

Original Research

Development of a Sales Information System to Improve Batik Shop's Sales Efficiency

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Abstract—Batik is an indigenous cultural artifact of Indonesia that demands conservation. This study's batik establishment, Satrio Manah Batik, is located in Tulungagung and specializes in selling authentic Tulungagung batik. Sales for Satrio Manah Batik are conventional, and customers must physically visit the store. Satrio Manah Batik often makes custom orders, so it takes time for an appointment. The sales reach is limited to Tulungagung, and transactions are restricted to clients already acquainted with Satrio Manah Batik. Further, the antiquated book writing method must still be employed to record raw material stocks and sales reports. There needs to be a better record of the product inventory reports. It affects the calculations of monthly sales profits. Hence, this study was conducted to develop a sales information system to improve Satrio Manah Batik's sales efficiency. This research was developed using a waterfall model. The verification and validation results show that the system developed can meet customer needs. Customers can order custom batik by platform in a short time, which can increase the effectiveness of Batik Satrio Manah's sales.

Keywords: sales information system, batik shop, efficiency

Abstrak—Batik merupakan artefak budaya asli Indonesia yang perlu dilestarikan. Tempat usaha batik pada penelitian ini adalah Batik Satrio Manah, yang berlokasi di Tulungagung dan khusus menjual batik asli Tulungagung. Penjualan Batik Satrio Manah bersifat konvensional dan pelanggan harus mengunjungi toko secara fisik. Satrio Manah Batik sering membuat pesanan secara custom sehingga memerlukan waktu untuk membuat janji. Jangkauan penjualan Batik Satrio Manah hanya terbatas di Tulungagung, dan pembelian hanya dilakukan oleh pelanggan yang sudah mengenal Satrio Manah Batik. Selain itu, cara mencatat stok bahan baku dan laporan penjualan masih melakukan penulisan buku. Perlu adanya pencatatan laporan persediaan produk yang lebih baik. Hal ini mempengaruhi perhitungan keuntungan penjualan bulanan. Oleh karena itu, penelitian ini dilakukan untuk mengembangkan sistem informasi penjualan untuk meningkatkan efisiensi penjualan Batik Satrio Manah. Penelitian ini dikembangkan dengan menggunakan model *waterfall*. Hasil verifikasi dan validasi menunjukkan bahwa sistem yang dikembangkan dapat memenuhi kebutuhan pelanggan. Pelanggan dapat memesan batik *custom* melalui platform dalam waktu singkat sehingga dapat meningkatkan efektivitas penjualan Batik Satrio Manah.

Kata kunci: sistem informasi penjualan, toko batik, efisiensi

INTRODUCTION

Indonesia has achieved cultural identity achievement with the confirmation of batik as an intangible culture of Indonesia by UNESCO. So, it is necessary to maintain the values and belief system through batik artwork, which is the hallmark of the Indonesian nation (Iskandar & Kustiyah, 2017). Batik exhibits captivating advancements and narratives in all regions of the archipelago. Indonesia showcases Batik motifs in various cultural items, including temples. Tulungagung possesses a distinctive historical background about the presence of Batik and the Majapahit Kingdom (Wulandari, 2011). One of the industries that upholds the traditional Tulungagung batik is Batik Satrio Manah Tulungagung.

Satrio Manah Tulungagung Batik is a typical Tulungagung batik produced only in Tulungagung. Satrio Manah batik has a distinctive characteristic: its dominant dark colors are smooth black and dark brown, and its batik motifs do not overlap between the two dimensions (Ningtyas, 2019). The process of creating batik at Batik Satrio Manah involves the utilization of stamping, printing, and writing processes. The stamped batik process consists of using high-quality fabric to create intricate designs, with batik patterns being formed by utilizing copper stamps. On the other hand, the printing approach involves a production process that utilizes manual screen printing, while the writing technique is executed traditionally using a canting instrument.

Most of the Satrio Manah Batik production process still relies on traditional methods. The purchasing process is traditionally conducted by visiting the store, as no online sales

platform is available. An inherent limitation of this activity is its narrow target audience, which primarily consists of clients who are already acquainted with Batik Satrio Manah and located exclusively inside Tulungagung. In addition to this, sales reports and records of raw material stock are still documented in physical books. The recording technique is time-consuming and frequently prone to data recap errors. An additional issue about sales is the discrepancy between sales data and product stock reports, which can impact the accurate recording of monthly sales earnings.

As a result of the questionnaire, 77.8% of respondents had trouble when purchasing Batik. The difficulty is that buyers didn't know the type of material used to make Batik and had trouble determining the size. So, the Batik purchased often does not match what is desired. 61.1% of respondents did not know the type of batik cloth material, and 72.2% needed custom-size services for the Batik they ordered. So far, Batik Satrio Manah takes measurements of clothes ordered by customers directly at the Batik Satrio Manah location.

Establishing a special platform for selling Satrio Manah batik would simplify the process for clients in selecting batik that is certain of its superior quality and authenticity, only sourced from Satrio Manah. The findings support this statement, as 78.3% of participants have made internet purchases. Implementing a Sales Information System will provide numerous advantages for organizations or companies, including streamlined data retrieval, expedited access to necessary information, enhanced data organization, reduced calculation errors, and efficient generation of reports. The information generated is more precise and delivered promptly (Hidayati, 2019). The Sales Information System effectively disseminates information regarding the latest products available at Newbiestore (Zaliluddin & Rohmat, 2018).

This study developed a web-based Sales Information System for Batik Satrio Manah to enhance sales efficiency. Subsequently, clients can enter their preferred dimensions on the website, and it is the customer who decides the selection of materials. This website can log and track inventory levels, raw material quantities, and sales reports on the administrative side, hence streamlining the sales process. This website also facilitates the promotion of high-quality products.

METHODS

The research was conducted using the waterfall method, one of the SDLC (Software Development Lifecycle) models. The waterfall method in information system development offers the advantage of ensuring high-quality outcomes due to the systematic implementation in sequential stages. This method is well-suited for initiatives involving the development of new systems (Wahid, 2020). This research is divided into 2(two) stages: the initial data collection process and the software development process.

A. Initial data collection process

The data collection in this study was conducted using methods such as observation, questionnaire distribution, interviews, and literature review. Concurrent observations were conducted alongside the interview procedure including research participants. Questionnaires are provided to consumers in a random manner to ascertain their issues and requirements. The research involved conducting literature studies to acquire theoretical insights by reading relevant books and publications pertaining to the research topic. Data collection is conducted to ascertain current issues and the necessity of creating a sales information system.

B. Software development process

According to (Sommerville, 2011) software development utilizing the Waterfall methodology comprises five different phases.

1. Requirements Analysis and Definition: Conduct a needs analysis process based on the acquired data.

2. System and Software Design: involves creating BPMN, ERD, and UI designs in the form of system prototype images.
3. Implementation and Unit Testing: involves the initial development of each system module, followed by their integration. Every unit undergoes development and testing to ensure its functionality.
4. Integration and System Testing: The units created during the implementation phase are combined into the system once each unit has undergone testing.
5. Operation and Maintenance: The program is fully functional, allowing users to operate it and perform necessary maintenance tasks. At this stage, the implementation is carried out directly with the end users who will utilize the system.

RESULT

The subsequent sub-chapters will explain each step in developing the Satrio Manah Batik Sales Information System, including data collection, system testing, and other relevant activities.

Initial Data Collection Process

The initial step in constructing this batik sales information system involves collecting data using questionnaires and interviews. The study was performed on an internet platform by randomly distributing questionnaires. The findings derived from a sample of 23 participants met the requirements of individuals who purchased batik online. Subsequently, the interview was conducted with the proprietor of Batik Satrio Manah in Tulungagung. The interview method provides data about the state of affairs concerning the batik sales process and any issues that may arise. The issues that arise in the sales process of Batik Satrio Manah, as identified by surveys and interviews, are as follows:

- The sales process is now conducted offline due to the abundance of sales data, resulting in frequent discrepancies between reports and stock data.
- The sales process is restricted to a narrow target market because most consumers are familiar with Batik Satrio Manah, and the market coverage is limited to Tulungagung Regency.

Requirements Analysis and Definition

The system requirements necessary for the development of the Satrio Manah Batik Sales Information System are derived from data gathered through system analysis.

- The system was designed to categorize three roles: super admin, product admin, and customer.
- The system was designed with several functionalities, including a Wishlist, Search, Checkout product, Chat, Rating, History and Profile, Custom Clothing Size, Product List, and Payment Checking through a third-party service, specifically midtrans, and Shipping Cost Checking.

System and Software Design

Using the previously outlined system requirements analysis, a design for the system requirements will be developed. The designs include database design, process design, and user interface design. The database design implemented is an Entity Relationship Diagram (ERD). The purpose of an ERD is to visually represent the system that is going to be developed. The software utilized for generating the ERD design is MYSQL Workbench. ERD can be shown in Figure 1.

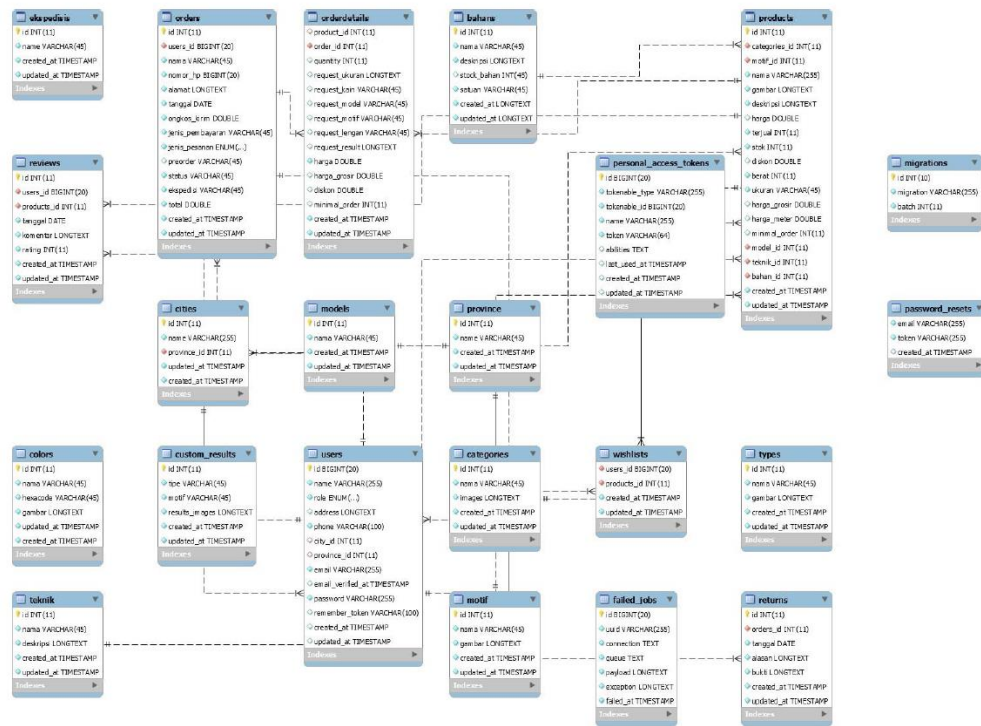


Figure 1. Entity Relationship Diagram (ERD).

The design process for creating this website uses the Business Process Model and Notation (BPMN). BPMN is a notation or diagram explaining the flow of an application's processes, activities, and actions. The purpose of BPMN is to describe the process of using the application from start to finish. BPMN can be shown in Figure 2.

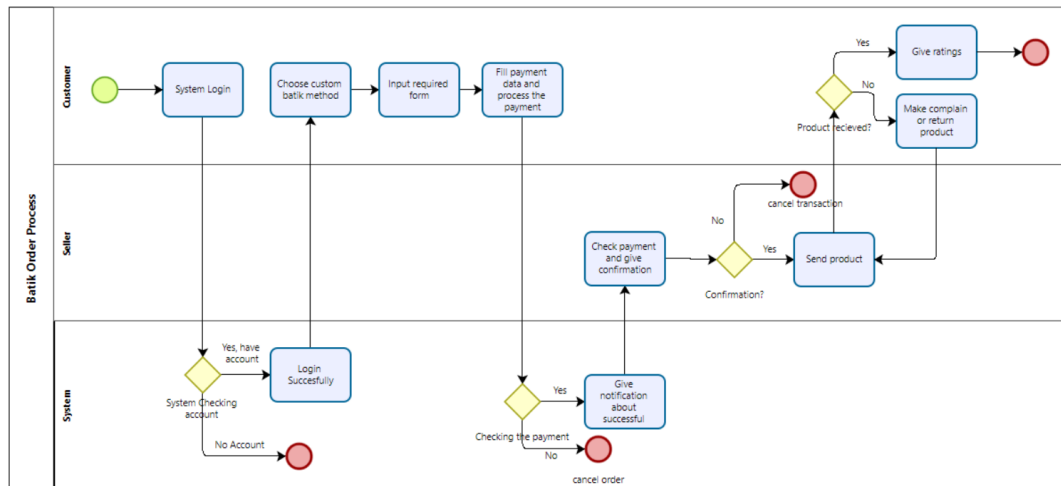


Figure 2. Business Process Model and Notation (BPMN).

Implementation and Unit Testing

After analyzing the problem and knowing the system requirements, the next step is to design and implement the Batik Satrio Manah sales information system. When a user first accesses a website, the first thing that will appear is the home page. After registering and logging in, users can access all the main features for purchasing products. The home page can be seen in Figure 3.

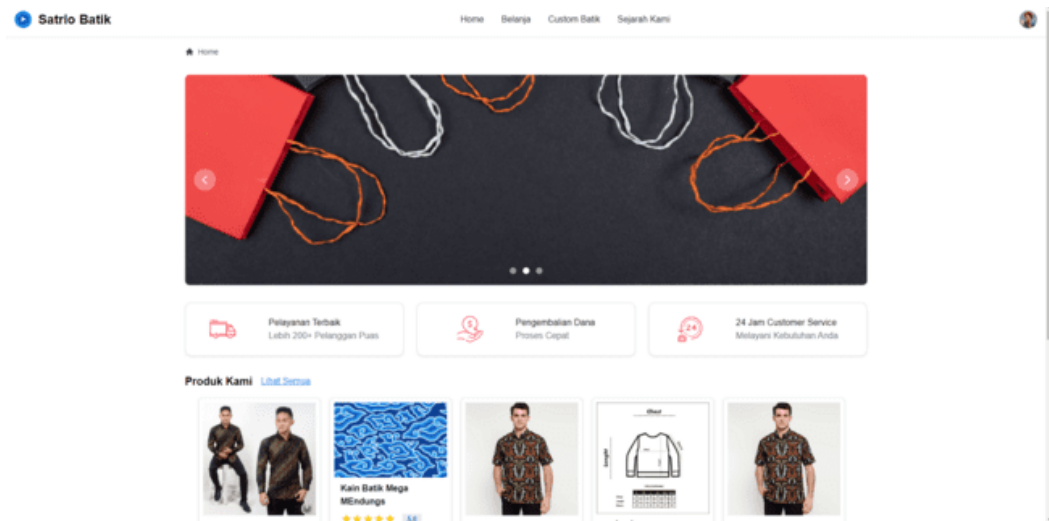


Figure 3. Satrio manah batik website home page.

The custom batik option allows users to upload their unique batik designs or choose from a selection of batik designs offered by the system. The system gives a warning notice to users who fail to submit a batik model, prompting them to do so. The order can proceed once the user has completed uploading the batik model during manual customization. Figure 4 displays the website showcasing the custom batik functionality.

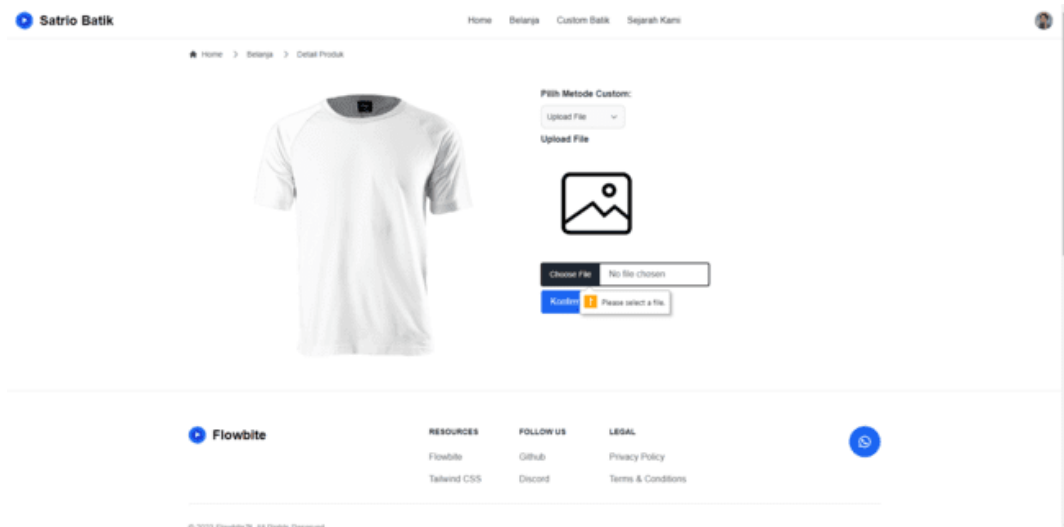


Figure 4. Custom batik feature page.

After successfully uploading the batik model, the user will proceed to the custom batik order details page. The user is required to input information about to the clothing model, fabric composition, quantity of orders, size specifications, and the desired number of batik orders in specified sizes. Figure 5 shows the presentation of the detailed information page.

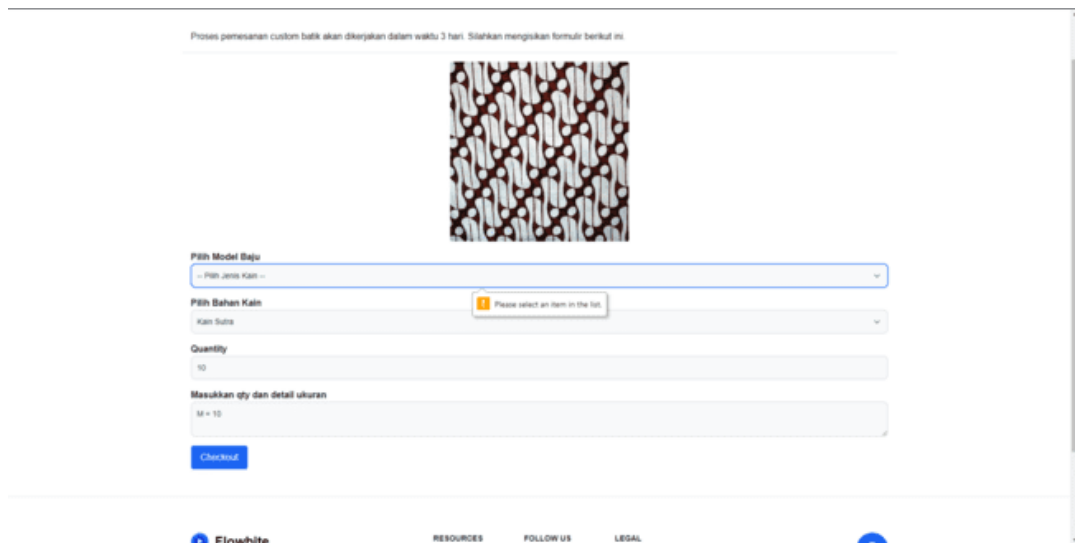


Figure 5. Custom batik detail feature page.

If the user has provided the necessary information, proceed to the payment page. The system additionally delivers a notification when the user intends to proceed with the checkout process. This aims to ensure that users accurately complete the process of purchasing their customized batik products. Upon selecting the "yes" button, the user will be directed to the payment choices and successfully finalize the order. Figure 6 illustrates the appearance of the custom batik checkout page..

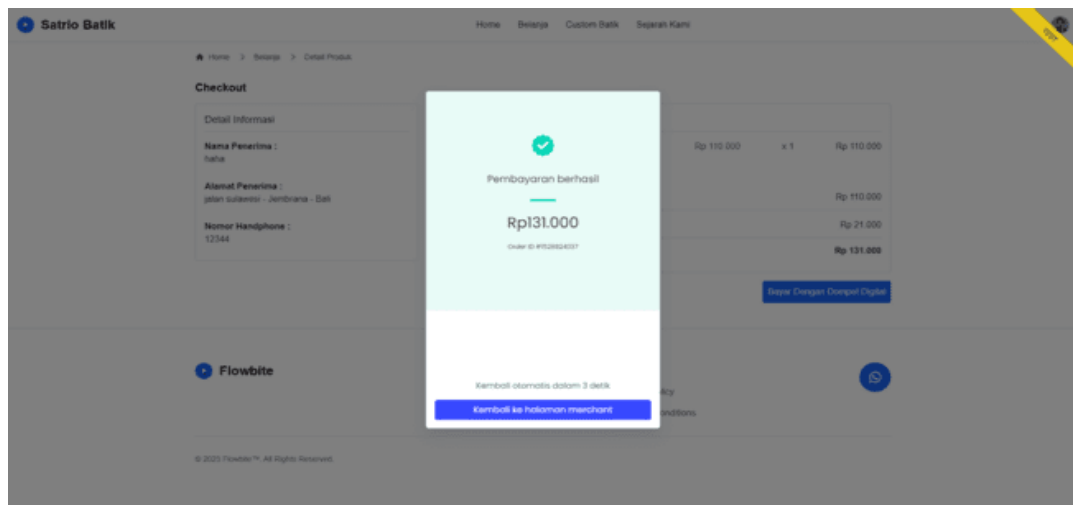


Figure 6. Checkout features page.

The features that will be verified on display for users are the registration, login, product order, custom batik, resource management, and goods return application features. The admin interface will verify the following features: adding a product, changing a product, deleting a product, generating sales reports, and displaying a list of product return applications. The critical aspects to evaluate are the payment and ordering functionalities for personalized batik items.

This payment page utilizes a payment gateway provider. Payment gateways facilitate making payments, such as ShopeePay, Virtual Bank Accounts, Gopay, Credit Cards, and other digital payment methods. Upon completion of the user's payment, the system will present a notification indicating the successful completion of the transaction.

DISCUSSION

The sales information system in Batik Satrio Manah provides special services, namely custom batik and return of goods. Verification is carried out in the order return confirmation feature. The admin can see a list of orders that will be returned by the buyer on the sales report page. When confirming an order return, the admin is required to press the details button on the sales report. After pressing the detail button, the admin will be given information regarding the product to be returned along with the reasons and proof of the product being returned as in the picture. The display of the verification message is illustrated in Figure 7.

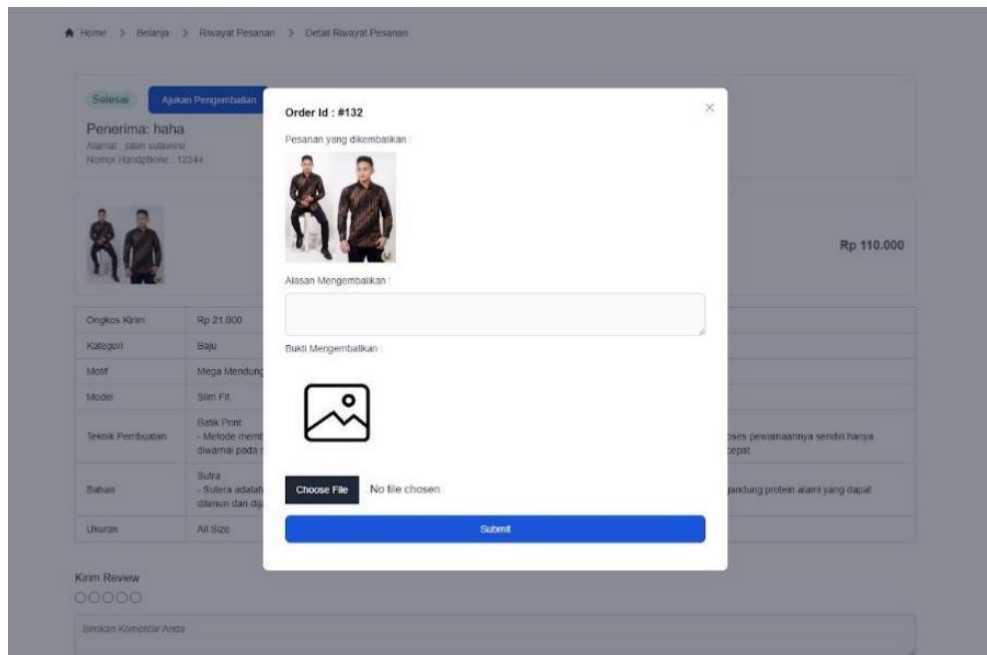


Figure 7. Order Return Submission Display.

The administrator may decline to refund a purchase if the submitted evidence is deemed inappropriate or unsuitable for the administrator to consider. When the administrator determines that the proof presented by the buyer is adequate to warrant the return of the order, they are obligated to click the confirmation icon. The confirmation button triggers a verification message from the system when the administrator clicks it. The display of the verification message is illustrated in Figure 8.

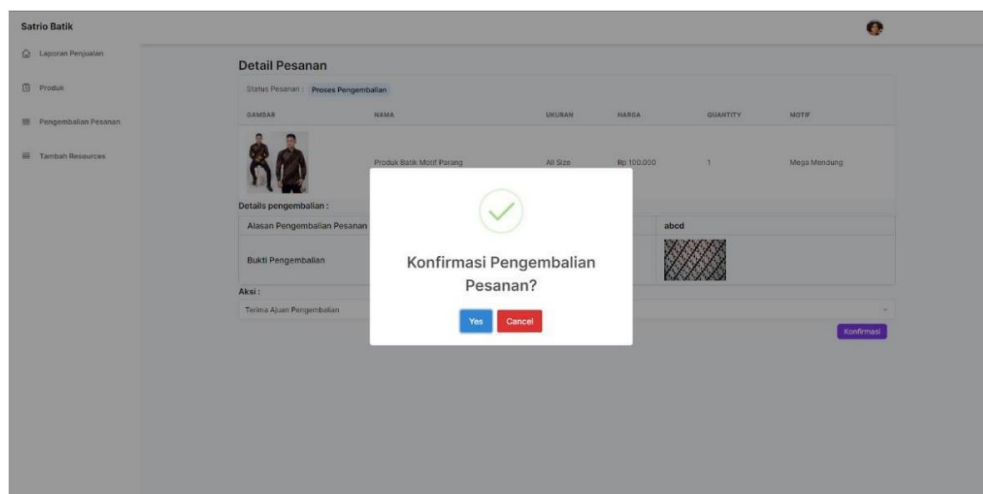


Figure 8. Order Return Confirmation Verification Display.

The custom order feature commences with uploading the batik model, after which the user will go to the page where they can specify the details of their custom batik order. The user is required to input information about the clothing model, fabric composition, quantity of orders, size specifications, and the desired number of batik orders in specified sizes. This page displays a notification when the user is required to enter the necessary information, as seen in Figure 9.

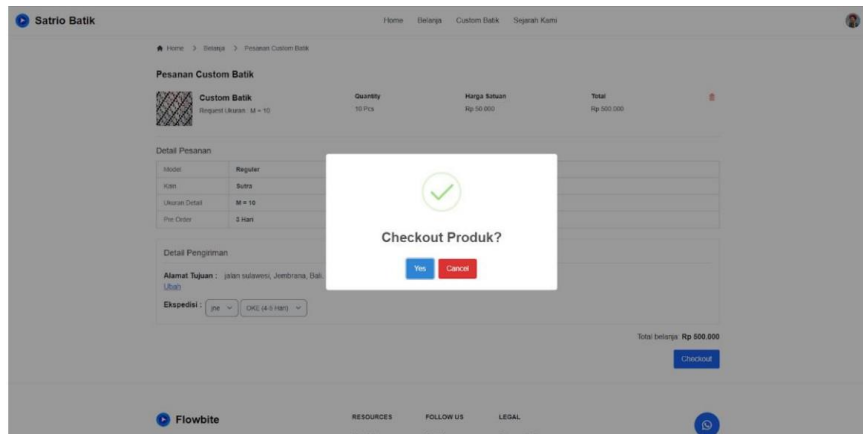


Figure 9. Custom Batik Checkout Page Order Display

Following the installation, a verification process is conducted on the Batik Satrio Manah website that has been developed, along with an assessment of the trial outcomes. The validation process was obtained by interviewing several users who participated as potential buyers. The questions asked to the owner of Batik Satrio Manah were about the store management administration system and the management of the materials used to make batik products. Meanwhile, the questions asked to potential buyers are about the use of the system as a whole and related to the core features created. System validation was conducted on a sample of 27 participants through a direct demonstration of the application. Following the demonstration, participants were requested to complete the provided questionnaire. The respondents were administered single-choice questions arranged on a 5-point Likert scale. The purpose of these questions was to gauge the respondents' perspectives on the developed application. Table 1 presents a summary of the questionnaire responses that were provided to 27 respondents.

Table 1
Validation Result

No.	Component	1	2	3	4	5
1.	Design the overall appearance of the application				51.9%	48.1%
2.	Complete features provided by the application				55.6%	44.4%
3.	Ease of ordering custom batik products on the application			3.7%	44.4%	51.9%
4.	Ease of payment provided by the application			33.3%	66.7%	33.3%
5.	The importance of security factors and convenience in online transactions				37%	63%
6.	The use of the review feature in determining which batik to buy			3.7%	44.4%	51.9%
7.	Using the return request feature can help return orders		3.7%	48.1%	48.1%	3.7%
8.	Ease of operating the features provided by the application				44.4%	55.6%

Note: 1:Strongly Disagree; 2:Disagree; 3:Fairly Agree; 4:Agree; 5:Strongly Agree

CONCLUSION

Based on the results of the verification and validation tests described in the preceding chapter, it can be concluded that: (a) Sales information systems facilitate consumer purchases by providing an online platform, (b) The primary focus of this system is the sale of batik products, offering buyers comprehensive information on the materials and designs used in batik, (c) The system's features facilitate the management of batik sales for Batik Satrio Manah and aid buyers in placing orders, (d) This system allows consumers to place orders for batik in personalized dimensions, (e) Customers can return things if the goods they receive do not correspond with the system's records, (f) Batik Satrio Manah may efficiently obtain monthly sales, inventory, and profitability reports.

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