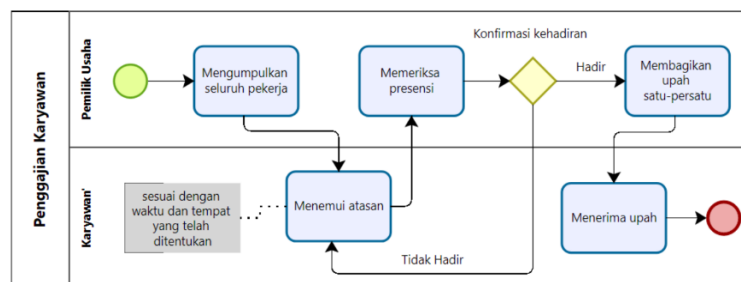


Figure 4. Current model of employee payroll

Based on the results of the identification and modeling of business processes that have been carried out, and taking into account the limitations and operational characteristics of Marbil Collection as a home-based micro business, there are several recommended solutions that can be implemented in stages to support the digitization process. These recommendations are focused on the most basic needs and are relevant to the main business processes, as well as considering the human resources and financing capacity owned by the business actors.

#### A. Addition of Human Resources (HR) in Information Technology.

The first step that can be considered is to recruit one to two support personnel in the field of information technology who have the ability to develop and maintain simple systems, especially website-based. This need is flexible, meaning that it can be adjusted to the financial capabilities of Marbil Collection. The main tasks of these human resources include developing system interfaces (front-end), managing data and system functionality (back-end), and monitoring system performance regularly. With the presence of these technical personnel, digital system management will be more assured in terms of sustainability and future improvements.

#### B. Website Development and Supporting Infrastructure.

The second recommendation is to build a website-based information system that covers the main needs of Marbil Collection home industry in carrying out its business processes. The system is designed to be accessible by two parties, namely customers and business owners (admin). The main features for customers include product catalog display, working time information, order form, payment and delivery method options, and order status tracking. Meanwhile, for the admin or business owner, the system must be able to display incoming order notifications, customer data, employee data, raw material management, goods distribution, and payroll systems.

This information system includes at least two main components, namely:

- a) Front-End, which is the interface accessed by users (both customers and business owners), designed to be simple, responsive, and easy to use without in-depth technical training.
- b) Back-End, which is the data management system, business logic, and automation processes such as material stock validation, production estimation calculation, supplier data management, and notification delivery.

To support the sustainability of the system, additional infrastructure is also needed that is adjusted to the scale of the business. The infrastructure can include a low-cost hosting server, an official web domain, simple computer equipment for data access and management, and a stable internet connection. Since “Marbil Collection” is small-scale, the system can be developed in a modular and phased manner, with prioritized features first (e.g. ordering and procurement of raw materials) before moving on to other modules.

As a follow-up to the identification of problems in the current business process, modeling of the proposed business process was carried out to illustrate how the workflow of “Marbil Collection” can be optimized through the use of digital systems. This model is designed by prioritizing the principles of efficiency, integration, and ease of operation, and considering the limited resources owned by micro and small businesses.

### 3.1 Ordering Process

Customers can access the official website (for example: [marbilcollection.com](http://marbilcollection.com)) to browse the product catalog. The details of each bag and wallet will be clearly written, ranging from the type of material, available color options, as well as small accessories customization

that may be added. Customers can also check the estimated production time, determine the payment method, monitor the delivery process later, and confirm the order directly through the platform provided. The business owner or admin will receive an automatic notification through the system dashboard whenever a new order comes in. These orders will then be stored in the order database so as to minimize delays or manufacture of products that are not in accordance with the order sequence. The following is a visualization of the proposed order process design:

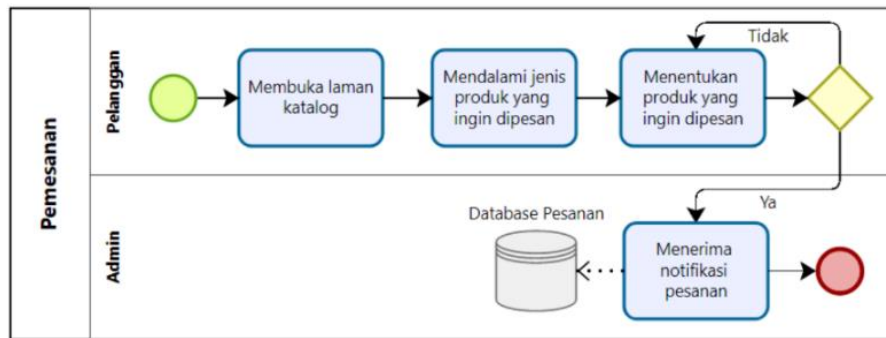


Figure 5. Proposed model of order process

In the ordering process (as-is) there are 6 tasks consisting of: 1) Customers contact the business owner (time: 10 minutes), 2) The business owner receives the prospective customer, 3) Customers ask for the desired product (time: 10 minutes), 4) The business owner answers and explains related products (time: 30 minutes), 5) The customer confirms the product order (time: 10 minutes), and 6) The business owner records the order in the order book (time: 30 minutes). The simulation results of the current model of order process using Bizagi are presented as follows:

Table 1. Time analysis for the current order process

Name	Type	Instances completed	Instances started	Min. time (m)	Max. time (m)	Avg. time (m)	Total time (m)
Pemesanan	Process	5	5	90	140	110	550
Menghubungi pemilik usaha	Task	5	5	10	10	10	50
Menerima calon pelanggan	Task	5	5	0	0	0	0
Menjawab dan menjelaskan jenis produk	Task	7	7	30	30	30	210
Menanyakan jenis produk yang diinginkan	Task	7	7	10	10	10	70
Mengonfirmasi pemesanan produk	Task	7	7	10	10	10	70
Konfirmasi pemesanan	Gateway	7	7				
Mencatat pesanan	Task	5	5	30	30	30	150

Meanwhile, in the ordering process (to-be) there are only 4 tasks consisting of: 1) Customers open the catalog page (time: 10 minutes), 2) Customers explore the types of products they want to order (time: 30 minutes), 3) Customers determine the product they want to order (time: 10 minutes), and 4) The business owner or admin receives the order

notification (time: 10 minutes). The simulation results of the proposed model of order process using Bizagi are presented as follows:

Table 2. Time analysis for the proposed order process

<i>Name</i>	<i>Type</i>	<i>Instances completed</i>	<i>Instances started</i>	<i>Min. time (m)</i>	<i>Max. time (m)</i>	<i>Avg. time (m)</i>	<i>Total time (m)</i>
Pemesanan	<i>Process</i>	5	5	60	120	78	390
Membuka laman katalog	<i>Task</i>	5	5	10	10	10	50
Mendalami jenis produk yang ingin dipesan	<i>Task</i>	5	5	30	30	30	150
Menentukan produk yang ingin dipesan	<i>Task</i>	14	14	10	10	10	140
ExclusiveGateway	<i>Gateway</i>	14	14				
Menerima notifikasi pesanan	<i>Task</i>	5	5	10	10	10	50

There is a significant difference between the two processes, where the ordering process (as-is) has an average completion time of 1 hour and 50 minutes. While in the ordering process (to-be), the average completion time of the entire process is 1 hour 18 minutes. This proves that the first proposed business process, namely order process, is more effective and efficient.

### 3.2 Materials Procurement and Production

Because business digitization in Marbil Collection home industry starts from the very beginning, the raw material procurement process will begin with inputting the last stock data of raw materials that are still suitable for use. From here a database of raw materials will be formed, so that in the future if an order comes in, the system will automatically calculate the raw materials that are needed. Notifications will appear on the dashboard page, a list of items that need to be purchased for production needs appears after the notification is opened. Similar to creating a raw material database, at the beginning of implementing this system, the admin must also input data on raw material suppliers who have previously subscribed to the business owner. This supplier data is used by the admin to contact and confirm the availability of raw materials that need to be purchased. After that, several employees will be assigned to pick up the materials according to the previous request. Once the availability of raw materials is verified in the system, the production process can begin immediately. The business owner can monitor the status of the work through the system, so that supervision becomes more structured and documented. The following is a visualization of the proposed design of the raw material procurement and production process:

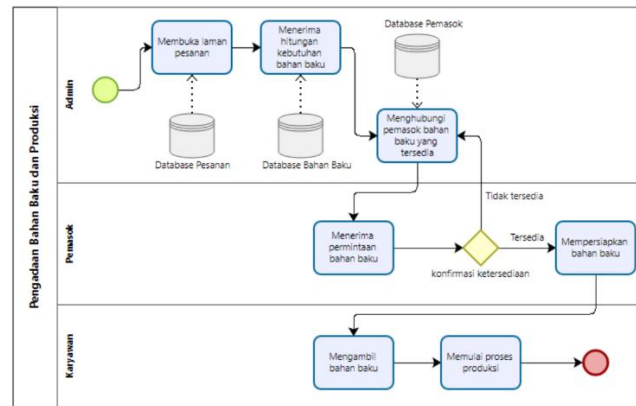


Figure 6. Proposed model of materials procurement and production

In the process of procuring raw materials and production (as-is) there are 6 tasks consisting of: 1) The business owner opens the order record (time: 30 minutes), 2) The business owner calculates the required raw materials (time: 60 minutes), 3) Employees purchase raw materials as needed (time: 180 minutes), 4) The business owner rechecks the completeness of the raw materials (time: 30 minutes), 5) The business owner directs the employees to start the production process (time: 10 minutes), and 6) The employees start the production process (time: 2880 minutes). The simulation results of the current model of materials procurement and production process using Bizagi are presented as follows:

Table 3. Time analysis for the current materials procurement and production process

Name	Type	Instances completed	Instances started	Min. time (m)	Max. time (m)	Avg. time (m)	Total time (m)
Pengadaan Bahan Baku dan Produksi	Process	3	3	3190	3190	3190	9570
Membuka catatan pesanan	Task	3	3	30	30	30	90
Menghitung bahan baku yang diperlukan	Task	3	3	60	60	60	180
Membeli bahan baku sesuai keperluan	Task	3	3	180	180	180	540
Mengecek kelengkapan bahan baku	Task	3	3	30	30	30	90
Konfirmasi kelengkapan	Gateway	3	3				
Mengarahkan pegawai untuk memulai proses produksi	Task	3	3	10	10	10	30
Memulai proses produksi pesanan	Task	3	3	2880	2880	2880	8640

While in the process of procuring raw materials and production (to-be) there are 8 tasks consisting of: 1) Admin opens the order page (time: 5 minutes), 2) Admin receives a raw material requirement count that appears when the order notification is opened (time: 5 minutes), 3) Admin contacts raw material suppliers from stored in the supplier database (time: 5 minutes), 4) Suppliers receive requests for raw materials (time: 5 minutes), 5) Suppliers confirm the availability of the requested raw materials, 6) Suppliers prepare the requested raw materials (time: 30 minutes), 7) Employees pick up raw materials at the supplier's place (time: 30 minutes), and 8) Employees start the production process (time: 1440 minutes). The



simulation results of the proposed model of materials procurement and production process using Bizagi are presented as follows:

Table 4. Time analysis for the proposed materials procurement and production process

Name	Type	Instances completed	Instances started	Min. time (m)	Max. time (m)	Avg. time (m)	Total time (m)
Pengadaan Bahan Baku dan Produksi	Process	3	3	1550	1550	1550	4650
Membuka laman pesanan	Task	3	3	5	5	5	15
Menerima hitungan kebutuhan bahan baku	Task	3	3	5	5	5	15
Menghubungi pemasok bahan baku yang tersedia	Task	3	3	5	5	5	15
Menerima permintaan bahan baku	Task	3	3	5	5	5	15
konfirmasi ketersediaan	Gateway	3	3				
Mempersiapkan bahan baku	Task	3	3	30	30	30	90
Mengambil bahan baku	Task	3	3	60	60	60	180
Memulai proses produksi	Task	3	3	1440	1440	1440	4320

There is a significant difference between the two processes above, where the raw material procurement and production process (as-is) has an average completion time of 2 days 5 hours 10 minutes. While in the process of procuring raw materials and production (to-be), the average completion time of the entire process is 1 day 1 hour 50 minutes. This proves that the second proposed business process, namely materials procurement and production, is more effective and efficient.

### 3.3 Distribution and Order Completion

Finished products that have been made will still go through the quality control stage by human labor. If any discrepancies are found, the product will be returned to the production room for repair. If the product has passed the inspection, the admin will confirm the readiness for shipment in the system, and the system will automatically contact the courier service. When the goods are picked up by the courier to begin shipping, the tracking feature will start to activate so that both business owners and customers can monitor the status of the shipment in real-time. Customers who have received their orders will receive a notification to confirm receipt of the product. If the customer states that the product has been received properly and accordingly, then the order is declared complete in the system. The following is a visualization of the proposed design of the order distribution and completion process:

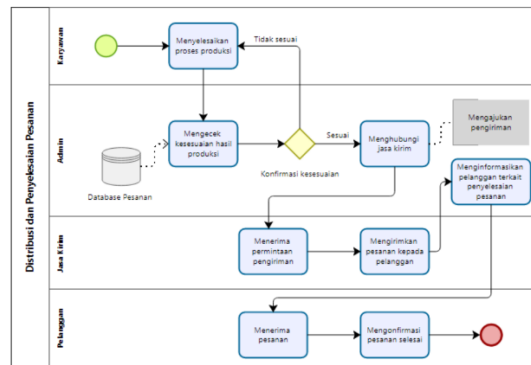


Figure 7. Proposed model of distribution and order completion

In the distribution and order fulfillment process (as-is) there are 9 tasks consisting of: 1) Employees complete the production process (time: 2880 minutes), 2) The business owner checks the suitability of the production results (time: 60 minutes), 3) The business owner confirms the suitability of the production results, 4) The business owner contacts the customer to confirm the delivery and completion of the product (time: 30 minutes), 5) The business owner contacts the delivery service (time: 30 minutes), 6) The delivery service receives the delivery request, 7) The delivery service sends the order to the customer (time: 180 minutes), 8) The customer receives the ordered product, 9) The customer confirms the completion of the order. The simulation results of the current model of distribution and order completion process using Bizagi are presented as follows:

Table 5. Time analysis for the current distribution and order completion process

Name	Type	Instances completed	Instances started	Min. time (m)	Max. time (m)	Avg. time (m)	Total time (m)
Distribusi dan Penyelesaian Pesanan	Process	3	3	3180	6120	4160	12480
Menyelesaikan proses produksi	Task	4	4	2880	2880	2880	11520
Mengecek kesesuaian hasil produksi	Task	4	4	60	60	60	240
Konfirmasi kesesuaian	Gateway	4	4				
Menghubungi pelanggan	Task	3	3	30	30	30	90
Menghubungi jasa kirim	Task	3	3	30	30	30	90
Menerima permintaan pengiriman	Task	3	3	0	0	0	0
Mengirimkan pesanan kepada pelanggan	Task	3	3	180	180	180	540
Menerima pesan	Task	3	3	0	0	0	0
Konfirmasi penerimaan	Gateway	3	3				
Pesanan selesai	Task	3	3	0	0	0	0

While in the order distribution and completion process (to-be) there are also 9 optimized tasks, these tasks consist of: 1) Employees complete the production process (time: 1440 minutes), 2) The business owner checks the suitability of the production results (time: 60 minutes), 3) The business owner confirms the suitability of the production results, 4) Admin contacts the delivery service (time: 10 minutes), 5) The delivery service receives the delivery request, 6) The delivery service sends the order to the customer (time: 180 minutes), 7) Admin informs customer about order completion (time: 10 minutes), 8) Customer receives the ordered product, 9) Customer confirms the order completion (time: 10 minutes). The simulation results of the proposed model of distribution and order completion process using Bizagi are presented as follows:

Table 6. Time analysis for the proposed distribution and order completion process

Name	Type	Instances completed	Instances started	Min. time (m)	Max. time (m)	Avg. time (m)	Total time (m)
Distribusi dan Penyelesaian Pesanan	Process	3	3	1710	1710	1710	5130
Menyelesaikan proses produksi	Task	3	3	1440	1440	1440	4320
Mengecek kesesuaian hasil produksi	Task	3	3	60	60	60	180
Konfirmasi kesesuaian	Gateway	3	3				
Menghubungi jasa kirim	Task	3	3	10	10	10	30
Menerima permintaan pengiriman	Task	3	3	0	0	0	0
Mengirimkan pesanan kepada pelanggan	Task	3	3	180	180	180	540
Menginformasikan pelanggan terkait penyelesaian pesanan	Task	3	3	10	10	10	30
Menerima pesanan	Task	3	3	0	0	0	0
Mengonfirmasi pesanan selesai	Task	3	3	10	10	10	30

Between the two processes above, there are differences where the distribution and order completion process (as-is) has an average completion time of 2 days 5 hours. While in the order distribution and completion process (to-be), the average completion time of the entire process is 1 day 4 hours 30 minutes. This proves that the proposed third business process, namely distribution and order completion, is more effective and efficient.

### 3.4 Employee Payroll

The system allows the management of employee data through the initial creation of an employee database. Employees only need to confirm the suitability of the data once, after which each period of work is completed, the business owner can immediately transfer wages according to the results of each work. There is no need to waste time and energy by gathering in one place and checking employee attendance manually every period. Here is a visualization of employee payroll:

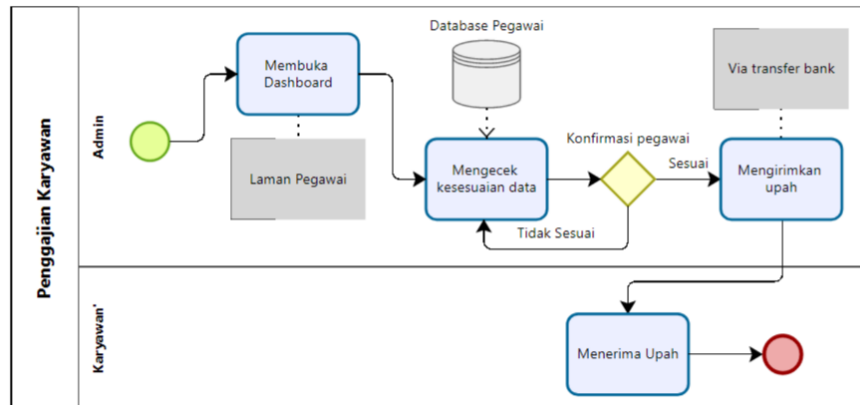


Figure 8. Proposed model of employee payroll

In the employee payroll process (as-is) there are 6 tasks consisting of: 1) The business owner gathers all employees (time: 30 minutes), 2) Employees gather at the designated place (time: 15 minutes), 3) The business owner checks attendance (time: 5 minutes), 4) The business owner confirms the presence of each employee, 5) The business owner distributes wages to each employee according to the results of their respective work (time: 15 minutes), and 6) Employees receive wages. The simulation results of the current model of employee payroll process using Bizagi are presented as follows:

Table 7. Time analysis for the current employee payroll process

Name	Type	Instances completed	Instances started	Min. time (m)	Max. time (m)	Avg. time (m)	Total time (m)
Penggajian Karyawan	Process	1	1	390	390	390	390
Mengumpulkan seluruh pegawai	Task	1	1	30	30	30	30
Menemui atasan	Task	17	17	15	15	15	255
Memeriksa presensi	Task	17	17	5	5	5	85
Konfirmasi kehadiran	Gateway	17	17				
Membagikan upah satu-persatu	Task	1	1	15	15	15	15
Menerima upah	Task	1	1	5	5	5	5

While in the employee payroll process (to-be) there are only 5 tasks consisting of: 1) Admin opens the dashboard page (time: 5 minutes), 2) Admin checks the suitability of the data (time: 10 minutes), 3) Admin receives confirmation of the suitability of employee data, 4) Business owners transfer wages simultaneously (time: 15 minutes), and 5) Employees

confirm receipt of salary. The simulation results of the proposed model of employee payroll process using Bizagi are presented as follows:

Table 7. Time analysis for the current employee payroll process

Name	Type	Instances completed	Instances started	Min. time (m)	Max. time (m)	Avg. time (m)	Total time (m)
Penggajian Karyawan	Process	1	1	390	390	390	390
Mengumpulkan seluruh pegawai	Task	1	1	30	30	30	30
Menemui atasan	Task	17	17	15	15	15	255
Memeriksa presensi	Task	17	17	5	5	5	85
Konfirmasi kehadiran	Gateway	17	17				
Membagikan upah satu-persatu	Task	1	1	15	15	15	15
Menerima upah	Task	1	1	5	5	5	5

In the two processes above, there is a significant difference, where the employee payroll process (as-is) has an average completion time of 6 hours 30 minutes. While in the employee payroll process (to-be), the average completion time of the entire process is 50 minutes. This proves that the proposed fourth business process, namely employee payroll, is more effective and efficient.

## CONCLUSION

From the results of observation and analysis, it is known that the business process of “Marbil Collection” is still fully run manually, starting from communication with customers, procurement of raw materials, to employee payroll. The irregularity of records, reliance on personal communication, and lack of digital documentation lead to potential errors, delays, and obstacles in tracking business activities.

Through BPMN-based process proposal modeling, this research provides a simple yet functional digital system design. Processes such as ordering, production, distribution, and resource management are reorganized to provide clarity of flow, time efficiency, and ease of control for business owners. The proposed system includes an interactive website, a dashboard for order notifications, a centralized database for raw materials, employees, customers, and simple integration with logistics providers. Overall, digitizing business processes is not only a solution to technical problems, but also a strategic step towards modernization.

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