A Website Framework to Support the Distribution of Milkfish in The Fishing Industry

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Abstract. Delivering milkfish pond products to industries, restaurants or end consumers should be done as soon as possible in real time so that the process of milkfish distribution does not take a long time. The middleman's involvement in the distribution process will require a lot of time and lots of people so that it dramatically affects marketing and price fluctuations. This research has found a solution to minimize the situation that occurs, a website framework with a supply chain concept approach successfully designed. A website with an integrated system can be accessed with an android mobile device to facilitate the process of uploading images of milkfish and other information about milkfish so that it does not require users to use personal computers (PC/laptop), while computer administrators can control the activities of pond farmers in marketing. The results showed that the website was able to connect between fish farmers and industries or restaurants before the results of the milkfish ponds were harvested and provide information about fish weight, fish prices, the location of lakes and order facilities for purchase transactions. If this happens, the middleman's involvement in marketing begins to decrease, and this will undoubtedly cut the chain of the dependence of the farmer farmers with intermediaries. This is a way to accelerate the marketing process, and increase the income of fish farmers and reduce dependence on intermediaries.

Keywords: website technology, fisheries industry, distribution of milkfish

1. Introduction

Efforts to utilize fish resources optimally, sustainably are demands and very urgent for the magnitude of the prosperity of the people, especially to improve the welfare of fishers and fish farmers [1]. Table 1 shows the production of superior commodities in Polewali Mandar Regency from 2012-2016. The most significant production source is milkfish with a total of 9,325.00 tons. This situation is possible to improve the standard of living of pond farmers and increase export commodities.

Table 1. Production of superior commodities of Polewali Mandar Regency 2012-2016 (tons)

Fish Type	2012	2013	2014	2015	2016
Tuna	3,187.50	3,187.50	3,185.55	3,186,50	3,187.55
Skipjack	3,250.50	3,838.70	3,869.20	3,874.10	3,872,50
Cob	3,575.50	3,600.00	3,620.00	3,630.60	3,640,20
Flying fish	1,475.50	1,337.80	1,370.25	1,385.50	1,320,40
Milkfish	8,180.50	9,162.00	9,180.00	9,215.30	9,325,00

Sources: Fisheries and Maritime Office of Polewali Mandar Regency

In the practice of distributing the results of cultivation to marketing, there are many stages, time, and involving many people as shown in Figure 1 [2].
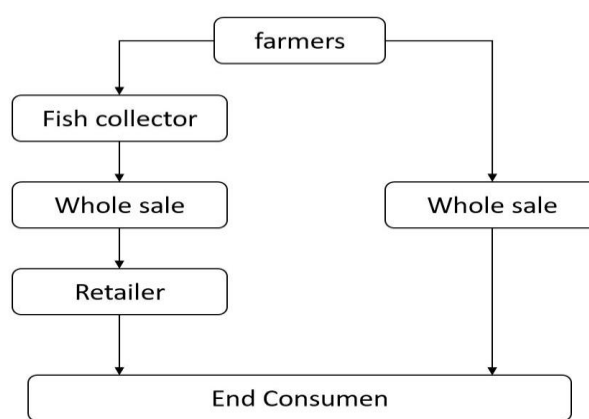
Figure 1. Fish distribution channel [2]

This process can be made more optimal if used information technology in the form of an interactive and integrated website system. Farmers can be directly connected to the industry, restaurants, markets or end consumers. This is undoubtedly apart from involving traders/ intermediaries/brokers. Information technology enables the delivery of information in real time. One of the key factors to optimize fish distribution is using by the concept of the supply chain. The supply chain can create a flow of information that moves quickly and accurately which results in maximum satisfaction for the customers [3]. The fishing industry is a business that runs from fishing, cultivation, processing, distribution, marketing, and reaching consumers. This is a form of industry that starts from the upstream in the form of arrest, and cultivation and moves downstream for marketing [4]. This research will produce a website framework that can support the distribution of fish from upstream to downstream. The website will present information on the weight and price of fish, the location of the farm, and order facilities for purchasing transactions for industry, restaurants, markets or consumers.

2. Proposed Method
This study was carried out by designing a web-based system as a framework to provide new ways of marketing and publicizing the yields of pond farmers. The system was made with a supply chain concept approach considering the distribution process of milkfish starts from the farmers as upstream industries to the end consumers. The special editor of PHP (Hypertext Preprocessor) programming such as Notepad ++ was used to create web-based applications, Adobe Dreamweaver CS5.5 for designing user interfaces and then Cascading Style Sheets (CSS) to created the same appearance every page, while the flash elements used are also available in Dreamweaver [5] . Database design used MySQL Application and android studio for design mobile applications. All are designed with attractive appearance to maximize usability.

2.1. Current practice and the proposed method

The first stage of this research is to make observations to identify the marketing processes that occur in the field as shown in Figure 2. The process of distributing milkfish involves many middlemen or intermediaries before the final consumer truly accepts the milkfish. This is a management practice in the distribution process.
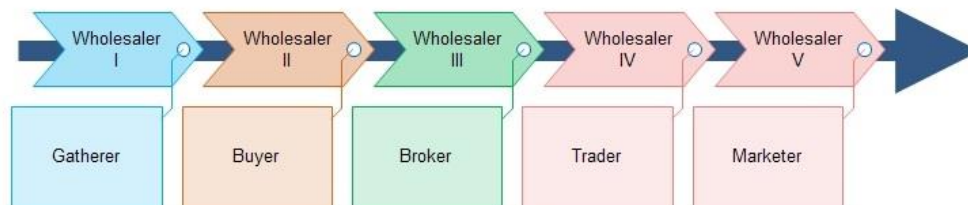

Figure 2. Marketing process involving middlemen or intermediaries

Figure 2 is the result of observation before the system development is carried out The management practices shown in Figure 2 has provided information on user needs and requirements so that it is beneficial to use to develop an efficient website portal model. We use the SCM concept to help analyze web system needs. We simplify the marketing process by reducing the involvement of intermediaries, that is, farmers can directly marketing and contact with industry, restaurants or end consumers, this model is shown in Figure 3.
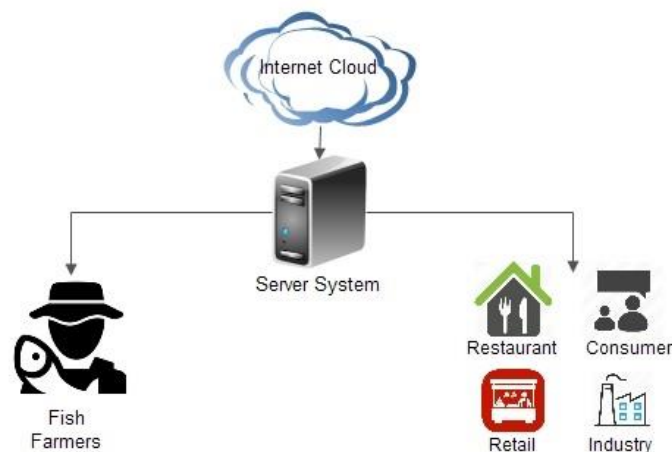

Figure 3. Proposed frameworks

Once the system is made, then the next stage, we involve ten farmers to allowed them to upload data to a web portal system. This stage conducted to see how far the system can process existing data. The results of this approach are presented in the form of a dashboard as shown in Figure 8.

2.2. Fishery distribution pattern of supply chain

The fishing industry shows a very challenging supply chain because fisheries are obtained wildly at sea while other food products are produced on their own [6]. Distribution channels in the fishing industry occur from the first two supply chain areas of the production area and second from the circulation area of the goods. Changes in the distribution patterns on the area of production can provide considerable influence on the marketing [7]. The supply chain focus is on the process of receiving and moving products, from pond fisheries to local or international markets [8]. Supply chain players can consist of several middlemen [2]. Providers of raw materials in this case pond farmers and or fishers cannot wholly cut or reduce supply chain players then sell products directly to end consumers. The involvement of middlemen (mid-chain players) in the distribution channel adds

to the complexity of the supply chain as it allows reducing the quality of products, the possibility of fraud, and reduced profits or the value of the price obtained by farmer or fisherman [8] while fish products have quality sensitive to handling and conditions limited storage and shelf live [6]. Optimizing this process must be assisted by information systems technology such as tracking each product, labeling each product and identifying supply chain attributes. This is a strategy to promote and provide incentives effectively [8]. As is the principle of supply chain management (SCM) concerning increasing product flow and reducing costs to optimally provide value-added goods to consumers [5].

2.3. Web portal system development

Web portals have dynamic pages that can receive responses from actions given by end users according to the level of access granted to them [9]. The web portal system will be used for marketing; registered farmer farmers will upload data in the form of harvested milkfish information using an Android-based mobile device. The industry or restaurant will automatically accept this information or perhaps the end consumer has been connected to the website system. Information on milkfish will also be presented on the website page as a form of promotion of the results of the district food commodity. The proposed system development uses the first two types of analysis relating to the study of information that will be presented on the web page and the second is the system user analysis related to the needs and responsibilities of each actor, namely suppliers, marketing and end consumers [9]. The different information about the weight and price of fish from each actor in the distribution process makes the analysis difficult. We use a technique prototype sketch to describe any web page and shows that information on individual web pages with the goal of helping end users understand the process flow in the system. The system process flow showed as in Figure 4.
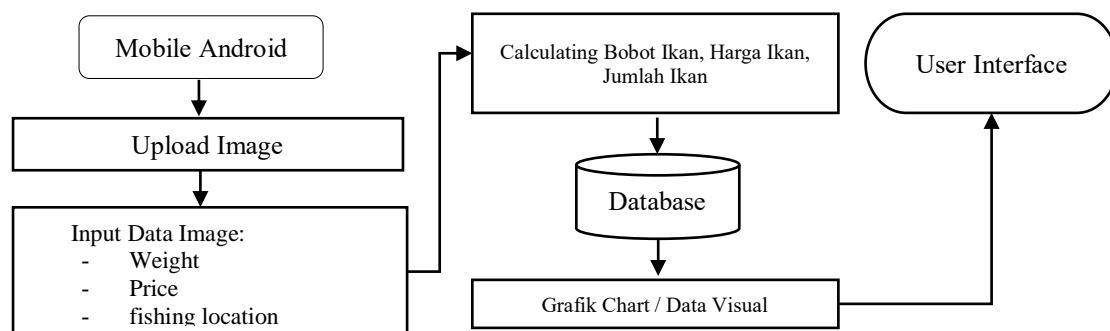

Figure 4. Website portal process flow

The data uploaded using mobile Android and input it in an application with some information about the fish and the system will perform the calculation of fish price before correct information is published.

2.3.1 System architecture

The complexity of a web-based information system lies in the resource needs and every stage that occurs in each process. The system built with multi-user and multi-department will result in information exchange and data flow so that each user must have different access requirements. For example, consumer users cannot access information on the number of profits contained in the user management, whereas management users want to know the transactions that occur every day, the system architecture will be made integrated with various information formats for each department. The proposed web system architecture as shown in Figure 5.
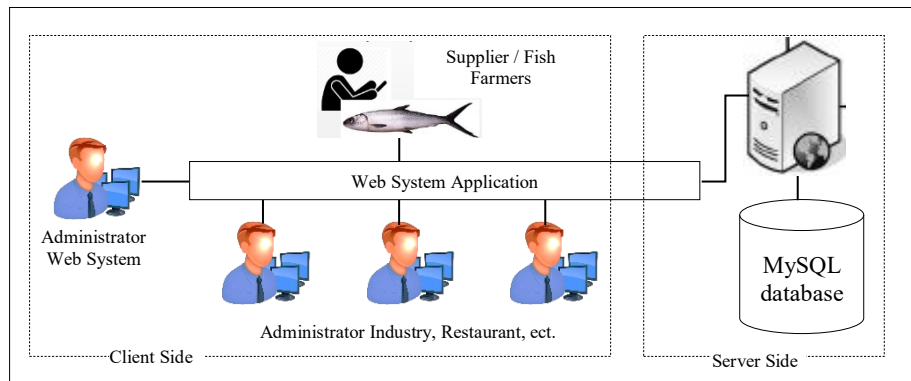
Figure 5. The proposed system architecture framework

2.3.2 Database system

Database design involves two main phases namely modeling entities and then normalizing the data. Entity modeling is used to determine data tables, data attributes, and their relationships in system database management. Relational databases as shown in Figure 6.
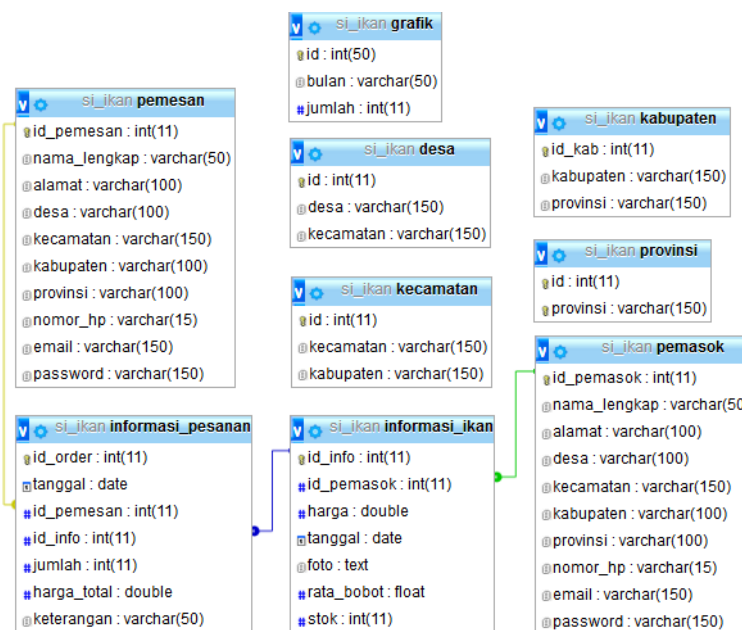

Figure 6. Table and relationship database

3. Results

A website portal framework can simplify the distribution process and reduce the involvement of intermediaries. A website with the ability to present accurate information about fish products, fish prices, fish weight and location of ponds will help farmers in marketing their crops. The website can accommodate data from many sources, more than one farmer so that visitors such as industry, restaurants or end consumers can see the different types of fish and different fish farmers or suppliers. This system certainly adds to the quality of the information.

3.1. Website testing

The home page allows the user or farmer to register and log in to the administrator then enter some data, the home page as showed in Figure 7.
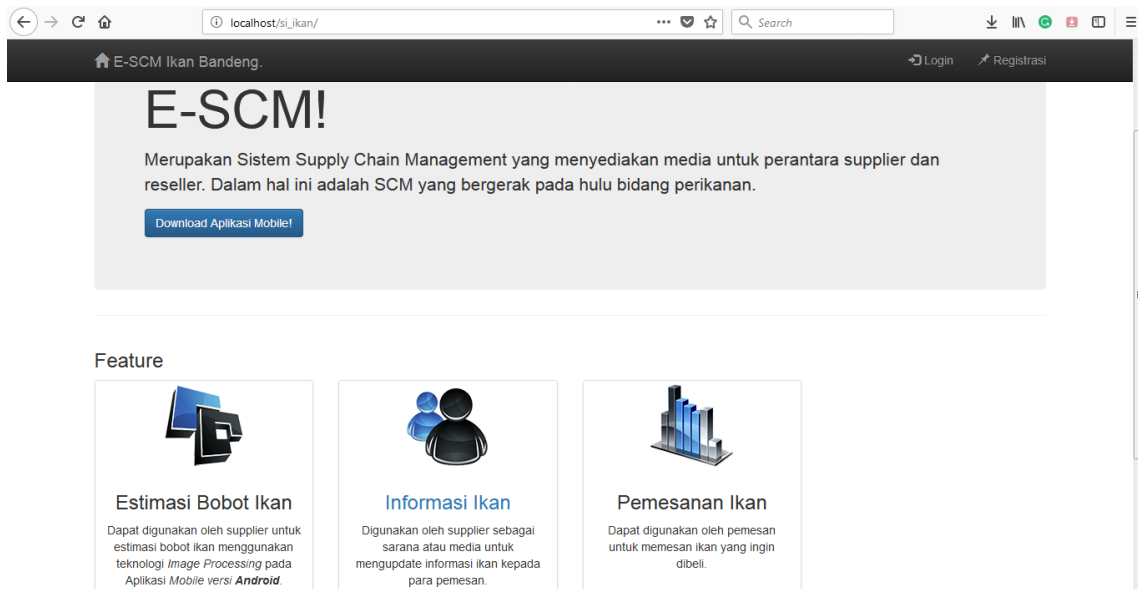

Figure 7. Website portal homepage

An integrated system website utilizes the database and formulates to calculate the percentage of fish supply and orders received by pond farmers. System data can be used to monitor and control fisheries in real time. Figure 8 is a website administrator page that shows a graph of fish supplies and orders.
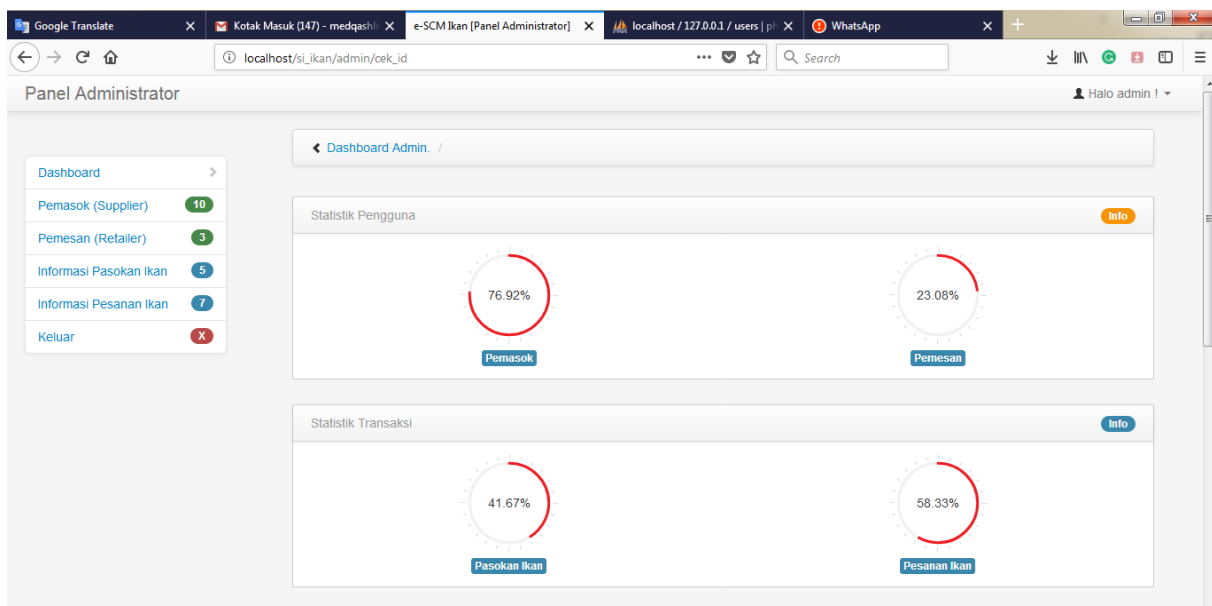

Figure 8. Supplier information portal and ordering fish portal administrators

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3.2. Mobile application testing

Mobile devices are provided to facilitate farmers in updating data on the web, seeing the interests of users and consumers who are easier to access information on mobile devices and become one of the most significant means to shop online. Mobile devices are considered faster than using personal computers or laptops.
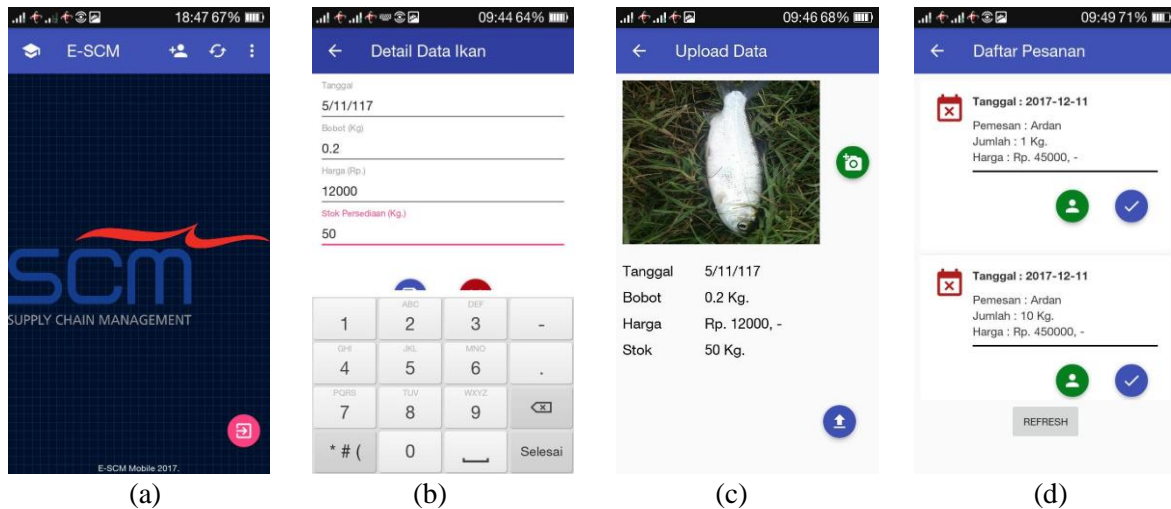

(a)   (b)   (c)   (d)

Figure 9. E-SCM simulation on the Android Mobile Program

Seeing the needs of users who tend to cellular technology, this research has also designed mobile software, and the device may include image processing technology that works to identify fish and calculate the weight automatically. Figure 9 (a) is the home page, image 9 (b) for inputting and editing fish detail information, image 9 (c) is fish data, and image 9 (d) order data. Farmers actively update data and receive orders through mobile software. The administrator can control via the provided page shown in Figure 8.

4. Conclusion

From the results of the testing process in the system framework website with the SCM, it can be concluded that the website designed is corresponding with analysis of the distribution model of harvested fish that occurs in the field. The process that runs on the web system is a form of computerization of the process that occurs in the field. This is a form of business process modernization using information technology as a tool that can work in an integrated manner to perform publication and marketing and increasing farmer income. However, some pond farmers cannot use the web system because it is limited to internet access and the ability to use technology devices. Further research can formulate a system concept as a continuation of this study that processes fisheries data information for the marine and fisheries office.

Website implementation in the field of fisheries is an effort in a series of processes that manage some resources to achieve goals. The objective expected in this study is the accumulation of commercial profits that can be obtained when pond farmers have been connected with various industries and extensive market networks.

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