



Integrated Web-Based E-Fulfillment Services Information Systems

Florentina Kurniasari¹(✉), Keshia Tiffany², Dennis Gunawan², and Prio Utomo¹

¹ Department of Technology Management, Universitas Multimedia Nusantara, Tangerang, Indonesia

{florentina,prio.utomo}@umn.ac.id

² Department of Informatics Engineering, Universitas Multimedia Nusantara, Tangerang, Indonesia

dennis.gunawan@umn.ac.id

Abstract. The growing e-commerce businesses in Indonesia brought challenges in the value-chain strategies. The business players were currently facing the expensive logistics cost and complicated administrative procedure. There's an urgency to develop the integrated information system to reduce these barriers. This study was focus on developing a web-based e-fulfillment services information system called MyStore2Go. This system allowed the management to make a business decision making in more simple way. It also allowed to have an update data and information that were needed in business process. Documentation of all data and information was provided for further system development. Meanwhile, the designing of the model followed the Rapid Application Development framework. MyStore2Go built a web-based information system that can be accessed quickly and easily using internet. The information system was built using the Laravel framework, Bootstrap, and MySQL. The web application is ready to use and has been built in accordance with the stakeholder's requirements.

Keywords: E-fulfillment Services · Laravel · website · MySQL

1 Introduction

E-commerce businesses was growing rapidly in Indonesia during the Covid-19 pandemic. The growth was aligned with the increasing number of online shoppers spending [1] who more than 50% of them doing the online transaction once a week [2]. The positive trend of e-commerce business opened huge opportunity for the companies that were be able to offer the integrated fulfilment services at the cheaper and affordable prices. The research of [3] showed that the main problem for the e-commerce business players was the expensive logistic costs and complicated supporting logistic infrastructure.

The growing of ICT infrastructure in Indonesia support the development of information system application in various of businesses [4]. The implementation of fulfilment services information system was expected to overcome the barriers in the logistic activities and provide an alternative solution as the information system strengthens corporate decision making processes [5]. Store2Go was an online sales platform with the main objective to support the Small Medium Enterprise businesses. The platform integrated all the online activities in market place and social commerce and supported with the experienced fulfilment and logistics services. The stakeholders of Store2Go found that some business processes were still conducted in manually. The management had difficulties in getting real and update customer information related with the financial issues and sales transaction. Therefore, the company decided to designed and develop new integrated e-fulfillment services called MyStore2Go. MyStore2Go was a web-based information system in which the users had access into detail customer database.

MyStore2Go was developed as an integrated information system based on website and application. This system was easily accessible through internet. The development of the system itself using Rapid Application Development (RAD) [6]. RAD was a strategically cycle to obtain the shorter, simplify, speedy system with the more stable and understandable [7].

2 Literature Review

A. *E-Fulfillment Services*

The basic process of the fulfillment services in the e-commerce businesses is the receipt of products ordered from suppliers through an internet store to the warehouse, in which the products are then stored. E-fulfillment services related with the comprehensive value chain started out from shopping for to selling, helps record goods in the warehouse, facilitate the financial transaction [8] to get on-time to the right customers at the right conditions [9]. Therefore, the process itself covered some important activities included: the process of receiving the goods, storing in the warehouse, processing or packaging, shipping, delivering to customers and returns if any [10].

B. *Rapid Application Development (RAD)*

Rapid application development was a software development approach that use efficient resources by initiating a prototyping method when introducing the product [11]. This prototype was able to cover some needed functions or features. RAD approach was expected to have proper and faster output with focused more on the adaptability of development workflow itself. The RAD model required more data gathering from various related stakeholders to pinpoint the features that really needed from a given product. There are significant stages in the RAD process includes building, designing, analysis, and the testing phase. Business modeling as the first stage in a RAD model required data collection to form useful description from different business-related sources. Data modeling was the next step in the RAD process to put all the information with accurate

description. In the process modeling, all the data that was collected in Data Modeling stage is converted to useful information. Therefore, during this stage, it's allowed to make changing necessary information such as: adding, removing or changing the data objects. All the data that has been collected further coded and converted in the prototypes in the coding phase called application generator. The last stage was testing stage in which all models were evaluated and examine to avoid any problems.

C. *Laravel*

Laravel is a framework that widely used in designing website and applications. The framework itself was written in the programming language called Hypertext Preprocessor (PHP). Laravel is a tool that consists of various types of programming tool and provide some easy tasks that mostly used in the web development project [12]. The tasks including: making authentic following programs, routing, periods and buffering [13] and assists in developing the application faster without losing its functionality.

D. *MySQL*

MySQL was a database that connected PHP script using the same query command and escape character in PHP. MySQL is a database server in which all data was processing in the server and user only send or change the data. The system could be accessed anytime and anywhere as long as the computer connected to the server. Meanwhile, PHP itself was defined as a powerful server-side programming language that mostly used to make dynamic and interactive website [14].

3 Research Method

A. *Data Collection*

MyStore2Go integrated information system was developed based on the direct observation and interview with the stakeholders and users, including the Board of Management, the Finance and Marketing Department.

B. *MyStore2Go System Development*

There're five important stages in developing the system followed the RAD framework [6].

C. *Analyze and Design MyStore2Go System*

In the early stage, all information and data were obtained to get more understanding regarding the current business process, the urgency and the needs in using the system. The system was expected to replace the manual existing system that are costly and wasting time. The use case diagram, sitemap, and database schema was the result in the system design stage.

D. User-Interface MyStore2Go Development

User-Interface was developed based on the analysis in the previous stage, public interface and CMS. The user-interface was developed using Bootstrap.

E. Implementation of MyStore2Go System

The implementation of database design, functional system and interface used the framework of PHP Laravel [12] and MySQL [14].

F. Testing and Evaluation of MyStore2Go System

The next stage after the information system development was testing of the system functionality. The testing activities were conducting to ensure that the program fulfill the requirements as expected. Therefore, the testing stages needs the confirmation and involvement of the stakeholders. The corrective necessary action will be taken in handling the mistake and risk while using the system.

G. Documentation of MyStore2Go System

Documentation was the important last stage in the system development. Documentation of the system was used as a guidance both for the users and developer in maintaining and upgrading the system in the future. Removing the documentation process would bring the risk in losing the company necessary data and information [15].

4 Results and Discussion

A. Analyze and Design MyStore2Go System

Based on the interview with the related stakeholders, the main problem that the company facing was the absence of the information system that could be accessible anytime and anywhere. Currently, all data and information related with the customers was input manually. There's an urgency to have a more integrated information system that can provide detailed customer information, included: financial performance, behavior, transaction sales and business prospect in the future.

Therefore, before the system was developed, the various diagrams were created, such as: use case diagram, sitemap, and database schema. The system itself consists into two main parts, namely: public website and content management system (CMS).

1) Sitemap Website CMS MyStore2Go

Website CMS MyStore2Go was built from accessible various menu, as it shown in Fig. 1.

2) Database Schema MyStore2Go

Figure 2 showed the database scheme as the output of database design. There're four tables that could be used to developed the MyStore2Go information system.

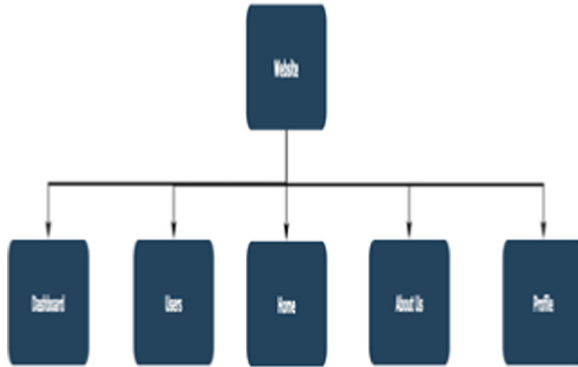


Fig. 1. Sitemap Website CMS



Fig. 2. Database Schema

3) Use case Diagram

Website CMS was used to manage all the database easily in which the user did not need to access directly at the provided database. In this stage of system development, the data management would be handled by Administrator. There're two kind of users in the CMS: Administrator and Superadministrator, who each person had an exclusive access rights that can be explained in Fig. 3.

B. User-Interface MyStore2Go Development

The next step was the designing and developing the system user-interface in each page.

1) Login Page

The user must login before able to access the dashboard of My Store2Go website. The login page ensures that only users who had full-authorization were able to use the application. Figure 4 was the user-interface of the first page in MyStore2Go when the user access the website.



Fig. 3. Use case diagram



Fig. 4. Login Page

2) Dashboard Page

After successfully login into the website, the user would continue to access the dashboard page which consists the summary of the total users who are successfully registered in the My Store2Go mobile. The front-end program was created to manage the content related with the summary number of the registered users (Figs. 5 and 6).

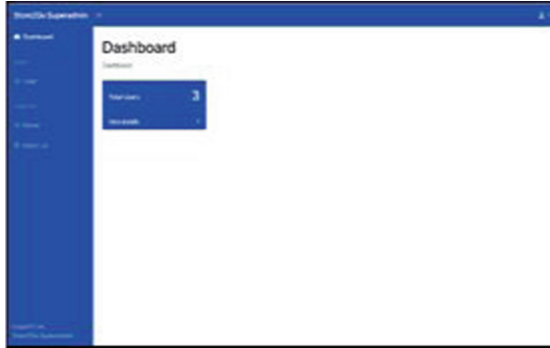


Fig. 5. Dashboard Page

```
resources > views > pages > | index.blade.php | @ div.container-fluid.pe-4
1 @extends('layouts.app')
2 @section('title-page', 'Dashboard')
3 @section('body-classname', 'sb-nav-fixed')
4
5 @section('content')
6 <div class="container-fluid pe-4">
7   <div class="mt-4">Dashboard</div>
8   <div class="breadcrumb mb-4">
9     <li class="breadcrumb-item active">Dashboard</li>
10  </div>
11  <div class="row">
12    <div class="col-1-3 col-md-4">
13      <div class="card bg-primary-dark text-white mb-4">
14        <div class="card-body d-flex align-items-center justify-content-between">
15          <div>Total Users</div>
16          <div>{{ $total_users }}</div>
17        </div>
18        <div class="card-footer d-flex align-items-center justify-content-between">
19          <a class="small text-white stretched-link" href="{{ route('stp-admin.users') }}">View Details</a>
20          <div class="small text-white"><i class="fas fa-angle-right"></i></div>
21        </div>
22      </div>
23    </div>
24  </div>
25 @endsection
```

Fig. 6. Program of Dashboard Page

3) User Page

The complete information of list users who are successfully registered in the system would be shown in the user page. User page feature also allowed the user to change its active status (Figs. 7 and 8).



Fig. 9. Content – Home Page

4) *Content – Home Page*

This feature allowed the user to add, manage position and delete or remove the list banner that was listed in the home page at the My Store2Go application. Users were also allowed to change the paragraph content of the home page (Figs. 9 and 10).

5) *Content – About Us Page*

This feature gave the permission for the user to manage the content of about us page in the My Store2Go application mobile. In addition, the program in the content-about us page allowed the user to change the master head banner and content (Figs. 11 and 12).

6) *Profile Page*

Users were able to take a look at the profile and change the password (Fig. 13).



Fig. 11. Content – About Us Page

C. 4.3. Implementation

The implementation of the MyStore2Go system used the approach of framework Laravel [12] and MySQL database [14].

D. Testing and Evaluation

The testing activities in using the system was conducted to ensure the normal process of the system as well as the system functionality was running well. The evaluation process also ensure that the system fulfill the stakeholder's needs and requirements.

E. Documentation

The documentation covered some important information, such as: sitemap, use case diagram, system functionality and user guide. The documented information was very useful to educate the users in accessing the MyStore2Go system.

F. Conclusion and Future Works

The integrated web-based MyStore2Go was successfully developed to manage the customer data base in more simple and efficient. The system consists two main parts, including: public website and CMS to manage the data. This application was developed using the PHP program language with Laravel framework and MySQL database. The design of MyStore2Go program was dynamic to open further development in the future to become the integrated e-fulfillment services platforms that can bring alternative solution in providing the distribution and logistics activities to end-user, including: storing, packaging and delivering the products or services [16].

This study suggested some further recommendation:

1. Additional features to add other administrative and in the same time implementing access control list features.
2. Additional features to manage top features that was available in about us page in the mobile application Store2Go.
3. Enriching the e-fulfillment services MyStore2Go into the mobile application.

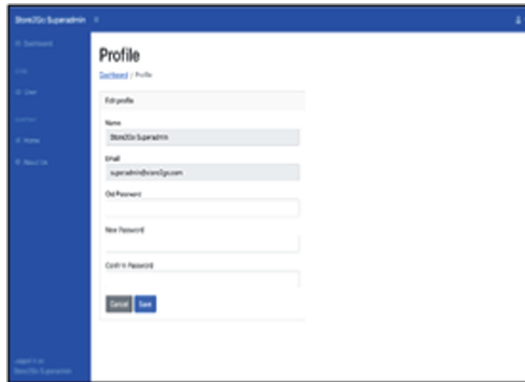


Fig. 13. Profile Page

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References

1. C. B. o. Statistics, "Statistik E-Commerce 2019," Central Bureau of Statistics, Jakarta, 2019.
2. Snapcart, "How bis is your brand's opportunity in online grocery platforms?," Snapcart, London, 2020.
3. A. & C. G. J. Febransyah, "Measuring the supply chain competitiveness of e-commerce industry in Indonesia," *Competitiveness Review*, 2020.
4. F. Kurniasari, "The role of financial technology to increase financial inclusion in Indonesia," *Journal of Data and Network Science*, vol. 5, pp. 391-400, 2021.
5. D. T. Y. a. Q. J. Almazan, "Influence of Information Systems on Organizational Results," *Contaduria y Adm*, 2017.
6. B. a. Y. P. Kumar, "Improving the rapid application development process model," in *International Conference on IT Business, Industry and Government*, 2014.
7. M. Despa, "Comparative study on software development methodologies," *Database Systems Journal*, vol. 5, no. 3, pp. 37-56, 2014.
8. A. A. N. F. X. P. J. R. R. a. S. V. Ouassarah, "Understanding Business Trends from Data Evolution with Tornado," in *International Conference on Data Engineering*, 2015.
9. K. A, "Fulfillment service in e-commerce logitics," *LogForum*, vol. 13, no. 4, pp. 429-438, 2017.
10. I. C, "E-fulfillment-a new challenge for electronic business," *Annals of the University of Petrosani, Economics*, vol. 14, no. 1, pp. 121-128, 2014.
11. A. A. Lapada, "University e-bulletin," *International Journal of Novel Research in Computer Science and Software Engineering*, vol. 5, no. 3, pp. 1-6, 2018.
12. M. D. A. & S. H. Anif, "Designing internship monitoring system web based with Laravel framework," in *IEEE conference on communication, networks and satellite*, 2017.
13. R. & S. L. Das, "Comparison of procedural PHP with Codeigniter and Laravel Framework," *International Journal of Current Trends in Engineering and Research*, vol. 2, no. 6, pp. 42-8, 2016.

14. J. Letkowski, "Doing database design with MySQL," Journal of Technology Research, 2015.
15. B. a. R. Oluwaseun, "A university examination web application based on linear-sequential life cycle model," DIU Journal of Science and Technology, vol. 12, no. 1, 2017.
16. F. a. E. M. Nafie, "Real-time monitoring and analyzing business process performance," vol. 6, no. 7, pp. 31–35, 2016.

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