Integrated Data Bank Development as Supporting System of Civil Service Management in Middle Vocational School

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Abstract
The objectives of this study are: 1) Improved Integrated Data Bank services for staffing data and information; 2) Enhanced support system for data and information service server usage; 3) Improving data and information services that are accurate for Staffing Management. The research method used is Research and Development (R&D). Data collection techniques using questionnaires and interviews. Product trials were conducted twice, the first trial involved 15 people, the second trial involved 35 people. The results of the study are 1) Integrated Data Bank services for employee data and information can be used effectively and efficiently. This is based on system reliability with a success rate of 100%. In addition, the efficiency test using GTMetrix gives the results of the PageSpeed Grade B (85%) with a loading rate of the system page 7.4 seconds; 2) the support system for the use of data and information service servers runs according to the Integrated Data Bank application; 3) Personnel management data and information services can be used as an accurate staffing database and show that the Integrated Data Bank staffing management information system can be used as a supporting management system for staff at SMK Muhammadiyah Karangpucung; 4) Integrated Data Bank Products have gone through the process of design validation, instrument validation, and product validation through judgment experts and experts, which produce data in the form of Data Flow Diagrams (DFD), Unified Modeling Language (UML) design, and Entity Relationship Diagram Bank designs Integrated Data. Based on the results of the product design validity test showed that the layout (layout), interface (interface), and content (content) of the system itself obtained a final percentage of 84%. Suggestions in this study include 1) Socialization of the Integrated Data Bank system to employees about the existence of this system can be optimized so that all information can be conveyed properly; 2) Integrated Data Bank systems can be utilized optimally to integrate staffing data; 3) Integrated Data Bank System can be developed into a superior product as a staffing database system in the SMK environment.

Keywords: Integrated Data Bank, Civil Service Management, Supporting System,

INTRODUCTION

The process of developing data management requires a system that makes it easy for employees to carry out their performance. Schools as one of the government organizations engaged in education require the availability of a management information system that is able to help store and provide data and information as material for determining development policies and strategies as well as for the availability of operational data and information. This system was built in an effort to facilitate human resource management, improve the quality of human resources and staffing management.

An integrated data bank system is a supporting system of an existing system. Systems that are already running in an organization such as administrative systems, financial systems. The integrated data bank system can also be applied as a supporting system for an staffing system. Good staffing management will improve performance to realize the vision that has been set at an institution, especially in a school. The implementation of good staffing management will also increase the effectiveness and efficiency of services. Strategic

planning in the use of information technology to create a supporting management system that is staffed, integrated and comprehensive.

Use of supporting data information management systems to help school performance. The development of information technology, its development. Modern management systems have many strategic decisions that result from consideration of integrated information data utilization. Support systems in the development of integrated data banks including through a server hosting system. Then, this system will further facilitate performance through the use of a browser application with a multi-platform integrated data bank system.

Vocational High School (SMK) as an educational institution is inseparable from the development of information technology, including the need for an integrated staffing data bank. The development of technology and information that penetrated into SMKs had a positive impact in order to improve the quality of education services. The use of information and communication technology can be used as a means of: (1) academic and non-academic activities, (2) increasing school branding as a form of excellent service.

A few problems often faced by the personnel management showed less accessible database, storage systems and service personnel data is still manual, the search data and information needed in time quickly and accurately, to not use the data bank system based on information technology to support service personnel.

Thus, researchers are interested in conducting research under the title Integrated Bank Data Development as a Supporting Staffing Management System in Vocational Schools. The development of this application has the intent and purpose to provide staffing information that is needed effectively, efficiently, integrated, and faster. In addition, the structuring of information can be carried out regularly, quickly, and precisely in a good report, which will certainly support the service activities and staffing operations.

RESEARCH METHOD

This research writer uses Research and Development (R&D) research. According to Sugiyono (2015) the Research and Development research method which will later be abbreviated to R&D is a research method used to produce certain products, and test the effectiveness of these products. The product is not always in the form of objects or hardware (hardware), such as books, stationery, and other learning tools. However, it can also be in the form of software (M. P. P. Sugiyono, 2016).

Data collection techniques used were using interviews, questionnaires, and measurement software. Meanwhile, data analysis techniques include: 1) data analysis of the usability test results. Measurement of usability instrument reliability was done by testing the alpha cronbach consistency value; 2) data analysis on the results of testing variable functionality. Measurement of functional suitability testing using the Guttman scale. The questionnaire on the Guttman scale only consists of two answers namely, "Yes" or "No"; 3) data analysis of the reliability variable testing results. Testing the reliability variable using WAPT software. Reliability testing with WAPT software has three assessment categories namely, sessions, pages and hits; 4) data analysis of the Efficiency variable test results. Testing the efficiency variable using GTMatrix. Then, the validity of the data used includes the instrument validity and product validity.

RESULTS AND DISCUSSION
Result

The development of an Integrated Data Bank as a supporting system for staffing management in SMK is explained in detail in this chapter. In this study the researchers used Research and Development (R&D) research which, according to Sugiyono, consisted of 10

steps, namely (1). potential and problems, (2) data collection, (3) product design, (4) design validation, (5) product revisions, (6) initial product trials, (7) initial product revisions, (8) final product trials, (9) revision of the final product and (10) trial of the final product. Describe the results of each step of the study.

Potential and Problems

A needs analysis was carried out through preliminary observations and interviews conducted with the Head of Administration, Teachers and Employees at SMK Muhammadiyah Karangpucung. Based on the initial observation and interview activities, several problems related to staffing data management were found, namely (1) poorly controlled data, (2) paper data, (3) employee data search when needed in quick time, (4) employee data report is less effective and efficient, and (5) databases that are difficult to access.

Data Collection

The results at the stage of discovering the potential and problems that exist in SMK Muhammadiyah Karangpucung, then the next is to collect data that will be used to build an Integrated Data Bank staffing management system. Data collection is performed on staffing data and also supporting tools used to build the system.
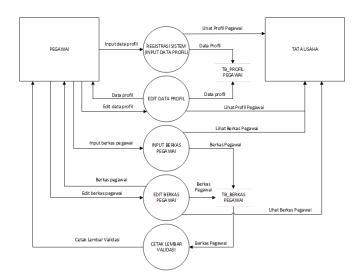
Product Design

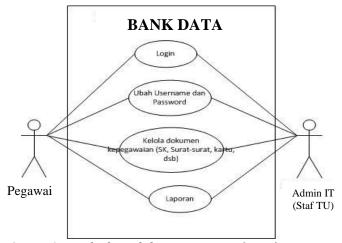**Figure 1.** Data Flow Design Using Data Flow Diagrams (DFD)

Figure 2. Unified Modeling Language (UML) Design

Figure 3. Desain Entity Relationship Diagram

System Interface Design

The design of the interface consists of the design of the user login page, the design of the admin login page, the design of the user's main menu page, the design of the admin's main menu page, the design page for uploading user documents, the design of the user validation print page, the page design of the admin profile view, and the design of the profile edit page user and admin.

Design Validation

Product design validation is carried out to provide an assessment of the Integrated Data Bank staffing management information system before an initial trial is conducted. Validation is done in 2 (two) stages, namely product validation / product design and product validation that has been built.

Product Revision

After the Integrated Data Bank staffing management information system is validated by experts, the next process is the product revision process. The revised part refers to

suggestions and criticisms from experts in accordance with the results of the questionnaire, namely: Change the location of the button on the login page, main menu and upload documents.

Test Try Products Beginning
Functionality test

Testing functionality will test system functionality. Tests carried out by 15 respondents employees at SMK Muhammadiyah Karangpucung by using the *test case.* The results of the *functionality test* can be seen in the following Table 1:

Table 1. The Functionality Test

| No. | Function | Test Results (Respondents) | |
		Function	Not Functioning
1	Login	15	0
2	Upload file	15	0
3	Print validation	15	0
4	View profile	15	0
5	Edit profile	15	0
6	Registration	15	0

Reliability test

Testing the reliability of the system (reliability test) carried out by the method of stress testing aided software Web Application Performance Testing (WAPT) Pro version 10. The results of the test are shown in the image below .
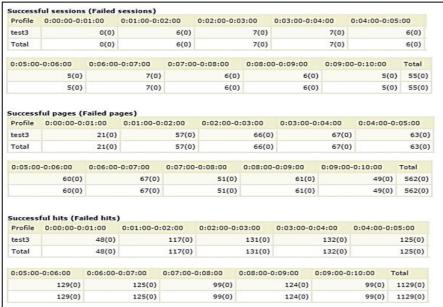

Successful sessions (Failed sessions)

Profile	0:00:00-0:01:00	0:01:00-0:02:00	0:02:00-0:03:00	0:03:00-0:04:00	0:04:00-0:05:00
test3	0(0)	6(0)	7(0)	7(0)	6(0)
Total	0(0)	6(0)	7(0)	7(0)	6(0)

0:05:00-0:06:00	0:06:00-0:07:00	0:07:00-0:08:00	0:08:00-0:09:00	0:09:00-0:10:00	Total
5(0)	7(0)	6(0)	6(0)	5(0)	55(0)
5(0)	7(0)	6(0)	6(0)	5(0)	55(0)

Successful pages (Failed pages)

Profile	0:00:00-0:01:00	0:01:00-0:02:00	0:02:00-0:03:00	0:03:00-0:04:00	0:04:00-0:05:00
test3	21(0)	57(0)	66(0)	67(0)	63(0)
Total	21(0)	57(0)	66(0)	67(0)	63(0)

0:05:00-0:06:00	0:06:00-0:07:00	0:07:00-0:08:00	0:08:00-0:09:00	0:09:00-0:10:00	Total
60(0)	67(0)	51(0)	61(0)	49(0)	562(0)
60(0)	67(0)	51(0)	61(0)	49(0)	562(0)

Successful hits (Failed hits)

Profile	0:00:00-0:01:00	0:01:00-0:02:00	0:02:00-0:03:00	0:03:00-0:04:00	0:04:00-0:05:00
test3	48(0)	117(0)	131(0)	132(0)	125(0)
Total	48(0)	117(0)	131(0)	132(0)	125(0)

0:05:00-0:06:00	0:06:00-0:07:00	0:07:00-0:08:00	0:08:00-0:09:00	0:09:00-0:10:00	Total
129(0)	125(0)	99(0)	124(0)	99(0)	1129(0)
129(0)	125(0)	99(0)	124(0)	99(0)	1129(0)

Figure 4. Reliability Test

Reliability test

Testing the efficiency of the system (*efficiency test*) done by calculating the time that it takes the system to be loaded in full by the device user included in the answer and process inputs given user. To measure the duration of time that, to use the services of web (web service) GTMatrix especially criteria Page Speed Grade which is a standard assessment of Google in calculating the speed of loading a website. Results *efficiency test* are shown in the display below.
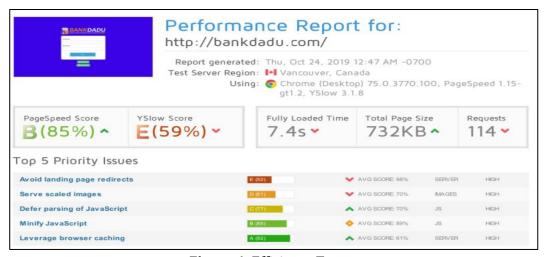
Figure 4. Efficiency Test

Initial Product Revision

Initial product trial results indicate the product has been tested in terms of functionality, reliability and efficiency. Of the three tests, the product is declared eligible without revision and can proceed to the final product trial.

Test Try Product End

The product will be tested once again after it was previously tested at the initial product trial stage. In the initial product trial, the product has been tested with functionality, reliability and efficiency tests. While the test try the product end, that will be tested is the usability test (test purposes). At this stage, the product will be tested on 25 respondents which consists of teachers and employees of SMK Muhammadiyah Karangpucung by using a sheet questionnaire Usefulness, Satisfaction and Ease of Use (USE). The results of the questionnaire can be seen in the appendix. Recapitulation of test results can be seen in the following Table 2:

Table 2. Recapitulation of Test

Question To-	Number of Respondents				
	Score 1	Score 2	Score 3	Score 4	Score 5
Q1	3	2	7	5	8
P2	6	0	10	6	3
Q3	3	3	10	5	4
Q4	2	5	10	5	3
Q5	4	3	8	5	5
Q6	3	5	8	4	5
Q7	2	7	6	6	4
Q8	4	3	10	5	3
Q9	5	2	11	2	5
Q10	4	3	6	5	7
Q11	1	1	12	3	8
Q12	2	7	6	6	4
Q13	2	5	8	5	5
Q14	4	4	9	4	4
Q15	6	4	9	1	5

Question To-	Number of Respondents				
	Score 1	Score 2	Score 3	Score 4	Score 5
Q16	5	1	13	4	2
Q17	8	3	9	2	3
Q18	6	2	9	3	5
Q19	3	0	13	3	6
Q20	3	1	8	6	7
Q21	3	2	5	5	10
Q22	1	1	10	6	7
Q23	4	1	7	6	7
Q24	1	0	12	7	5
Q25	2	3	12	4	4
Q26	3	0	7	10	5
Q27	0	2	11	4	8
Q28	3	0	9	8	5
Q29	0	0	7	11	7
Q30	0	0	6	11	8
Amount	93	70	268	157	162

Final Product Revision

The results of the trial of the final product, it was concluded that the product was feasible and no final product revision was needed.

Final Product

The final product is the result of a series of steps of research methods that have been carried out from starting to discover the potential and problems to the development of the final product in the form of an Integrated Data Bank staffing management information system. This final product is unique and unique because it is tailored to the needs of the Karangpucung Muhammadiyah Vocational School.

Discussion

Development of an Integrated Data Bank for Staffing Data and Information

The development of an Integrated Data Bank to provide staffing data and information can be measured through a reliability test. The results of testing the reliability of the system (reliability test) using software WAPT can be seen in the table below:

Table 3. Reliability Test

Category	Success	Failed	Percentage of Success	Percentage Failed	Conclusion
Sessions	98	0	100%	0	Reliable system
Pages	784	0	100%	0	Reliable system
Hits	2673	0	100%	0	Reliable system

Based on tests of reliability at the top, can be concluded that the system of information management personnel Data Bank Integrated has the reliability that is good and can be relied upon to provide data and information personnel in the use of run length. In addition, based on testing functionality will test system functionality. The test was conducted by 15 employee respondents at SMK Muhammadiyah Karangpucung by using a test case all the features developed were in accordance with their uses.

Development of Support Systems for Data Server and Information Server Usage

Supporting System Development in this case the use of servers and web hosting systems can be tested through efficiency tests . Testing the efficiency test using GTMetrix gives the results of the PageSpeed Grade B value (85%) with a loading rate of the system page 7.4 seconds . From these results it can be concluded that the system is included in the efficient category because the loading time is less than 10 seconds . This shows that the system already supports an integrated data bank server at SMK Muhammadiyah Karangpucung.

Development of Accurate Data and Information Services on Personnel Management

Having conducted the test the usability (*usability test*) used questionnaires to 25 respondents, obtained the results as follows.

Table 4. Usability Test

	Respondents
5	162
4	157
3	268
2	70
1	93

After going through a statistical calculation then with a percentage of results of 66%, it can be concluded that the Integrated Data Bank staffing management information system can be used as a supporting management system for staff at SMK Muhammadiyah Karangpucung .

Integrated Data Bank Feasibility Testing for Staffing Data and Information

In addition to the product 's also been through the process of validation of the design , validation of the instrument , and validation of products through the judgment of expert and an expert , who produce the data in the form of Data Flow Diagrams (DFD), the design of the Unified Modeling Language (UML), and the design Entity Relationship Diagram Data Bank Integrated . Based on the results of the product design validity test showed that the layout (layout), interface (interface), and content (content) of the system itself obtained a final percentage of 84% .

CONCLUSION

Based on the results of data analysis and research discussion, it can be concluded that:
1. Integrated Data Bank Services for employee data and information can be used effectively and efficiently. This is based on system reliability with a success rate of 100% with analysis using WAPT-assisted software.
2. The support system for the use of data and information service servers runs according to the Integrated Data Bank application. In addition, testing the efficiency test using GTMetrix gives the results of the PageSpeed Grade B (85%) with a loading rate of the system page 7.4 seconds. From these results it can be concluded that the system is included in the efficient category because the loading time is less than 10 seconds.
3. Staffing data and information services can be used as an accurate staffing database. Based on the percentage of usability test results, 66% of the data show that the Integrated Data Bank staffing management information system can be used as a supporting management system for staff at SMK Muhammadiyah Karangpucung.

4. Integrated Data Bank Products have gone through the process of design validation, instrument validation, and product validation through judgment experts and experts, which produce data in the form of Data Flow Diagrams (DFD), Unified Modeling Language (UML) designs, and Entity Relationship Diagram Bank designs Integrated Data. Based on the results of the product design validity test showed that the layout (layout), interface (interface), and content (content) of the system itself obtained a final percentage of 84%.

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