

# Web-Based Marketing Information System Design as One of the Multi-Channel Marketing Strategies on Ship Design Services Business

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**Abstract:** Technology has made great progress every year. For example, information and communication technology. Thanks to the development of information and communication technology, marketing methods that were previously traditional and conventional have now been integrated into the digital world. Many businesses use internet technology to sell and promote their products. Handa Ship Design & Drawing business which is a business in the field of ship design services, plans to market their business online in the hope that this business can be known by many people. Based on the existing background, a web-based marketing information system was created as one of the applications of multichannel marketing strategies for the business. The development of information systems in this study was carried out using the system development life cycle method with a waterfall model approach. System modelling is described using context diagrams, data flow diagrams, and ER diagrams. This information system was built using PHP programming language and MySQL for the database. The final result of this research is a website that can be used by business owners to introduce their business and as a place of communication between customers and business owners.

**Keywords:** information system, marketing, multi-channel marketing, promotion, website.

## I. INTRODUCTION

Technology has made great progress every year, for example, information and communication technology. We can feel the benefits of these technological developments in a variety of ways, including economics. With the development of information and communication technology in the business world, marketing methods that were previously traditional and conventional have now been integrated into the digital world. Many businesses use internet technology to sell and promote their products. In addition to reducing marketing costs, internet technology has become a new form of sales marketing for many businesses.

Handa Ship Design & Drawing business is a business engaged in the field of drawing services. The products produced are in the form of ship design drawings, either new ship designs or redesigning ship drawings. The business, which was founded in 2021, currently does not have a running marketing system, so there are still few people who know about this business. In an effort to market this business, Handa Ship Design & Drawing Business plans to market their business online in the hope that this business can be known by many people.

Based on the above background, the problem formulations taken in this study are as follows: 1) How to optimise marketing for the promotion of Handa Ship Design & Drawing through a web-based marketing information system; and 2) How to develop a web-based marketing information system at Handa Ship Design & Drawing Business. The purpose of this research is to optimise business marketing through a web-based marketing information system to expand market access at Handa Ship Design & Drawing Business and to develop a web-based marketing information system at Handa Ship Design & Drawing Business.

## II. LITERATURE REVIEW

### 1. Basic Concepts of Information Systems

Marimin, et al (2006), an information system is one of the components in an organisation or business related to the process of creating and disseminating information used by one or many users. The main activities in an information system include computing, comparing, sorting, classifying, synthesising, and concluding. The result of a data processing operation is information that can be in the form of text, graphics/images, film, and sound displayed on screen media, print media, and storage media (computer memory, magnetic tape). The output of this activity is called an information product.

### 2. Marketing Information System

Kotler defines "marketing" as the process of organising products or services that appeal to customers. A marketing information system is a system used to collect, store, analyse and distribute marketing data to assist the marketing team in making better decisions. The input of the marketing information system focuses on collecting relevant internal and external data to be analysed and interpreted. The outputs of a marketing information system are concerned with distributing data, to all team members and marketing managers, to make more informed marketing decisions to promote business success.

### 3. Multichannel Marketing Strategy

Multichannel marketing is a marketing strategy that uses multiple communication channels for promotion. The goal is to optimise communication channels to reach more customers.

#### 4. Web Programming Basics

Programming is a way, a process, or act of programming. Web is a system that can be used to access, edit, and download documents on computers connected to the internet. A web page is a text file consisting of HTML syntax that can only be opened or accessed using a web browser.

### III. METHODOLOGY

Website development in this study was carried out using the System Development Life Cycle method with a waterfall model approach. The software development process in this model is carried out in a linear sequential flow, where each stage in the new software development process will begin only if the previous stage has been completed.

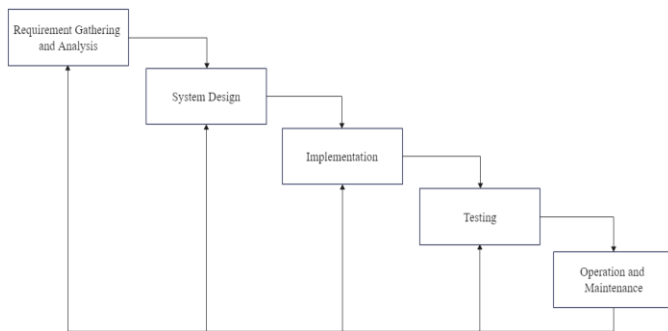


Fig. 1 Waterfall model

The explanation of the stages of the waterfall model above is as follows:

#### 1. Requirement gathering and analysis

In this phase, researchers collect data about current system problems and information system needs, analyse them, and determine what the program needs to achieve. Information is obtained through interviews and discussions with business owners.

#### 2. System Design

Designing software design as an estimate before generating code, System design is carried out using system modelling tools such as context diagrams, data flow diagrams (DFD), and entity relationship diagrams (ERD).

#### 3. Implementation (Writing Program Code or Coding)

This implementation is the phase where all data modelling designs made previously are converted into programming code using programming languages such as HTML and PHP.

#### 4. Testing

During this phase, previously produced modules are combined and tested to ensure that the produced system matches the design and function. If it is not appropriate or bugs are still found, then the developer can review and improve the application to make it better.

#### 5. Operation and Maintenance

The system has been completed and can be operated and maintained. Maintenance can be in the form of updating existing systems and data.

### IV. RESULTS AND DISCUSSION

#### 1. Marketing System Plan

Handa Ship Design & Drawing plans to promote its business through internet. Based on this, a website-based marketing information system was created. In order for the website to be better known by many people, several marketing ideas that can be done are compiled. The marketing idea plan is as follows:

- 1) Promoting through social media by creating a social media account that is used to share the website link created and is also used to post service products contained in the Handa Ship Design & Drawing Business and things related to the business.
- 2) Apart from social media, promotion can also be done offline by sharing the link of this business website to the closest people.

#### 2. System Requirements Analysis

For the system to work as intended, we need to know the user's requirements for building the system. Therefore, a system needs analysis is performed to know the functional and non-functional needs required by the system

- 1) *Functional Requirements*, Functional requirements are requirements that show how a system will be implemented and the things that can be operated by the system.
  - a) The system can display product data, product images, and other data related to the business on a web page.
  - b) The system is easy for users to understand.
  - c) The system allows admins to edit data
  - d) Admin can login to enter the admin dashboard.
  - e) Consumers can access the system for 24 hours as long as consumers are connected to the internet network.
  - f) Customers can send messages through the message field on the menu.
  - g) The system uses a database to support data storage so that data can be stored properly.
- 2) *Non-Functional Needs*, Non-functional requirements are needs related to attributes that the system must have, such as operational, performance, and security requirements. Non-functional requirements are used to determine the design of system interfaces, hardware, software, and the underlying physical architecture of the system.
  - a) Hardware Requirements

- Processor Intel(R) Core(TM) i3-4030U CPU @ 1.90GHz
- 4.00 GB RAM (3.89 GB usable)
- System 64-bit operating system, x64-based processor

b) Software Requirements

- Operating system Windows 10 Pro
- Microsoft Edge version 103.0.1264.37
- Microsoft Visual Studio Code version 1.69.2
- XAMPP version 8.1.6

3. System Design

In this phase, existing functional and non-functional requirements are converted into system specifications. System specifications are described using data modelling tools such as context diagrams, data flow diagrams, and ER diagrams. Its purpose is to understand the user's needs and to provide a clear picture and complete design of the system description and processes involved in creating it.

1) Context Diagram

A context diagram describes how external entities interact with the internal software system. Using a context diagram, it can be seen all the elements that need to be included in the system and how they interact. Thus, with this information, appropriate decisions can be made on how to structure the entire software to better serve customers.

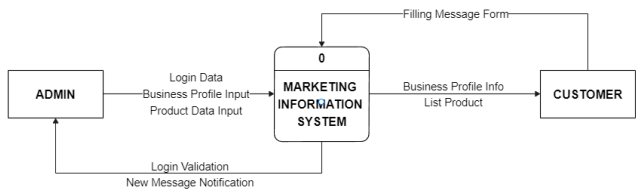


Fig. 2 Context Diagram

Based on the context diagram above, this marketing information system is designed by involving 2 (two) external entities, namely admin and customers. Admin is an operator in charge of processing the website display and data on the website. Meanwhile, a customer is someone who visits/accesses the website.

2) Data Flow Diagram

A data flow diagram is a way to represent the flow of data in a process or system (usually an information system). A data flow diagram is a diagram that contains a detailed description of each process in the context diagram. The purpose of making a data flow diagram is to examine each process in an information system in more detail.

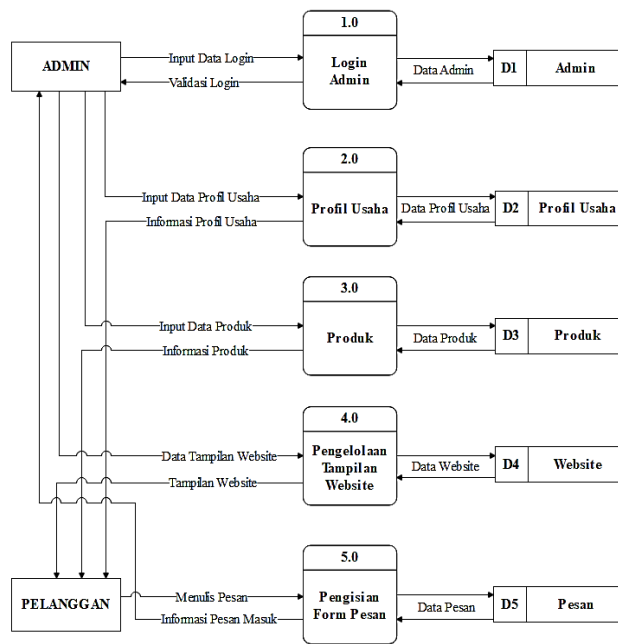


Fig. 3 DFD Level 1 for The Marketing Information System

3) Entity Relationship Diagram

ERDs are used to model a logical view of the system from a data perspective by defining entities, such as people, things, or concepts, attributes of entities, and relationships between entities in the database. ER diagrams are usually used in conjunction with data flow diagrams (DFDs) to display the contents of a data store.

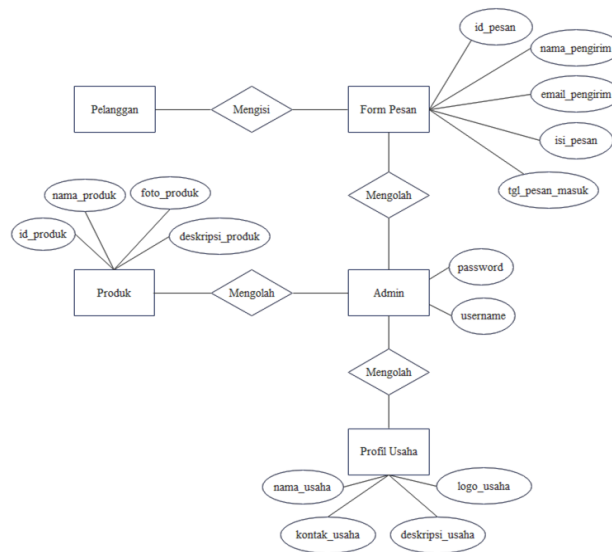


Fig. 4 Entity Relationship Diagram

4. Website Design

At this stage, the author creates a website design which is a form of actualisation of the previously created data modelling design which is implemented into the system using html and php programming language codes.



Fig. 5 Website Wireframe Design



Fig. 6 Header Display Implementation

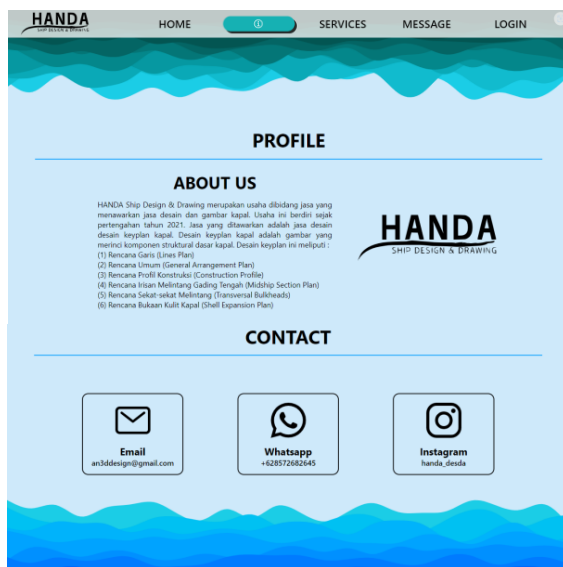


Fig. 7 Business Profile Display Implementation

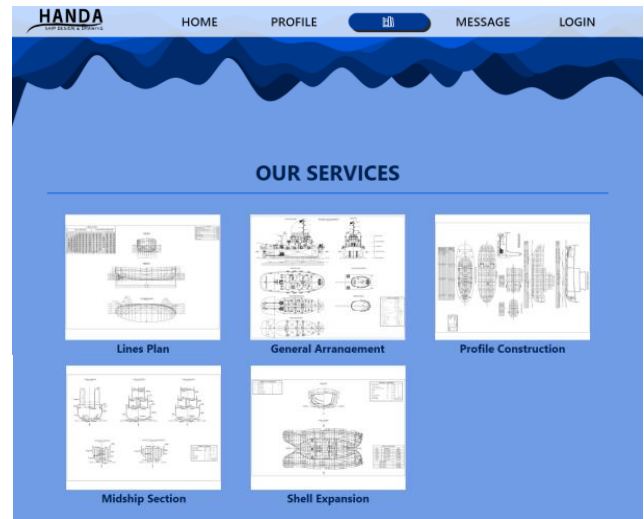


Fig. 8 Product Page Display Implementation

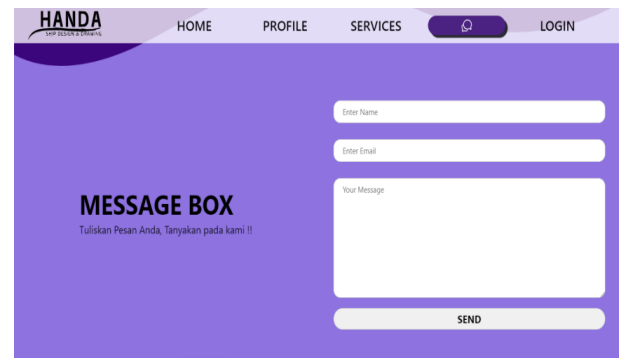


Fig. 9 Message Page Display Implementation

## V. CONCLUSIONS

Based on the results of the analysis and design of the system that has been done. The conclusions that can be given are as follows:

1. Handa Ship Design & Drawing plans to promote its business through internet media by creating a website-based marketing information system. To further optimise the marketing of this business, several marketing ideas that can be done are compiled: 1) Promoting through social media by creating social media accounts that will be connected to the website created. 2) Conducting conventional promotions through the closest people by sharing existing website links.
2. The development of marketing information systems is carried out using the SDLC method with a waterfall model approach. The first step is to determine functional and non-functional requirements. After that, system design is carried out using system modelling tools in the form of context diagrams, data flow diagrams, and entity relationship diagrams. Then coding is done using html and php programming languages to actualise the system modelling that has been made.

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