

Original Article

***Analysis on the Utilization of Digital Application as the Covid-19 Mitigation Effort***

**Sunandar Said<sup>1\*</sup>, Mardhatillah<sup>1</sup>, Muhammad Rusdi<sup>1</sup>, Herick<sup>1</sup>, Mega Aprisna Arif<sup>1</sup>,  
Nurul Wakiyah<sup>1</sup>, Dwi Erma Kusumawati<sup>2</sup>**

<sup>1</sup>Universitas Muhammadiyah Sidenreng Rappang, Indonesia

<sup>2</sup>Poltekkes Kemenkes Palu, Palu, Central Sulawesi, Indonesia

(Correspondence author's email, nandarnurse@gmail.com/+6282281006588)

**ABSTRACT**

*Covid-19 has an obvious impact on people's lives. Therefore, the government continues to make efforts to suppress and reduce the negative impacts. One of the efforts being made is to develop the pedulilindungi application to make it easier to track Covid-19 cases. However, the problem that occurs is the lack of utilization of the pedulilindungi application by the public. This study aims to analyze the effect of technology acceptance and technology readiness on the level of utilization of the pedulilindungi application as a Covid-19 mitigation effort. This was a quantitative study with a survey method. This study was conducted from June to August 2022. The population in this study were lecturers, staffs and students within the Muhammadiyah University of Sidenreng Rappang as many as 3394. The study samples were selected using random sampling technique with a target of 358 respondents. Data were collected using a questionnaire based on the technology readiness index (TRI) to assess the level of technology readiness and the Technology Acceptance Model (TAM) to assess the level of technology acceptance. Furthermore, the data were analyzed using Path Analysis to determine the direct effect and variables of Technology Acceptance and Technology Readiness on mitigation effort, as well as the indirect effect through perception towards the Covid-19 policy. The study results showed that the values of the direct effect of Technology Acceptance and Technology Readiness variables on mitigation efforts were 0.228 and 0.095, respectively, while the indirect effect through the perception towards Covid-19 policy perception were 0.479 and 0.115, respectively. Thus, it was revealed that there would be an increase in the effect of Technology Acceptance and Technology Readiness on mitigation efforts if they were supported by government policies. It can be concluded that Technology Acceptance and Readiness had a significant effect on mitigation efforts through the use of the Pedulilindungi application supported by perception towards the Covid-19 policy.*

**Keywords : User Perception, Pedulilindungi, Mitigation, Covid-19.**

<https://doi.org/10.33860/jik.v16i4.1672>



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**INTRODUCTION**

Corona virus disease 2019 (COVID-19) was discovered in December 2019 in Wuhan, China. Then, in a very short time, the virus spread globally. As of March 2022, data showed that more than 520 million people have contracted COVID-19 and more than 4 million people have died due to the disease. COVID-19 is an acute respiratory disease characterized by persistent cough, high fever and shortness of

breath. The rapid spread of COVID-19 prompted the World Health Organization (WHO) to declare a pandemic. Many healthcare systems around the world have been affected and challenged by the large number of patients who require medical care<sup>1</sup>. According to WHO data as of 13 September 2022, there were more than 605 million confirmed cases of Covid-19 and more than 6 million deaths. Since Covid-19 was declared a global pandemic, the number of cases has fluctuated, reaching a statistical peak

of 14 million daily cases in mid to late January 2022. At the end of January 2021, there were over 15,000 deaths documented daily, the highest number ever recorded. The United States occupied the highest number of positive cases of Covid-19, which reached over 93 million cases, with the highest number of cases occurring on January 10, 2020 when more than 5 million daily cases was reported<sup>2</sup>.

In 2020, the Singapore government implemented three mitigation measures against the pandemic disaster: quality of health services, government legitimacy, and community social capital<sup>3</sup>. In Indonesia, one of the models for managing pandemic problems is the pentahelix approach, namely the involvement of various elements, such as government, business people, academics, communities and the media<sup>4</sup>.

Mitigation effort for the spread of COVID-19 cases can be performed in various ways, some of them are tracing, tracking and warning<sup>5,6</sup>. Previous study showed that digital technology, such as contact tracing application and the use of social media, were very useful in efforts to prevent and monitor Covid-19 cases<sup>7</sup>. Therefore, the existence of digital-based applications such as Pedulindungi needs to be utilized optimally, because in addition to tracking cases, this application also provides vaccination and consulting services so as to implement efforts to accelerate the management of the pandemic properly.

Based on a study conducted in Japan, an effort to mitigate COVID-19 were carried out by disseminating information related to social distancing, wearing masks and washing hands. Information dissemination was carried out through social media, television media, as well as in public places such as train stations and airports. In addition, restriction on working hours was also carried out to reduce contact that might cause transmission of COVID-19<sup>8</sup>.

Digitization in the field of health services is an effort made to expand the affordability of services and make it easier for service users to contact health service providers<sup>9</sup>. Digital transformation in the health sector is an opportunity as well as a challenge for health professionals and for patients themselves<sup>10</sup>. The need for large amounts of health data and information requires sophisticated technology in managing it so that the results will be more accurate. The need for fast and accurate information flow is a demand that arises in the

relationship between patients and health care providers<sup>11</sup>. European countries such as Austria have used the Electronic Health Record Act (HER-Act) since 2012. Moreover, people in Belgium have been using BeHealth since 2004, which is a system that processes electronic information related to the field of health services<sup>12</sup>.

Digitization of the health service sector in Indonesia has been experienced since the Covid-19 pandemic hit the world. The need for data and information related to the spread of the disease is very important. The government then launched the pedulindungi application with the aim of controlling the spread of Covid-19 cases. The existence of this application has goals and benefits for both the government and the people. This application can be a means of controlling the implementation of Social Distancing in public spaces, tracking indicated communities, tracing patterns of distribution, input for policy making as well as a means of consulting through teledoctor services. Meanwhile at the community side, this application can provide information on the case distribution zones, so that the users can avoid areas that are prone to Covid-19 cases<sup>13</sup>.

The current health service challenge is the need to improve service quality at a low cost. One of the triggers is the advancement of information and communication technology<sup>14</sup>. Therefore, the government through the Ministry of Health and the Ministry of Communication and Informatics developed the pedulindungi Application as a tool used in tracking so that the spread of cases can be controlled<sup>15</sup>. Based on information obtained on the [www.pedulindungi.id](http://www.pedulindungi.id) page, the pedulindungi application was developed in order to make it easier for the government to track Covid-19 cases. This application also requires community participation in awareness of sharing location so that contact history with sufferers can be done easily. The public can get notifications from the application if they are in the red zone of the Covid-19 case.

Several previous studies regarding the pedulindungi application found that such application was still not ready to operate massively and there were also many problems resulting from the use of the application which was contrary to applicable national law<sup>10</sup>. Another study found that pedulindungi application had not fully implemented the principles of personal data protection when

collecting, processing and storing personal data<sup>16</sup>. Information security is very necessary to protect personal information and data from unauthorized misuse<sup>17</sup>. It was previously found that the ease of use of the pedulilindungi application had a significant effect on its usability and attitude in using it. Furthermore, attitude in the use and usability of the pedilindungi application had a significant effect on the intention to use it<sup>18</sup>. Based on findings of previous studies, this study aims to analyze the effect of technology acceptance and technology readiness on the level of acceptance of the pedulilindungi application as a Covid-19 mitigation effort.

## METHOD

This was a quantitative study with a survey. Information regarding the perception of the Pedulilindungi application as an effort to mitigate the Covid-19 infection were collected from respondents. The study was conducted at Muhammadiyah Sidenreng Rappang University for three months from June to August 2022. The study population consisted of 3,394 lecturers, staffs, and students at Muhammadiyah University of Sidenreng Rappang. A target sample of 358 individuals was selected using the random sampling method and the Slovin sample formula<sup>19</sup>.

The initial stage of this study was identification of problems that existed in society as actual problems and a literature study was

further conducted to find problems and theoretical gaps for further research. Based on the results of the literature study, a conceptual framework related to the study problem to be studied was developed. After that, the researcher determined the study variables, study hypotheses and research questions as the focus of problem solving. An appropriate study design was developed in order to achieve the study objectives. The study samples that represented the population were further selected. Data were collected using instrument that had previously been tested for validity and reliability so that then it could actually be applied to assess variables validly. After the data were collected, data analysis was carried out and finally conclusions were made.

The researcher applied a questionnaire as a data collection instrument in this study. Such instrument consisted of several questions to assess existing variables. The SPSS application was used to analyze the data that had been collected through the path analysis method with a significant value of  $\alpha < 0.05$ . Path analysis was used to determine the relationship between variables that had been determined by the researcher. The independent (exogenous) variables were Technology Acceptance and Technology Readiness, which were analyzed to determine the direct effect on the dependent variable (mitigation effort) as well as the indirect effect through the mediator variable (Covid-19 policy).

## RESULTS

**Table 1. General Characteristics of Respondents.**

| Variable        | Respondent<br>(n=358) | Percentage<br>(%) |
|-----------------|-----------------------|-------------------|
| Gender          |                       |                   |
| Male            | 165                   | 46                |
| Female          | 193                   | 54                |
| Position        |                       |                   |
| Student         | 223                   | 62                |
| Staff           | 43                    | 12                |
| Lecturer        | 84                    | 24                |
| Other           | 8                     | 2                 |
| Age (Years)     |                       |                   |
| 17 to 25        | 217                   | 61                |
| 26 to 35        | 72                    | 20                |
| 36 to 45        | 48                    | 13                |
| 46 to 55        | 17                    | 5                 |
| 56 to 65        | 4                     | 1                 |
| Education       |                       |                   |
| JHS             | 2                     | 1                 |
| SHS             | 233                   | 65                |
| Bachelor Degree | 36                    | 10                |
| Master's Degree | 73                    | 20                |
| Doctoral Degree | 14                    | 4                 |

Table 1 describes the general characteristics of a total of 358 respondents. The distribution of respondents by gender showed that 165 respondents (46%) were male and 193 respondents (54%) were female. Furthermore, the distribution of respondents by position showed that 223 respondents (62%) were students, 43 respondents (12%) were

staffs, 84 respondents (24%) were lecturers, and 8 respondents (2%) had other professions. The distribution of respondents by age showed that 217 respondents (61%) aged 17 to 25 years, 72 respondents (20%) aged 26 to 35 years, 48 respondents (13%) aged 36 to 45 years, 17 respondents (5%) aged 46 to 55 years, and 5 respondents (1%) aged 56 to 65 years.

**Table 2. Effect of Technology Acceptance and Technology Readiness on Perception towards Covid 19 Policy.**

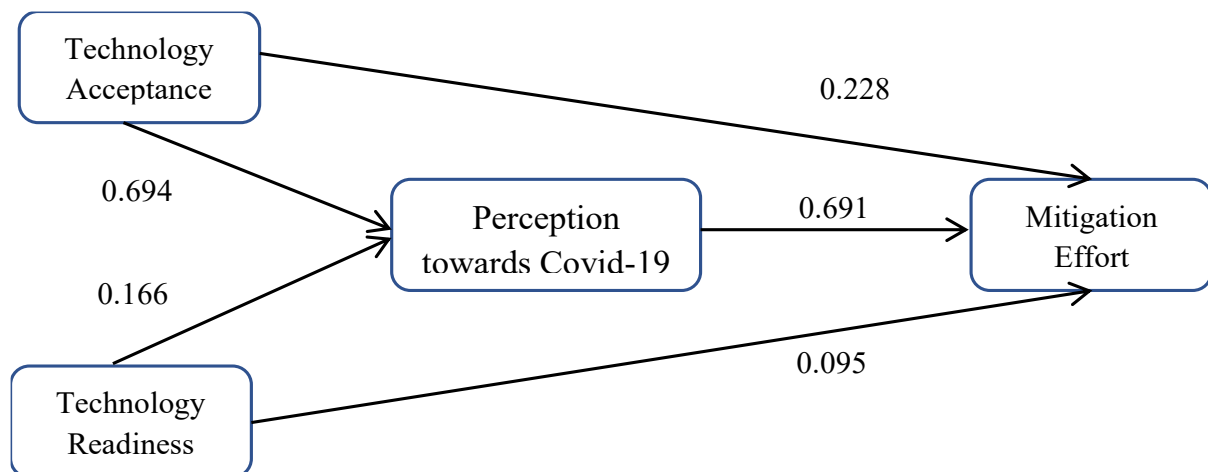
| Model                 | Standardized Coefficients | Sig.  | R Square |
|-----------------------|---------------------------|-------|----------|
|                       | Beta                      |       |          |
| Technology Acceptance | 0.694                     | 0.000 | 0.677    |
| Technology Readiness  | 0.166                     | 0.000 |          |

Based on table 2, it was revealed that Technology Acceptance variable obtained a significance value of 0.000 (<0.05). So, it can be concluded that the Technology Acceptance variable had a significant effect on the perception towards Covid-19 policy with an effect size of 0.694. On the other hand, the Technology Readiness variable obtained a significance value of 0.00 (<0.05). Thus,

Technology Readiness also had a significant effect on perception towards the Covid-19 policy with an effect size of 0.166. It was obtained an R Square value of 0.677. Thus, it can be interpreted that the contribution of Technology Acceptance and Technology Readiness variables to the use of Pedulilindungi application was 66.7%.

**Table 3. Coefficient Value of the Effect of Technology Acceptance, Technology Readiness and Perception towards Covid-19 Policy on Covid-19 Mitigation Effort.**

| Model                 | Standardized Coefficients | Sig.  | R Square |
|-----------------------|---------------------------|-------|----------|
|                       | Beta                      |       |          |
| Technology Acceptance | 0.694                     | 0.000 | 0.677    |
| Technology Readiness  | 0.166                     | 0.000 |          |



**Figure 1. Path Diagram of the Effect of Technology Acceptance, Technology Readiness and Perception towards Covid-19 Policy on Covid-19 Mitigation Effort**

Table 4 revealed that the significance value of the technology acceptance variable was 0.00 (<0.05). Thus, it can be concluded that the Technology Acceptance variable had a significant effect on the mitigation effort variable with a practical value of 0.228. Furthermore, the significance value of the Technology Readiness variable was 0.00 (<0.05), which meant that the Technology Readiness variable also had a significant effect on the mitigation effort variable with an effect size of 0.095. The significance value of the Perception towards Covid-19 Policy variable was 0.00 (<0.05), which meant that the Perception towards Covid-19 Policy variable also had a significant effect on the mitigation effort variable with an effect size of 0.691. Figure 1 presented an R Square value of 0.915. Thus, it can be interpreted that the contribution of the Technology Acceptance, Technology Readiness, and Perception towards Covid-19 policy variables on mitigation effort was 91.5%.

Based on the results of the regression test analysis, it was determined a Path Analysis which showed the effect of Technology Acceptance, Technology Readiness and Perception towards Covid-19 policy on Covid-19 Mitigation Effort as shown in Figure 1.

Figure 1 showed that the size of the direct effect of the Technology Acceptance variable on the Covid-19 mitigation effort variable was 0.228. The indirect effect of the Technology Acceptance variable on the mitigation effort variable through the perception towards Covid-19 policy variable was  $0.694 \times 0.691 = 0.479$ . Based on the results of this interpretation, it can be seen that the direct effect value was lower than the indirect value. Thus, it can be concluded that indirectly technology acceptance through perception towards Covid-19 policy had a significant positive effect on Covid-19 mitigation effort.

## DISCUSSION

This study found that Technology Acceptance or the level of acceptance of the Pedulilindungi application and Technology Readiness had a significantly effect on Covid-19 mitigation effort through the Covid-19 policy. In addition, we might see that the level of technology acceptance towards the pedulilindungi application could directly affect the community's efforts to mitigate Covid-19, even though the result was small. Thus, we can

conclude that digital technology was used to mitigate Covid-19 through the policy or rules set by the government.

The results of this study are in line with previous study which found that digital technology had a vital role to play during a pandemic but required strong policy so as to create effective contribution<sup>20</sup>. Another study conducted in Vietnam showed that a fast, proactive and practical policy system contributed to the successful management of Covid-19<sup>21</sup>. Thus, the effective application of digital technology as a Covid-19 mitigation effort requires the establishment of solid policy. People will take advantage of digital technology as a Covid-19 mitigation effort if the government stipulates regulations that encourage the use of applications. For example, the government requires the use of the pedulilindungi application when traveling by air.

Digital technology in health services has developed rapidly since the Covid-19 pandemic, developing various applications and functions for controlling Covid-19<sup>1,22</sup>. Digital technology has proven to be used as a coordinating medium to respond to the spread of Covid-19 cases in all existing health facilities. Some examples of the use of technology in the Covid-19 management were robotic systems in medicine, aerial drones, and the use of the internet in managing and detecting cases. One of the important steps in the medical treatment of Covid-19 is the PCR test and medical imaging. A previous study proved that Computed Tomography had a PCR test accuracy of 98%. Thus this technology becomes an innovation and an opportunity to deal with Covid-19 effectively<sup>23,24</sup>. Therefore, the success of Digital Health in managing this pandemic will become the basis for the development of the health system in the future<sup>25</sup>.

Digital technology during this pandemic is vital, especially in diagnosing or detecting cases early, making it more effective and efficient<sup>26,27,28,29</sup>, since the use of technology can increase the effectiveness of cases finding and tracing<sup>30,31</sup>. Various features and facilities are available in the Pedulilindungi application to track and trace cases. This tracking feature aims to track location digitally so that if a user is detected to be exposed to Covid-19, related parties can track and detect the user's movements in the last 14 days. In

addition, this application will also provide notifications if the user is in a zone or area that is at risk of being exposed.

The use of digital application as a mitigation effort is also influenced by the level of technology acceptance and technology readiness. The higher the level of acceptance, the greater the opportunity for a technology or application to be used by its users. The result of this study is in accordance with a study conducted by Kurniawati (2020) which found that the ease of use of the pedulilindungi application technology affected the level of use and user attitudes<sup>32</sup>. Another study found that there was a significant relationship between ease of use and attitudes in using online learning applications<sup>18</sup>. Thus, the development of a digital application must consider the user's perspective<sup>33</sup>.

## CONCLUSION

Based on the results of the study, it can be concluded that Technology Acceptance and Technology Readiness of the pedulilindungi application had a significant direct as well as indirect effects on Covid-19 mitigation effort with Covid-19 policy as a mediator variable. The indirect effect was more significant than the direct impact. Therefore, the successful implementation of mitigation efforts requires the implementation of strong and effective policy so that the community can be more compliant and the pandemic can be controlled. The pedulilindungi application developer should continue to improve the quality of the application according to user needs. In addition, government has to develop strong policy which may lead to effective policy implementation.

## ACKNOWLEDGEMENT

The researcher would like to deliver sincere gratitude to the Directorate of Research, Technology and Community Service, Directorate General of Higher Education, Research and Technology, Ministry of Education, Culture, Research and Technology, which has provided funding for the implementation of this study. Special thanks are also delivered to the Chancellor of Muhammadiyah University of Sidenreng Rappang, Dean of the Faculty of Health Sciences, Head of the Health Administration Study Program and the team of lecturers and students involved in this study.

## CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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