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Application of the Hot-Fit Method in Evaluation of the Use of ePuskesmas at Community Health Care I South Denpasar

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Abstract. ePuskesmas is a multi-user web-based application that allows simultaneous access by multiple users. It facilitates electronic patient recording and data management. The implementation of ePuskesmas services at UPTD Denpasar Selatan 1 has not been conducted previously, but the application aids the Health Department in monitoring public health data. Therefore, it is crucial to evaluate the readiness of personnel in adopting ePuskesmas using the HOT-FIT method. The aim of this study is to assess the Usage Evaluation of ePuskesmas at UPTD Puskesmas I Denpasar Selatan using the HOT-FIT Method. The research adopts a Cross-Sectional Study approach, with a sample comprising all 32 ePuskesmas users at Puskesmas I Denpasar Selatan selected through purposive sampling. Data analysis includes multivariate analysis using multiple linear regression. The findings reveal significant correlations between human, organizational, and technological factors and the net benefit of ePuskesmas usage. Specifically, multivariate analysis identifies organizational factors as the most significant predictor influencing ePuskesmas net benefit ($p<0.001$). This underscores the pivotal role of organizational readiness in ePuskesmas utilization. Hence, enhancing organizational structure in ePuskesmas management is essential, alongside fostering communication and organizational experience in utilizing ePuskesmas for patient recording and reporting purposes.
Keywords: ePuskesmas, Evaluation, HOT-FIT

I. BACKGROUND

Information technology plays a crucial role in supporting the operations of institutions, particularly in enhancing efficiency across all activities. One such institution in the healthcare sector, which serves as a primary service provider, is the Community Health Center (Puskesmas). As a pioneer in community health development, Puskesmas requires effective management from planning to execution, monitoring, and evaluating ongoing programs. One electronic-based application utilized in Puskesmas is ePuskesmas.

ePuskesmas is designed to facilitate improvements in service quality by enabling electronic recording and data management of patients. This web-based multi-user application allows simultaneous access by multiple users through web browsers such as Internet Explorer and Mozilla Firefox. It enhances the ease of data monitoring for the Health Office, thereby supporting public health management. The advantages of ePuskesmas include fostering healthy competition among Puskesmas to provide the best service quality to users and competing to renew data reporting systems. Additionally, it ensures comprehensive service for the public while consolidating data within the ePuskesmas system.

When implementing a system or application for various purposes, especially in healthcare, optimal usage is essential. Thus, assessing user readiness levels becomes crucial. The Human Organization and Technology-Fit (HOT-FIT) model, developed by Yusof et al. (2008) from the Information Systems Success Model by DeLone and McLean (1992), provides insights into critical aspects of application implementation and utilization readiness. This method emphasizes human, organizational, technological, and their balanced relationship aspects [1].

The HOT-FIT method not only focuses on the system itself but also considers its supportive environment. Its simplicity and comprehensiveness are supported by various studies, making it effective for evaluating existing system implementations. It provides solutions to challenges and recommends improvements for application development [2]. ePuskesmas addresses issues stemming from conventional systems. It aims to streamline data reporting to the Health Office and ensure swift, accurate information through online reporting systems [3]

Puskesmas I Denpasar Selatan, implementing ePuskesmas since March 2021, faces challenges such as network issues, intermittent BPJS connectivity, inadequate user training, lack of designated responsible personnel, and manual reporting practices. Moreover, it lacks regular evaluations during system implementation, impacting operational activities and service quality.

Therefore, conducting evaluations is crucial to generate insights for improving information system usage [4]. Evaluations help management assess whether current systems facilitate user convenience and optimal service delivery compared to previous conventional systems. They identify positive aspects driving system usage and pinpoint obstacles encountered during implementation [3] Research by Nuramilla (2022) at Puskesmas Malaka Sari and Jambago in Siak District highlights discrepancies in human resources, organizational, and technological optimization in ePuskesmas implementations [5]. Similarly, findings from other research on SIMPUS implementation at Puskesmas Sipatana indicate good adoption per the HOT-FIT model but reveal challenges like system understanding and network issues [6].

II. METHOD

The method used in this study is a Cross-Sectional Study approach, where measurements or research are conducted at a single point in time. The sample for this research includes all 32 users of ePuskesmas at Puskesmas I Denpasar Selatan. Purposive sampling is used as the sampling technique. The instrument used for data collection in this study is a questionnaire consisting of statements related to dimensions of the HOT-FIT [7]. Bivariate analysis is employed, specifically correlation tests, to examine relationships between the Human, Organization, Technology (HOT) dimensions and the benefits of implementing ePuskesmas by personnel at Puskesmas I Denpasar Selatan. Multivariate analysis in this research utilizes multiple linear regression analysis to further explore the relationships between the HOT dimensions and the benefits of ePuskesmas implementation.

III. RESULTS AND DISCUSSION

A. CORRELATION BETWEEN HUMAN DIMENSIONS WTH NET BENEFIT

Based on bivariate analysis, it was found that there is a relationship between human factors and net benefit (Table 1). The implementation of the e-Puskesmas application underscores the importance of understanding the relationship between human dimensions, particularly from the perspective of system users, with user satisfaction and the tangible benefits obtained.

Users, specifically healthcare workers at Puskesmas I Denpasar Selatan who possess adequate knowledge of the e-Puskesmas application, tend to better comprehend its functions, features, and potential benefits. This knowledge also aids them in effectively integrating the application into daily practice. Skills in using technology, including efficient navigation and data input, are also crucial. Proficient users of the e-Puskesmas application can typically maximize its potential to improve healthcare service processes. A positive attitude toward information technology and innovation helps users adopt e-Puskesmas more effectively. This attitude includes openness to change, enthusiasm for utilizing new features, and willingness to collaborate with teams in using the application. Users' interest in using technology in healthcare contexts also influences their application usage and satisfaction levels.

Table 1. Bivariat Analysis

Evaluation of Net Benefit	r_s	p-Value
Human	0.819	0.000
Organization	0.919	0.000
Technology	0.855	0.000

Support from management and other staff within the organization is crucial. This support includes adequate resource allocation, such as training, technical assistance, and infrastructure that supports smooth application usage. From the user satisfaction aspect, it depicts the Level of Efficiency and User-Friendliness, where an intuitive and efficient e-Puskesmas application enhances user satisfaction. An easily navigable and time-efficient application means users are more satisfied with the system. Users are satisfied if the application can provide relevant and accurate data to support decision-making in healthcare services. A well-implemented e-Puskesmas application can enhance efficiency and effectiveness in delivering healthcare services to patients. For instance, accurate electronic records can improve medical record management and timely diagnosis. Another advantage is that effective application use can reduce administrative costs and enhance efficient resource utilization, resulting in financial benefits for the organization. This, in turn, can lead to improved Patient Satisfaction. With faster and more efficient service, the e-Puskesmas application can enhance patient satisfaction due to a better healthcare access

experience.

The alignment between humans, technology, and the organization is crucial in the adoption of wearable healthcare devices. This study also found that better device usage occurs with harmonious integration of these factors [4]. Other studies have used a resource-based view approach to explore alignment between information technology and work organization in hospitals. These studies highlight the importance of appropriate alignment to improve organizational performance in delivering healthcare services [5]. In conclusion, the successful development and implementation of the e-Puskesmas application depend not only on the technology used but also on human factors involving system users. Considering knowledge, skills, attitudes, participation, and organizational support will help enhance user satisfaction and the tangible benefits derived from this application in the context of healthcare services. By ensuring human dimensions are well-addressed, the e-Puskesmas application has significant potential to enhance efficiency, effectiveness, and overall healthcare service quality. With good alignment, it can improve efficiency and effectiveness in medical decision-making [8].

B. CORRELATION BETWEEN ORGANIZATION DIMENSIONS WITH NET BENEFIT

Based on the bivariate analysis, it was found that there is a relationship between organization and net benefits (Table 1). The implementation of ePuskesmas applications underscores the importance of understanding the relationship between organization and tangible benefits in health system applications, which is crucial for enhancing efficiency, service quality, and patient safety, particularly from the perspective of organizational structure and environment towards the tangible benefits obtained. Table 2 shows that when combined, only organizational dimensions have a significant influence on net benefits.

Table 2. Multivariat analysis

Evaluation of Net Benefit	Beta	p-Value	95% CI B
Human	0.018	0.688	-0.074 – 0.111
Organization	0.313	0.000	0.205- 0.421
Technology	0.028	0.408	-0.040- 0.096

Organizations that efficiently manage resources such as time, manpower, and equipment can optimize healthcare system operations. For instance, by implementing integrated hospital management systems, they can reduce patient waiting times, improve service accessibility, and lower operational costs. Organizations focusing on service quality enhancement enforce stringent standards to ensure correct and timely medical procedures. They utilize data and analysis to continuously monitor and improve clinical processes.

Conversely, progressive organizations tend to adopt the latest technologies in their healthcare systems. Examples include using electronic medical records (EMRs) to enhance care coordination or predictive systems to estimate patient risks and prevent diseases. Patient safety remains a top priority. Organizations with robust risk management systems can identify and mitigate medical risks such as medication errors or nosocomial infections, thereby enhancing public trust and reducing long-term costs from medical complications. The importance of collaboration among various departments and healthcare professionals within the organization is key to providing coordinated and holistic patient care. Systems facilitating effective communication among doctors, nurses, and other therapy experts can significantly improve patient care outcomes.

Full organizational support in the form of continuous education and development for medical staff is a crucial long-term investment for healthcare organizations. By enhancing the clinical competencies and skills of their teams, organizations can improve service quality and reduce error rates. Therefore, the relationship between healthcare organization and tangible benefits in health system applications is essential to ensure that services provided are effective, safe, and reliable. Organizations capable of integrating innovation, risk management, team collaboration, and commitment to compliance will contribute significantly to overall healthcare system improvements.

C. CORRELATION BETWEEN TECHNOLOGY DIMENSIONS WITH NET BENEFIT

The results of the bivariate analysis show that the technological dimension has a strong relationship to the net benefit of ePuskesmas (Table 1). This shows that the better the technological dimension, the better the net benefit felt by officers. Delfia's research (2022) found the same results, namely that there is a significant relationship between technology and net

benefits [8]. Technological factors include system quality, information quality, and service quality. There is an influence between system quality and benefits. The system can improve the capabilities of the information system if the system is quality in the sense that the system is created to provide user satisfaction through simplicity in using the system [9]. The simplicity of the system influences user satisfaction to support the work of managing data and information [10].

The description of the evaluation using the HOTFIT method shows that from the technological aspect, there is one indicator of the technological dimension, namely the hope that e-Puskesmas can be mobile-based which users want to be better. This indicates that the better the technology, the impact it can have on user satisfaction and continued use of the system [11].

IV. CONCLUSIONS AND SUGGESTIONS

The results of this research show that there is a strong relationship between the human, organizational and technological dimensions of each of the net benefits of using ePuskesmas. Multivariate analysis shows that the organizational dimension is the most significant in the net benefits of using ePuskesmas at the South Denpasar 1 Community Health Center. Organizations that efficiently manage resources such as time, manpower, and equipment can optimize healthcare system operations. Full organizational support in the form of continuous education and development for medical staff is a crucial long-term investment for healthcare organizations. Organizations capable of integrating innovation, risk management, team collaboration, and commitment to compliance will contribute significantly to overall healthcare system improvements. Therefore, it is important to manage the organization at the South Denpasar 1 Community Health Center so that the use of ePuskesmas is better and its sustainability is maintained.

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