

College Performance Monitoring Application using Appclay Shephertz

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Abstract: This college monitoring application was developed using Appclay Shephertz by applying 8 Key Performance Indicators for all Colleges. The results of the application have succeeded in displaying data on eight college performance KPIs, namely; 1) graduates get decent jobs, 2) students get experience off campus, 3) lecturers have activities outside of campus, 4) teaching practitioners on campus, 5) lecturers' work is used by the community, 6) study programs work together with class partners world, 7) Collaborative and participatory classes, and 8) international standard study programs. Users can access by pressing the button. Then a black-box test is carried out on this application, the results are that all the buttons tested run well and are ready to be used. This research uses the R&D (Research and Development) development model. To test the success of the Higher Education Performance Monitoring Application, the Higher Education Performance Monitoring Application test was used with 17 test items having a 100% success rate, the Feasibility Test and the Interpretation Percentage were used by experts in measuring aspects of design, communication, and software assessment so that the percentage was 81, 42%, and in the validation test, the provisions on item 25 in the Aiken V table are with a lower limit of 0.64 to an upper limit of 0.93 or a V value of 0.83. The results of the average value of $V = 0.794$ are declared valid.

Index Terms: Application; Performance Monitoring; College; Appclay Shephertz; Research and Development.

1. Introduction

Higher Education is an educational unit that organizes higher education and can take the form of academies, polytechnics, high schools, institutes, or universities [1]. Universities are obliged to provide education, research, and community service [2]. Higher education is a level of education after secondary education which includes diploma programs, undergraduate programs, master programs, doctoral programs, and professional programs, as well as specialist programs, organized by universities based on Indonesian culture [3][4]. Universities as the front line in the intellectual life of the nation, by developing Science and Technology to promote general welfare and social justice for all Indonesian people [5][6]. Universities have an important role in giving birth to a young generation with high character and competitiveness who will later become game changers in the midst of challenges and changes faced by the world community today. Currently, education in Indonesia is regulated through Law Number 20 of 2003 concerning the National Education System. Education in Indonesia is divided into three main lines, namely formal, non-formal, and informal [7][8]. Education is also divided into four levels, namely early childhood, elementary, middle, and high. At Universities in Indonesia, the Tridharma of Education must meet 3 activity principles, namely; Education and Teaching, Research and Development of Community Service [9]. One of the driving forces in the process of education and teaching, research and service can support the achievement of the Main Performance Indicators (KPI) of Higher Education, especially related to

campus performance results [10]. The Ministry of Education, Culture, Research and Technology has established Key Performance Indicators (IKU) in the context of measuring performance for universities based on the Decree of the Minister of Education and Culture of the Republic of Indonesia Number 3/M/2021. The KPIs set by the Ministry of Education and Culture-Ristek are 8 Key Performance Indicators for all State Universities-Legal Entities [11]. The eight KPIs are; 1) graduates get decent jobs, 2) students get off-campus experience, 3) lecturers have activities outside of campus, 4) teaching practitioners on campus, 5) lecturers' work is used by the community, 6) study programs work together with class partners world, 7) Collaborative and participatory classes, and 8) international standard study programs.

In connection with the improvement of Human Resources in a Higher Education, it is something that should be assessed in improving quality in an institution, quantity is also a consideration as a benchmark in the comparison of rationality [12]. Muktiyanto (2016) explains that digital technology in thinking such as entrepreneurial universities, bureaucracy universities is a choice for higher education institutions to face competition in the digital era in changing marketing strategies and enabling higher education performance processes to be carried out [13]. Research conducted by Rahardja, Tejosuwito, & Armansyah (2017) designed a mobile-based pen+ application to facilitate the performance of lecturers at mobile-based universities which also facilitated online assessment services [14]. The same thing was also done by Agustin, Zoromi, & Erlin (2018) designing an assessment model for the performance of each lecturer in carrying out research and community service [15]. Melyanti (2019) also discusses the assessment of lecturer performance by utilizing web or internet-based media (Interconnection-Network) so that application users can use this application anytime and anywhere. With the implementation of lecturer performance assessment in the implementation of the Tri Dharma of Higher Education, it is expected to facilitate the processing of questionnaires, the process of assessing lecturer performance, printing lecturers' report cards, index reports and presenting information more effectively and efficiently [16]. Of the three studies, they are only limited to evaluating the performance of lecturers and have not implemented the standards set by the Indonesian Ministry of Education, Culture, Research and Technology in measuring the quality of higher education performance. Another study conducted by Salamun & Arisandi (2020) built a Lecturer Performance Monitoring System on the development of the activities of each lecturer in each semester that can record the performance of all lecturers digitally, and information on lecturer performance can be accessed by the university to be used as material for future performance assessments. [17]. Widyawati, Fatoni, & Sudarwanto (2020) designed a research performance application and community service that can make it easier for institutions and faculties to monitor each of these activities [18]. If it is concluded that all agree that a monitoring application is needed to control every activity of higher education performance, what makes this research different is that it involves the Higher Education Main Performance Indicators (KPI) set by the Indonesian Ministry of Education, Culture, Research and Technology. This research was also revealed by Amelia (2022) who built an application for accreditation needs with the Higher Education Accreditation Instrument (IAPT), namely SAPTO or the Online Higher Education Accreditation System which has 5 assessment categories, Higher Education Performance Reports (LKPT), and College Assessment Matrix. high as a reference for the assessment of the LKPT [19]. And it is hoped that the performance application can become a performance dashboard that can help university leaders evaluate their performance [20]. The same research conducted by Wali, Iqbal, & Salam (2022) developed a new model to assess the performance of higher education institutions with reference to Study Program Accreditation (APS 4.0) and Institutional Accreditation (APT 3.0) of BAN-PT which can monitor and evaluate quality performance. , and documenting in accordance with accreditation instruments, as well as implementing intelligent system algorithms that are able to assess the quality of higher education performance and are built with the flutter framework [21]. What distinguishes this research is the tool developed by using Appclay Shephertz.

Appclay Shephertz is an application maker site that makes it easy for users to create android applications without having to master coding, no need to install applications or download other files to use appclay, here it is enough to use HTML5 base to make homemade android applications. There are no related studies discussing further use of the Appclay Shephertz. Based on the official website appclay.shephertz.com, it states that making android applications with Appclay Shephertz offers various categories, including; Sports, Education, Events, Business, and Travelogue. Some of the features found in Appclay Shephertz are; Shopping cart, RSS Feed, Push Notification, Upload Audio/Video, Social Connect, and Analysis & SEO [22]. AppClay, compiled and created by core development experts at ShepHertz Technologies and developed with the App42 Cloud API, AppWarpAppWarp, AppHawk, AppHQ and future Shared and Dedicated Cloud Containers can be used [22]. This provides a challenge and innovation value for this research to develop an application for monitoring university performance by implementing 8 Key Performance Indicators for all universities and developed using Appclay Shephertz.

2. Research Method

This research was conducted from March to October 2022 in collaboration with the KITA Institute and PT. Epsilon Global as a team of experts in conducting application testing. Research and development is one of the research models that can be used to conduct research. Research and development or Research and Development (R&D) according to Borg and Gall (in Haq, Samani, & Hariyati, 2022) is basically a process used to develop and validate developed products [23].

Based on this opinion, there is a process of developing and testing the feasibility of the effectiveness of a product with criteria adapted to the product produced. The research procedure carried out by the researcher in this development was adapted from the development steps developed by Borg & Gall with limitations. Borg & Gall (in Marvin, 2018) state that it is possible to limit research on a small scale, including limiting research steps [24]. The implementation of the development steps is adjusted to the needs of the researcher, namely the Data Collection Phase, Product Design Phase, Design Validation Phase, Usage Trial Phase, Product Trial Phase [25][26].

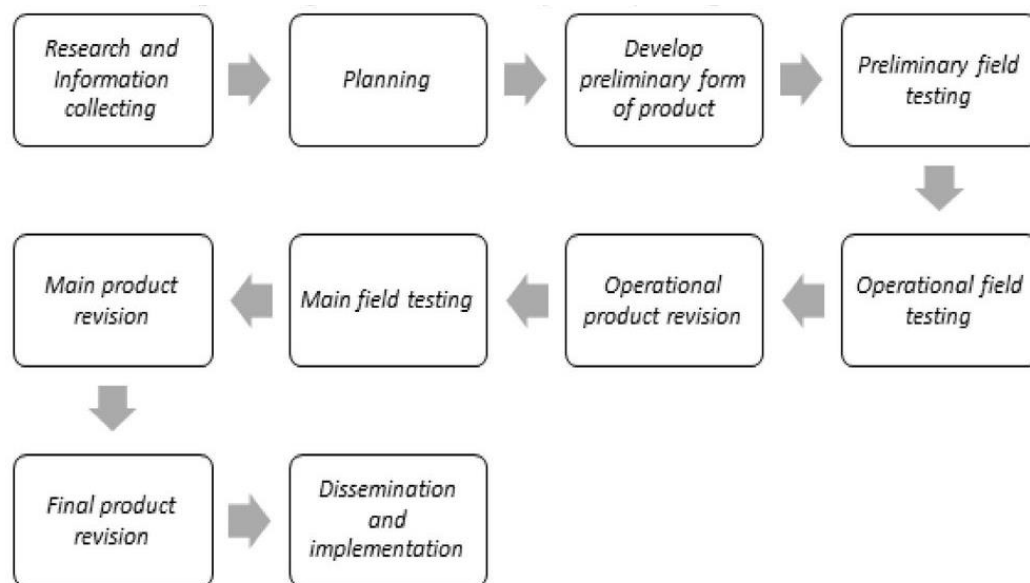


Fig 1. Stages in Research and Development (R&D)

3. Result and Discussion

3.1 Results

This study only tested the feasibility of learning media and due to the Covid-19 pandemic, large-scale testing was not carried out. At the data collection stage, the results of interviews with university leaders at the Muhammadiyah Bali Institute of Technology and Business found that user needs that discuss the monitoring that need to be made for an Android-based Higher Education Performance Monitoring Application are specifications for hardware and software requirements that support the process of developing this learning media. that is; Laptops, Appclay Shephertz Preview, and Smartphones with Android 10 (API 29) operating system. Making Use Case Diagrams displays a scenario description of the interactions that users make to the Higher Education Performance Monitoring Application. Making the Activity diagram displays the main menu, the user opens and then runs the Higher Education Performance Monitoring Application, then the system will respond by displaying the main menu display in the form of performance data and achievement indicators of every aspect of higher education performance. Several Activity menu diagrams, performance KPIs, and reports are designed before further designing the final application. At the stage of designing learning media products that have been made by researchers. Making College Performance Monitoring Applications Using Appclay Shephertz Builder.

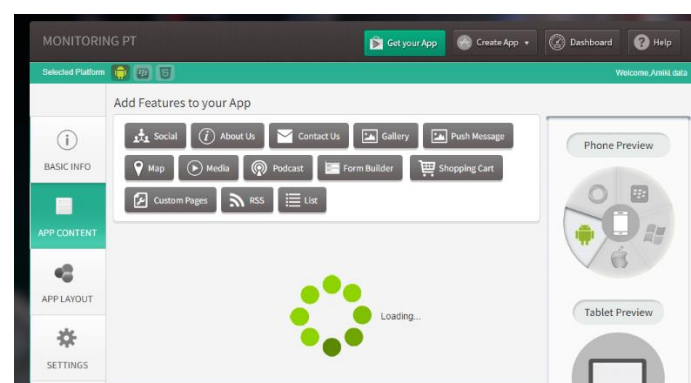


Fig 2. Appclay Shephertz Design Start Page

In Figure 2 this is a layout view on Appclay Shephertz which functions as a place to organize the layout, developers can enter objects, add, delete, provide text, buttons and change the layout. Figure 3 is the initial menu display of the

"University Performance Monitoring Application" with various color designs and attractive icons. The main menu display consists of the eight KPI menu icons, namely; 1) graduates get decent jobs, 2) students get off-campus experience, 3) lecturers have activities outside of campus, 4) teaching practitioners on campus, 5) lecturers' work is used by the community, 6) study programs work together with class partners world, 7) Collaborative and participatory classes, and 8) international standard study programs. Users can access by pressing the button.



Fig 3. Results of Higher Education Performance Monitoring Applications

The university performance indicator data is taken from the use of the App42 Cloud API by utilizing the App42 PaaS Content which supports many services such as SQL databases and NoSQL databases. The data is taken from university data center application data so that it is dynamically always real-time in generating reports.

3.2 Discussion

To test the success of the Higher Education Performance Monitoring Application, the University Performance Monitoring Application test was used with 17 test items having a 100% success rate, which means that all features and buttons on the application are functioning properly.

Table 1. Black Box Test Results

Number of Tests	Succeed	Fail
16	17	0
Percentage	100%	100%

In the Feasibility Test and Interpretation Percentage used by experts in measuring aspects of design, communication, and software assessment, the percentage obtained is 81.42% as shown in table 2 below.

Table 2. Media Expert Assessment Results

No	Assessment Aspect	Skor	Percentage	Quality
1	Desain	57	81,42 %	Very Worthy
2	Visual Communication	49	65,71 %	Worthy
3	Software	63	67,77 %	Worthy

In the validation test, the provisions on item 25 in the Aiken V table are with a lower limit of 0.64 to an upper limit of 0.93 or a V value of 0.83. The results of the average value of $V = 0.794$ are declared valid.

$$\text{Average value} = \frac{\text{total value } V}{n \text{ items}}$$

$$\text{Average value} = \frac{19,86}{25} = 0,794$$

4. Related Work

This research is related to research conducted by Amelia (2022) and Wali, Iqbal, & Salam (2022) who built an application for monitoring university performance for accreditation needs. What distinguishes it is the instrument where Amelia (2022) uses a monitoring instrument with SAPTO or the Online Higher Education Accreditation System which has 5 assessment categories, the Higher Education Performance Report (LKPT) [19], while the research conducted by Wali, Iqbal, & Salam (2022) using higher education performance instruments with reference to Study Program Accreditation (APS 4.0) and Institutional Accreditation (APT 3.0) BAN-PT [21][20]. However, in the research it is very different where the instrument used is the KPI set by the Ministry of Education and Research, namely 8 Key Performance Indicators for all Universities in 2021 and are still being used in 2022 where the eight KPIs are; 1) graduates get decent jobs, 2) students get off-campus experience, 3) lecturers have activities outside of campus, 4) teaching practitioners on campus, 5) lecturers' work is used by the community, 6) study programs work together with class partners world, 7) Collaborative and participatory classes, and 8) international standard study programs. Technically, the development of the college monitoring application used by the author is Appclay Shephertz which still has shortcomings in terms of limited design. However, if you look at the advantages and costs incurred, it is relatively small and easy to use.

5. Conclusion

This college monitoring application was developed using Appclay Shephertz and exported to Android with the use of the Contenta App42 PaaS where the data was taken from the college data center application data so that it is dynamically always real-time in generating reports. The results of the application have succeeded in displaying data on eight college performance KPIs, namely; 1) graduates get decent jobs, 2) students get experience off campus, 3) lecturers have activities outside of campus, 4) teaching practitioners on campus, 5) lecturers' work is used by the community, 6) study programs work together with class partners world, 7) Collaborative and participatory classes, and 8) international standard study programs. Users can access by pressing the button. Then a black-box test is carried out on this application, the results are that all the buttons tested run well and are ready to be used. This research uses the R&D (Research and Development) development model. To test the success of the Higher Education Performance Monitoring Application, the Higher Education Performance Monitoring Application test was used with 17 test items having a 100% success rate, the Feasibility Test and the Interpretation Percentage were used by experts in measuring aspects of design, communication, and software assessment so that the percentage was 81, 42%, and in the validation test, the provisions on item 25 in the Aiken V table are with a lower limit of 0.64 to an upper limit of 0.93 or a V value of 0.83. The results of the average value of $V = 0.794$ are declared valid.

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