

The Development of Web Based Management System: Emartech Computerized Management System

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ABSTRACT: *This paper focus on development process of Emartech Computerized Management System. This project is intended mainly to Emartech Resources Sdn Bhd which is the company that requested a new upgraded management system to be used by their customer and staff. The main problem of existing system is that the company's existing website and management system is not integrated with each other. The database is unstable and the existing system cannot function properly. Not only that, the existing system cannot be used by mobile devices since the screen resolution will not fit properly and lastly, the company cannot manage the system and the data by their own since the system is being outsourced to other company. Based on these problems, it is proposed that a new upgraded system have been developed using PHP language, jQuery and MySQL as its database. The new system known as Emartech Computerized Management System, is a mobile web based system that can fit in mobile devices easily and efficiently. With the development cost of RM30,000.00, the company will be installed with a new server which will store the new system and its database. The project duration time is six months starting from 1st July until 31st December 2016 and the end product of this project will help the company to manage the data efficiently and securely, access the system anywhere and anytime and the system will be more stable than the older system.*

KEYWORDS - *Emartech Resources, Computerized Management System, Web based system, Information System, Data Management*

1. Introduction

Currently, information system offers a range of benefits in data management such as cost effective development process, accessible anywhere, accessible for a range of devices and higher user rates. Information system refers to a computerized system used for processing data to achieve certain functions. Referring to [1], information management system can be applied to improve the efficiency of various activities, task management and administration.

Refer to [2], the development of the technology continues to evolve. The used of internet as a medium of information providers which is better known as web has been utilized for various activities, such as sales, promotions and other activities.

[3] discuss that web based system able to produce more effective and faster outcome than that can be done on papers. In reality, user still preferred to use manual document which is so tedious, time consuming and not well managed. The next section will further clarify the issue in the aspect of managing report, manage human resource document and project management in Emartech Resources Sdn Bhd.

2. Research Problem

There are some problems faced by Emartech Resources Sdn Bhd which caused the need for the new web based system. Based on some research and meeting with the management, there are some problems faced by the company in project management and managing human resources. The company's website and existing systems are not integrated with each other. Besides that, the database used is not stable and the existing system cannot function properly. The existing system also cannot be used mobile devices since no automated programming is used and the company is unable to manage the system as well as company data as the system is hired by outside companies. The current system process only consists of staff management system and basic details of project management

system. In addition, the current system does not have a systematic database structure. This causes difficulties in the system integration process if additional modules on system processes are implemented.

Based on the this problem, member of PPRN's in Department of Information and Communication Technology, Tuanku Syed Sirajuddin Polytechnic implement the collaboration with Emartech Resources Sdn Bhd to develop a computerized management system. This computerized management system will be called the web and mobile based Emartech Computerized Management System (ECMS). This application have been developed using PHP language, jQuery and MySQL as its database.

This study aims:

- a) To discuss the project development process of Emartech Computerized Management System.
- b) To ensure that the whole system complies with previous literature studies and system comparison studies.

3. Literature Review

Currently, web-based applications have become the main preference for many sectors to present products and services to prospective consumers and are also engaged by governments as a platform for information dissemination and exchange to the public [4]. Information system can be categorized into two types which are manual and automatic. Automated information systems are also known as computerized information systems or computer based information systems. According to [5], the information system consist of five main functions as shown in Fig. 1.

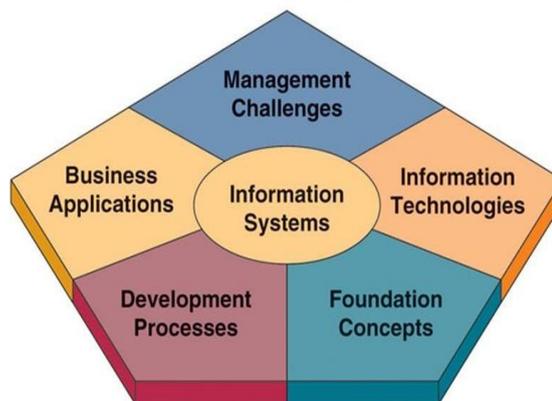


Figure 1: Conceptual Framework of Information Systems (A.O'Brien, 2008)

Emartech Computerized Management System is part of an information system that is defined as a collection of components that are interconnected with each other. Most of businesses use some kind of human resources (HR) software to assist with managing employees. However, Emartech Sdn Bhd requires not only a human resource management system, but also a system in one platform for managing company projects to create an effective reports.

3.1 System Comparison

There are various types of web-based systems on the market that involve human resource management and project management. This study also compares with some existing software by the simple system module category and its features. In general, ECMS have the advantage over existing systems where it has all the features that does not exist in any existing system on the market.

3.1.1 Emartech Resources Management System

Emartech Resources Management System is first version of company management system that consists of Employee Record function, inventory management and project report function. Refer on interview session with company management, previous system needs improvement because maintenance reports could not be generated directly and no human resources management system included. Fig. 2 shows an interface of Emartech Resources Management System.



Figure 2: Emartech Resources Management System Interface

3.1.2 Namely HR System

Namely was founded to create an HR platform as intuitive as social media, but powerful enough to support the complexity of today's workforce. The Namely HR System consists of talent management function, time management and payroll. The system is modern HR platform used by everyone and included payroll and talent management platform. Namely HR System is online system that provide affordable plans from the nation's top carriers, tax filings, easy on boarding, goals, and performance reviews. Besides that, there are time module that record staff attendance information and insight that allow user to create benchmarking, dashboards and customizable reports. Fig. 3 shows an interface of Namely HR System.

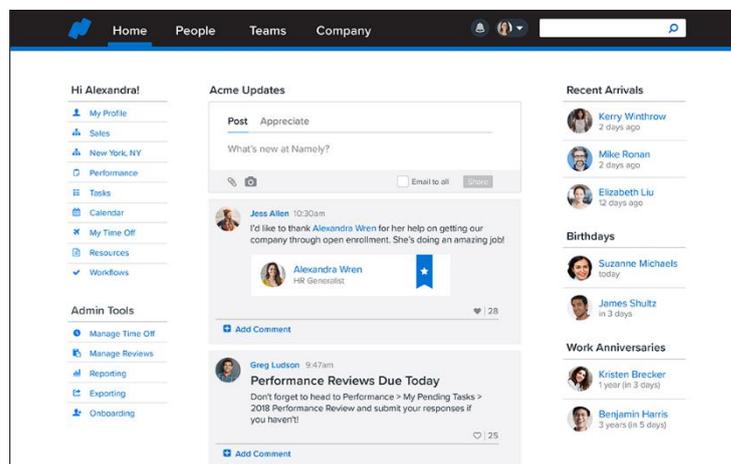


Figure 3: Namely HR System Interface

3.1.3 Human Resource Management System (HRMS)

Human Resource Management System (HRMS) developed to facilitate efficient handling of the employee management issues and provide instant access to the authorized users and based on the system specifications and requirements. The system can be used for maintenance, reporting of personnel information, using specialized input and maintenance programs, a generalized robust data management, reporting, and retrieval of the information. HRMS allows the personnel department to perform the tasks of storing, retrieving, and processing personnel data such as payroll and time reporting as well as generating managerial reports in a timely fashion. Fig. 4 shows an interface of Human Resource Management System (HRMS).

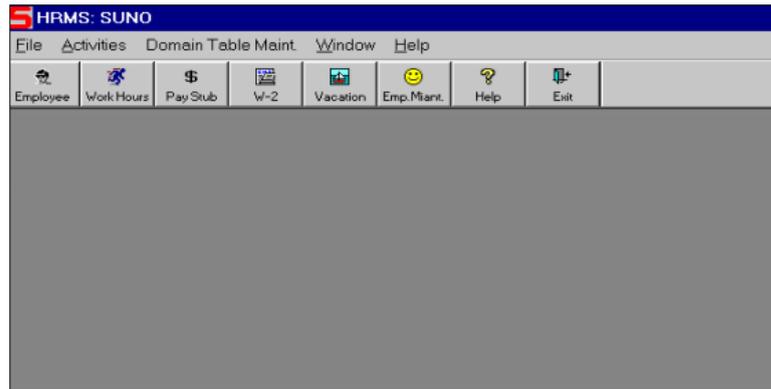


Figure 4: Human Resource Management System (HRMS) Interface

Table 1 is comparison of existing systems with human resource management and project management software on the market.

Table 1: Comparison of Existing System with System in Market

Item	ECMS	Emartech System (v1) [6]	Namely [7]	HRMS [8]
Web Mobile Interface	Yes	No	Yes	No
Web Based System	Yes	Yes	Yes	Yes
Payroll	Yes	No	Yes	Yes
Leave Management	Yes	No	Yes	Yes
Employee Record	Yes	Yes	Yes	Yes
Attendance Scheduling	Yes	No	Yes	No
Inventory Management	Yes	Yes	No	No
Construction Project Monitoring	Yes	Yes	No	No
Content Management System (CMS)	Yes	No	Yes	No
Programming Language	PHP	PHP	PHP	PowerBuilder
Database	MySQL	MySQL	MySQL	SyBase

4. Research Methodology

To develop a system, there are several methodologies that can be followed. For the ECMS development, Rapid Application Development (RAD) has been used as a project development guidance. This methodology allows instant implementation on any finished subsystem into the working environment [9].

4.1 Rapid Application Development

System development using Rapid Application Development (RAD) is a stable and well-known information development methodology in research design [10].

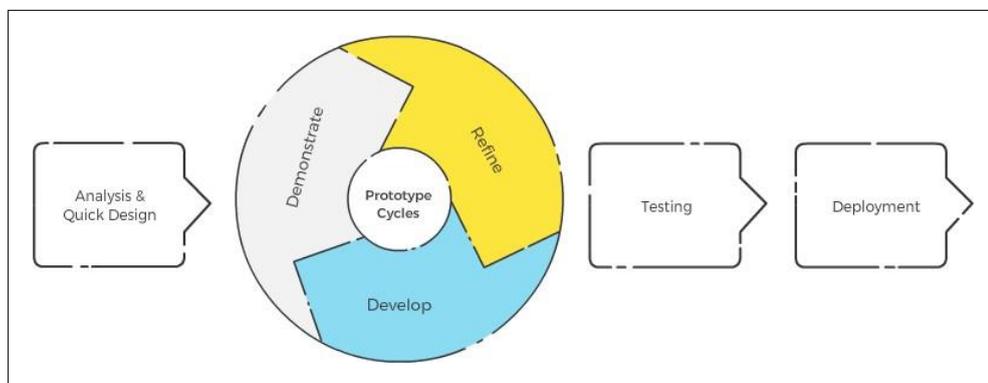


Figure 5: Rapid Application Development (RAD) Methodology (J Martin, 1991)

4.1.1 Analysis and Quick Design

The process of analysis and development needs of the ECMS system is based on three main sources for achieving system development objectives. The main source is from a physical form. Referring to [11], physical forms referenced translate into the main structure of the database and as a design for storing information using a data-driven model. The second source is from interview session with the company staff. The third source is based on the existing web-based system functionality and interface in Emartech System Version 1. All sources have been analysed and used as reference sources for developing an effective web-based system. Fig. 6 shows the model for analysis and design of the ECMS system.

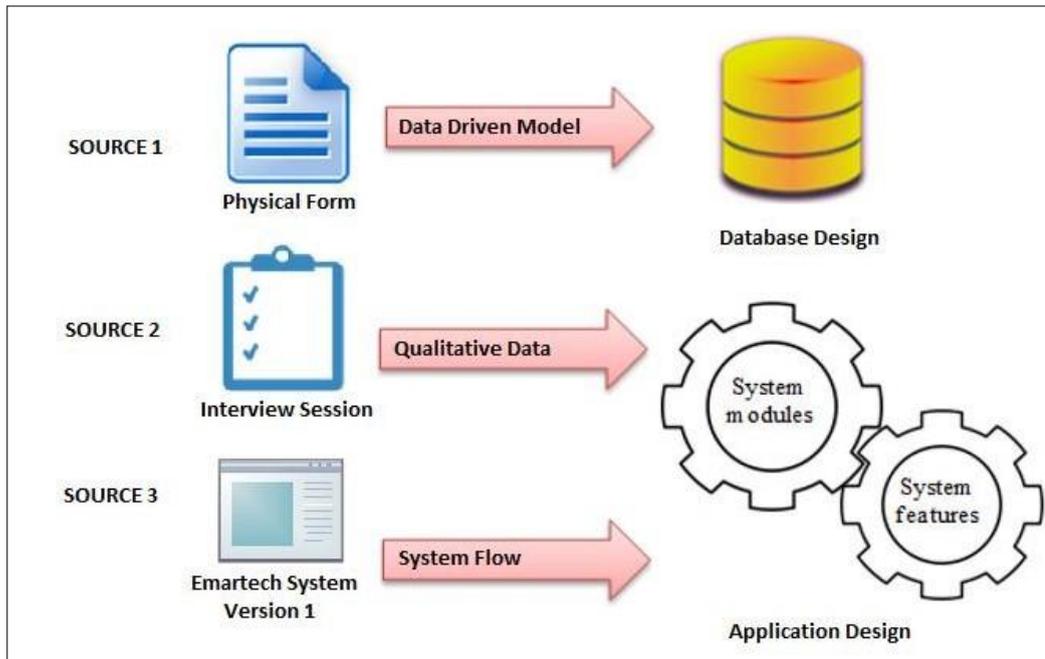


Figure 6: Model for ECMS Analysis and Quick Design

4.1.2 Design and Development Details

Most of system development process include repetition and detail process. Therefore, it is very important that users engage during the software development process. The actual users involved are the staff and management of the Emartech Resources Sdn Bhd. This user is selected because they have experience and very familiar with working flow. This system consists of five main user; Administrator, Manager, Supervisor, Technician and Interns. This system was development in the duration of six months (July 2016 - December 2016). That was the reason for using this methodology and development milestones shown in Fig. 7.

Month / Milestone	July	August	September	October	November	December
1) Project planning						
2) Data Analysis						
3) System Design						
4) System Development						

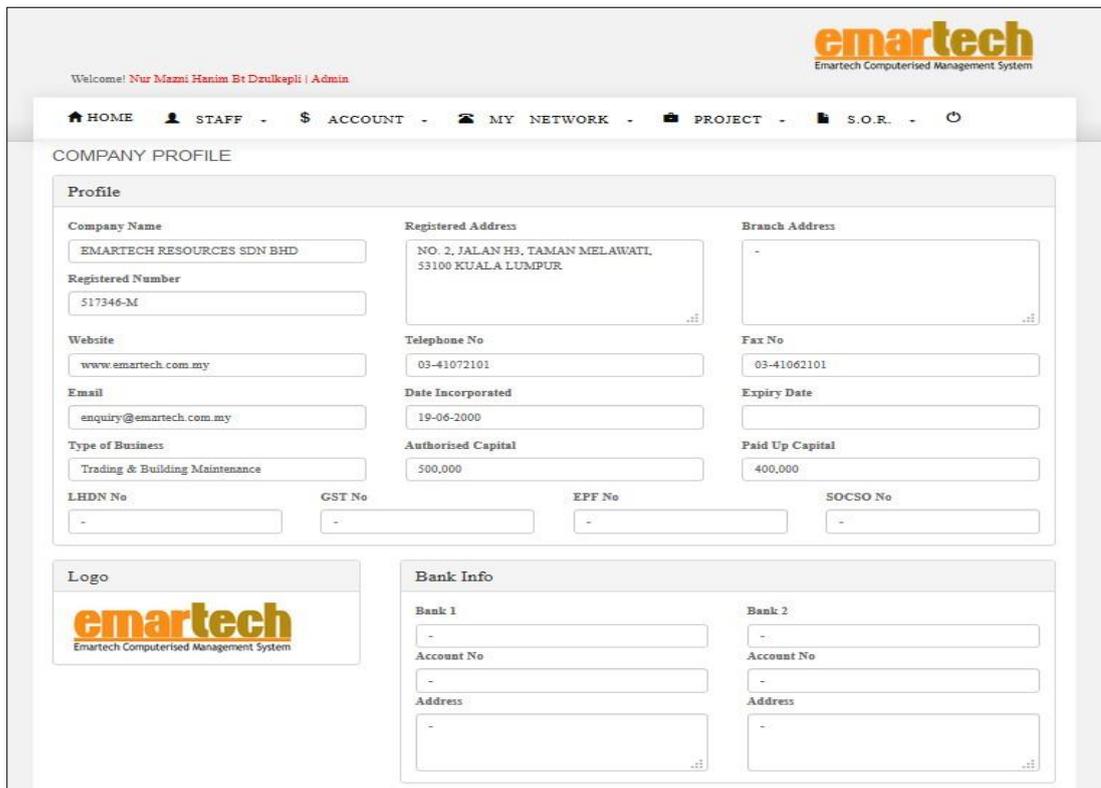


Figure 10: ECMS Main Function Interface

4.1.3 Testing and Deployment

In this phase, all users will test the module. Besides, this system also will be go through pilot test stage to see the performance of the system. This is the final testing stage before the complete system will be deployed to users. Once the testing phase completed, system will be uploaded into server. Training has been conducted to each level of user to demonstrate the functionalities of each available module.

5. Result

The new system was developed using PHP language and MySQL database. In order for the system to be used in mobile phone, jQuery will be integrated with the system to produce a mobile web based system. This system consists of five modules which are:

5.1 Staff Module

Under the staff modules, there are seven main functions that can be used to manage staff information. User can use this function to insert the data of new staff that work in the company. User can use this functions to find any saved information for the existing staff. Under attendance functions, there are five sub functions related. These sub functions are annual leave, sick leave, emergency leave, unpaid leave and other leave. Staff can use these functions according to their required types of leaves. Under payroll functions, there are two sub-functions which are create payroll (user can use to create new payroll information for new staff) and search payroll (to search for existing payroll information in the system). Under overtime functions, user can create overtime (to create overtime information for new user) and search overtime (to search for existing overtime information in the system). User can change their default password to their own password. Under report functions, there are four sub-functions which are staff report, attendance report, payroll report, and overtime report. User can use these functions according to the types of report that they required.

5.2 Cash Module

Cash modules is being divided into four main functions which are ledger, account, data entry and report. Ledger functions is being divided into six sub-functions. User can create asset, view asset, create liability, view liability, create income statement, and view income statement. Under account, there are three sub functions which

are petty cash banks and others. User can create new data entry that can be used in the system. There are three sub-functions under report which are ledger, account and data entry. User can use the sub-functions accordingly.

5.3 Contact Module

Contact modules is divided into four main functions which are customer, supplier, others and report. User can use this function to create new customer detail. User can use this function to create new supplier details. User can use this functions to create new other contact details. Under reports, there are three other sub-functions which are customer, supplier and others. User can use report function to view the report of each categories accordingly.

5.4 Project Module

Project modules is divided into five function which are create project, service report, invoice, quotation and report. Under this function, user can create new project that was given to the company. Besides that, Service report is divided into three sub-functions which are equipment check, service sheet and equipment list. User can create invoice (inserting new invoice data into the system) and view all invoice that exist in the system. Same as invoice, user can create new quotation details and view all quotation details saved into the system. Report is divided into four types which are project, service, invoice and quotation. User can choose required report accordingly.

5.5 Schedule of Rate Module

Under schedule of rate, there are two which are create schedule and manage schedule. User can insert new schedule information into the system by inserting unit id, description and price. User can manage the schedule using this functions. User need to key in related information in order to gather the data.

6. Conclusion

The system provides a web-based platform that makes ECMS a shared system for enhancing the productivity of Emartech Sdn Bhd. The new system support mobile devices where the screen setting will fit in the mobile device. It's also support mobile devices and using any device, staff can access and key in the information to the system anytime and anywhere. Staff can straight away print the receipt and maintenance sheet using the mobile printer. The new system support five types of users and each user have its own functionalities and therefore, it is more secure than the old system. Each users have their own unique username, password and privileges. The systems covers most of the functions that are used in the company. Based on interview session conducted on users, this software has met the business requirements and provided accurate data. This suggests that 100% of respondents provide positive feedback that the software fulfils business requirements and produces accurate data. 100% of respondents measuring the overall software are high. The project had completed successfully with a good collaboration from the company.

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REFERENCES

- [1] Marchewka, J. T. (2014). *Information technology project management*. John Wiley & Sons.
- [2] Sriwahyuni, T., Huda, A., Afka, D. S., & Suadi, D. (2015). Web Based Advertising Information System Design for Newspaper. *Jurnal Teknologi*, 77(23), 27-33.
- [3] Shammy Shiri. (2012). Effectiveness of Human Resource Information System on HR Functions of the Organization—A Cross Sectional Study. *US-China Education Review*, 9, 830-839.
- [4] Fernandez, A., E. Insfran, and S. Abrahao. (2011). Usability evaluation methods for the web: A systematic mapping study. *Journal of Information and Software Technology*. 53(8): 789-817.
- [5] O'brien A.J & George M. (2010). *Management Information Systems*. College of Business Administration Northern Arizona University. 10th Edition.
- [6] (n.d.). Emartech Resources Sdn Bhd. Retrieved from <http://www.emartech.com.my/>
- [7] (n.d.). Namely HR System. Retrieved from <https://www.namely.com/>

- [8] Akkina, R., & Alijani, G. S. Development of Essential Features for a Human Resource Management System.
- [9] Jeffrey L. Whitten, Victor M. Barlow, Lonnie Bentley (1997). *Systems Analysis and Design Methods*, McGraw-Hill Professional.
- [10] Martin, J. (1991). *Rapid Application Development*. Macmillan Publishing Company
- [11] Denne, M. and J. Cleland-Huang. (2004). The Incremental Funding Method - A Data Driven Approach to Software Development. *IEEE Software*. 21(3): 39-47.