Local Web Based Internal Corporate Meals Request System With Email Approval Using ASP.Net MVC

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Abstract— Indonesia is one of the countries with the largest manufacturing industry in the world. Manufacturing companies in Indonesia have many workers who work hand in hand to build a better industry with meetings, training, kaizen, and others. The activities of the company require a consumption ordering system to support the sustainability of the activities of the manufacturing company. Most manufacturing companies still use a manual ordering system, namely by filling out the order form with Microsoft Excel and calling the canteen vendor who takes care of ordering food to order via WhatsApp message to the email. This causes a lot of time wasted on ordering food, late billing, to over budget which makes the company must spend more funds than before. Therefore, this final project discusses the creation of a website-based consumption ordering system application with an approval feature through email, which is expected to help overcome problems that have been occurring in manufacturing companies. So that the consumption ordering process can be well integrated, systematic, and reduce the possibility of errors that occur to cause losses.

Keywords: Ordering System, Approval, Company, ASP.net MVC

I. INTRODUCTION

Consumption is one of the most important things to prepare during meetings or long training in a company. Not only for company workers but also for entertaining guests, speakers, relations, and others. In a large manufacturing company, there are at least ten to twenty meeting activities to training from all divisions of the company which takes place with an average of ten to fifteen people involved in each activity. Of course, this causes the budget allocation of funds for consumption of activities in one month to reach up to five hundred million rupiah. In ordering activity consumption, there are budget restrictions for several categories which are seen from the duration of the activity, the theme of the activity to the people involved in the activity. However, this is often forgotten by consumption ordering users to cause over budget or a surge in bills from canteen vendors who take care of purchasing consumption activities and every

month will be billed to the finance department at the manufacturing company.

The surge in activity consumption bills is caused by several factors, due to the irresponsibility of related requestors such as not knowing the limit and no reminders when ordering food because the order is carried out manually by filling out an official order form, sending an order email, to calling the canteen vendor who oversees taking care of ordering consumption activities. In addition to the excess budget, the problem experienced in this manual ordering system is that the order is not integrated, causing the canteen to be overwhelmed so that there are some mistakes in terms of executing orders. The delay in inputting the billing statement is also an obstacle because many requestors have not collected the official request form that has been signed by the division manager.

With a website-based system that will be created, it aims to help the process of ordering consumption of manufacturing company activities to be more systematic, and requestors are no longer confused with the type of consumption to be selected because it is displayed visualization of the available menu and the approval manager system by using the approval button that will be sent via email to shorten the time order process. Timeliness in billing consumption funds by exporting data. The development of this website-based Meals Request System application uses the Waterfall method because this method is the earliest approach to the Software Development Life Cycle (SDLC). [1]. With the development cycle of Needs Analysis, System Design, Implementation and Unit Testing, System Integration and Testing, Operation and Maintenance.

II. BIBLIOGRAPHY REVIEW

A. ASP.NET

ASP.NET is a web development platform that provides a programming model developed by Microsoft, a comprehensive software infrastructure, and a variety of services required for web applications that can be used on both PCs and mobile devices.[3]. ASP.NET is designed to work with the HTTP protocol which is the standard protocol used in all web applications. ASP.Net applications can also be written in various .NET languages, including C#, VB.NET, and J#. ASP.NET can be said to be a collection of technologies in the .Net Framework to assist in the development of web applications that use the concept of Object-oriented dynamically.

B. MVC

The important thing used in making a food ordering system is MVC. MVC is a design pattern that separates an application into three main components: a *view*, data, and an application logic controller *(Controller)*. This pattern helps achieve a separation of worries. Using this pattern, user requests are routed to the *Controller* responsible for working with the *Model* to perform user actions and/or retrieve query results. The controller selects a *View* to display to the user and provides it with whatever Model data it needs.[2].

C. Visual Basic (VB)

Visual Basic is a programming language that has been around since 1991, as written by the ThoughtCo site. Visual Basic or VB includes a variety of visual tools that can be used to create advanced applications. The GUI (Graphical User Interface) in Visual Basic is also extended so that VB is not just a programming language. Instead, it includes a variety of libraries that are useful for creating object-oriented programs. The program involves a large development team that can work on projects simultaneously. [4].

D. Manufacturing Company

A manufacturing company is a business entity that converts raw goods into semi-finished goods or finished goods that have a selling value. [6]. In the process of processing, the company operates machinery, equipment, and labor in one medium. All processes and stages carried out in manufacturing activities refer to the Standard Operating Procedures or SOPs owned by each work unit.

E. SQL Server

SQL Server is a client/server software product that functions as a database server application because there are client components that have the function of displaying and manipulating data, as well as server components that have the function of calling, storing, and secure databases.[7]. SQL Server has many editions that can be used according to needs, such as Express, Standard, Enterprise, Business intelligence, Developer to Microsoft Azure SQL Database.

III. SYTEM ANALYST

The Meals Request System application is a website-based system created using the MVC (Model View Controller) ASP.Net using the VB programming language, assisted with CSS, Bootstrap, and JavaScript for a more attractive appearance, and uses Entity Framework and SQL for object-oriented and database development. This system has four user roles with different features in each role, namely user, canteen admin, and manager. Meals Request is an activity to order food for the benefit of existing events such as Meetings, training, Overtime, and others from the company to canteen vendors. The current feeding request is done manually by filling out the order filling sheet in excel. Often, food requests are filled out after the event, which hinders data entry for food cost billing. In addition, previous orders are made by phone to vendor workers to request a menu that can be made into options and prices. So, this causes a lot of time wasted just for the ordering process. Currently, most manufacturing companies in Indonesia still use a manual food processing system using paper or telephone, and email. Therefore, with Meals Request this system will eliminate the manual process of ordering using paper, and ordering food are much more systematic and faster than previously took as much as fifteen to twenty minutes. The Meals Request system that the author will work on will speed up the order time by seventy-five percent. to summarize the details of system users and their interaction with the system. It helps represent scenarios in which the system interacts with users, the purpose of system-user interaction, and the scope of the system.
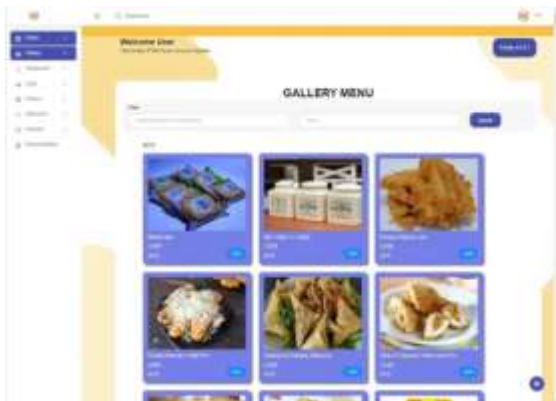
Figure 3. 1 Use case diagram

IV. SYSTEM DESIGN

User Interface or User Interface is a form of communication between users and the system that has been created. The interface design on the Meals Request System is intended for User users, Administrators, and canteen parties which includes making orders, editing item data, and users, and using data in processing the course of orders needed to meet needs during events in manufacturing companies. This user interface is designed using Figma to make it easier to visualize the appearance of the Meals Request system. The image below is one of the cores of the user interface design sub-chapter, namely the design of the main page of the application.

Figure 4. 1 User Interface Home Page

In this sub-chapter, the author examines the data design of the proposed system that will explain how the data (input and output) is managed and stored in this system through the entity relationship diagram on the class diagram and the system database table.

Figure 4. 2 Class Diagrams

V. IMPLEMENTATION SYSTEM

Figure 5.1. below, the *Gallery Menu* page has a visualization of the items to be offered. Displays item name, price, restaurant category, and add button on one *menu card*. On this page, there is also a responsive *sidebar* and there is a *dropdown* to select a restaurant. In addition, when the user clicks the "*Add*" button on the *item card*, in the right corner, a button will appear that can directly point to the shopping cart.

Figure 5. 1 User Interface Gallery Menu

The term Model in this project specifies that this project uses a Model to represent the database used to store data on this system. The Gallery Menu page devoted to the user is in the user controller where in the user role all functions will be coded in the *UserController*. There is an index that will bring in the view menu and function menu for search engines based on the item name and restaurant. The *CartAdd* function in the following image is a function to add items to the Shopping Cart Database (*Cart*).

Gambar 5. 2 Coding Menu Home Controller - Add Menu to Cart

After the order process, the system will display a summary page or see a summary of the items in the message. In addition to seeing the function of this page, there is also a button to download the formed invoice automatically and a button to send an email to the manager.

Figure 5. 3 User Interface – Summary

Figure 5. 4 Below displays a view with an invoice outline on *windows.print* containing order information.

Figure 5. 4 User Interface - Download Invoices

One of the main functions of this project is to send Approval via Email. In the picture below, it can be seen that the *"Send Email"* button on the summary page serves to call a modal that has a file input class.
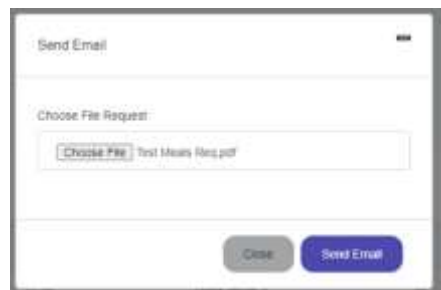

Figure 5. 5 User Interface User - Attach File Send Email

Figure 5.6 shows the main point in sending email i.e. by using SMTP (Simple Mail Transfer Protocol). In the *SendEmail* function, Meals

Request System uses *smtp* with *"Host"* and *"Port"* owned by the company. Without *smtpclient*, email delivery cannot be successful. After that, write down the parts of the email that must be completed.

Figure 5. 6 Coding Send Email Controller

After pressing the "*Send Email"* button, the email containing the A*pproval* request or approval along with attachments in the form of PDF files previously uploaded by the user will be sent to the manager in figure 5.7 according to the arrangement contained in the *MR_user* database.

Gambar 5. 7 User Interface Manager - Receive Email

Behind figure 5.7 there is a code that forms a view of the email received by the Manager. That is the body of the email that shows the name, user id, PDF attachment, and the "*Approve"* button to approve the order. When the email is sent, the approval status on the table *MR_Approval* will be "*Waiting for Approval Manager"*. In order for the "*Approve"* button to work properly, use the following code that is connected to the *order Orderid* and the date the order was created or *CreateON.* <a href=http://dckr00801274:8094//Email/SendEmail? orderid= {Orderid}&CreateON={CreateON}

VI. SYSTEM TESTING AND EVALUATION

The test environment describes the tools required to test the application. The selected tool is based on

relevance to the scenario or test objectives. The description below is the tools that will be used to perform application testing. Below are the hardware and software that will be used to test the application.

1. Laptop or Personal Computer with minimum RAM 8 GB, Windows 10 Operating System, and 500 GB hard disk.

2. Keyboard.

3. Microsoft Edge as a browser to run the system

4. IIS for debugging and runtime.

5. Visual Studio

Test scenarios describe several test scenarios to be tested for an application. The test scenario determines what action the user takes whether the app works and meets expectations or not. Some of the sub-chapters below are details for each application testing scenario.

No.	Testing Scenario	Expected Result	Actual Result
1	Opening Meals Request System	The system will display the login page	Pass
2	Login with KPK Id and Password.	Displaying the main page of each User role i.e. Gallery Menu When KPK id and Password are correct	Pass
3	Item "Add" button on Gallery Menu	Add items to cart	Pass
4	Order after filling out the event form	The order goes to the canteen order page (successfully ordered)	Pass
5	Download Invoices	Save an invoice containing order information on a pc	Pass
6	Send Email button	Manager receives an email containing approval with a file attachment	Pass
7	Approved Manager	Update	Pass

via Email	approval status from "waiting" to "Approved"	

Table 6. 1 Table Testing Scenarios

VII. CONCLUSION AND FUTURE DEVELOPMENT

The development of this project has finally reached the end. Overall, the application has met the expectations and goals of the previous chapter. This project provides a web-based application using MVC ASP.NET with the VB programming language, to simplify and digitize the food ordering process at manufacturing companies which are done manually using telephones and paper forms. This web application allows its users from various roles ranging from users, admins, canteens, and managers to easily carry out a more systematic and organized ordering process from orders to reports received. This Meals Request system, in addition to being used to place orders and approval managers via email, has a feature to display report results and generate reports in Microsoft Excel format for the purposes of administrators and canteens. Users and canteens can download invoices in PDF format with this user allowing them to get the output data they need. This can help to support sustainability programs to tighten budget restrictions. This web-meals request application is expected to be developed in the aspect of notification notifications by phone or via the WhatsApp application because the manager will be more quickly reached if notifications can be obtained through personal chat, and it is easier to provide approval by phone. In addition to notifications, one of the things that must be developed is an approval system that directly attaches order details or in the form of an invoice table directly to the email body so that managers can more easily see orders before giving approval without having to open the PDF attachment sent first. The last thing that must be improved is the User Interface and request the system so that this web can look more attractive and optimize the use of components contained in this web application.

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