

CHAPTER I INTRODUCTION

I.1 Background

The maternal mortality rate (MMR) is a crucial indicator of a country's development success and the well-being of women, the foundation of sustainable human resources. Although Indonesia has targeted reducing the MMR to less than 70 per 100,000 live births by 2030 through the Sustainable Development Goals (SDGs) (Arifin, 2023; Bappenas, 2020). In reality, the national average maternal mortality rate (MMR) remains high, and its distribution is uneven. As seen in Figure I.1 below, Maluku, Papua, and Nusa Tenggara recorded the highest MMR at 333 per 100,000 live births in 2020, while Java and Bali reported 125 per 100,000, and other regions such as Kalimantan, Sulawesi, and Sumatra ranged from 180–242 per 100,000.



Figure I.1 Maternal Mortality Rate by Region in Indonesia 2020

Source: (Badan Pusat Statistik, 2020)

Furthermore, as seen in Figure I.2 below, Indonesia also ranked third highest in Southeast Asia for maternal mortality in 2020, at 173 per 100,000 live births, far above Malaysia (21 per 100,000). This situation highlights the significant challenges the Indonesian government faces in achieving this target and the need for effective interventions.

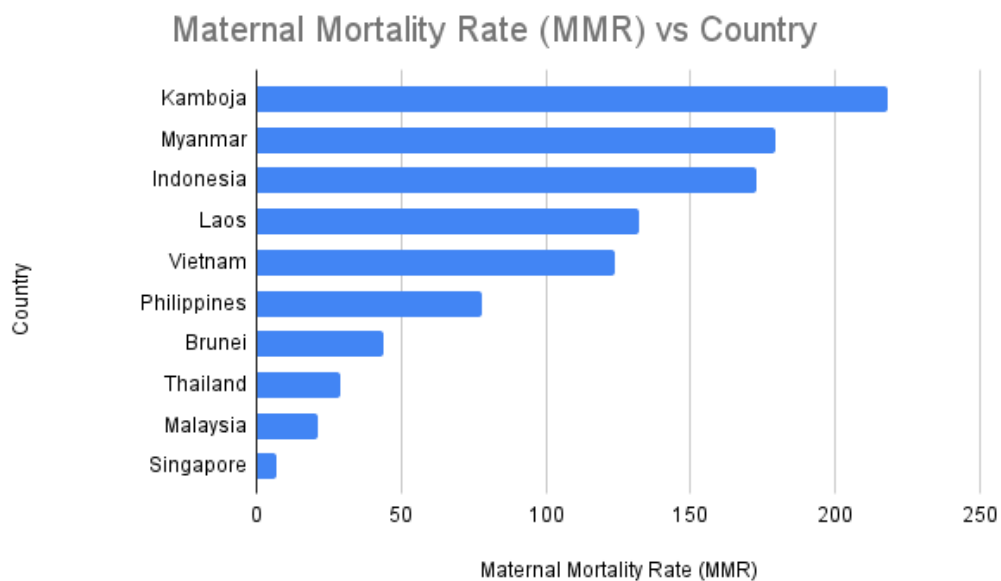


Figure I.2 Maternal Mortality Rates (MMR) Across Southeast Asian Countries
Source: (GoodStats Data, 2023)

Various root causes underlie the high maternal mortality rate in Indonesia, particularly in rural areas. Research shows that geographic disparities, limited access to quality healthcare, socioeconomic barriers, and uneven infrastructure exacerbate the problem (Cameron et al., 2019; Harrington et al., 2023). Women in rural areas are at higher risk, in 2024, maternal deaths were recorded at 42 per 100,000 households in rural areas, while in urban areas the figure was only 36 per 100,000 (Direktorat Statistik Kependudukan dan Ketenagakerjaan, 2024). Difficult access to health facilities, long distances, and low awareness of pregnancy danger signs contribute to delayed treatment and increased risk of complications (Harrington et al., 2023; Rakasiwi & Kautsar, 2021). Additionally, factors such as digital literacy, affordability, and infrastructure further worsen health inequalities in remote areas (Aril Ahri & Aulia Yusuf, 2022).

Technological innovations such as telemedicine, mHealth applications, wearable technology, and artificial intelligence offer great potential to expand healthcare access, especially in underserved areas (Pulimamidi, 2021). Globally, mHealth is recognized as a key strategy for reducing maternal mortality by providing real-time health information, empowering women, and easing the

burden on health systems (Choudhury & Nimbarte, 2024). With high mobile phone penetration in Indonesia, mHealth applications have great potential to address access challenges and support safe pregnancies and childbirth. However, the adoption rate of mHealth applications in Indonesia remains low, especially for locally developed maternal health apps (Octavius & Antonio, 2021). As can be seen in Figure I.3 below, the number of downloads for locally developed maternal health apps is still much lower than for internationally developed apps.

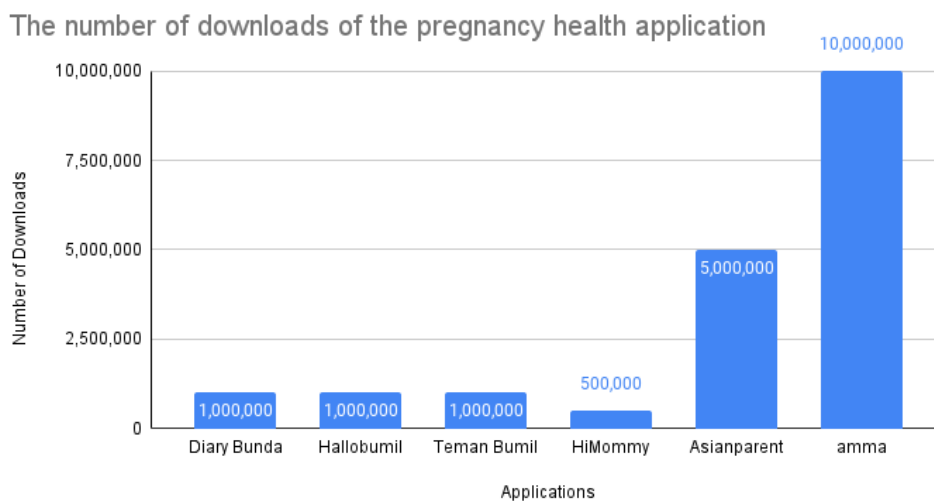


Figure I.3 The number of downloads of pregnancy health applications

Source: (Google Play Store, accessed on 23rd November 2024)

Many women in rural areas rarely access digital health platforms, and internet use is mostly for entertainment and communication rather than for health information. This data is supported by Figure I.4 below, which shows that 69% of rural people have never accessed health platforms, and only a small fraction uses them for productivity or health information (W. Akbar, 2023). A deeper analysis shows that the low adoption of maternal health mHealth applications in rural Indonesia is due to several related barriers. These include limited digital infrastructure, such as poor internet access, low device ownership (Nsor-Anabiah et al., 2019), low digital and health literacy (Octavius & Antonio, 2021), socioeconomic constraints such as income and employment status (Punjab et al., 2024), and technology anxiety among those unfamiliar with mobile applications (Alam & Khanam, 2023). Other contributing factors include the lack

of contextual and village-specific application features, minimal promotion by local health workers, and geographic isolation that limits the flow of information and the effectiveness of digital interventions (Leng et al., 2020). These root causes underscore the importance of more targeted and contextual strategies to increase mHealth adoption for maternal health in rural Indonesia.

Main Internet Activity of Rural People

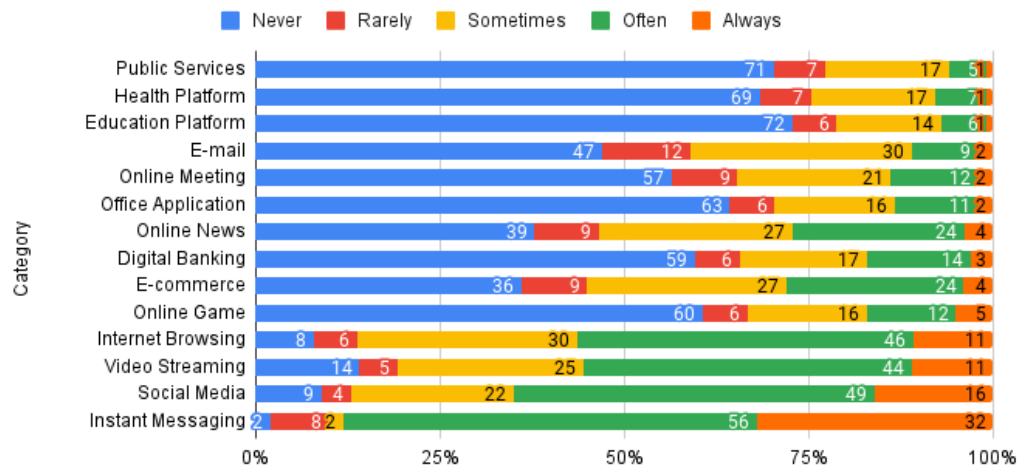


Figure I.4 Main Internet Activity of Rural People in Indonesia

Source: (M. Akbar & Wijaya, 2024)

The selection of variables in this study is based on theoretical relevance and empirical evidence from previous research on technology adoption. Core constructs such as Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Habit are included as they have consistently been found to significantly influence intention and technology use in many different fields (Venkatesh et al., 2003, 2012). In the context of mHealth adoption, variables such as Technology Anxiety, Geographical Location, and Socioeconomic Status are added to the Extended UTAUT2 framework to reflect the unique barriers faced by rural communities in Indonesia (Alam & Khanam, 2023; Leng et al., 2020; Punjab et al., 2024). Technology Anxiety is included to measure psychological barriers and resistance to digital health solutions that often occur in communities with low digital literacy. Geographical Location is highly relevant due to significant differences in access to health services and digital infrastructure

between urban and rural areas. Socioeconomic Status is considered because education, income, and employment have been shown to directly influence technology access and adoption.

Academically, the UTAUT2 model was chosen because it is one of the most comprehensive and empirically validated models for explaining technology adoption behavior and has been proven to explain the variance in behavioral intention better than previous models such as TAM or IDT. The flexibility of UTAUT2 in adding contextual variables also makes it highly suitable for analyzing the complex factors influencing maternal health app adoption in rural Indonesia (Alviani et al., 2023; Garavand et al., 2019; Mahande & Malago, 2019; Venkatesh et al., 2012; Yurisca Bernanda et al., 2019). Therefore, this research uses the Extended UTAUT2 to identify and analyze the main factors influencing the adoption of maternal health applications among women in rural Indonesia, with the aim of providing input for the government and app developers to design more contextually relevant mHealth promotion strategies and to contribute to the reduction of maternal mortality in rural areas and to increase the adoption of the maternal health applications.

I.2 Problem Formulation

The problem formulation underlying this research is:

1. Identifying the factors influencing the adoption of mHealth based maternal health applications in rural Indonesia.
2. Analyze the impact of the Extended UTAUT2 model variables such as Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC), Hedonic Motivation (HM), Price Value (PV), Habit (H), Behavioral Intention (BI), Technology Anxiety (TA), Socio-economic (SE), and Geographical Locations (GEO) on the intention and behavior of using maternal health applications in rural areas.
3. Explore specific barriers delaying mHealth based maternal health applications adoption in rural areas

I.3 Research Objectives

This research aims to:

1. To identify factors influencing the adoption of mHealth-based maternal health applications in rural areas of Indonesia by using the Extended UTAUT2 model.
2. To analyze the influence of variables in the UTAUT2 model, such as Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC), Hedonic Motivation (HM), Price Value (PV), Habit (H), Behavioral Intention (BI), Technology Anxiety (TA), Socio-economic Status (SE), and Geographical Location (GEO), on the intention and behavior of using maternal health applications in rural areas.
3. To examine barriers that delay the adoption of mHealth apps in rural areas.

I.4 Research Limitation

This research is limited to the analysis of the adoption of mHealth-based maternal health applications in rural areas of Indonesia, with a primary focus on factors that influence adoption intentions and behavior using the Extended UTAUT2 model. The variables studied include Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC), Hedonic Motivation (HM), Price Value (PV), Habit (H), Behavioral Intention (BI), Technology Anxiety (TA), Socio-economic Status (SE), and Geographical Location (GEO). This research only involved pregnant women in Indonesia who reside in independent, advanced, and developing villages.

I.5 Research Benefits

Benefits of this research:

1. For Health Application Developers, this research is useful in providing insight into the factors influencing the adoption of mHealth-based maternal health applications in rural areas, so that developers can create more effective and user-friendly applications.
2. For Rural Communities, the results of this research can increase awareness of rural communities regarding the importance of using mHealth

applications in supporting the health of pregnant women, which has the potential to reduce maternal mortality rates (MMR).