IT Management Shapes Marketing Using React Native at Gold Konveksi

Sepsa Nur Rahman[1], Yesri Elva*[2], Hezy Kurnia[3]
[1]Sistem Komputer, FILKOM, Universitas Putra Indonesia YPTK Padang
[2]Teknik Informatika, FILKOM, Universitas Putra Indonesia YPTK Padang
[3]Sistem Informarsi, FILKOM, Universitas Putra Indonesia YPTK Padang
e-mail: [1]sepsanurrahman@upiyptka.ac.id, [*2]y3sri3lva@gmail.com,
[3]hezykurnia@gmail.com

Abstract

Gold Konveksi is a small and medium-sized enterprise (SME) engaged in the garment industry that has not yet fully utilized technology in its marketing and product promotion. As a result, Gold Konveksi's market reach has been limited. This study aims to analyze the responses from questionnaires completed by respondents, with a specific focus on respondent profiles to generate brief demographic information. The objective of this study is to assess the readiness of both employees and customers of Gold Konveksi towards the adoption of new technology. The methods used in this research include data collection through questionnaires filled out by 247 respondents. The validity and reliability of the questionnaire instruments were tested using SPSS data processing. The validity test involved applying the r-value formula, compared to the r-table value, to determine validity. The reliability test was conducted using Cronbach's Alpha value compared to the reliability threshold. Additionally, the Technology Readiness Index (TRI) was calculated to measure user readiness in adopting new technology. The results of the study indicated a high level of readiness among users. The program interface was evaluated, and system testing was conducted using black box testing to ensure its functionality. Overall, the findings of the research show a high level of readiness among users to adopt new technology, which is expected to enhance transactions and sales data recording at Gold Konveksi.

Keywords—Black Box Testing, Gold Konveksi, React Native Framework, Technology Readiness Index, New Technology

1. INTRODUCTION

The Rapid Development of technology has ushered humanity into an era where we coexist with information and technology [1]. The utilization of information technology aims to achieve efficiency in various aspects of information management, as evidenced by the speed and timeliness of processing, as well as precision and accuracy [2]. However, some stores or SMEs do not fully utilize technology in their sales, one of which is Gold Konveksi. Based on observations, the management of trade goods at Gold Konveksi still does not use technology in marketing or promotion. As a result, Gold Konveksi's market has not been able to reach various regions.

There is a need for technology that can help develop Gold Konveksi's market. The purpose of this goods management system is to facilitate merchants who own the store to sell products online and conduct goods transactions using smartphones, especially Android smartphones. Android smartphones are one of the technologies owned by many people in Indonesia because of their affordable prices [3]. In this advancing digital era, information technology (IT) has become an integral part of almost every aspect of human life, including in the business world [4]. Implementing IT Business Management in forming marketing strategies

is crucial to helping companies optimize their business potential[5]. One framework that can be utilized in implementing IT Business Management is React Native, an open-source framework.

Several previous studies have used the React Native framework. For instance, [6] developed the Me-List application, which is used to record important activities. The Me-List application was tested using the SUS and received a positive response from respondents. In addition, Me-List was also tested using black box testing, and it was found that the entire system functioned well. Another study by [7] utilized the React Native framework for a sewing service application. The results showed that all features worked well, as tested through black box testing, making the application suitable for tailoring customers in Batam City. Moreover, this application also served as a promotional medium. Another research by [8] used this framework to build a point-of-sale distro management system application, which also ran well after being tested using black box testing.

Using the React Native framework has proven effective in several projects. Therefore, this research also employs this framework. React Native is a JavaScript-based framework used for developing mobile applications. It is an open-source framework, allowing developers to contribute as long as they follow community guidelines. This community can be advantageous for novice developers to share experiences, learn, and improve their skills. Additionally, it can serve as a resource for solving problems encountered when using React Native [9]. Thus, application development at Gold Konveksi can utilize this framework for effective marketing strategies to expand market share and increase sales.

In implementing IT Business Management, Gold Konveksi needs to conduct a comprehensive analysis of the needs and challenges faced in marketing strategies. This involves understanding the target market profile, current fashion trends, and consumer needs and desires. By knowing these aspects, the company can develop appropriate marketing strategies, such as identifying the most demanded products, determining competitive prices, and selecting effective distribution channels.

Furthermore, the implementation of IT Business Management can help Gold Konveksi optimize the use of technology to expand its marketing reach. In this regard, using the React Native framework can be an effective solution. React Native allows companies to develop mobile applications accessible to consumers through their smartphones [10]. By having a mobile application, Gold Konveksi can provide a more convenient and seamless shopping experience for consumers, thus enhancing consumer loyalty and increasing sales. Additionally, implementing IT Business Management can help Gold Konveksi manage the necessary data and information for making strategic decisions.

Before implementing this application, user readiness will be measured using the Technology Readiness Index (TRI) model. TRI is an index used to measure users' readiness for new technology [11]. TRI utilizes a series of belief/confidence statements in surveys to comprehensively measure the level of technology readiness of individuals, including Optimism, Innovativeness, Discomfort, and Insecurity [12]. By measuring users' readiness, the built application can be easily used by users. Additionally, this research will ensure that all features function properly by using black-box testing. Thus, it can be concluded that the implementation of IT Business Management utilizing the React Native framework can be the right solution for Gold Konveksi in forming effective marketing strategies. By understanding the needs and challenges, optimizing technology usage, and managing data and information effectively, the company can increase sales, expand market share, and achieve success in the garment business.

2. RESEARCH METHODS

Figure 1 shows the flow of the research methodology used as a guide in conducting this research.

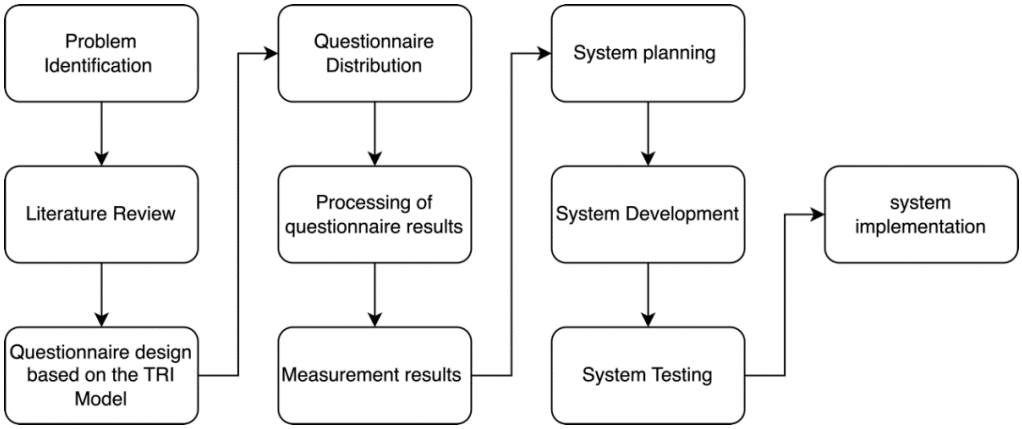

Figure 1. Research Methodology

2.1. Problem Identification

Identifying the problem is a crucial first step in any research process. Based on direct observations at Gold Konveksi, it was found that management still relies on manual record-keeping in ledgers, which are then input into Microsoft Excel. This process is time-consuming and inefficient. This indicates that the existing management system is not optimal and requires a more effective technological solution. To address this issue, this research aims to develop a more effective inventory management system using the React Native framework and to assess user readiness for adopting new technology. This assessment will be conducted through data collection using a questionnaire designed based on the Technology Readiness Index (TRI) model. By testing the validity and reliability of the questionnaire and analyzing respondent data, it is expected to determine the level of user readiness for adopting new technology.

2.2. Questionnaire

Table 1 is a questionnaire that has been designed based on the Technology Readiness Index (TRI) Model.

Table 1. TRI Questionnaire

Variable	Statement
Optimism (OPM)	1. This system is more efficient in purchasing goods at Gold Konveksi.
	2. This system can be used anywhere, so there is no need to visit Gold Konveksi.
	3. This system can provide better shopping satisfaction compared to traditional purchasing systems.
Innovativeness (IVS)	4. Many people ask me about the system used to purchase goods at Gold Konveksi.
	5. I can learn this system quickly.
	6. I can use this system without the help of others.
Discomfort (DCF)	7. This system is difficult to understand.
	8. I feel embarrassed when using this system in front of others because I cannot use it properly.
	9. I trust the traditional way more than using this system at Gold Konveksi.
	10. I dare not use this system before others use it because I am afraid of negative consequences for me.
	11. Sometimes I feel this system is only for those who understand technology.
Insecurity (IST)	12. I am worried that my data can be viewed and altered by others.
	13. I prefer traditional methods at Gold Konveksi because they are safer.
	14. Every time I purchase goods, I always have to double-check to ensure this system does not make mistakes.

Each variable is measured through statements designed to evaluate specific aspects of the users' technology readiness. Statements under the Optimism and Innovativeness variables tend to be positive, indicating a positive attitude toward the technology. Conversely, statements under the Discomfort and Insecurity variables tend to be negative, indicating potential barriers to technology adoption. Respondents are asked to provide their responses using a Likert scale with five response options, ranging from "Strongly Agree" to "Strongly Disagree."

2.3. Questionnaire Results

After the questionnaires are distributed and completed by the respondents, the collected results will be analyzed through validity and reliability tests. The validity test is conducted to ensure that the questionnaire effectively measures the intended constructs. This test uses Pearson's product-moment correlation formula to validate the questionnaire items [13].

$$r_{calculation} = \frac{n(\sum XY) - (\sum X)(\sum Y)}{\sqrt{\{n.\sum X^2 - (n.\sum X)^2\}\{n.\sum Y^2 - (\sum Y^2)\}}} \quad (1)$$

Where:

n : Number of data pairs X and Y.
ΣX : Total sum of Variable X.
ΣY : Total sum of Variable Y.
ΣX2 : Square of the total sum of Variable X.
ΣY2 : Square of the total sum of Variable Y.
ΣXY : Result of the multiplication of the total sum of Variable X and Variable Y.

Next, reliability testing is used to measure the consistency of the questionnaire, which is an indicator of the variables. A questionnaire is considered reliable if an individual's responses to the questions are consistent or stable over time. To assess this consistency, Cronbach's Alpha value is used and compared with the reliability threshold [14].

$$\alpha = \frac{k}{k-1}\left(1 - \frac{\sum S_i^2}{S_t^2}\right) \quad (2)$$

Where:
k: Number of items in the questionnaire
$\sum S_i^2$: Sum of the variances of each item
S_t^2: Total Variance of the test scores

Additionally, to assess user readiness, the Technology Readiness Index (TRI) value is calculated using the following equation [15]:

1. Statement Weight:
   Each variable in the questionnaire has several statements to be measured. The weight for each statement is calculated as follows:

   $$\text{Statement Weight} = \frac{25\%}{\sum \text{Statement variable}} \quad (3)$$

   Where 25% is the fixed weight given to each main variable (Optimism, Innovativeness, Discomfort, Insecurity).

2. Statement Value:
   The statement value is calculated by summing the scores from all respondents for that statement and then dividing by the number of respondents:

   $$\text{Statement Value} = \frac{\sum(\text{Number of respondent x Response Score})}{\text{Number of response}} \quad (4)$$

   Where:
   $\sum(\text{Number of respondent x Response Score})$ is the total score obtained from all respondents

for that statement.
The number of Respondents is the total number of respondents who answered the questionnaire.

3. Variable Value:
   The variable value is obtained by summing the values of all statements included in that variable:

$$\text{Variable Value} = \sum \text{Statement Value} \quad (5)$$

4. TRI Value:
   The TRI value is the sum of the values of all variables. This provides an overall picture of the respondents' technology readiness:

$$\text{TRI Value} = \sum \text{variable Score} \quad (6)$$

The readiness level categories in the application of the Technology Readiness Index developed by [16] are:

a. Low Technology Readiness: if TRI =< 2.89.
b. Medium Technology Readiness: if TRI 2.90 =< TRI =< 3.51.
c. High Technology Readiness: if TRI > 3.51.

Using these formulas, we can calculate the level of technology readiness of users in adopting a new system. This process involves evaluating each statement in the questionnaire, calculating the average value for each variable, and finally combining them to obtain the overall TRI value.

2.4. System Design

After obtaining the results from the readiness analysis, the next step is to design the system. The system design aims to ensure that the developed system will meet the desired expectations and effectively address the identified problems at Gold Konveksi. This process begins with a detailed requirements analysis to identify the specific needs of Gold Konveksi and gather information on the functionalities required by the users to manage their operations more efficiently. Subsequently, a system architecture is developed to outline the components of the system and their interactions, including the overall structure of the system, such as database design, user interface, and application logic.

The design process also involves creating use case diagrams to represent the interactions between users and the system, identifying and documenting various use cases that describe how users will interact with the system to perform specific tasks. User interface design is crucial to ensure that the system is user-friendly and intuitive, involving the development of wireframes and prototypes to visualize the layout and functionality of the system. Additionally, the technical specifications of the system are defined, including hardware and software requirements, and selecting appropriate technologies and frameworks for system development, such as the React Native framework for mobile applications.

2.5. System Development and Testing

The system development and testing stage involves the actual implementation of the IT management system at Gold Konveksi. The development process follows the design specifications, implementing the required functionalities using the chosen technologies and frameworks while adhering to best practices and coding standards. Thorough testing is conducted to ensure the system functions as expected, with a focus on black box testing to validate the

system's functionality without examining the internal code structure. Black box testing emphasizes the input and output of the system to verify its behavior.

Test scenarios and test cases are developed to cover all aspects of the system's functionality, including user login, product management, order processing, and data security. Any bugs or issues identified during testing are fixed, and the system is optimized for performance to ensure it runs efficiently and effectively. User acceptance testing (UAT) is conducted to gather feedback from actual users, with necessary adjustments made based on user feedback to improve the system's usability and functionality. This comprehensive approach to system development and testing aims to create a robust and reliable system that meets the needs of Gold Konveksi, enhancing their operations and improving overall efficiency.

3. RESULT AND DISCUSSION

The first step is to analyze the responses in the questionnaire filled out by the respondents, specifically focusing on the respondent profile section to generate brief demographic information. This is done to assess the readiness of both Employees and Gold Konveksi customers. The data collected by the researcher at present amounts to 247 respondent data. The results of the questionnaire were generated through SPSS data processing. The study tested 14 questionnaire instruments. Then, the questionnaire items were tested using the r-value formula, with the criterion that if the r-value > r-table, it is considered valid, and vice versa [17]. In this study, the number of samples tested was 17 respondents. The r-table value with a 5% level of significance from 17 respondents is 0.482. Table 1 shows the validity results obtained using SPSS.

Table 1. Validity Results

No	$r_{calculation}$	r_{table}	Explanation
1	0.370	0.138	Valid
2	0.420	0.138	Valid
3	0.365	0.138	Valid
4	0.417	0.138	Valid
5	0.340	0.138	Valid
6	0.460	0.138	Valid
7	0.410	0.138	Valid
8	0.515	0.138	Valid
9	0.469	0.138	Valid
10	0.416	0.138	Valid
11	0.530	0.138	Valid
12	0.620	0.138	Valid
13	0.519	0.138	Valid
14	0.650	0.138	Valid

Table 2 shows the results of the validity test for 14 questionnaire items tested on 247 respondents. The $r_{calculation}$ column represents the Pearson correlation values obtained from the test results, while the r_{table} column represents the critical values from the r table for a given number of respondents at a 5% significance level. A questionnaire item is considered valid if the $r_{calculation}$ value is greater than the r_{table} value.

In this study, the number of samples tested is 17 respondents. The r table value with a 5% significance level for 17 respondents is 0.138. Based on the results shown, all items have $r_{calculation}$ values greater than the r_{table} value, so all questionnaire items are declared valid. As explained by [18], the construct validity of the self-concept scale for students is measured similarly.

Reliability testing is conducted to measure the consistency of the questionnaire, which is an indicator of the variables. A questionnaire is considered reliable if an individual's responses to the questions are consistent or stable over time. [19] state that the reliability of an instrument can be measured using Cronbach's Alpha value compared to the reliability threshold [20]. Table 3 presents the findings from the reliability assessment.

Table 3. Reliability Results

Reliability Statistics	
Cronbach's Alpha	N of Items
.729	14

3.1. TRI Value Test

The calculation of the Technology Readiness Index (TRI) value is performed by combining the average values of each variable measured in the questionnaire. These variables include Optimism (OPM), Innovativeness (IVS), Discomfort (DCF), and Insecurity (IST). Each variable contains several statements evaluated by respondents using a Likert scale.

The first step is to calculate the average value for each statement within each variable. The following table shows the average values for each statement in each variable.

Table 4. TRI Test Result per Variable

NO	VARIABLE	TOTAL VALUE	AVERAGE	AVERAGE OF VARIABLES	CATEGORY
1	OPM1	979	3,80	3,89	HIGH
2	OPM2	978	3,99		
3	OPM3	980	3,88		
4	IVS1	977	3,89	3,91	HIGH
5	IVS2	980	3,97		
6	IVS3	977	3,88		
7	DCF1	939	3,79	3,83	HIGH
8	DCF2	949	3,77		
9	DCF3	964	3,83		
10	DCF4	938	3,75		
11	DCF5	987	3,99		
12	IST1	933	3,70	3,77	HIGH
13	IST2	965	3,84		
14	IST3	939	3,78		

From Table 4, it can be observed that users' readiness to adopt new technology is highly prepared. Users' readiness can be seen from the average score across all variables, ranging from 3.77 to 3.89, indicating a high category. With a high category score, it means that all users are ready to embrace new technology. Following the examination of variables, the next step is to measure all variables to obtain the TRI value. The average score of variables obtained in Table 4 is then divided by 25% [21]. The resulting values can be seen in Table 5.

Table 5. Overall TRI Test Results

NO	VARIABLE	AVERAGE	CATEGORY
1	OPM	0,97	HIGH
2	IVS	0,98	
3	DCF	0,96	
4	IST	0,94	
Total TRI Value		3,85	HIGH

From Table 5 it can be concluded that the overall score of system users is categorized as high in terms of acceptance of new technology. With this testing, the process of implementing the system at Gold Konveksi is expected to be able to increase sales at the store.

3.2. System Planning

The system Planning phase aims to ensure that the developed system will meet the desired expectations and effectively address the identified problems at Gold Konveksi. This phase includes the following steps:

1. Requirements Analysis
   Conduct a detailed analysis to identify the specific needs of Gold Konveksi. Gather information on the functionalities required by the users to manage their operations more efficiently.
2. System Architecture:
   Develop a system architecture that outlines the components of the system and their interactions. Define the overall structure of the system, including the database design, user interface, and application logic.
3. Use Case Diagrams:
   Create use case diagrams to represent the interactions between users and the system. Identify and document various use cases that describe how users will interact with the system to perform specific tasks. The following is a use case diagram for the system management at Gold Konveksi, illustrating the interactions between users and the system:

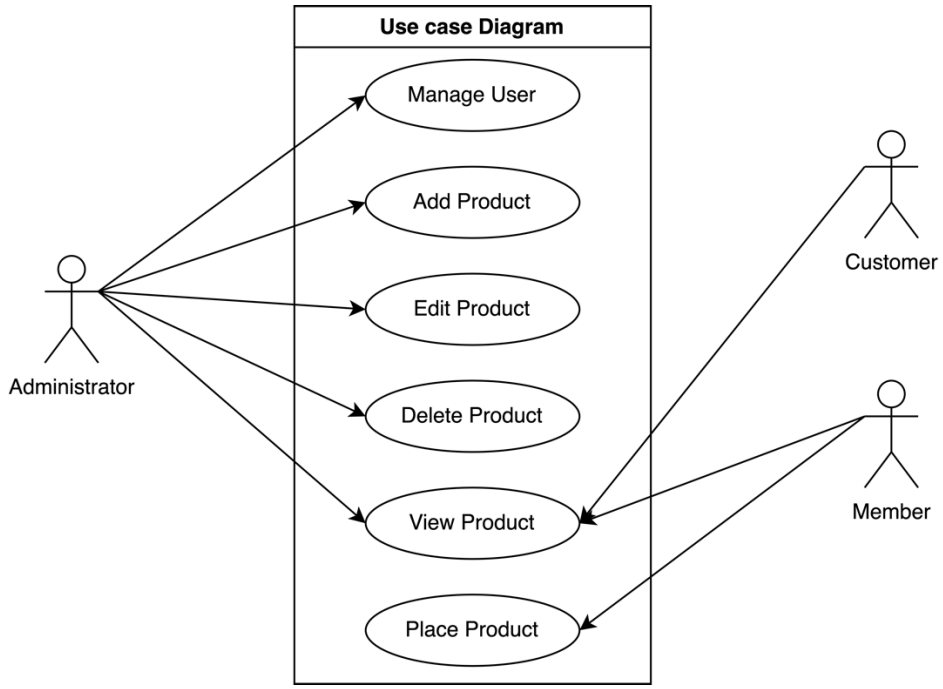

Figure 2. Use case Diagram

Explanation of Use Case Diagram:

1. Administrator
   Manage Users: Add, edit, or remove users from the system.
   Add Product: Add new products to the system.
   Edit Product: Edit existing product details.
   Delete Product: Remove products from the system.
   View Product: View the list of available products.
2. Customer:
   View Product: View the list of available products.
3. Member:
   View Product: View the list of available products.
   Place Order: Place an order for products.

This use case diagram provides a visual representation of the interactions between different types of users and the system, highlighting the main functionalities available to administrators, customers, and members.

4. User Interface Design:
   Design the user interface to ensure it is user-friendly and intuitive. Develop wireframes and prototypes to visualize the layout and functionality of the system.
5. Technical Specifications
   Define the technical specifications for the system, including hardware and software requirements. Choose appropriate technologies and frameworks for system development, such as the React Native framework for mobile applications.

3.3. Program Interfaces

The development of the program interface is crucial for ensuring that the system is user-friendly and meets the needs of its users. The interface design focuses on creating an intuitive and efficient user experience. The main components of the interface include the homepage, product listing page, add product page, and order page.

The homepage serves as the initial interface when users access the mobile sales platform. On the homepage, users can find options for available products, product features, information on the latest products, and a sign-up menu used for registering as a member of the online marketplace. The homepage design aims to provide users with a seamless and welcoming entry point to the application.

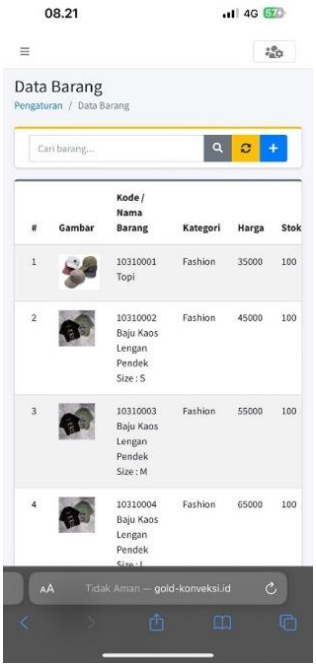

Figure 3. Homepage

The product listing page allows users to view a list of products available on the sales website based on the selected categories. This page includes navigation displaying various menu options provided for administrators, including add, view, edit, and delete functionalities. The design of this page ensures that users can easily find and manage products.

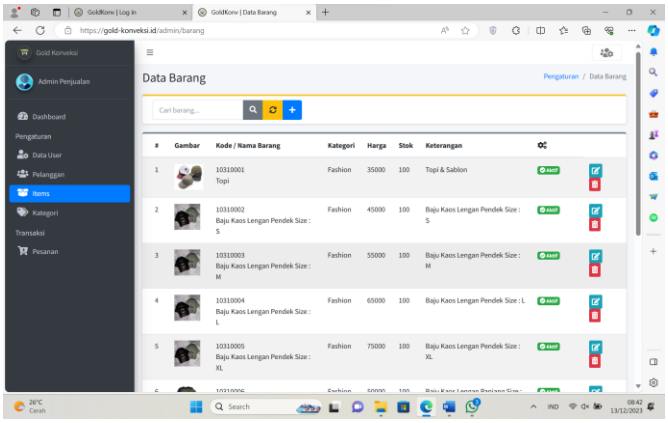

Figure 4. Product Listing Page

The add product page enables administrators to add new products to the system. This page includes fields for entering product details such as name, description, price, and category. The design focuses on simplicity and ease of use to facilitate quick and accurate product additions.

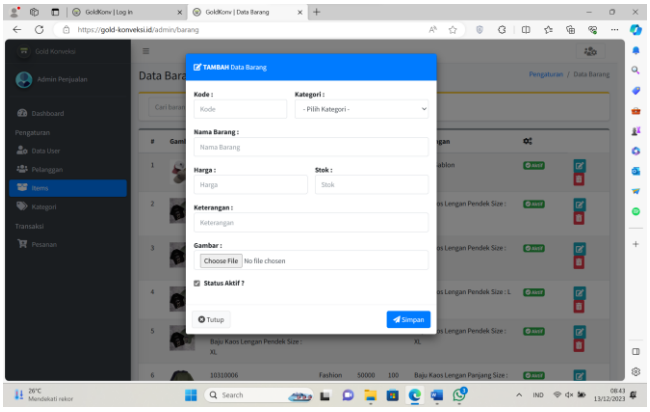

Figure 5. Add Product Page

The order page provides a form used by members to place orders for specific sales items. This page ensures that users can easily complete the purchase process, providing necessary details such as quantity, delivery address, and payment method. The design aims to streamline the ordering process and enhance user satisfaction.

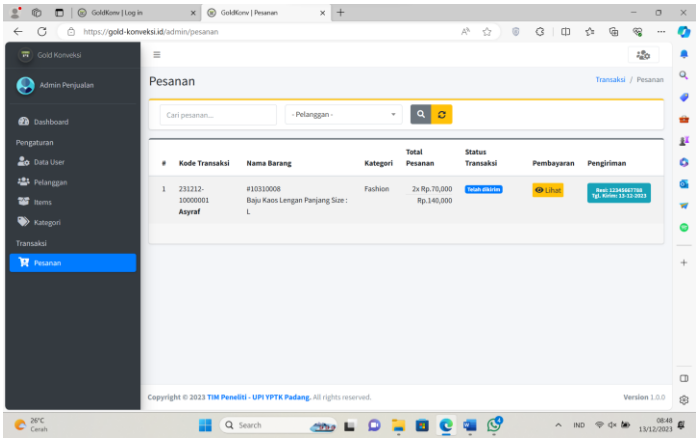

Figure 6. Order Page

3.4. System Testing

Table 6 shows the results of testing using black box testing. Black Box Testing focuses on the functional specifications of the software, where testers can define a set of input conditions and test them against the functional specifications of the program [22].

Table 6. Black box Testing

No	Test Case	Test Steps	Expected Result	Actual Result	Status
1	Login	1. Input username and password 2. Click login button	The user successfully logs in	The user successfully logs in	Passed
2	Add Product	1. Navigate to add product page 2. Input product details 3. Click submit button	The product is added to the system.	The product was added to the system.	Passed
3	Edit Product	1. Select product to edit 2. Modify product details 3. Click save button	Product details are updated.	Product details were updated.	Passed
4	Delete Product	1. Select product to delete 2. Click the delete button 3. Confirm deletion	The product is removed from the system	The product was removed from the system	Passed
5	View Product List	Navigate to the product list page	A list of products is displayed	A list of products was displayed	Passed
6	Place Order	1. Select product to order 2. Input order details 3. Click order button	Order is placed successfully	The order was placed successfully	Passed
7	User Registration	1. Navigate to the registration page \ 2. Input user details 	The user is registered successfully	The user was registered successfully	Passed
8	Logout	Click logout button	The user is logged out successfully	The user was logged out successfully	Passed

Table 6 shows the results of Black Box testing for various test cases examined in the system. Black Box testing focuses on the functional specifications of the software, where the tester only checks the input and output without looking at the internal code of the system. In this table, each test case is assigned a sequential number and a description of the function or feature being tested. The test steps include the input provided and actions taken by the tester. The expected result for each test case is recorded to ensure the system functions correctly. The actual result obtained during testing is also recorded to compare with the expected result. The status of each test indicates whether the test case passed or failed.

The test cases tested include login, adding a product, editing a product, deleting a product, viewing the product list, placing an order, user registration, and logout. The test results show that all tested functions worked as expected, with all test cases marked as "Passed." This indicates that the system functions according to the specified requirements and is ready for use.

4. CONCLUSION

This study successfully analyzed the responses from 247 respondents to assess the readiness of employees and customers of Gold Konveksi to adopt new technology. The validity and reliability testing of the questionnaire instruments confirmed their suitability for this research. The Technology Readiness Index (TRI) indicated high readiness among users. The program interface proved to be user-friendly and functional. System testing using black box testing yielded positive results, confirming the system's functionality. Overall, the research findings suggest that

the implementation of the system is expected to enhance transactions using this system so that sales data can be well recorded.

From this research, various aspects can be developed, including technology, customer service, further research, training and education, and industry collaboration. The findings of this study provide a solid foundation for enhancing systems and services, as well as expanding understanding of technology adoption in the garment industry.

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