



Analysis and Design of Digital Marketing Information System for Building Material Store

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Abstract

The manual nature of Material Store such as *Toko Bangunan Berkat Rezeki*'s current business operations is one of the hurdles it encounters in marketing. This study intends to build a marketing information system for the products and services of *Toko Bangunan Berkat Rezeki* utilizing the 4P marketing mix idea (product, price, place, and promotion). The framework for application design is design thinking, which includes empathy, defining, ideating, prototyping, and test phases. Business owners, employees, and customer's requirements are identified during the empathize phase. In addition, at the designated stage, each system user's business operational difficulties are ranked according to a scale of importance. At the ideate stage, the outcomes of selecting and organizing problems and wants of system users based on priority scales are used to create flows and authorities according to their respective functions. At the prototype stage, the application interface is designed based on the demands and rules of system users and follows the 4P marketing mix concept. In the testing phase, test the login procedure for each user and the procedures for adding, saving, viewing, updating, and removing data. The findings of this study indicate that information on products, product prices, and product promotions may be handled by a website-based marketing information system, such that place is no longer synonymous with a physical store but rather an intangible one. Consequently, *Toko Bangunan Berkat Rezeki* can employ a website-based marketing information system to enhance sales volume and expand its market reach.

Keywords: Information System; Digital Marketing; Design Thinking

1. INTRODUCTION

The 4P marketing mix strategy emphasizes the mobility of information between product and service providers to consumers through product, place, price, and promotion information. [1] uses the concept of the 4P marketing mix in website design as a digital marketing medium to increase sales volume and improve business performance. On the other hand, [2] shows that the challenge of



conventional marketing is the need for much higher business operational costs and limited access to a broader market share. This demonstrates the benefits of utilizing digital technology to enhance the marketing of goods and services provided by Micro, Small, and Medium-Sized Enterprises (MSMEs) across various industries. This study suggests using the 4P marketing mix and incorporating it with digital marketing information systems in light of this.

Some research on the marketing mix shows that the marketing mix can influence purchasing decisions [3]. Moreover, [4] raises challenges in implementing the 4P marketing mix concept in the 5.0 era, where business actors must have broader, more innovative, friendly, dynamic, collaborative thinking and prioritize spiritual values in running a business. This shows that implementing the marketing mix requires the support of qualified Human Resources (HR). [5] shows that the ability to utilize digital technology in marketing products and services of a business determines the effectiveness of business processes and the efficiency of business operational costs. To support business operations, qualified technology and human resources are required. In light of this, this study utilizes the case study methodology. It uses Construction Shop, Thanks to Sustenance's building materials business, as its framework for studying how to sell goods and services.

The development of website-based information technology is a strategic step to market the products and services of a business entity. [6] shows that designing a website-based information system as a medium for promoting products and services of Micro, Small, and Medium Enterprises (MSMEs) is very effective in supporting business development in remote areas. On the other hand, [7] shows that using information technology in the form of websites can increase the knowledge and skills of system users as a form of business innovation using digital devices. This shows that information technology positively impacts the development of MSMEs and can improve HR capabilities. [8] emphasized that applying the 4P marketing mix for MSMEs using digital technology in the form of a website is a form of marketing communication that can increase sales volume and improve the ability of business actors. This study will address the use of the 4P marketing mix in creating a website-based digital marketing information system in the context of *Toko Bangunan Berkat Rezeki*.

The 4P marketing mix concept is very effectively used in improving business unit performance. [9] shows that implementing the 4P marketing mix can increase interest in the products and services provided and increase competitiveness. On the other hand, [10] shows that implementing the 4P marketing mix significantly influences customer satisfaction and strengthens the brand of the business unit. [11] shows that the 4P marketing mix strategy emphasizes product development strategies, pricing, choosing the right location and distribution channels, promotional strategies relevant to the existing conditions of business units, and resource availability. This demonstrates how the 4P marketing mix concept may

be integrated into developing digital marketing information systems to boost business resilience and ensure sustainability. In light of this, *Toko Bangunan Berkat Rezeki* designed a digital marketing information system using the 4P marketing mix concept as a conceptual framework.

Digital marketing information systems can be integrated with marketing mix concepts to optimize business processes. [12] shows that digital marketing information systems are one of the factors that play an essential role in improving business performance and changing production processes. On the other hand, [13] shows that digital marketing information systems emphasize digital processing data related to products and services, prices, locations or distribution channels, and promotions. This demonstrates how the 4P marketing mix concept and the digital marketing information system, which must be connected to support business unit performance, are relevant. This study will examine and design a digital marketing information system based on a 4P marketing mix to optimize the business process.

Previous research discussing the design of digital marketing information systems shows that the challenge of digital business innovation is determined by the complexity of the system and the capabilities of HR in operationalizing the strategy. [14] shows that system design results must be supported by HR skills in system operations to help business processes. On the other hand, [15] shows that the design of digital marketing information systems can adopt models relevant to the complexity of a business unit's business processes. This suggests that to successfully produce and distribute goods and services, information system design needs the cooperation of all parties or components of a business unit. Thus, it is clear that the outcomes of information system design depend on the model and method of creation and the complexity of a business unit's operational activities. Based on this, this study's digital marketing information system design utilizes a Design Thinking framework tailored to *Toko Bangunan Berkat Rezeki's* operating procedures.

Previous research has demonstrated that adopting digital technology as a marketing information system can enhance firm performance and improve capital owners' monitoring or control [16]. Nurhidaya dan Utomo designs a website-based information system for product marketing to access a wider market [17]. However, the information system architecture is restricted to implementing the Laravel framework and adopting e-commerce systems to ease purchasing and selling products via the website. In addition, the 4P marketing mix strategy is integrated into the system's design to support business performance.

There are several important considerations when designing a marketing information system that is integrated with the 4P marketing mix, as follows: first, adaptation to digital transformation in the business sector with a broader market

reach; second, improving the capability of Human Resources (HR) in the use of digital technology for business management; and third, driving business performance by optimizing marketing information systems based on the context of *Toko Bangunan Berkah Rezeki*. Because each firm has unique financial and human capital capabilities must be evaluated contextually. In light of this, the design framework for systems is design thinking.

This research develops systems using a design thinking framework. Through a website-based digital marketing information system created using a Design Thinking framework, the results of this research contribute empirically to enhancing the business process of Toko Bangunan Berkah Rezeki. On the other hand, applying the 4P marketing mix concept to the context of Toko Bangunan Berkah Rezeki makes a theoretical contribution to the discussion of the dynamics of Micro, Small, and Medium-Sized Enterprises (MSMEs) when dealing with the process of converting traditional business processes to digital. This demonstrates a chance to theoretically and practically contribute to studying information systems and entrepreneurship. The willingness of *Toko Bangunan Berkah Rezeki* business owners to offer the data required in this study is the issue in building a website-based application that blends the notion of the 4P marketing mix with digital marketing information systems. Theoretical and empirical contribution prospects for advancing entrepreneurship and information systems studies, therefore, drive the necessity of this research.

2. METHODS

Employing an information system approach, this research strategically leverages the Design Thinking framework to propel the development of applications. Encompassing the essential stages of empathizing, defining, ideating, prototyping, and testing, the Design Thinking framework orchestrates a seamless interplay among these phases. This dynamic synergy nurtures inventive concepts, culminating in the seamless creation of a customized digital marketing information system that precisely caters to the unique needs of Toko Bangunan Berkah Rezeki. For a visual representation of this methodical journey through the Design Thinking framework's stages.

This research capitalizes on the power of the information system approach coupled with the Design Thinking framework to navigate the complex terrain of application development. Through a meticulous progression of empathetic understanding, precise definition, creative brainstorming, iterative prototyping, and rigorous testing, this holistic methodology cultivates innovation and results in a finely tuned digital marketing information system, finely attuned to the specific requirements of *Toko Bangunan Berkah Rezeki*. The step-by-step visualization of this systematic process is thoughtfully presented in Figure 1.

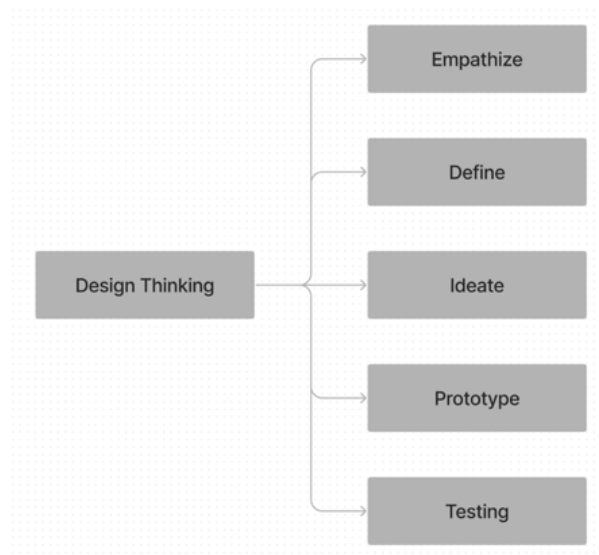


Figure 1. Design Thinking Framework

Figure 1 shows the initial stage in designing a digital marketing information system for *Toko Bangunan Berkat Rezeki*. At the empathy stage, the owner of *Toko Bangunan Berkat Rezeki* goes through a process of recognizing wants and categorizing challenges. Sustenance. To get a comprehensive understanding of the current state of business units, business processes, and difficulties experienced by business owners and employees, an in-depth interview process is employed with business owners, employees, and observers at business locations. Meanwhile, the documentary proof shown in the following figure shows the findings of the observations.

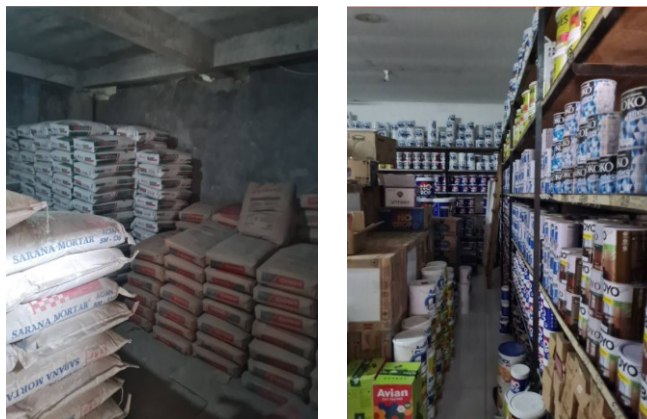


Figure 2. Existing Conditions of *Toko Bangunan Berkat Rezeki*

Figure 2 shows the existing condition of the *Toko Bangunan Berkat Rezeki*, which still uses conventional processes in buying and selling products and storing goods. Interviews are conducted with business owners to identify and classify problems encountered from traditional business processes and the need for a marketing system expected by business owners and working employees. The problem identification results show that business owners need help expanding market access because they need a product and service promotion website. Likewise, recording transactions that still use manual methods requires accuracy, skill, and a longer time. Meanwhile, the needs of business actors and employees are information system support that can solve product and service marketing problems and support the digital documentation process.

At the define stage, the problems raised by business owners and employees are analyzed based on the 4P marketing mix concept based on product and service development strategies, product and service pricing, product location and distribution channels, and product promotion. Based on the results of the user needs analysis, it can be seen that the top priority in the *Toko Bangunan Berkat Rezeki* emphasizes the promotion of products and services and strategies to reach a broader market. Based on the identification of prioritized problems, the digital marketing information system is designed based on the main problems and needs of all actors as system users.

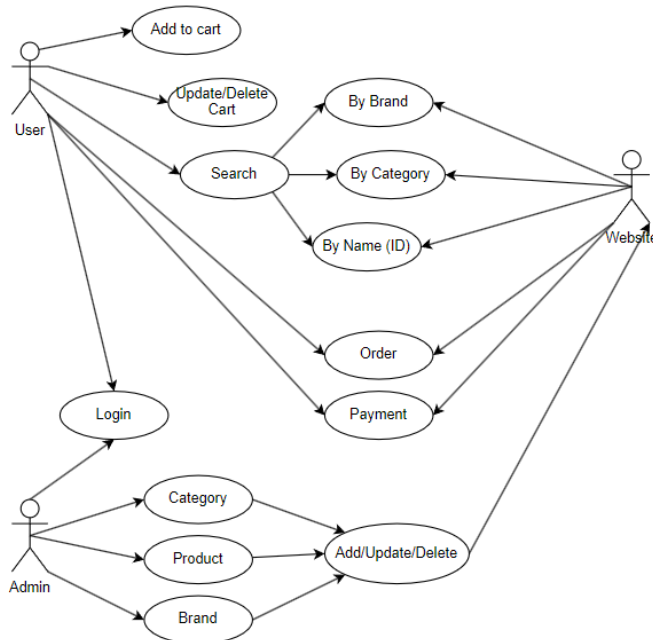


Figure 3. Use Case of Digital Marketing Information System

Digital marketing information system ideas are depicted as Use Case diagrams at the ideate stage to address system users' primary needs and concerns. Employee, admin, user, and system act as system users. Each actor has a unique role and level of access to system functionalities. Users can use discounts made by business owners to draw customers to access product information, prices, locations, distribution channels, and product promotions. Employees who are acting as customers or potential buyers can see transaction data as well as user information. Conversely, Admins are in charge of managing employee accounts, transaction data, and product information to a greater extent.

At the prototype stage, the concept of the 4P marketing mix is integrated with the flow of digital marketing information systems visualized in the form of a User Interface (UI) using a website-based application known as Figma. Meanwhile, the application design implementation process uses the Hypertext Preprocessor (PHP) programming language. Furthermore, at the testing stage, the black box testing method is used to test the login process, the Create, Read, Update, Delete (CRUD) function on each page in the system. Thus, designing a website-based digital marketing information system for *Toko Bangunan Berkat Rezeki* can be implemented based on the 4P mixed-marketing concept.

3. RESULTS AND DISCUSSION

The 4P marketing mix concept emphasizes the product development process, product pricing process, product location development process and distribution channels, and product promotion process. *Toko Bangunan Berkat Rezeki* is one of the business units engaged in buying and selling building materials, where goods will be stored in warehouses, then issued and distributed to buyers when the transaction process is complete. Product prices are adjusted to market prices so they are competitive, while goods distribution services are provided to customers to increase customer satisfaction. However, the business process of *Toko Bangunan Berkat Rezeki* can be more optimal if supported by a website-based digital marketing information system. Considering this, a website-based information system design is carried out that supports business operations and increases sales volume, as shown Figure 4.

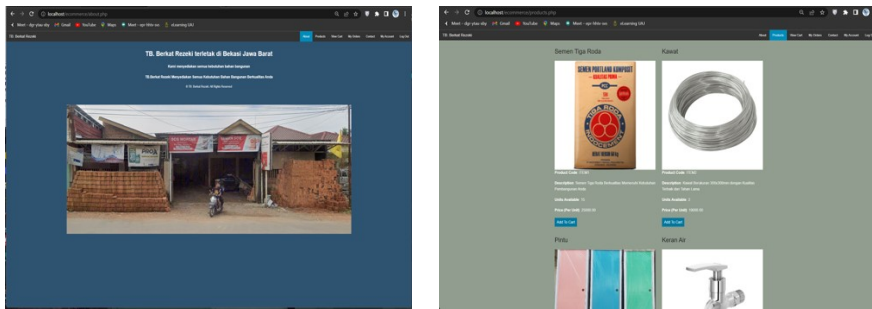


Figure 4. Digital Marketing Information System Prototype

Figure 4 is an interface visualization of a digital marketing information system designed to support the business performance of *Toko Bangunan Berkah Rezeki*. Information systems must accept specific product information, price, and discounts in line with business promotion plans based on the marketing mix concept in product creation. Information systems are made to handle ordering goods to be delivered to the address the customer has supplied. In the meantime, based on the accessibility range, the product introduction is tailored to labor and auxiliary resource availability. The complete transaction process connecting staff working as cashiers with customers is contained in the information system. Owners of businesses are responsible for regulating or overseeing staff performance.

Applications are created with the transaction process in mind. Therefore, codes, names, descriptions, brands, categories, and images are needed for product development. Users can obtain detailed product information, select how many things they wish to purchase, and agree on a price. Based on the total number of products, price, and order date, the number of product orders will be maintained in a database. Customers as users are additionally required to register, complete user identity, and confirm as part of the order process. First name, middle name, last name, address, city, email, username, and password are all required by the system's architecture. The information needed for the ERD's information system is depicted in the following figure.

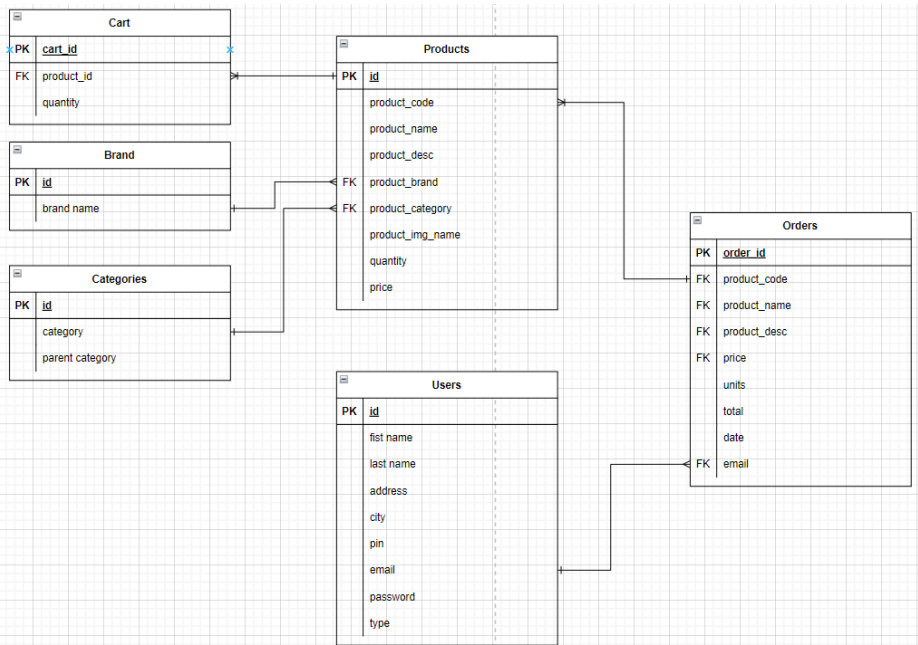


Figure 4. Entity Relationship Database (ERD) of Digital Marketing Information System

Figure 4 explains that consumers as users can access important information about the operational location of *Toko Bangunan Berkat Rezeki*, along with product distribution channels in the digital marketing information system. Additionally, it can be seen that product information is categorized based on id, brand, and categories in the product component (product). Once more, the product's price is modified to reflect market conditions and stored in the database for user access. The contact page for the *Toko Bangunan Berkat Rezeki* location is in the location component and product distribution channel (Place). In the promotion component, discounts are offered following the policy and displayed in the system so that the cost of products purchased for a particular amount will be automatically computed using the provided value.

Every feature and function on every website page is functional according to the findings of the application testing. However, there are several innovation programs or system developments that can sometimes introduce various features and processes connected to the following: First, the database system needs to be optimized; next, the user data security system; next, the transactions based on the decision-making model for calculating the number of rebates; and finally, the application interface needs to be optimized to meet the requirements of system users. Meanwhile, the results of black box testing show that the system can run well and follow expectations, as shown in the following table.

Table 1. Test Result of the Login System

No	Test Scenarios	Test Cases	Expected results	Results
1	Try logging in without entering your email and password	Email: (Blank) Password: (Blank)	The system refuses the user/admin to continue the activity and redirects the user/admin directly to the page containing the Invalid Login message! <i>Redirecting..</i> And finally back to the About page.	Succeed
2	Try signing in with only your registered email	Email: elfin@gmail.com Password: (Blank)	The system refuses the user/admin to continue the activity and redirects the user/admin directly to the page containing the Invalid Login message! <i>Redirecting..</i> And finally back to the About page.	Succeed
3	Try logging in with only the correct password	Email: (Blank) Password: 123123	The system refuses the user/admin to continue the activity and redirects the user/admin directly to the page containing the Invalid Login message! <i>Redirecting..</i> And finally back to the About page.	Succeed
4	Try signing in with an unregistered email and password	Email: contoh@gmail.com Password: exampletesting	The system refuses the user/admin to continue the activity and redirects the user/admin directly to the page containing the Invalid Login message! <i>Redirecting..</i> And finally back to the About page.	Succeed

5	Try to log in with the correct email and password and have been registered	Email: elfin@gmail.com Password: 123123	The system receives a user/admin request to continue the activity and redirects the user/admin directly to the About page. The Login and Register buttons on the website disappear and the My Account button appears.	Succeed
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The results of the login test for the digital marketing information system are shown in Table 2. The system test employs temporary user usernames and passwords to find faults or errors and notices that lead when the username and password are not entered. The system trial's findings demonstrate that the login procedure has met expectations. Integration with the user's email and extra security features like OTP or encrypted security codes are the following development recommendations for login systems.

Table 2. Test Result of Update Data

No	Test Scenarios	Test Cases	Expected results	Results
1	Change the Product Code on certain items	Product Code: ITEM1	The product code changes as desired	Succeed
2	Change the Description on certain items	Description: Quality cement of your choice	Description changes to certain items as desired	Succeed
3	Change Available Units on certain items	Available Units: 12	Available units are replaced as desired	Succeed
4	Change the Price (Per Unit) of a specific item	Price: 9000	Price (Per Unit) is changed on certain items as desired	Succeed

Table 2 is the test result for updating data on each page related to product information and user data. The system testing findings show that every page on the system can be updated following expectations. The product of notations before and after changes are made; second, there is a log to store data before changes are made; and third, there are various recommendations for system development by altering the interface for data updates. Third, build graphics that maintain user data as a modifier of timestamped data and updated product

information. As a result, business owners can monitor each data update made by employees as a way to manage corporate operations and staff productivity.

The *Toko Bangunan Berkah Rezeki* business process needs to be steadily optimized. Understanding the system's features and being aware of the data that is accessible to the general public versus closed or confidential must go hand in hand with business owners and staff's adaptability to utilizing the system. Similar to how e-commerce has grown, digital marketing information systems are developing. However, there are benefits to the Design Thinking framework's empathy process. The system's design is centered on determining user requirements and including a pleasing and practical client transaction experience. One requirement of *Toko Bangunan Berkah Rezeki* users is the system's usability and accessibility. Meanwhile, the issue with traditional business processes is carelessness in transaction recordkeeping. As a result, the system is set up to use notifications each time the data deletion procedure is completed, as shown in the accompanying table.

Table 3. Test Result of Delete Data Process

No	Test Scenarios	Test Cases	Expected results	Results
1	Delete items that have been put in the Cart on the View Cart page	Pressing the Empty Cart Button	The system will immediately delete the data contained in the View Cart page	Succeed
2	Delete a specific product and do not press the OK or cancel buttons	OK: Tidak di Click Cancel: Tidak di Click	Alert dialog: Do you really want to execute "DELETE FROM products WHERE `products`.`id` = 14"?	Succeed
3	Delete a specific product and press the cancel button	OK: Tidak di Click Cancel: Di Click	Alert dialog: Do you really want to execute "DELETE FROM products WHERE `products`.`id` = 14"?	Succeed
4	Delete a specific product and press the OK button	OK: Di Click Cancel: Tidak di Click	The alert dialog disappears and displays the words "1 row deleted"	Succeed

The test result of deleting user and product data is shown in Table 3. The trial results demonstrate that the entire process met expectations and succeeded. Adding business analytics elements that may assess and examine transaction data as data to be managed into a decision support system is advised for system development over the long term. Additionally, the design of the website interface

can be improved to make it adaptable to changing the settings of the digital devices used by system users.

4. CONCLUSION

The results of this study show that the concept of the 4P marketing mix (Product, Price, Place, and Promotion) can be integrated with designing and analyzing digital marketing information systems based on the context of *Toko Bangunan Berkat Rezeki*. The implementation of the Design Thinking framework in the empathize process is carried out to identify business development problems or challenges and the needs of system users. The defined process includes classifying issues and priority needs converted into system flows and functions through a use case diagram and Entity Relationship Database (ERD). Furthermore, the ideate process includes networking aspirations or digital innovation ideas in accommodating the business interests of *Toko Bangunan Berkat Rezeki* with consumer behavior. The prototyping process consists of the design of the application interface as well as the implementation of the prototype into a website-based digital marketing information system. Meanwhile, the system trial phase is carried out using the black box method, where the system is tested based on the features and functions of login, update and delete data. The entire trial process shows that the application can be developed regularly on security aspects to support business development decisions for the long term.

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