DESIGN OF CONTINUOUS IMPROVEMENT APPLICATION SYSTEM PT. MEIRA MANUFACTURING INDONESIA USING VISUAL BASIC.NET

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Abstract

Technological advances are growing rapidly so as to provide convenience in every aspect of life and industry. In today's digital era, documents are rarely stored in paper form stored in a neatly arranged cupboard in the corner of the room, but the data is stored in a collection of interconnected files, tables or archives stored on electronic media, in this digital era we are familiar with databases, one of which is like phpMyAdmin. The database requires a tool, the tool is a programming language, one of which is Visual Studio 2010 (VB.Net). With this case the author aims to design a Continuous Improvement Application System at PT Meira Manufacturing Indonesia, the data collection method is carried out by conducting observations, interviews, literature studies and documentation that have a relationship with the research. This system was created using Visual Studio 2010 (VB.Net) and the database used is phpMyAdmin. The results of this application system to facilitate and improve employees in proposing company improvements.

Keywords: Visual Studio 2010, phpMyAdmin, System Continuous Improvement.

Introduction

In the era of globalization, business competition is getting tougher, both in technology systems and in the form of industrial services. The success of a company or organization is highly dependent on information technology that can facilitate work or provide reports for analysis. A flexible and efficient submission tool is a tool that uses an application system that does not use manual tools such as paper, so that users can more easily access anytime and anywhere for 24 hours and is done in real time without the need for an admin to actively control.

This Continuous Improvement System is also considered to be able to reduce company costs in physical form or process, and is more attractive to all employees to be able to submit their ideas easily. Departing from this need will be a service that becomes the main gate to bridge the two-way interaction between employees and company management.

Problem Formulation

Based on the background described above, the problem can be described as follows: "How to create and design a Continuous Improvement Application System based on Visual Studio 2010 (VB.Net) so that it provides convenience for users and companies in submitting employee ideas efficiently so that the information obtained is more quickly received and analyzed so that it can be applied as a better work process than before".

Problem Limitation

This research is limited to designing a continuous improvement design system based on Visual Studio 2010 (VB.Net) including several features including: understanding Continuous Improvement, Kaizen, QCC, Red Zone.

Research Objectives

The Continuous Improvement System developed will act as a simple *Virtual Assistant* that can provide specific information related to the process of submitting employee ideas. The information provided by the Continuous Improvement System includes: about Continuous Improvement, Kaizen, QCC, Red Zone.

With the Continuous Improvement System, it allows interaction at any time for 24 hours and is done in *real time* without the need for an admin to actively control. This can increase more ideas that will be submitted by all employees. In addition, in general, the Continuous Improvement System also reduces service operational costs because there is no need for an admin to serve interactions between employees and company management.

Research Benefits

1. Make it easier for employees to make kaizen or improvements.
2. Save costs incurred by the company: Paper usage documentation
3. Improvement is more quickly received and analyzed by the company.
4. The application can be accessed anytime for 24 hours in real time without an admin who actively controls it.

Systematization of Writing

CHAPTER I - Introduction
This chapter contains the basics of script writing such as: background, problem formulation, problem limitation, research objectives, research benefits and writing systematics.

CHAPTER II - Theoretical Foundation
This chapter contains the basic theories used in the research, namely about designing a continuous improvement system application using Visual Studio 2010 (VB.Net) and supporting applications such as XAMPP, PHPMyAdmin, and ODBC Data Source.

CHAPTER III - Research Methodology
This chapter contains a research methodology that discusses determining the steps in making a continuous improvement system application design.

CHAPTER IV - Results and Discussion
This chapter contains a discussion of how the results of designing a continuous improvement system application, in the application method and its application as a means or forum for submitting employee ideas.

CHAPTER V - Closing
This chapter contains conclusions from the entire discussion and suggestions for readers and thanks to all parties and sources that have helped in making this application and journal.

Theoretical Foundation

1.   Understanding Visual Studio 2010 (VB.Net)

According to Geval Gusrion (2018) Visual Studio 2010, or VB.Net 2010, is essentially a computer programming language. Here, a programming language means commands that a computer understands to perform certain tasks.
VB.Net 2010 is not only a programming language, but also referred to as a tool or means to create *Windows-based* application programs. It is very easy to learn, so novice programmers who want to learn to program can create programs quickly with the Visual Studio environment, which is very simple and uses common English words. We no longer need to remember a lot of syntax and language formats; Visual Basic has them all in options, so we only need to select them as needed. However, for advanced programmers, its tremendous power can be used to create complex programs, such as shared or client server work environments. Some of the features of Visual Studio 2010 are as follows:

- It uses a program creation platform called developer studio, which has a similar look and tools to Visual C++ and Visual J++, allowing you to migrate or learn other programming languages easily and quickly.
- Visual Studio 2010 has a powerful compiler that can produce executable files faster and more efficiently than before.
- Has several new wizards. Wizards make it easier to create applications by automating certain tasks.

- With Visual Studio 2010, you can develop various applications, such as Windows Development, Web Development, Office Development, Sharepoint Development, Cloud Development (Windows Azure), Silverlight Tooling, Multicore Development, and Customizable IDE.

2.   Definition of PHP

Anhar (in salamun, 2017) states that PHP is a *script* used in making dynamic *web* pages, which means that it can be updated regularly. In this case, a dynamic *website is* created when the *client* requests, this mechanism makes the *website* display information that can be received by the *client* always up to date and on time. All PHP *scripts* are processed on the *server* where the *script* is run.

EMS Team (2016) states that PHP stands for *Hypertext Preprocessing* or is a *script* language where when using PHP, a dynamic web is created with PHP code which is then linked between HTML *script* codes. It is a standard markup language for the *web* world.

From several definitions, it can be concluded that PHP *(Hypertext Preprocessing)* is a *script* language in creating dynamic *websites* and displaying information that can be received by *clients.*

3.   Definition of XAMPP

According to Mawaddah and Fauzi (2018), XAMPP is *software* in which there is a MySQL server and is supported by PHP as programming for creating dynamic *websites* and there is an *Apache web server* that can be run on several *OS X, Windows, Linux, Mac, and Solaris* platforms.

Iqbal (2019) states that XAMPP is *apache server software* where in XAMPP *database servers* such as MySQL and PHP *Programming* are available. XAMPP has the advantage that it is quite easy to operate, does not require fees and supports installation on *Windows and Linux*. Another advantage that is obtained is that only by doing it once then there is *MySQL, Apacheweb server, PHP database server* available.

From the above understanding, it can be concluded that XAMPP is an *Apache server software* in which a MySQL database is available as programming to create a dynamic *website* and has many advantages and a very large space.

4.   Definition of MySQL Database

Deval Gusrion (2018) states that a *database* also known as a *"database"* is a collection of data that is stored systematically in a computer and can be examined through a computer program. There are several *open source* software or *software* that can be used to create databases. This software is referred to as a *high level* programming language*,* one of which is mySQL. MySQL *databases* can be created using the *PHPMyadmin* interface or with PHP *scripts*.

MySQL is a *multithreaded and multiuser* SQL database management system or DBMS software/software derived from the main concept of a *database* for data selection and entry, which allows data operations to be performed easily and automatically. The advantages of MySQl when used in a *database* are as follows:

- It's free so MySQL can be easily accessed,
- MySQL is stable in operation,
- MySQL has a good security system,
- MySQL strongly supports transactions and has a lot of community support,
- MySQl is growing very fast.

5.   Definition of ODBC Data Source

According to Andoyono and Suyono (2016:209), ODBC is a program for *database* connections locally or remotely, and can also handle various databases with different formats with *driver* notes.

Meanwhile, according to Fauzi and Amin (2012: 59) "*Open Database Connectivity*" ODBC is a *Application Programming Interface* (API) database specifically used to access *rational databases.*

From this understanding, it can be concluded that ODBC is equipped with an *Application Programming Interface* and provides an application connection through the *database* management system used, with ODBC it will help design applications to access, view, and manage several applications at the same time.

Research Methodology

The research methodology created by the author includes:

a. *Analysis*

1. Conduct a survey of the actual field by interviewing employees; the results of the survey can be analyzed to determine the formulation of the problem faced by the author and get a solution to the problem that can be implemented immediately.

2. The literature study focused on data collection methods through the use of books and internet media covering the concepts and application of the Visual Studio 2010 (VB.Net) programming language, which serves as the basis of this paper.

b. *Design*

This research is a research design and software development waterfall model. The design of this application uses Visual Studio 2010 (VB.Net) with reports using the MySQL database which will be carried out in the implementation and described in the results and discussion.

c. *Implementation*

The author makes a case study in the form of a Continuous Improvement application system.

d. *Simulation Testing*

The simulated application will be tested to see how it performs. It is expected that the resulting solution will soon be implemented in the field.

e. *Time and Place of Research*

This observation was carried out from February 01, 2023 to February 20, 2023. Every Monday-Friday from 7:30 am to 4:30 pm.

Located at PT Meira Manufacturing Indonesia, KIM Area Jl. Mitra Raya II No. 5-6 Parungmulya District Ciampel-Karawang 41363.

Results and Discussion

4.1. Profile of Meira Manufacturing Indonesia

PT Meira Manufacturing Indonesia is the first Japanese PMA company in Indonesia engaged in manufacturing bolts (Bolt) for the automotive industry. Established since 2015 in the KIM Area Jl. Mitra Raya II No. 5-6 Parungmulya Ciampel District - Karawang 41363.

4.2. Process Specifications

In accordance with the results of the research conducted, the current system at PT Meira Manufacturing Indonesia includes:

1. Employees report to department supervisors to propose improvements.
2. Department supervisors provide kaizen forms for employees to fill out regarding improvements.
3. Employees analyze and fill out the kaizen form.
4. After completion, the employee gives the results of filling out the kaizen form to the department supervisor.
5. The supervisor provides the results of the kaizen form to the company management for documentation and later analysis.
6. The company agreed and then the improvement was implemented in the field.

4.3. Troubleshooting Efforts

At the initial stage in designing this system is to create a Use Case diagram Flow of the system to be built using UML *(Unified Modeling Language)* notation.

1. *Use Case* Diagram Flow
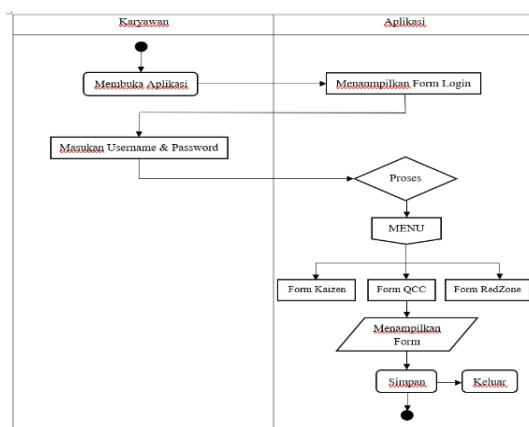
Use Case Diagram Flow

4.4. System Implementation

1. *Login Form* Implementation

Figure 2. *Login Form*

Input username and password then input password click Login to continue the application system process and close to exit the system.

2. Menu *Page* Implementation

Figure 3. *Menu Page*

Functioning to display the menu page there is a menubar of choices according to the form of employee needs, such as: Kaizen Form, QCC, RedZone, About, Logout.

3. *Kaizen Form* Implementation
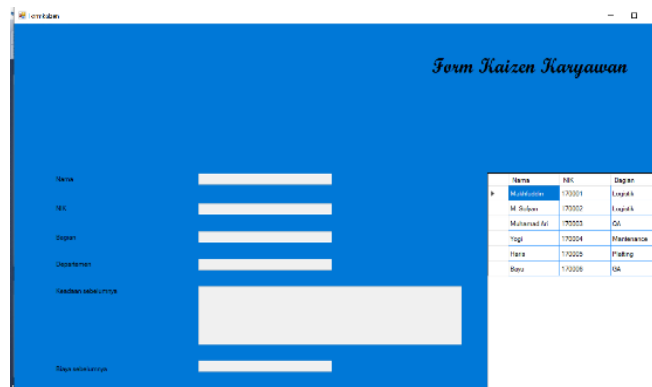
Figure 4. *Kaizen Form*

Fill in all fields and nothing should be left blank, if it is left blank then a description will appear:
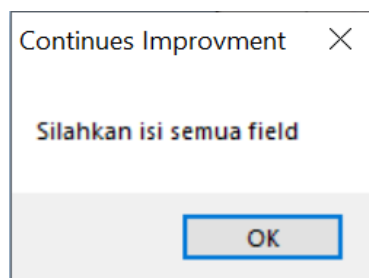
Figure 5. *Incorrect input warning*

If the fields are all filled in, then click Save, and the input form will automatically be entered into the MySQL database. Then a description will appear:
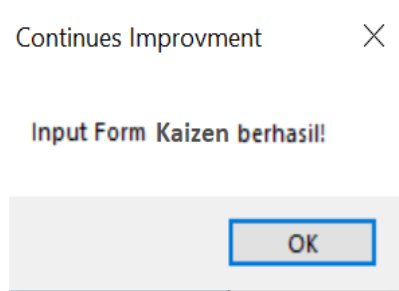
Figure 6. *Successful input warning*

4. *Qcc Form* Implementation
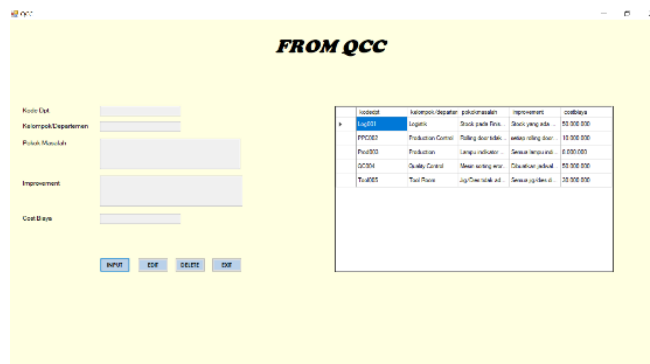
Figure 7. *QCC Form*

5. *RedZone Form* Implementation

Figure 8. *RedZone Form*

6. Implementation of *About Form*

Figure 9. *About page*

Coding used in the use of application forms in the Continuous Improvement system.

Figure 10. *Vb Form Coding*
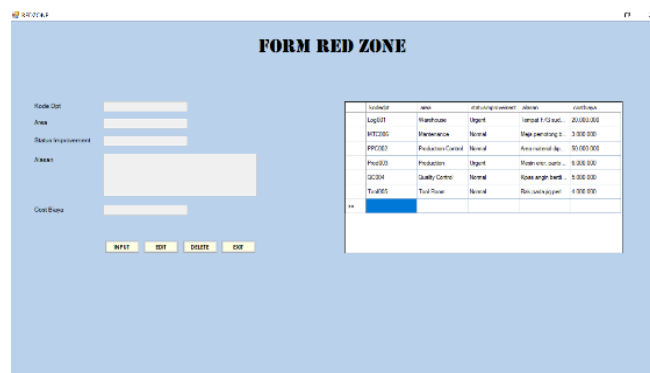
7. Database Implementation

The design of the Continuous Improvement Application System using a MySQL database can be accessed through a browser: http://localhost/phpmyadmin. as a storage place. In this case, the database is an application with the name batabase dbkaizen. The structure of the application table: kaizen form, qcc form, redzone form. After creating the database, we create a table design according to the data in VB.Net.

Figure 11: *Db Table Design*

Figure 12. *Db formkaizen*

Figure 13. *Db formqcc*

Figure 14. *Db formredzone*

Serves to display data that has been input by employees, in the Continuous Improvement system can be seen in the dbkaizen database, click print to capture.

Figure 15. *Kaizen Form Input Result*

Figure 16. *QCC Form Input Result*

Figure 17. *Redzone Form Input Result*

Conclusion

Based on the research results of the discussion described in the previous chapter, the following conclusions can be drawn:

1. The system used so far is still manually filling in paper forms, thus slowing down the process of submitting improvements because it cannot be accessed digitally. With the design of the continuous improvement application system will provide convenience for employees of PT Meira Manufacturing Indonesia because it does not require a long time and can be accessed 24 hours in *realtime* and does not require an admin to mengentrol.
2. Continuous Improvement Application System using *Visual Studio 2010 (VB.Net)* software and a database using *php MyAdmin*, this application is designed to facilitate employees in submitting *improvements digitally*.

Suggestion

Based on the results of the research, it is hoped that this application can be built in the future to be even better and meet   the   needs   of   the   industry   .

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B. Website

1. Definition of Continuous Improvement
   https://dailysocial.id/post/continuous-improvement
   [May 20, 2023, 7:32 pm]

2. Definition of Improvement
   https://jagad.id/pengertian-improvement/
   [May 20, 2023, 7:40 pm]

3. Definition of Kaizen
   https://www.kajianpustaka.com/2021/01/kaizen.html
   [May 20, 2023, 20:05 WIB]

4. Definition of QCC
   https://standarku.com/metode-qcc/
   [May 27, 2023, 7:35 pm]