



Development of a Google Sheet-Based Application for Handling Foreign Patients' Health Insurance Claims

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Abstract. An application based on Google Sheets for handling health insurance claims for foreign patients needs to support the services provided by healthcare facilities. The aims of this research are: 1) to produce a Google Sheet-based application for handling foreign patient health insurance claims and 2) to analyze user evaluations of the output from an application that uses Google Sheets for handling foreign patient health insurance claims. The system development approach used is a prototype approach with stages including 1) collecting information from healthcare facilities, 2) designing an application prototype, 3) developing an application prototype, and 4) evaluating the application prototype by users. In this study, quantitative data were used in the form of Google Sheet-based application testing data for handling foreign patient health insurance claims. Percentage analysis is the quantitative analysis method employed, which compares the number of correct answers to the total number of answers in a single item. The research results show that the Google Sheet-based application for handling foreign patient health insurance claims has met technical and operational feasibility.

Keywords: Application, Foreign Patients, Google Sheet, Health Insurance

1 Introduction

Bali is one of the most well-known tourist spots in Indonesia. Bali receives visits from foreign tourists. Travelers are drawn to Bali, which is referred to be the island of gods. Bali offers a singular fusion of stunning scenery, a vibrant culture, and kind people. Direct arrivals of foreign tourists to Bali in the period January to November 2023 reached 4.79 million visits. The BPS Bali Province data per 2/1/2024 shows number of foreign tourists visiting Bali reached 46.02 percent of the total number of foreign tourists visiting Indonesia from January to November 2023, which was recorded at more than 10.409 million visits.

Traveling abroad by tourists can cause health problems due to changes in air humidity, temperature, germs, and so on. Therefore, tourism needs to be supported by adequate health service facilities. As stated in Government Regulation No. 47 of 2016, whether a health care program is preventive, curative, rehabilitative, or promotional, a health service facility is a tool or site utilized by the federal

government, local governments, or the community to carry it out. Health service facilities fall into one of the following categories: independent practice locations for medical professionals, community health centers, clinics, pharmacies, hospitals, blood transfusion units, optical, medical facilities used for legal purposes, and traditional health care institutions.

Payment of treatment costs at health service facilities can be done in several ways, such as through insurance, BPJS Health, BPJS Employment, credit cards, company guarantees, and cash. Payment via insurance abroad is one of the payments used by tourists (Yuan et al., 2017). Health insurance is a type of financial security that covers medical expenses and necessary care in the event of an illness or injury. Health insurance can help reduce the cost burden. Tourists come from various countries, so insurance companies and procedures for submitting health insurance claims for tourists (foreign patients) are also different (Ji et al., 2024). Health service facilities need an application to handle payments for health services for foreign patients who make payments through foreign insurance.

Application development for handling health insurance claims for foreign patients needs to support the services provided by healthcare facilities. Application development using a Google Sheet-based application. Google Sheets is a popular cloud-based spreadsheet, widely known for its ease of use, collaborative features, and accessibility from multiple devices (Reyna, 2023). Spreadsheet programs are frequently utilized in businesses and continue to be so, in addition to other software for accounting and other functions (Chaamwe & Shumba, 2016; Leblanc & Grossman, 2014). Spreadsheets are an efficient platform for software development, therefore they can be a valuable addition to a practitioner's arsenal (Leblanc & Grossman, 2014). Spreadsheet applications are utilized in financial reporting and transaction processing systems (Ariana & Bagiada, 2017; Hassan, 2023) and applications for financial reporting as an addition to the system for financial information (Ariana et al., 2023).

Microsoft Excel and Google Sheets are spreadsheet-based applications used to process worksheets. Spreadsheet applications are flexible and easy to use and can be shared to any Google account (Ariana et al., 2018; Pebralia et al., 2023; Schalkwijk et al., 2015). Using Google Sheets can be cost-effective with continuous and real-time links (DeBell et al., 2019; Shivakumar & Pradeepkumar, 2019). Using Google Sheets does not require high investment funding and employee qualifications (Van et al., 2020). spreadsheet applications such as Excel are the most important software for newly hired accountants (Gitahi, 2022). the most crucial piece of software for recently recruited accountants (Ariana et al., 2018; Ariana et al., 2019).

Research needs to be carried out immediately so that health service facilities can serve foreign patients who pay health service costs through health insurance abroad. The research focuses on developing a Google sheet-based application for handling foreign patient health insurance claims and the feasibility of a Google Sheet-based application for handling foreign patient health insurance claims.

2 Methodology

The research model adapts the Richey and Klein research and development model (Richey & Klein, 2007). The Richey and Klein model encompasses the research and development sequential stages of Planning, Production, and Evaluation (PPE). The research methodology comprises several stages: 1) Planning, which includes analysis of application requirements by exploring health services for foreign patients, procedures for submitting foreign insurance claims, and exploring the characteristics of application users; 2) Production, namely the development of Google Sheet based applications according to the needs of health facilities; and 3) Assessment is by assessing Google Sheet based applications by application users and application information users. A user response questionnaire was the tool utilized for this evaluation. The instrument employs a five-point Likert Scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

The object of this study is the development of a Google Sheet-based application for handling foreign patient health insurance claims at first-level health service facilities. The study used quantitative data, namely application user assessment data and Google Sheet-based application information users for handling patient health insurance claims. The research data was gathered from both primary and secondary sources. Data was acquired utilizing a variety of approaches, including interviews, observations, and documentation. The sampling technique used in this research is purposive sampling technique. The sample is determined by determining the sample based on the research objectives. The sample consisted of five and fifteen users of information produced by the application. The data was examined utilizing percentage analysis techniques to provide user testing results for Google Sheet-based application materials. The percentage range of assessments is shown in Table 1.

Table 1. Eligibility criteria

Value range	Level
81.26-100.0	Very worthy
62.51-81.25	Worthy
43.76-62.50	Not feasible
25.00-43.75	Very inadequate

3 Result and Discussion

Following the needs analysis could be seen that the information and reports required in developing a Google Sheet-based application for handling foreign patient health insurance claims include information about insurance companies, nurses and doctors, patients, patient examinations, medical certificates, patient examination cards, and patients checklists, invoices, recapitulation, and other letters.

An overview of a Google Sheet-based application for handling foreign patient health insurance includes a menu, table (insurance company, doctor and nurse, patient, patient examination, and invoice table), output (medical certificate, patient examination card, patient checklist, invoice, recapitulation, and letters). The menu makes it easier for operators to move from one section to another part of the application. The insurance company table covers information such as the insurance name, address, country, and phone number. The doctor and nurse table contains information about the identity of the nurse and the attending doctor. The patient table contains information about their identity and disease. The examination table shows the patient's results. The invoice table includes information on patient examination expenses. A medical certificate is a medical certificate from the patient. The patient examination card is a card about the patient and data on the patient's examination results. The patient checklist is a list that contains all patients and their examination results. The invoice contains the bill to the patient for treatment costs. Recapitulation is a report used to fulfill the requirements requested by the insurance company when claiming coverage. Letters are various documents required in the insurance claim process. Figure 1 shows the application menu.

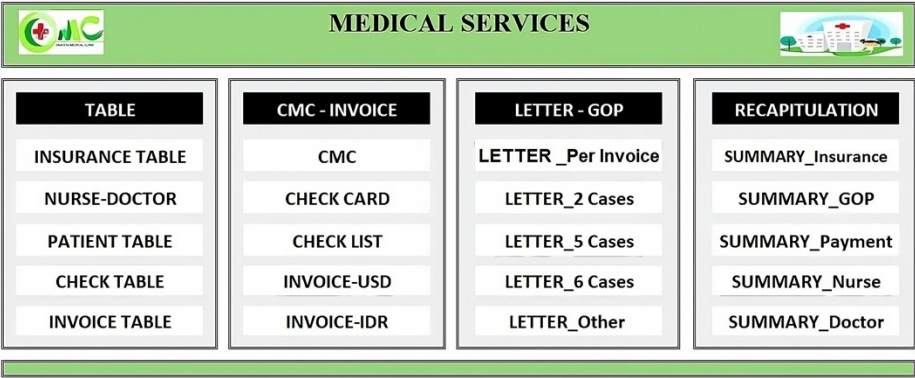


Figure 1. Application menu
Photograph and permission by Ketut Arya Bayu Wicaksana

According to the expert assessment results, the user’s capacity to use the program is deemed “Very Worthy”. Users can efficiently explore the application and overcome challenges. However, further enhancements in other areas (such as application control) may contribute to overall improvement. According to user assessment results, the application is considered “Worthy” in user usability, as both quick usage and overcoming difficulties are adequately addressed. Additionally, consider exploring specific features or design choices to improve these usability scores.

According to expert assessment, the application’s ability to generate required information is considered “Worthy” based on the assessment results. It effectively produces financial reports, and detailed information, and displays data on the monitor. Additionally, its capability to generate paper documentation enhances its overall worthiness. According to user assessment results, the application performs

exceptionally well in making information for display on monitors and paper documentation. While it meets the criteria for generating financial reports and detailed information, there is room for improvement. Additionally, consider discussing strategies to enhance financial report generation and detailed information output.

According to the expert assessment result, the application's application control is considered "Not Feasible" based on the assessment results. While password security and control mechanisms are in place, further improvements are necessary to enhance overall security and accuracy. According to user assessment results, the application's password-related controls are considered "Worthy." However, the output control falls short and is deemed "Not feasible." To improve the application, further attention should be given to enhancing output control mechanisms. Further exploration of application control, especially output control, is needed to find potential solutions for better output control.

Table 2. Operational aspect assessment results

No.	Indicators	Expert	User
User's ability to use the program			
1	Users can utilize the accounting program rapidly.	76.00%	70.67%
2	Users can overcome their challenges in using accounting programs.	72.00%	65.33%
The ability of the program to generate the required information.			
1	The program can provide financial reports.	76.00%	68.00%
2	The application can generate detailed information.	72.00%	66.67%
3	The program can provide information that can be seen on the monitor.	88.00%	97.33%
4	The program can provide information in the form of paper documentation (print).	88.00%	96.00%
The program has application control.			
1	The program is equipped with adequate passwords.	68.00%	70.67%
2	The program has controls (validation test, accuracy test, reasonableness, completeness, etc.).	68.00%	70.67%
3	The program has output control (the output is reconciled with other parts).	68.00%	62.67%

According to expert assessment results in Table 2, the application demonstrates strong compatibility with the CPU (Central Processing Unit) and operating system, ensuring efficient responsiveness. Both indicators meet the criteria for being considered "Very worthy." Additionally, improving specific hardware or operating system requirements is needed to contribute to these high scores. According to user assessment results, the

application demonstrates strong compatibility with the CPU and operating system, ensuring efficient responsiveness. Both indicators meet the criteria for being considered “Worthy.” It needs to improve any specific hardware or OS requirements that contribute to these high scores

According to expert assessment results, the application demonstrates good usability in ease of learning and use. The presence of a guiding dialogue and an intuitive menu structure contributes positively. However, there is potential for further enhancement in ease of use. Additionally, consider exploring strategies to improve the application’s ease of use.

According to expert assessment results, the application demonstrates good usability in ease of learning and use. It can be seen in Table 3. The presence of a guiding dialogue and an intuitive menu structure contributes positively. However, there is potential for further enhancement in ease of use. Additionally, it needs to explore strategies to improve the application’s ease of use.

Table 3. Technical aspect assessment results

No.	Indicators	Expert	User
Hardware and operating system capabilities			
1	The central processing unit can handle all requests rapidly.	88.00%	82.67%
2	The operating system supports the application being used.	84.00%	84.00%
Simplicity and ease of use			
1	The program is easy to learn.	84.00%	78.67%
2	The program is easy to use.	72.00%	78.67%
3	The program provides a guiding dialogue that directs the user in filling in data.	68.00%	68.00%
4	Menu structure, makes it easy for users of program.	80.00%	77.33%

4 Conclusion

Google Sheet- based application for handling foreign patient health insurance consists of a menu, table (insurance company, doctor and nurse, patient, patient examination, and invoice table), output (medical certificate, patient examination card, patient check-list, invoice, recapitulation, and letters). The research results show that the Google Sheet-based application for handling foreign patient health insurance claims has met technical and operational feasibility.

Researchers can then convert this application into a web-based system to improve the application's ability to fulfill the information needed by health facilities. Health facilities should be able to use this simple application for handling foreign patient health insurance claims to improve service to patients.

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