



# Design of Application for Calculating Human Resources for Medical Record Technician with ABK-Kes using the Excel Macro

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## ARTICLE INFO

## ABSTRACT

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Distribution of medical record technicians in several health service institutions still not in accordance with the workload in each division, and calculation of human resource needs for medical record technicians was still calculated manually. The calculation of ABK-Kes will be faster and easier to do if there is a system or application that can help the calculation process. The purpose of this research is to design an application for calculating human resources for health using ABK-Kes method in the medical records section at the hospital. The type of research is qualitative research with a prototype system development method. Data collection methods that used are interviews, document review and literature study. The research results are start from communication and analyzing system requirements, rapid design, prototype development, evaluation, and improvement of prototypes, to produce an application for calculating the human resource needs of medical records based on VBA macro excel. Conclusion of research is the application has been adapted to the ABK-Kes method and can operate well so it can help the medical record technicians in calculating the human resource needs faster and easier.

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## 1. Introduction

The management of human health resources is not optimal where the lack of number, type, and uneven distribution will affect the quality of health services. So human resource departement planning needs to be carried out as preparation of actual employee requires plans adjusted to the existing workload [1]. One of the human resources planning efforts in the medical record section is that it can do it by calculating the Health Workload Analysis (ABK-Kes) per period so that the performance of the medical record officers can follow the main tasks and workloads each.

ABK-Kes in the Health Facility Needs Planning Manual calculates needs based on the workload carried out by each type of employe at each health service facility by their primary duties and functions. If there is a system or application that can assist the calculation process, calculation of ABK-Kes per period will undoubtedly be faster, more precise, and easier to do. Along with the development of technology, it can increase effectiveness and efficiency in doing work, such as using computers, which have now become a necessity to make it easier for humans to complete their work [2]. The utilization of technology will be one solution that can facilitate the calculation of human resource needs, especially in the medical record section. Monitoring the need for human resource in the medical records section needs to be done because there are still problems in the distribution of employee that is not right.

The distribution of medical record officers in several health service agencies is still not following the workload of each part. Gemilang and Suradi in their research, stated that there are medical record officers who are not only responsible for certain sections but are also responsible for assembling to coding as well as carrying out hospital statistical reporting tasks [3]. Chrismawanti in his research, found that only eight registration officers were available, while what was needed according to the workload was nine people [4]. Likewise, Suryanto said, where there is still a shortage of human resources in the medical record section,



there is a need for additional employees to meet the number of staff needs in the medical record section quality of service can be better [5].

The number of human resources needs for medical record officers is still calculated manually. If there is a system or application that can assist the calculation process, calculation of ABK-Kes per period will undoubtedly be faster, more precise, and easier to do. Based on this, the purpose of this study is to design an application for calculating needs based on the Health Workload Analysis (ABK-Kes) method in the medical record section of the hospital.

## 2. Method

The type of research used is qualitative research with a prototype system development method. Qualitative research explores and explores the realities of individual and social life and produces descriptive descriptions needed to describe a reality in an argumentative manner [6]. The prototype method uses applications that can build applications quickly, even eliminating the architectural design stage. Architectural design is done when the programmer makes a prototype, and the prototype results already include the architectural design [7].

The selection of informants in meeting information needs has data, can provide information according to the research topic, and is willing to provide accurate and complete information. The informants in question are the Head of the Medical Record Installation and one of the medical record officers in charge of calculating ABK-Kes medical records. Taking the informant on specific considerations, the informant is the one who knows best and as a leader will make it easier for researchers to explore the object/social situation under study [8].

The primary data collection method in this study was conducted to obtain information related to identifying needs, suggestions, and inputs that can be used to make the system or application more perfect. Data collection was carried out based on interviews with predetermined informants. The secondary data collection in this study used the literature study method. The data can be obtained from various sources and sourced from books, reports, journals, and others [9]. In this research, the documents used are needed and related to the research. The data collection instruments used were the researchers themselves, interview guides, a list of documents, writing instruments, and voice recorders.

## 3. Result and Discussion

### 3.1 Communicatae

It takes an application to calculate the number of medical records employee needs. There is a report feature for recapitulating the calculation results of medical record human resources needs per part; the researchers made an application adapted to the manual one calculation of ABK-Health.

Produced activities that can be applied to the system or application to obtain system requirements consisting of functional and non-functional requirements analysis in the application for calculating medical record HR needs with the ABK-Health method.

**TABLE 1**  
ANALYSIS FUNCTIONAL & NON-FUNCTIONAL

No	System Functional Requirements	System Non-Functional Requirements
1.	Functions to view and edit human resources information in the Medical Record Installation	- Hardware requirements: computer or laptop
2.	The function of calculating the need for human resources in medical records installation according to the ABK-Kes method	- Software requirements: Microsoft Excel (Office version 2016 and above)
4.	The function of managing data and reports on the calculation of the need for human resources in medical records installation	- Brainware needs: human resources who are authorized and know the calculation of ABK-Kes
5.	The function of printing the recapitulation report of the calculation of the human resources in medical record installation	

### 3.2 Quick Design

#### a. Context Diagram

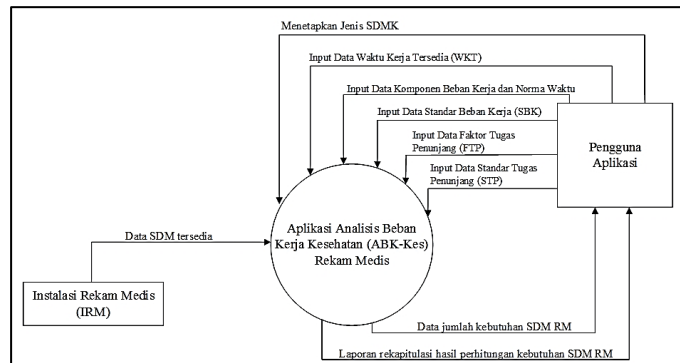


Figure 1. Context Diagram

#### b. Activity Diagram

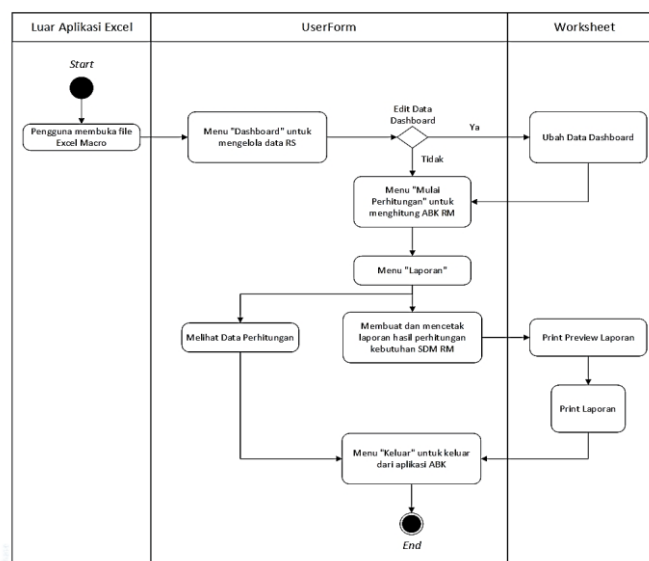


Figure 2. Activity Diagram

### 3.3 Design Prototyoe

At this stage, a prototype design is made, and testing and refinement are carried out, namely in making an application user, including making an application interface design.

### 3.4 Evaluate

At this stage, the prototype is evaluated by the user. Then feedback is given and used to refine the design. The user gave the feedback after the author showed the prototype design is good, at least it is running, has no errors, and can be optimized.

### 3.5 Maintenance

Researchers improve and refine all available menus to function better. In addition, the appearance of the application is also improved by considering the User Interface (UI), which focuses on the beauty of the application's appearance, and the User Experience (UX) for user satisfaction in using the application 3.6. Final Production

### 3.6 Final Production

#### a. Menu Dashboard



Figure 3. Dashboard Menu

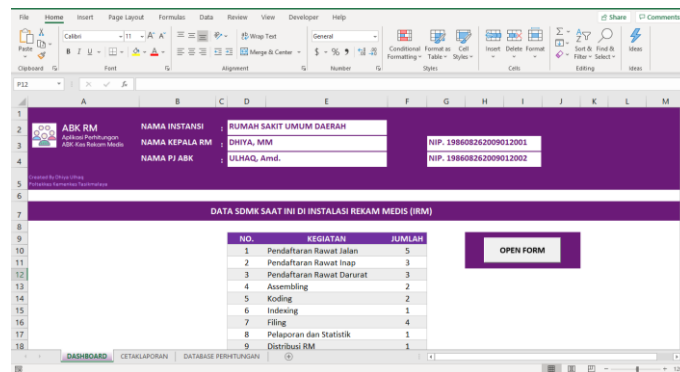


Figure 4. Edit Menu Interface

b. Calculation Menu

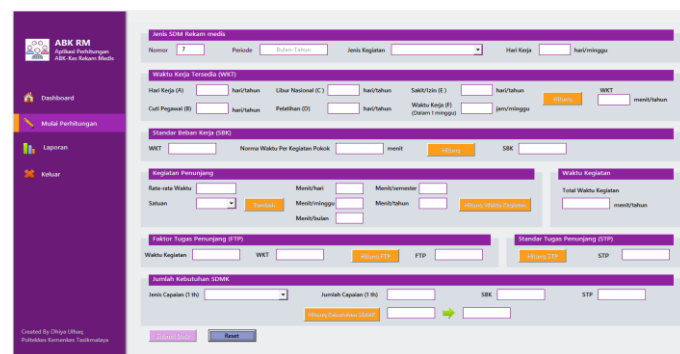
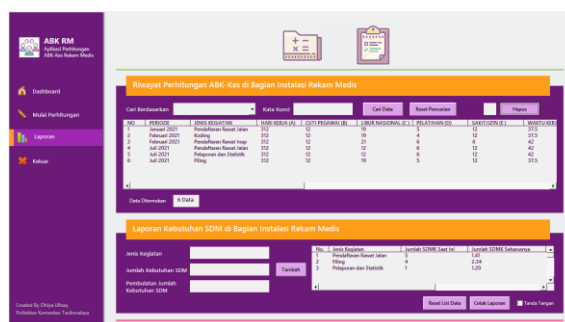


Figure 5. Edit Menu Interface

c. Report Menu





Software is equipment and programming language used in making applications [7]. The software used to run this application is using the Microsoft Excel application (Office version 2016 and above), so that the ABK-Kes calculation application is easy to use by anyone because everyone often uses the excel application itself.

3). Human Resources

Medical record human resources who are authorized and have knowledge of the calculation of ABK-Kes.

**c. Quik Design**

In the design with structured modeling, the first step is to make a context diagram, used to determine the limitations and scope of the software or system being worked on. These limitations are in the form of what the software does, who uses the software, and the inputs and outputs of the system/software [7].

The context diagram in this application for calculating ABK-Kes medical records illustrates input from application users who are medical records officers who understand ABK-Kes and input data for HR medical records available for reporting HR needs. The output of this application is in the form of human resources in medical records needs data and a recapitulation report on the calculation of human resources in medical record installation.

During requirements modeling, UML can represent information systems from the user's point of view [12]. Therefore, the author uses activity diagrams as one type of UML to show the sequence of activities in using this ABK-Kes calculation application for medical records. In the activity diagram the author made, this application includes a user form section and a worksheet section to process data input, manage data, store data, and print reports on medical record HR need following the calculation results of ABK-Kes medical records

**d. Final Production**

This menu is the core of the application for calculating ABK-Kes medical records. The calculation stages on this menu are adjusted to the steps of the ABK-Kes method contained in the "Manual Book 1 of HRK Needs Planning Based on ABK-Kes", namely:

- 1). Determine the Type of Medical Record HR
- 2). Calculating Available Working Time (WKT)
- 3). Calculating Standard Workload (SBK)
- 4). Calculating the Time of Supporting Activities
- 5). Calculating Supporting Task Factor (FTP)
- 6). Calculating Supporting Duty Standards (STP)
- 7). Calculating Human Resources Needs

Every time the calculation starts, the number part will automatically be filled following the last number of the ABK-Kes data. The buttons on this menu will also not be active before the user fills in the textbox in the order according to the steps above. The final result of the calculation in this menu is the number of human resources needs in the form of a decimal number and will automatically be rounded up. In addition to the "Submit Data" button to save, there is also a "Reset" button to delete the entries in the textbox in this menu. Making this menu is adjusted to the principle of task compatibility, which users should not have difficulty using. This can cause the application that is made to be unused and ultimately unable to help the user's work [13].

**e. Reporting Menu**

This menu consists of two sections. The first part is the history of the calculation of ABK-Kes, which includes data from previous calculations that have been stored. The list of calculation data can be searched according to the desired category and deleted as needed.

The second part is the HRK needs report section, where the user can select the data to be used as a report by adding data from the list in the first section, then after the data list is ready to be used as a report. After that, the user can click the "Print Report" button to print the report on the human resources needs for the medical record because the print preview page will automatically appear.

Following one of the interface design principles, namely the WYSIWYG (What You See Is What You Get) principle, there must be a similarity between the information on the screen and the information in the printed output or file [13]. After the print preview page is closed, before making the following report, make sure that on the user form in the "Reports" menu, the data in the print Listbox is cleaned by clicking the "Reset List Data" button.

#### f. Exit Menu

This menu, when clicked, will automatically display message boxes that appear on the monitor screen. The message box interacts with the user to ask for confirmation before exiting the application. When the application exits, the data/documents will be saved automatically. This follows the interface design principle, namely the protection principle, which protects the system from common human errors, for example, by confirming exiting the application [13].

#### 4. Conclusion

The conclusion that can be drawn from this research is that the application created is a VBA macro excel-based application adapted to the ABK-Health method and can operate adequately to help the performance of medical record officers in calculating the need for medical record human resources. There is a suggestion to continue the system or application design stage using the MySQL database to be more optimal data stored in the application.

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