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# Mental Health App Adoption: Perception, Social Dynamics and Mental Health Need Moderation

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**Abstract**

The purpose of this study is to look at the factors that influence people's intention to use mental health app selfcare.id with an emphasis on perceived ease of use, perceived usefulness, social influence, trust, and stigma in digital mental health service, and how mental health needs can moderate the impact of these variables. The research technique used is explanatory research, with 100 sample data collected through questionnaires sent to selfcare.id users and analyzed using the PLS-SEM method. The research findings reveal the indirect effects of social influence, trust, and stigma on intention to use the selfcare.id application through mental health needs are not mediated, but the effect of mental health needs on intention to use is positive and significant. This research highlights the importance of improving people's understanding of mental health, removing stigma, and developing trust in mental health service technology. It is recommended that features are developed to be easier to use, access and mental health services are improved through information and communication technology, and wider education is conducted to increase the adoption of mental health technology in the community, especially in light of the COVID-19 pandemic which has increased mental health issues globally.

*Keywords:* technology adoption; mental health; digital services; stigma..

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## 1. Introduction

On December 31, 2019, an outbreak of COVID-19 caused by SARS-CoV-2 began in Wuhan, China, and has since spread around the world. The Virus is most likely spread through the trade in wild animals in seafood markets. Fever, cough, and fatigue are common symptoms, while specific symptoms include coughing up phlegm, headache, hemoptysis (coughing up blood), and diarrhea. The COVID-19 epidemic and social distancing tactics have resulted in an extraordinary increase in information sharing (Camilleri & Falzon, 2021). The spread of COVID-19 poses risks of transmission and mobility restrictions (De Canio et al., 2023). The spread of information regarding COVID-19 continues to grow, with research continuing worldwide. Services have become a significant driving force in the development of the world economy (Liu et al., 2019).

The pandemic that has swept the whole world has presented not only a threat to physical health but also created a frightening shadow in the form of a mental health crisis that has penetrated globally (Polo Peña et al., 2023). This pandemic has not only createdlong-term and long-term stress but has also had a serious impact on the mental health of millions of people (Osborn et al., 2022). This has an impact on various sectors, such as the economic sector; for example, the mobility restriction measures carried out make Mobility Limited, which of course has an impact on the economy (Sulistyowati et al., 2022).

It has been proven that nature-based areas are essential for people to cope with stress and maintain physical and mental health amid the pandemic (Chi & Pham, 2022). Stress anxiety and depressive disorders increase as more people are infected with the coronavirus due to the increasing number of cases of fear of COVID-19 (Arachchi et al.,

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2022). Economic conditions can span segments and cultures. The crisis has gone beyond physical health, significantly affecting the quality of life and emotional well-being of Indonesians (Čaić et al., 2019). According to World Health Organization (WHO) in 2019, one in every eight people, or about 970 million people, suffered from mental disorders, the most frequent of which were anxiety disorders and depression. Burnout is a syndrome that has attracted research and socio-political attention, given its negative impact on individuals, organizations, and society (Dias et al., 2023).

According to the Basic Health Research (Riskesdas) data, more than 19 million people aged 15 years and older in Indonesia suffer from emotional mental illness, with more than 12 millions of them suffering from depression (Balitbangkes RI, 2018). Emotional mode is characterized by affective, intuitive, and automatic processing of risky situations (Abikari, 2024). Mental health difficulties in Indonesia are caused by the high frequency of people suffering from mental disorders, which is about one in every five people, implying that 20% of the Indonesian population is at risk of mental disorders (Rokom, 2021). Studies show that the pandemic has further widened the gap in mental health care, and mental health services (WHO, 2022). Another important element is represented by spiritual care, the willingness of staff to listen to patients' fears (Bellio & Buccoliero, 2021). This is very concerning because Indonesia, as a low-middle-income country (LMIC), has access to mental health services that do not follow the need for quality, equitable, and affordable health services (Idaiani & Riyadi, 2018).

Based on Indonesian Psychiatric Association data as of May 2022, the number of Psychiatrists in Indonesia is only 1,221 people, spread across Java Island by 68.49 percent and outside Java Island 31.51 percent. In Indonesia, the ratio of psychiatrists to the population is still quite low, which is one in 200,000 people. This means that each psychiatrist has to deal with 200,000 people. Likewise, the number of psychologists from the Indonesian Association of Clinical Psychologists (Indonesia, 2023) as of June 2023 the number of clinical psychologists in Indonesia is 3,750 people, with the largest distribution of members in Java and Bali. This ratio is still far from the WHO standard that requires the ratio of mental health workers (psychologists and psychiatrists) to the total population to be ideally 1:30,000 (Rokom, 2022).

One of the innovations in the mental health space is a platform designed to provide support and resources to individuals. Every day, people seek quality medical care for their various ailments without the need to find out where such services are provided (Balo.gun, 2020). Not only in mental health, but also in various health services, technology is used to facilitate treatment, one of which is telephysiotherapy, which although not popular in Indonesia, has received positive responses (Lubis et al., 2024). To address the mental health crisis, there is a need for innovation and expansive solutions through prevention and treatment interventions supported by mental health technology or technology interventions (Rudd & Beidas, 2020). According to a recent study of more than 700 Spanish TA, the current situation is considered to mark the changes that must be made ranging from technological innovations to potential changes in health (Splendiani et al., 2023).

In the World Mental Health Report 2022, the World Health Organisation also stated that it is important to provide digital mental health interventions that can be widely distributed (Osborn et al., 2022). Digital mental health services are now becoming known in the community, in general, they can be classified into several groups, namely services via email, mental health technology interventions by professionals, self-help interventions, and unguided self-help interventions. Mental health technology intervention by professionals is a form of service that has advantages in Ease of access and is a solution to the limited number of professionals in various countries, especially ILMC countries (Salma., 2020).

Digital healthcare services have also rapidly developed, especially after the pandemic, as people prefer to choose online healthcare services. Similarly, there has been an increase in the number of startup companies emerging in the field of mental healthcare services to provide assistance (Achtyes et al., 2023). The mental health technology industry is growing in line with the strong demand for affordable and easily accessible healthcare services, resulting in high levels of investment in this industry (Abrams, 2024). However, according to Abrams (2024), the downturn in the economy has led many startups to reevaluate the effectiveness of these services

Health technology interventions are still largely unable to replace traditional or face-to-face health services (Chan & Honey, 2022). Adoption of this technology will only be successful if there is a readiness in its use according to the procedure and achieve the desired result (Sari et al., 2020). Technology has made it easier for organizations to communicate with their customers and clients using digital channels and languages (Duffett & Maraule, 2024). In addition, technology has also reshaped the way financial products and services are delivered to consumers (Dörfling & Godspower-Akpomiemie, 2023).

Previous research on the acceptance of mental health service technology has mostly used the Technology Acceptance Model (TAM), the Theory of Planned Behaviour (TPB), and the Unified Theory of Acceptance and Use of Technology (UTAUT), using traditional information technology variables (Fitriani, 2022; Philippi et al., 2021; Sawrikar & Mote, 2022). However, due to differences in sample size, Research Context, and sample characteristics, there are some conflicting conclusions. These inconsistent conclusions are confusing not only to researchers and institutions but also to the development of mental health services technology.

Rapid technological developments in recent years have significantly altered consumer behavior and business practices(Rahman et al., 2024). Consumers often choose brands that match their personality traits, so brand marketers need to build a distinctive brand personality to attract consumers ' attention and strengthen consumer-brand interactions (Feng et al., 2024). In the acceptance of Technology engaged in the field of health, it is also necessary to consider other factors related to health itself to expand the range of research (Zhao et al., 2018).

In addition to technological factors, socio-cultural factors also significantly affect the acceptance of mental health services technology, one of which is stigma. College students with higher levels of stigma toward mental health care were less likely to have experience using face-to-face mental health services. This led to more openness to receive mental health service technology, which does not involve in-person visits but rather personal, mediated communication (Kim et al., 2022). In Indonesia itself, stigma and discrimination against people with mental disorders and healthcare professionals are very real. Negative labels are not only attached to patients but also to healthcare workers (Fiorillo & Gorwood, 2020). Several studies have found that stigma consistently affects the attitude of patients in seeking professional help and is a major obstacle in seeking traditional (face-to-face) (Kartikasari & Ariana, 2019; Utami et al., 2023). Although many studies have raised the issue of acceptance or adoption of mental health technology, not many have incorporated stigma variables into it (Lamela et al., 2020). Though the presence of this technology in addition to bridging the gap in mental health care, also has the potential to reduce the negative stigma that already exists today (Hollis et al., 2018).

PT Karuna Psikologi Medika is a business entity engaged in mental health service providers, namely independent practice of psychiatrists, independent practice of psychologists, Karuna pharmacy services and yoga-meditation in Denpasar Mental Health Centre (DMHC). In 2022, to improve services, PT Karuna Psikologi Medika adds experts and also adds the space unit as a service facility. With the hope of providing more services and reaching more patients/client. Introduction includes background, theoretical basis, problems, problem solving plans and research objectives. As one of the mental health services technology, selfcare.id it is expected to improve mental health services at PT Karuna Psikologi Medika and the success of patient acceptance in the presence of this new technology can help overcome the gap in the lack of mental health services in Indonesia. It is necessary to research to determine the adoption of patients/clients in receiving attendance selfcare.id asan ology of mental health services. Looking at the results of previous studies that have investigated the acceptance of mental health services technology using various models such as TAM, TPB, and UTAU, it is found that the results vary. However, most of these studies have not considered sociocultural factors, especially stigma against mental health. Experimental culture is the independence employees experience when expressing their ideas at work, the opportunities they have to learn and solve problems innovatively (Bhardwaj & Kalia, 2021)

In other words, there is a lack of research that specifically integrates stigma factors against mental health care in the understanding of acceptance and adoption of mental health service technologies. Although several previous studies have examined the influence of factors such *as perceived usefulness, perceived ease of use*, and other factors on users intentions to use the technology, there is still limited research considering the role of stigma in this context. Therefore, the lack of research integrating stigma as a variable in the understanding of acceptance of mental health technologies creates space for further research that can clarify the impact of stigma on the intention to use such technologies and the potential role of technology in reducing existing stigma. In this context, there is a research gap linking stigma characteristics to the adoption of mental health technologies. This study seeks to bridge that gap by investigating the impact of perceived ease of use, perceived usefulness, social influence, trust, and stigma on intentions to use mental health service technology selfcare.id.

## 2. Research Method and Materials

This research employs a quantitative case study method to examine the intention to use the mental health selfcare.id application among patients at the joint practice of Psychologists and Psychiatrists owned by PT Karuna Psychologi Medika. This method was chosen because the study focuses on real-world phenomena and provides information that complements the research with relevant sources of evidence and data. Non-probability sampling with an incidental

sampling technique was used to determine the sample. A total of 100 research samples were obtained, with primary data collection conducted by distributing questionnaires directly to patients who have used the selfcare.id service. The researcher utilized ordinal data in the form of semantic differentials with answer choices ranging from 1 to 10. The data analysis employed the Partial Least Square Structural Equation Model (PLS SEM) using Smart PLS 4.0.

## 3. Results and Discussion

### *3.1. Results of Descriptive Statistical Analysis*

The descriptive statistical analysis of the sample is presented in Table 1. The characteristics of the respondents, which will be describe below, reflect the conditions of the respondents studied, including genders, age, residence and previous experience using similar health application. The respondents being studied are patients at PT Karuna Psikologi Medika who have tried counseling through the selfcare.id.

**Tabel 1.** Demographic Respondent

| | **Respondent Factors** | **N = 100** | **%** |
|---|---|---|---|
| Genders | Male | 46 | 46.0 |
| | Female | 54 | 54.0 |
| Age | 15-24 years old | 17 | 17.0 |
| | 24-40 years old | 62 | 62.0 |
| | > 40 years old | 21 | 21.0 |
| Residences | Bali | 63 | 63.0 |
| | Jakarta | 4 | 4.0 |
| | Jogjakarta | 23 | 23.0 |
| | Jawa Tengah | 3 | 3.0 |
| | Jawa Barat | 7 | 7.0 |
| Previous Experience | Yes | 26 | 26.0 |
| | No | 74 | 74.0 |

#### *3.1.1. Evaluation of Measurement Models (Outer Model)*

There were model evaluations as variables of this research that consist of 6 items variables like Intention to Use, Perceived ease of use, Perceived Usefulness, Stigmas, Social Influence, Trust, and Mental Health Need are presented in Table 2.

Table 2, the data collection instruments were tested for precision and accuracy using a reliability test. Each research instrument variable's composite reliability and Cronbach's alpha coefficient were assessed to determine dependency. A value > 0.7 indicates mutual dependence, while a Cronbach's Alpha value > 0.7 indicates good support. One item was removed after data processing (social influence of medical personnel). To find out the unique meaning of a latent variable, discriminant analysis is used. Table 2 shows that all constructions have an AVE value > 0.5. Thus, the model tested does not have discriminant validity problems. Based on Figure 1 we can see SEM-PLS Result.

#### *3.1.2. Evaluation of Structural Models (Inner Model)*

The R-squared (R2) value indicates how much variability in the dependent variable is explained by the independent variables. An R-square value of 0.67 suggests a good model, 0.33 suggests a moderate model, and 0.19 suggests a weak model in this study (Hair et al., 2019). Based on Table 2, the R-squared value for intention to use is 0.494 or 49.4%. This indicates that the variability of variables in this study only influences the intention to use variables by 49.4%. Other variables outside the study affect the remaining 51.6%. Meanwhile, the value of Mental Health Need is very small, namely 0.060 or 6%.

The value of Q-Square Predictive can be measured in the following way:

$$Q = 1 -(1 -R_1^2) \times (1 -R_2^2)$$
$$Q = 1 -(1 -0{,}494) \times (1 -0{,}060)$$
$$Q = 0.52436$$

Q-Square values > 0 show predictive relevance, whereas < 0 indicates lack of significance. This study's Q-Square value is 0.52436, It shows evidence that the observed values have been reconstructed well, thus the model has a

predictive relevance of 52.43%, while the remaining 47.57% is attributed to other factors not accounted for in this research model.

**Table 2.** Finding of The Measurement Compositer Outer Model

| Variabel | | Loading Factor | Rho_A | CR | AVE |
|---|---|---|---|---|---|
| Intention To Use | ITU | | 0.881 | 0.900 | 0.808 |
| | ITU1 | 0.911 | | | |
| | ITU2 | 0.939 | | | |
| | ITU3 | 0.844 | | | |
| Perceived Ease of Use | PEOU | | 0.839 | 0.852 | 0.677 |
| | PEOU1 | 0.879 | | | |
| | PEOU2 | 0.885 | | | |
| | PEOU3 | 0.737 | | | |
| | PEOU4 | 0.780 | | | |
| Perceived of Usefulness | PU | | 0.945 | 0.945 | 0.860 |
| | PU1 | 0.921 | | | |
| | PU2 | 0.949 | | | |
| | PU3 | 0.958 | | | |
| | PU4 | 0.879 | | | |
| Stigma | S | | 0.944 | 0.987 | 0.900 |
| | S1 | 0.971 | | | |
| | S2 | 0.980 | | | |
| | S3 | 0.893 | | | |
| Social Influence | SI | | 0.795 | 0.970 | 0.702 |
| | SI1 | 0.940 | | | |
| | SI2 | 0.891 | | | |
| | SI3 | $0.655^{ns}$ | | | |
| Trust | T | | 0.939 | 0.953 | 0.892 |
| | T1 | 0.963 | | | |
| | T2 | 0.938 | | | |
| | T3 | 0.932 | | | |
| Mental Health Need | MHN | 1.00 | | | |

Source: Processed data, 2024. Note: ns = not supported (convergent validity value was removed from the model because the deal was <0.7)

**Tabel 3.** R-Square Adjusted

| Variable | R-Square | R-Square Adjusted |
|---|---|---|
| Intention To Use | 0,494 | 0,461 |
| Mental Health Need | 0,060 | 0,010 |

For the model to meet the criteria of model fit, it must fulfill the criteria of SRMR value < 0.80 and NFI value > 0.90. Based on Table 3, the obtained SRMR value is 0.079, which is less than 0.08, thus meeting the criteria well. Meanwhile, the NFI value is 0.703, which is less than 0.90. Therefore, the model exhibits good criteria.

Hypothesis testing is done with 5000 bootstrap samples, two-tailed testing and with a 0.50 significance level. Path coefficients can be known for their significance based on the t-statistic and p-value of each path. As shown in Figure 2 and Tabel 4 shows that only three hypotesis that accepted which are the influence of perceived of usefulness, social influence and mental health need.

**Table 4.** Model Fit Result

| Items | Saturated Model | Std Value | Result |
|---|---|---|---|
| SRMS | 0,079 | < 0,80 | Good |
| d_ULS | 1,433 | > 2,00 | Less |
| d_G | 1,537 | > 0,90 | Good |

| | | | |
|---|---|---|---|
| Chi-square | 693,043 | Minimal in size | Less |
| NFI | 0,703 | > 0,9 | Less |

**Table 5.** Finding of The Measurement Compositer Outer Model

| Variable | | Original sample | Sample Mean | STDEV | T-statistic | P Value | Result |
|---|---|---|---|---|---|---|---|
| Hipotesis 1 | PEOU > ITU | 0,192 | 0,197 | 0,184 | 1,043 | 0,297 | Rejected |
| Hipotesis 2 | PU > ITU | 0,604 | 0,591 | 0,121 | 5,006 | 0,000 | Accepted |
| Hipotesis 3 | SI > ITU | -0,223 | -0,209 | 0,086 | 2,604 | 0,009 | Accepted |
| Hipotesis 4 | T> ITU | 0,013 | 0,019 | 0,110 | 0,122 | 0,903 | Rejected |
| Hipotesis 5 | S > ITU | 0,112 | 0,106 | 0,077 | 1,443 | 0,149 | Rejected |
| Hipotesis 6 | MHN > ITU | 0,125 | 0,130 | 0,059 | 2,108 | 0,035 | Accepted |
| Hipotesis 7 | PEOU >MHN > ITU | -0,006 | -0,006 | 0,027 | 0,238 | 0,812 | Rejected |
| Hipotesis 8 | PU >MHN > ITU | 0,015 | 0,015 | 0,021 | 0,696 | 0,487 | Rejected |
| Hipotesis 9 | SI>MHN > ITU | -0,034 | -0,034 | 0,023 | 1,456 | 0,146 | Rejected |
| Hipotesis 10 | T >MHN > ITU | -0,005 | -0,003 | 0,019 | 0,236 | 0,813 | Rejected |
| Hipotesis 11 | S >MHN > ITU | -0,003 | -0,003 | 0,018 | 0,164 | 0,869 | Rejected |

*3.2. Discussion*

The acceptance of mental health services through the selfcare.id application from this research indicates that out of 11 hypotheses using variables of technology acceptance, social influence, and stigma, only three hypotheses were accepted: perceived usefulness, social influence, and mental health need. Using a user-centered design to ensure that the product is easy to use and meets user needs is also crucial because the ease of use and perceived usefulness of an application are related to the intention to use and actual use of digital health services in general and for mental health purposes. From an implementation science perspective, this information is critical in developing health communication strategies around health promotion (Sifat et al., 2022).

Based on Tabel.4, perceived ease of use has no significant effect on the intention to use which means the hypothesis is rejected. The reason why ease of use does not have a significant influence is the high digital literacy index in Indonesia. It is reported that Indonesia's digital literacy index is at level 3.65 on a scale of 1-5 points (*Indeks Literasi Digital Indonesia Terus Meningkat Sampai 2023*, n.d.). The high digital proficiency of the community today has made the ease of using an application commonplace, thus not significantly affecting the intention to use the application. Similar findings were also presented in a study by Sawrikar & Mote (2022), where young people were considered to have high digital literacy or technological literacy, leading to a low relationship to use. Similar results were also mentioned by Mangkunegara et al., (2019) and Putri et al., (2021). The influences of trust and stigma also got rejected. although caution is needed in interpreting these findings due to the preliminary nature of the current study, which focused on patients at the PT Karuna Psikologi Medika practice, we speculate that trust and stigma did not have a significant impact because these patients had previous experience with offline mental health treatment, rendering trust less influential. Similarly, stigma no longer acted as a barrier to seeking treatment. These findings are similar to the research by Lamela et al., (2020). It would be more relevant for future research to select samples without prior experience

Meanwhile, the result revealed a path coefficient value of 0.604 for the perception of the effect of perceived of usefulness on the intention of use, with a t-value of 5.006 >1.65,65 and a p-value of 0.000 < 0.05. These findings suggest that perceived usefulness has a beneficial and significant effect on intentions to use selfcare apps. And also the influence of mental health need. The research results show that patients are open to using this application and that the technology is highly beneficial in addressing their mental health issues, followed by the importance of mental health needs influencing this. Therefore, features that assist patients in this regard need to be improved. We also found that social influence has a significant negative impact, demonstrating that negative influences from social environments greatly affect usage. This findings is consistent with the research by Kristianto, (2021) and Semiz & Semiz (2021). Therefore, it is important to continue improving education and socialization about the importance of mental health and how to address it, including through this technology. This information can be key in marketing as the application can be framed to be used autonomously

## 4. Conclusion

This study aims to investigate the influence of factors such as perceived ease of use, perceived usefulness, social influence, trust, and stigma on the intention to use selfcare.id mental health service technology, and how mental health needs can moderate the influence of these variables. The results of the analysis show the indirect effect of social influence, trust, and stigma on the intention to use the selfcare.id application through mental health need is not mediated, but the effect of mental health need on the intention to use the selfcare.id application has a positive and significant effect. Thus, it is important to continue to increase public understanding of mental health, reduce stigma, and build trust in mental health service technology. It is recommended to develop features that make it easier to use, increase access and mental health services through information and communication technology, and continue to conduct wider education to increase the adoption of mental health technology in the community.

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