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Analysis and design of web-based management information system for garments manufacturing process

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Abstract. Information technology is needed for the management of the garment manufacturing process to producing of information a quickly and accurately. This research aims to analyze and design of web-based management information system for garments manufacturing process. This study conducted by the research and development method used the stages of software development. Starting from the system analysis, system design including database design, interface design, and writing program code. Web-based management information system was developed using the PHP programming language with Code Igniter Framework and MySQL database. The result of this research is web based application for garments manufacturing process which include production order process, sample making, cutting, embroidery, sewing, and finishing. This application is tested by using black box testing method, where the results show that the application function is running well.

Keywords: management information system, garments manufacturing process, web

1. Introduction

As the business grows, the intensity of the transactions handled will increase. In dealing with the complexity of various transactions, of course, requires the support of information technology in the management of the company. With the support of technology will enable the management of information quickly, relevant and accurate. Access to and the use of information can contribute to the success of business organizations [1]. Researchers agree that the systematic use of external data can help business organizations craft competitive positions in their sectors [2]–[6]

Similarly, for garment companies that handle transaction data related to the production process requires complete, accurate, and timely information. Accurate and timely information is needed by the management in making decisions. If handling transaction data is still done manually it will lead to possible errors such as recording errors, incomplete reports, inaccurate reports, or reports can not be done quickly. Complete but inaccurate information will be in vain, while quick but incomplete and inaccurate information will only mislead decision makers. Success depends on being able to collect, process, and organize data into accurate and timely information.

The empirical evidence that investment in information technology can contribute positively to the company's performance and productivity [7]. The use of information systems can provide information to help managers make managerial and staff decisions to accomplish the tasks assigned to them.

Information systems are virtual systems, their data represents the physical system of the firm [8]. An information system is an integrated and cooperating set of software directed information technologies supporting individual, group, organizational, or societal goals [9]. The information system is Assumed to mean computer-based systems, which are combinations of hardware, software, and

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telecommunications networks that people build and use to collect, create, and distribute useful information [10].

Web-Based Management Information System will provide convenience for Small and Medium Enterprises, especially those engaged in the field of convection to automate data processing previously done manually. Use of the application can be done online that provides information in real time. This information can be used as a reference for decision making quickly and accurately.

2. Methodology

This study uses a research and development (R & D) approach, the research aims to analyze and develop a system. The system in this research is web-based management information system for garments manufacturing process. Management Information System developed is designed to be accessible online.

Develop a Management Information System using Software Development Life Cycle (SDLC) methodology [11]. There are 6 main activities in SDLC: planning, defining requirement, designing, building, testing and deployment. One of SDLC methodologies is Rapid Application Development (RAD) model. RAD model was first introduced by James Martin in his book which has the same title [12].

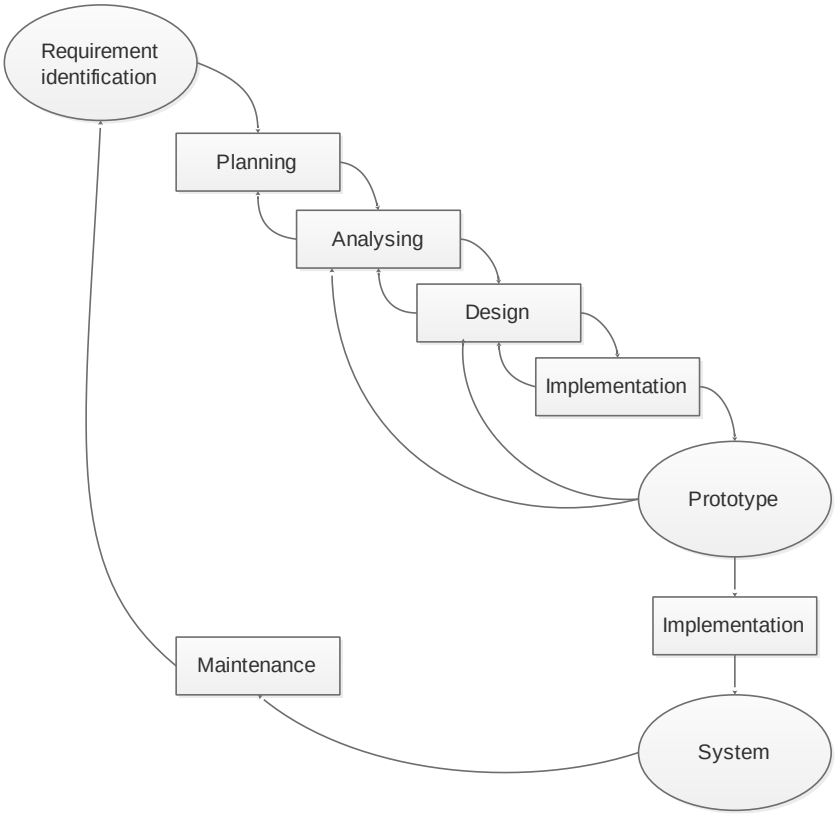

Figure 1. RAD model

Management Information System for Garments Manufacturing Process development using the RAD model. This model consists of a series of activities that can be grouped into several phases, as in Figure 1.

The first step is identifying requirement. Then some system requirements are 1) requirement to manage users, 2) requirement master data, 3) requirement to manage order production, 4) requirement to produce sample, 5) requirement to manage production (cutting, embroidery, sewing/assembling), and 6) requirement to access user profile. The next step is developing the prototype for each system requirement. Each system requirement went through basic SDLC processes: planning, analyzing, designing, and implementing.

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3. Result and Discussion

We named the Management Information System for Garments Manufacturing Process as SIMKonveksi. SIMKonveksi is designed based on the analysis that has been done directly through the interview technique. SIMKonveksi developed include Production Order, Sample production, Process Cut, Process Embroidery, Sewing Process, and Finishing. An overview of the application can be seen in Figure 2.

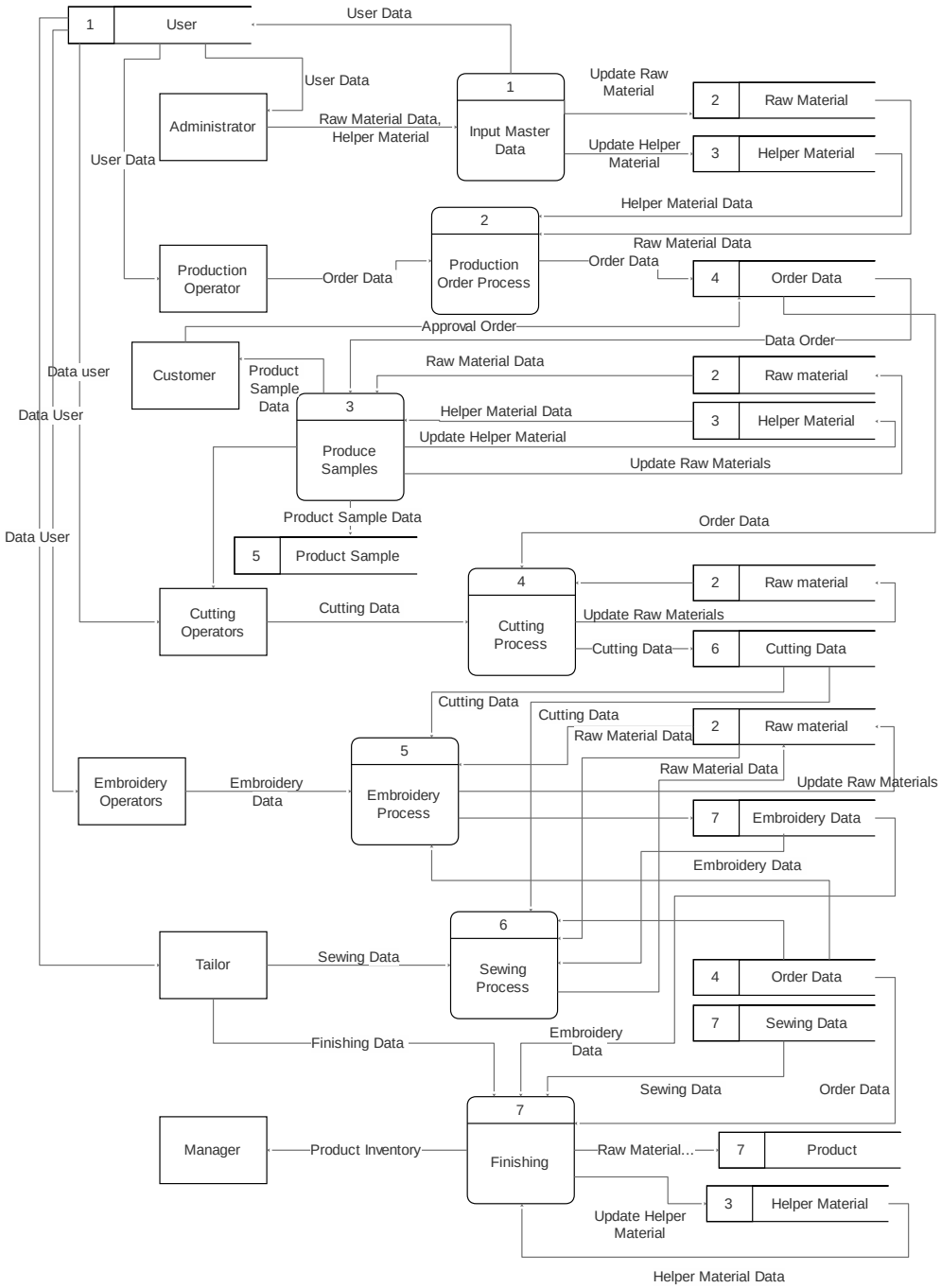

Figure 2. Data Flow Diagram of Application

Once there is a production order, then the production process begins with the process of making product samples. After obtaining approval from the customer, the process continues with the cutting process. If the product contains embroidery, the process is continued to the embroidery process. After the embroidery process is completed will proceed to the process of sewing and then the finishing process.

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Database used in accommodating data system information using MySQL DBMS. Application creation using PHP with Code Igniter framework and web page view using Bootstrap 3 Page view for Production Order List on Information System. The production list page is shown in Figure 3.

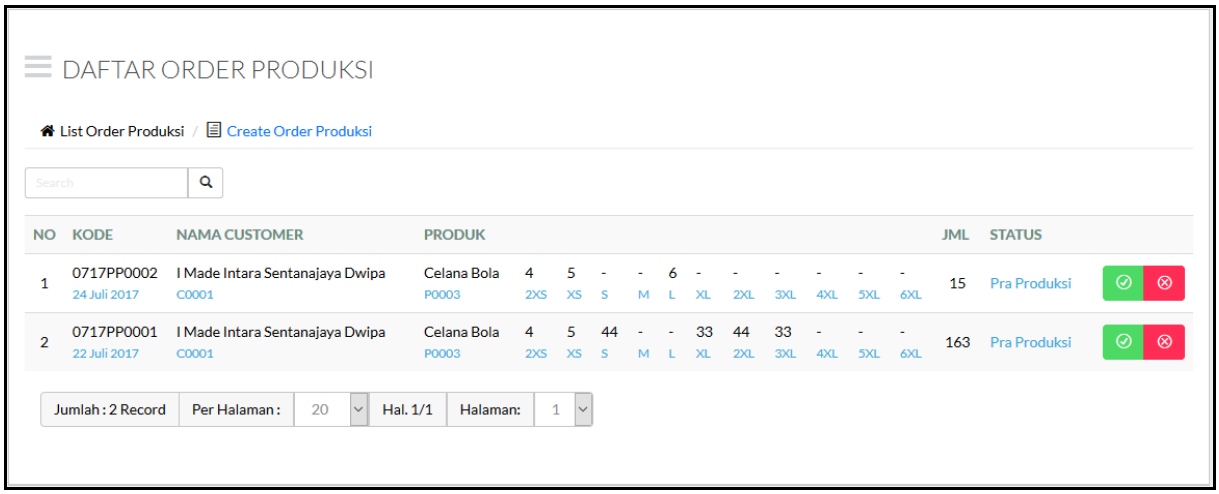

Figure 3. Production list page

The page for input / update of production data is shown in Figure 4.

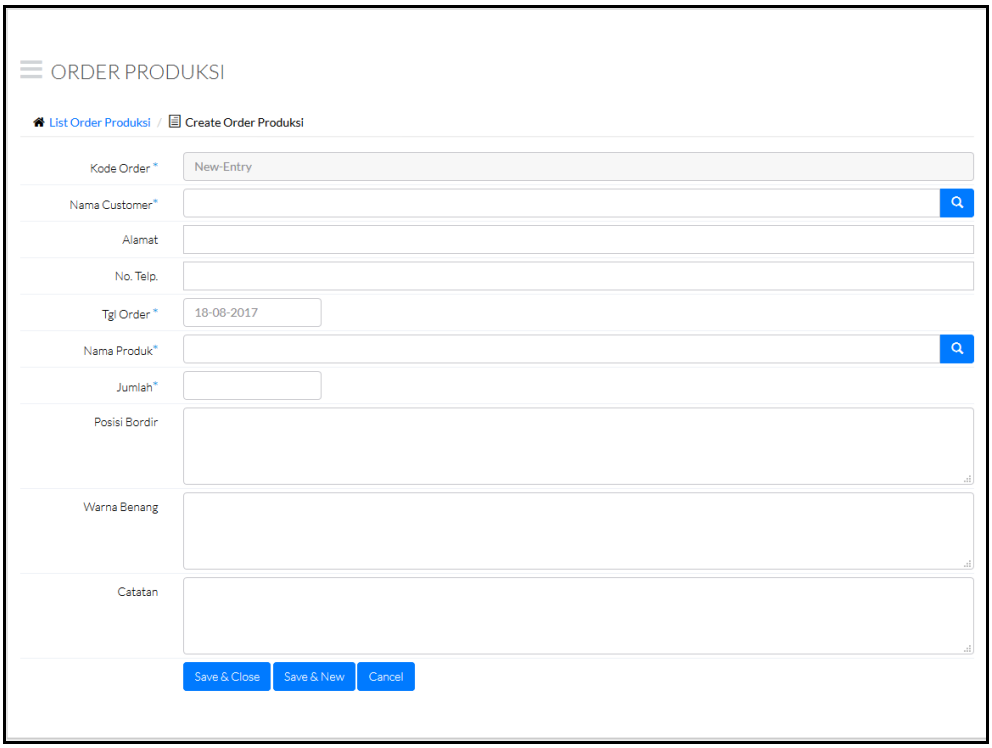

Figure 4. Input / update production data page

Testing applications using black box testing methods. Tests are done objectively involving nine testers. The scope and the test results shown in Table 1. The results show the functional outcome of applications has been running well.

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Table 1. Testing Application

Cluster Test	Test Items	Test Result
Master Data	Add data	valid
	Change data	valid
	Search data	valid
Order Produksi	Add data	valid
	Change data	valid
	Search data	valid
Sample Produk	Add data	valid
	Change data	valid
	Search data	valid
Cutting Process	Add data	valid
	Change data	valid
	Search data	valid
Embroidery Process	Add data	valid
	Change data	valid
	Search data	valid
Sewing Process	Add data	valid
	Change data	valid
	Search data	valid
Finishing Process	Add data	valid
	Change data	valid
	Search data	valid

4. Conclusion

Management Information System for Garments Manufacturing Process (SIMKonveksi) was developed by using RAD model. RAD is one of SDLC methodologies, so it consists of SDLC steps, which are requirement identification, planning, analyzing, design, and implementation. RAD model applies several iterations if needed. The programming language used to design applications is PHP with Code Igniter framework, application v using bootstrap 3, and database using MySQL DBMS. SIMKonveksi includes several modules, namely for production orders, product sampling, cutting, embroidery, sewing, and finishing. This application is tested by using black box testing method, where the results show that the application function is running well.

5. Acknowledgments

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