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Research Article

Designing A Website-Based Spice and Spice Sales Application using the Prototype Method

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Abstract

Online marketplaces have become one of the main platforms in modern commerce, facilitating accessibility and convenience for consumers to purchase goods online. In this context, this study aims to design a website-based application for selling herbs and spices using the prototype method. This method was chosen because it allows developers to iteratively develop the features of the application based on feedback from users. This research describes the process of designing a website-based application with a focus on optimal user experience. Through the stages of needs analysis, conceptual design, and prototype implementation, this application was developed to meet the needs of users in shopping for herbs and spices online. Users will have easy accessibility through an intuitive and responsive interface, as well as features such as product search, shopping cart, and secure payment processing. The results of this research are expected to contribute to the development of e-commerce, especially in the sales sector of herbs and spices. By utilizing the prototype method, developers can identify user needs more effectively and produce applications that are more in line with market expectations. In addition, this research can also be a foundation for advanced research in the development of more complex and integrated e-commerce applications.

Keywords: Herbs and spices; Prototype method; Sales application; System design

1. Introduction

The growth of information and communication technology has shifted the paradigm of traditional commerce, introducing new models that allow customers to shop efficiently without having to leave the house. Over the past few years, e-commerce has grown rapidly in various sectors, including the food and grocery industry. One of the interesting subsectors is the sale of herbs and spices. Herbs and spices are important products in various cuisines, and the demand for these products continues to increase both among home consumers and culinary businesses.

Although the demand continues to increase, there are still some obstacles faced in purchasing herbs and spices online. Some of these include the need for a platform dedicated specifically to such products, the lack of clear information about the quality and source of the product, as well as the inability to check and try the product before purchasing directly. In this context, research on designing website-based spice and spice sales applications becomes relevant. The use of prototype methods in application development is expected to help in overcoming several challenges faced in e-commerce application development, such as rapid iteration and testing of new features. With this background, this study aims to fill the gap by designing a seasoning and spice sales application that pays attention to user needs and uses a prototype method for its development.

Challenges and opportunities associated with the trade of herbs and spices through e-commerce platforms. Although herbs and spices are very important commodities in the food industry, the online shopping experience for these products could be more optimal. One of the main challenges is the lack of e-commerce platforms that specifically provide services for herbs and spices. Herbs and spices have unique characteristics in terms of product variety, quality, and packaging that may require more work for common e-commerce platforms to accommodate. This can result in users needing help finding the products they need easily and confidently. In addition, aspects of trust and product quality are also major concerns for consumers in purchasing herbs and spices online. Due to its difficult nature to test directly before purchase, consumers often require clear information about product origins, quality, and reviews from previous users.

In this context, designing a website-based application for selling herbs and spices becomes relevant to overcome these challenges. By using the prototype method, this research aims to produce a platform that not only facilitates buying and selling transactions but also provides a better online shopping experience and strengthens consumer confidence in the products offered. This particular background highlights the urgency and relevance of research in addressing unmet needs in the seasoning and spice trade through e-commerce platforms. It explains why a prototyped application design approach was chosen to address these challenges.

Related research in this study is a study on the use of prototype methods in the development of e-commerce applications and research on consumer preferences and behavior in shopping online for food products, including herbs and spicesh. Study of Prototype Method in E-commerce Application Development previous research has explored the effectiveness of prototype method in e-commerce application development. For example, research by (Hamdanuddinsyah et al., 2023) Discusses how the use of prototype methods helps in identifying user needs more effectively and speeds up the process of developing e-commerce applications.

Analysis of Consumer Preferences in Online Shopping for Food Products: The study of consumer behavior and preferences in shopping online for food products is also relevant. Research conducted by Rahayu et al. (2023) explores factors that influence consumer purchasing decisions in the context of food e-commerce, such as trust in product quality and the security of online payments. Research on E-commerce Platforms Specific to Food Products: Research on the development of e-commerce platforms devoted to specific food products. Praptiwi (2018) highlights the need for e-commerce platforms that can accommodate consumers' specific needs in shopping for food products, including aspects such as information on product sourcing and transaction security. By referring to these studies, this article can provide a solid theoretical basis and relevant context for

designing website-based spice and spice sales applications using the prototype method.

2. Literature Review

In the era of trade digitization, e-commerce applications have become the backbone of many businesses, facilitating buying and selling transactions online (Islami, 2021). However, when it comes to certain products, such as herbs and spices, the existence of specific e-commerce platforms still needs to be made public. This literature review aims to explore studies related to e-commerce application design, the use of prototype methods in application development, and consumer behavior in the context of purchasing herbs and spices online.

E-commerce Application Design
Principles of User-Based Design in E-commerce Applications
User-based design principles have a key role in developing successful e-commerce applications. Rachman et al. (2024) emphasize the importance of designing an intuitive and user-friendly interface to ensure a positive user experience. E-commerce is a means to facilitate buying and selling transactions in terms of energy, costs, and time that have been determined(Al Muhtadi & Junaedi, 2021). The result of this study is a website-based online sales application at Toko Herbal Pahlawan that provides stock features, stock reports, sales reports, transactions, and managing product data (Akbar et al., 2023).

The Role of the Prototype Method in Application Development
The use of prototype methods has become standard in software development, including e-commerce applications (Sulaksana et al., 2023). Hamdani et al. (2024) highlight the advantages of the prototype method in iteratively improving features and functionality, which are critical in dealing with the complexity of user needs.

Consumer Behavior in Online Purchases of Herbs and Spices
Consumer Preferences in Online Food Purchases
Understanding consumer preferences is key to the success of an e-commerce platform. Adhitya (2022) investigates factors that influence consumer behavior in online food purchases, including product quality, trustworthiness, and convenience.

Trust and Security in E-commerce Transactions
Trust and security are the main concerns of consumers when conducting online transactions, especially in the food industry. Research by Yolandari and Kusumadewi (2018) examines the role of perceived trust and security in influencing consumer intent to purchase goods online.

Dedicated E-commerce Platform for Seasoning and Spice Products
E-commerce Platform Specialized for Food Products
There is a trend towards e-commerce platforms that are specific to specific food categories. Sugandini et al. (2019) explore the development and adoption of niche market e-commerce platforms, which address unique challenges and opportunities in the sale of food products.

Improving User Experience in Food E-commerce
User experience is becoming a key differentiator for e-commerce platforms specializing in food products (Rismanah et al., 2024). Research by (Mumtazuddin & Ahmad, 2023) Test strategies to improve the user experience, including personalized recommendations and interactive interfaces.

3. Methods

This research method aims to develop a website-based application for selling herbs and spices with a user-centric approach using the prototype method. This method enables application development through iterations focused on user feedback, ensuring that the final product meets user needs and preferences.
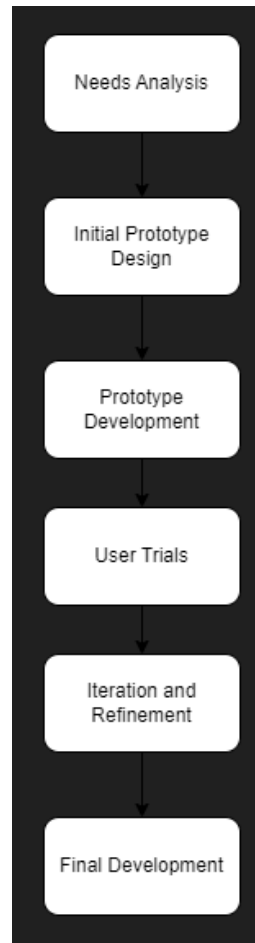
Figure 1. Research Methods

Figure 1 is the research stage conducted in the design of spices and spices sales applications:

Needs Analysis
The first needs analysis is a literature review that reviews relevant literature to identify trends and challenges in selling herbs and spices online. Furthermore, user interviews and surveys collect data from potential users (both consumers and sellers of herbs and spices) through in-depth interviews and online surveys to understand their needs, preferences, and problems.

Initial Prototype Design
Wireframing is creating preliminary sketches and wireframes to illustrate the application's structure and navigation flow. User interface (UI) design is developing the initial visual design of the user interface based on the wireframing results and data collected from needs analysis.

Prototype Development
Implementing basic functionality involves developing a functional prototype that includes basic features such as product search, shopping cart, and payment system. Internal testing involves testing prototypes within the development team to ensure that all basic functionality works properly.

User Trials
Researchers recruit users by recruiting a number of users representative of the target market to test prototypes. Furthermore, the testing session is a testing session where users are asked to complete certain tasks using a prototype. During these sessions, qualitative (e.g., verbal feedback) and quantitative (e.g., task completion time) data are collected.

Iteration and Refinement
At this stage, researchers conduct feedback analysis by analyzing data collected during user trials to identify problems and areas that need improvement (Maulina, 2023). Furthermore, prototype improvement by making improvements and improvements to the prototype based on the results of feedback analysis. This iteration process is repeated several times until the prototype reaches the desired level of user satisfaction.

Final Development
Advanced development and testing by developing a final version of the app with all the enhanced features and performing final testing to make sure the app is ready for launch. Launch and evaluation: officially launch the app and evaluate its performance in a real environment, as well as collect post-launch feedback for future improvements.

This research method is designed to ensure that a website-based seasoning and spice sales application is developed, taking into account user needs and preferences. By using the prototype method, the development process becomes more iterative and responsive to user feedback, which is expected to produce functional, user-friendly applications that are in accordance with market expectations.

4. Results
The initial design of the sales application is to design a program database that is presented in the form of an Entity Relationship Diagram. For the implementation of database programs by using the Hyper Text Markup Language language (HTML).
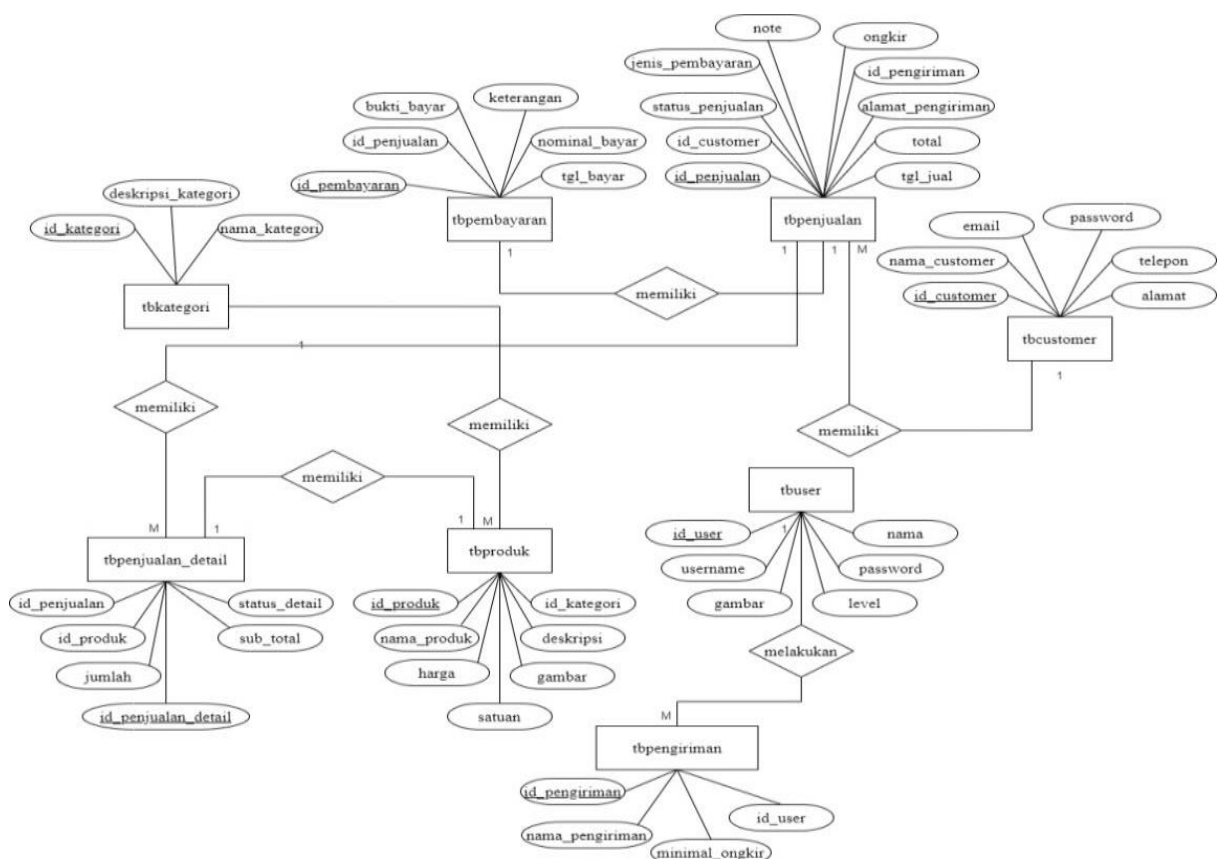

Figure 2. Sales Application Entity Relationship Diagram

Figure 2 describes the relationship between entities in the sales database, namely product entities, sales entities, sales detail entities, user entities, category entities, payment entities, consumer entities, and shipping entities. Each entity has attributes that are interrelated between one entity

and another, with the type of relationship being one-to-one, one-to-many, many-to-one, or many-to-many.

The next design is the user access design for the application for selling spices and spices which is illustrated with a use case diagram as below.
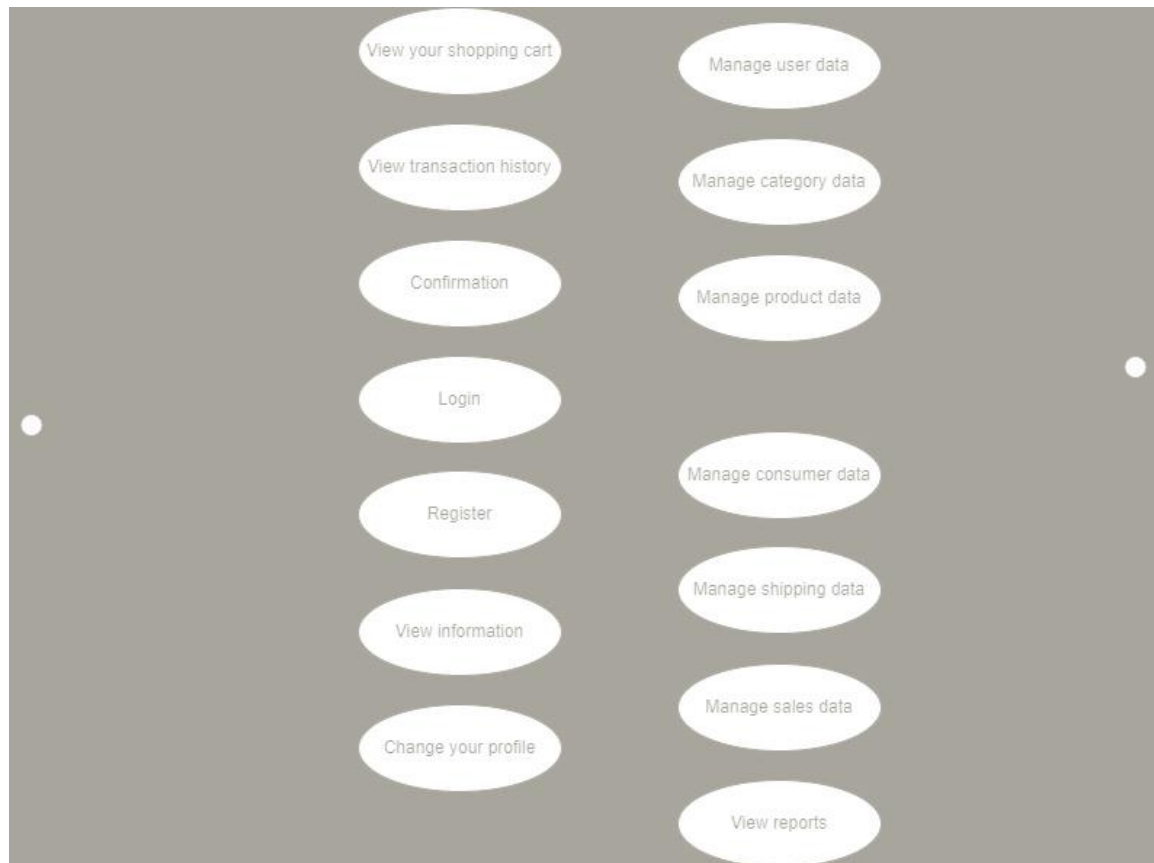

Figure 3. Sales Application Use Case Diagram

Figure 3 explains the access rights that each user can have. In this sales application, there are two actors, namely consumers and administrators. Consumers can view shopping carts, view transaction history, confirm payments, register accounts, browse information on the website, and change profiles. Administrator access consists of managing consumer user data, managing spice and spice category data, managing product data, managing consumer data, managing sales transactions, managing shipments, and viewing sales reports.

The management activities of the spice and spice sales application are designed by taking into account the ease of users, namely managers or traders, with the following description.
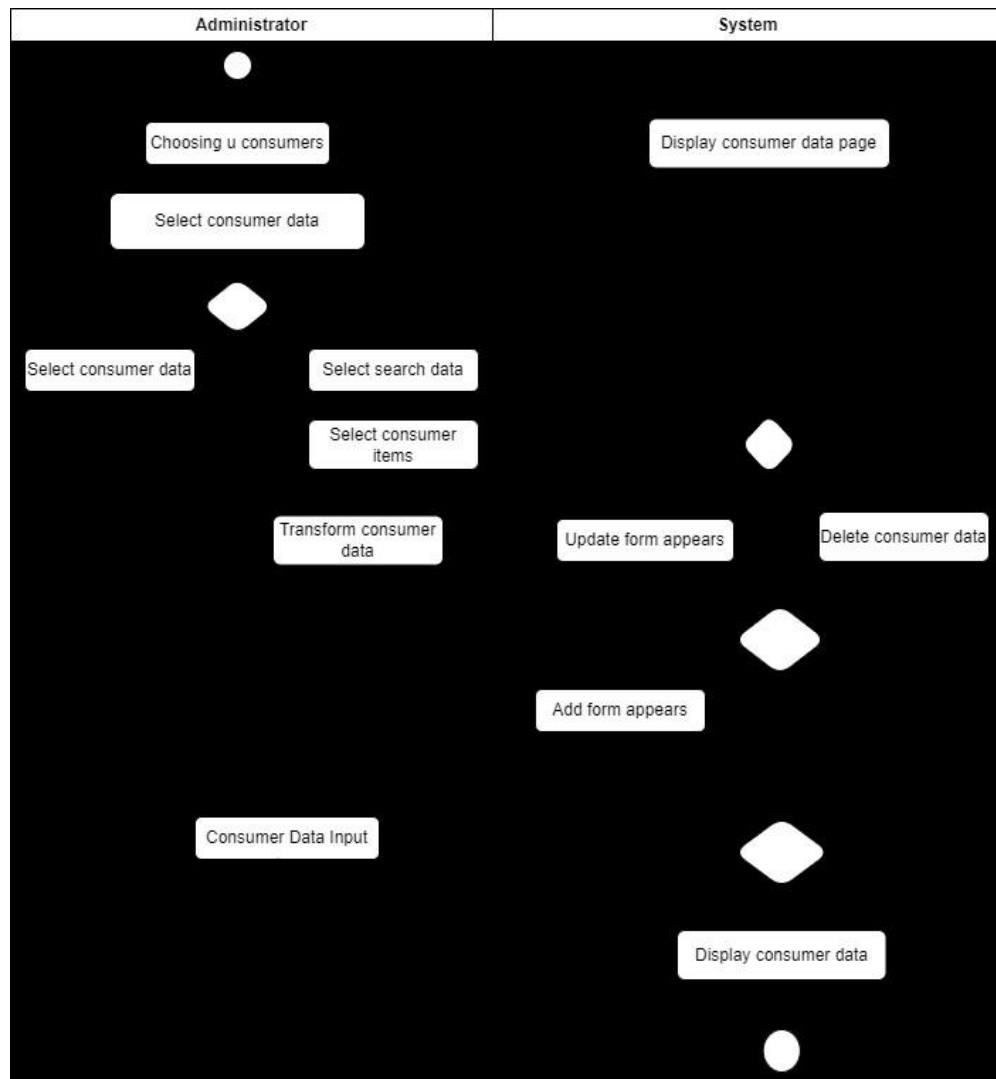
Figure 4. Sales App Activity Diagram

Figure 4 describes the activities carried out by managers or merchants. By selecting the consumer menu, the system will display the consumer interface. Administrator actors can select activities such as adding consumer data, searching for consumer data, updating, and deleting consumer data.

The interface design is designed with the element of ease of use by consumers and administrators, as presented in the following figure.
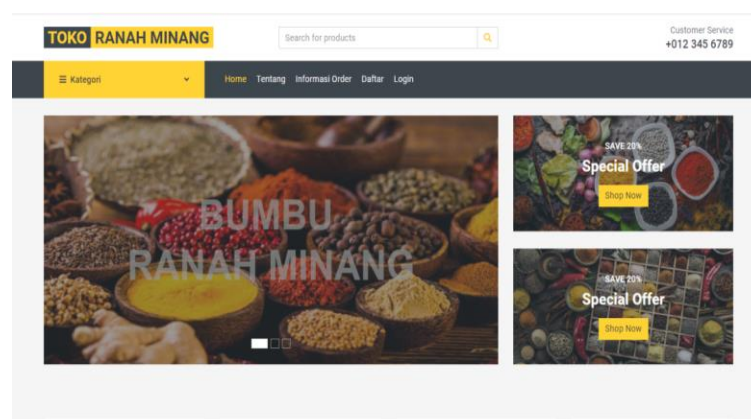

Figure 5. Spices and Condiments Sales Application Page

Figure 5 illustrates the start page or dashboard of the spice and seasoning sales application. On the application page, there is a menu of home, category, about, order information, register, and log in.

5. Discussion

This study discusses the process of designing a website-based spice and spice sales application using the prototype method. This method was chosen to ensure that application development focuses on user needs and preferences through continuous iteration and feedback.

Needs Analysis
Literature studies and user surveys show that the seasoning and spice market has specific needs that are only sometimes met by general e-commerce platforms. Consumers want detailed product information, including origin, quality, and other user reviews. Sellers need a platform that makes it easy to manage inventory and transactions efficiently. In-depth interviews with users reveal some key challenges, such as a need for clearer information about products and difficulty in navigating existing e-commerce sites. Surveys indicate that transaction security and delivery speed are important factors for consumers.

Prototype Design and Development
In the early stages of design, wireframing and user interface (UI) design are performed to ensure the application's structure and layout match the user's needs. The initial design emphasized ease of navigation and quick access to product information. Colors and visual elements are chosen to reflect the freshness and quality of herbs and spices.

User Trials and Iteration
The user testing process is very important in the prototype method. Testing sessions with real users revealed some issues not seen during internal testing, such as navigation confusion and the need for better search filters. User feedback allows the development team to iterate and refine the prototype.

Some of the major improvements made after the user trial include improved navigation by adding icons and visual cues to help users navigate the app more easily, improved search filters by adding more specific search filter options, such as product category, price, and customer reviews, and more complete product descriptions by improving product pages by adding detailed information about the origin, benefits, and how to use the product.

Final Development and Evaluation
The final version of the app is developed by integrating all the feedback from users and improvements made during iterations. Final testing ensures that the application works properly and is stable. The initial launch of the app showed a positive response from users, who appreciated the ease of use, speed of transactions, and quality of product information.

The post-launch evaluation revealed several areas for further development, such as customer loyalty programs and integration with social media, which can increase user engagement and loyalty.

6. Conclusion

The prototype method has proven effective in developing website-based spice and spice sales applications. This approach allows developers to focus on user needs and make improvements iteratively based on real feedback. The results of this study show that applications designed with this method can provide a better shopping experience for consumers and make it easier for sellers to manage their business.

The success of this project confirms the importance of a user-driven approach in the development of e-commerce applications, especially in niche markets such as herbs and spices. The next step is to continuously collect user feedback and implement additional features that can increase the application's value and competitiveness in the market.

Limitations and avenue for future research

This study has several limitations that need to be considered for interpretation of the results and further implementation. Here are some of the main limitations identified in the process of designing a website-based spice and spice sales application using the prototype method, namely limited time and resources, controlled testing environment, focus on basic functionality, technical and integration limitations, and limited feedback on security aspects.

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