Web-Based Smart Market Applications as a Preference Transition during COVID-19 Pandemic

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Abstract. The Smart Market application is a web application that useful for making easier of traders and consumers to carry out buying and selling activities in the midst of the COVID-19 pandemic. In advances technology, it is very relevant to implement website-based buying and selling which is quite easy to reach. Hence these activities become more practical and efficient by online without leave the house and it can be seen by the wider community. Another advantage is that the public can see product price updates so that they can find out the price and prevent the market price of raw materials which tends to fluctuate and become a big government homework that never ends. With the increasingly competitive market competition, the Smart Market system was built to maintain the existence of traditional markets and retain customers who tend to like to shop online. The system has been built by proposing research methodologies including, analysis, design, implementation, and testing. The system has been tested to see the ability using black box techniques and it is found that all features have been running well in accordance with the expected results.

Keywords: Smart Market; Covid-19 pandemic; Web Application; Shopping Wisely.

1 Introduction

According to governments in various parts of the world, the Covid-19 pandemic is to limit crowds to prevent the spread of the Covid-19 virus, including the Indonesian government [1]–[4]. The virus that began to be detected in Indonesian territory in early March 2020 made the Indonesian government take several policies to reduce the number of crowds in the community[5][6]. The large-scale social application is the first policy taken by the Indonesian government to break the chain of the spread of COVID-19. This policy has an impact on several sectors ranging from education [7]–[12], economic [13]–[15], society[16][17], offices [17]– [20]and traditional traders are no exception [21]. Traditional traders feel the effects of this policy the most, ranging from operational restrictions, reduced consumers, difficulty in accessing middlemen to a significant decline in turnover. This happens because the majority of traditional traders have not been able to adapt to technological developments which is one of the strategic choices to survive in the midst of a pandemic. The pandemic has also harmed some housewives who are often confused by the price of basic commodities in the market which tends to fluctuate on the grounds that basic goods are scarce or market traders rarely sell. Other findings, as do observations of a wide range of online shop platforms, is very rare traders in traditional markets. This is different from the modern market/supermarket which is becoming available on well-known online shopping platforms. The opportunities for traditional traders which are quite large have not been able to be optimized properly because there is no available container. Based on problems that have been formulated, we propose a web-based system with the title Smart Market.

This study aims to define and explain in more detail about the web-based application smart market which aims to make it easier for sellers to market or sell their products to a wider range of consumers. As well as educating the public that finding basic food materials can be made easier by using a web-based application smart market. In this web-based smart market application, it will also always be updated in displaying the price per product. So it is very useful for consumers to find out whether or not there is a price spike. The development of this system is expected to be a consideration, especially for traders because with the existence of a smart market system, traders or sellers can expand their marketing scope so that they can get more consumers. Apart from that, it is also beneficial for consumers, such as housewives, in fulfilling their daily needs. As for related agencies, it can be used as a guideline for the price range in the market so as to minimize fraud in raw material prices.

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2 Methodology

The development of this system implements several stages that are carried out. In general, the details of the work can be seen in Figure 1.

![Methodology Diagram](image)

**Fig. 1. Research Methodology.**

The stages applied are the stages commonly used in system development including analysis, design, implementation, and testing. First, it begins with formulating the functional and non-functional requirements of the system to underlie development. Both formulations are carried out at the analysis stage. Based on the functional requirements, a system design is built which is a blueprint for the system procedure map, it can also describe the activities of the system, actors, and the relationship between them. The conversion of the mapping into the selected programming language is carried out at the implementation stage. To find out all the functions are running well, it needs to be tested.

3 Results and Discussion

3.1 Analysis

This stage describes the system to be developed. The result is a needs analysis which writes down the activities in the system that are needed by the user [22]. Two requirements are described, namely functional requirements and non-functional requirements which are shown in Table 1 and Table 2

<table>
<thead>
<tr>
<th>Table 1. Functional Requirement</th>
</tr>
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<tbody>
<tr>
<td>Feature</td>
</tr>
<tr>
<td>Logout</td>
</tr>
<tr>
<td>Login</td>
</tr>
</tbody>
</table>

3.2 Design

Use case diagram is chosen as a diagram that represents the relationship between the system and the user[23][24]. Users are divided into 3 permissions, namely users, customers, and admins. Each actor has different permissions in the system which can be seen in Figure 2.

![Use Case Diagram](image)

**Fig. 2. Usecase Diagram**
3.3 Implementation

Implementation of the system using web-based programming languages such as PHP, CSS, JavaScript and several other supporting application programs. The application is run using a browser with a user friendly interface.

Fig. 3. Home page

Figure 3 is the home page where there are all available menus in Smart Market and on this page there is also a search feature to find the items needed and categories that function to filter products by type. Figure 4 shows the cart page, it can be seen that the selected product will be on this page accompanied by the quantity, price, total product. If the shopping process has been completed and the user wants to pay, the user will be redirected to the check page to make a transaction. The checkout page is shown in Figure 5.

Fig. 4. Cart page

Fig. 5. Checkout page

3.4 Testing

The test is done by choosing the black box technique. This technique tests the functional requirements features that have been running according to the expected results.

Table 3. Black Box Testing

<table>
<thead>
<tr>
<th>Feature</th>
<th>Expected Result</th>
<th>System Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logout</td>
<td>Displays login page</td>
<td>✓</td>
</tr>
<tr>
<td>Login</td>
<td>Displays the home page</td>
<td>✓</td>
</tr>
<tr>
<td>Home</td>
<td>Displays product details</td>
<td>✓</td>
</tr>
<tr>
<td>Product Category</td>
<td>Displays products filtered by type</td>
<td>✓</td>
</tr>
<tr>
<td>Search</td>
<td>Displays products by keyword</td>
<td>✓</td>
</tr>
<tr>
<td>Cart</td>
<td>Displays purchased products along with product details</td>
<td>✓</td>
</tr>
<tr>
<td>Checkout</td>
<td>Displays transaction process</td>
<td>✓</td>
</tr>
</tbody>
</table>

4 Conclusion

This application is a smart market application for online shopping for daily needs during the pandemic. The application has been successfully built by applying the proposed research methodology. Predefined functional requirements with several features include, login, logout, homepage, product category, search, cart, and checkout. In addition, non-functional aspects such as aspects of the operating system, security, interface, and system capabilities are also considered. Based on the needs analysis, the system is designed and implemented on a web-based basis. The system has been tested using the black box technique and it is known that all functions have been running well.

References


