



# Integrating Social Cognitive and Social Capital Theory in Using Telemedicine in Pandemic Period

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**Abstract.** During the Covid-19 outbreak, the usage of telemedicine has increased. This study has a goal to see how the integration of social cognitive and social capital theory affects users' inclinations to use telemedicine during pandemic turbulence. Individual relationships and social structure are discussed in the social capital theory, whereas social cognition pertains to social efficacy. This study used quantitative approaches with an online survey. SEM or structural equation modeling is a multivariate study of the given model's alleged causality. The findings suggest that user intentions are positively correlated with social capital and social cognitive. This study contributes both theoretically and empirically to the combination of social theory and social cognitive in influencing the usage of telemedicine. As a practical contribution, this study added new insight into the social aspects of telemedicine development. Researchers can use social characteristics that are more extensive than social trust for further investigation.

**Keywords:** Covid-19 pandemic · social capital · Telemedicine · social efficacy

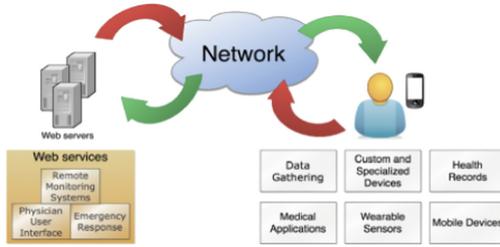
## 1 Introduction

Telemedicine began in the early 1960s [1] and has grown significantly as a result of advances in information and communication technologies (ICT). Many provincial villages now benefit from telemedicine innovation, which allows them to access specialists from far away even if they don't have access to local doctors or physicians. Patients from various walks of life, even those in remote places, may have access to their health diagnosis via a mobile device. The simplicity of telemedicine has grown enormously in recent decades, with a projected increase of about 27.3 billion USD from 2010 to 2016 [2]. Typical telemedicine services (shown in Fig. 1) rely on the Internet and Web administrators to facilitate proper communication between doctors and patients [2]. Through their devices, a doctor or physician could easily access medical records, medical photographs, lab data, and prescription information whenever and wherever they wanted.

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**Fig. 1.** The usual architecture of m-Health services

During the Covid-19 outbreak, telemedicine has recently been one of the most prominent issues in study, including the function of telemedicine such as Covid-19 prevention, surveillance, monitoring, and detection [3], Covid-19 for telehealth [4], and telehealth transformation the implications of [5].

Telemedicine’s potential will continue to develop as a result of equitable technological advancement in many rural areas and the pandemic Covid-19, which has effect in forcing many people to minimize their live connections. In 2021, rapid innovation of investment in ICT will help to keep telemedicine continue increase. Since pre-Covid-19, telemedicine usage is expected to have climbed 38 times and will reach up to \$250 billion in the coming years [6]. Of course, telemedicine is perfect for the treatment of infectious diseases. Decreased direct person-to-person connection is thus a significant factor in reducing the spread of a social distancing sickness. Telemedicine can help Covid-19 patients and others who are concerned that they may be tainted with the virus with remote monitoring and care arrangements. Nonetheless, in order to operate telemedicine, people’s behavior, both physicians and customers, must be adjusted [7].

Despite the need for further research about human people’s behavior and motivation in relation to their desire to use telemedicine, previous research has mostly relied on the telemedicine acceptance, which has long provided a solid theoretical foundation [8]. As a result, this study has purpose to know how social capital theory and social cognitive theory together affects telemedicine use in pandemic turbulence situation. In terms of ICT, social cognitive or self-efficacy is an important factor of client recognition in practically all breakthroughs, including telemedicine, according to social cognitive theory [9].

### 1.1 Telemedicine

Telemedicine, or long-distance medicine, is described as the exchange of healthcare services and the delivery of long distance healthcare [10]. The electronic transmission of medical information between clinical practice sites for the sake of recovery and/or education is known as telemedicine [8]. According to the Ministry of Health of the Republic of Indonesia Decree Number 20 of 201, telemedicine has defined as the remote provision of health services by physician and healthcare professionals ICT, the services or feature of telemedicine such consist of diagnosis, medical information, disease research, treatment, prevention, education, evaluation and also promoting medical insight [11]. Telemedicine has the potential to be useful in a variety of medical settings. Telemedicine

refers to the exchange of medical data, such as preventive measures, diagnosis, treatment, patient education, and monitoring. Telemedicine has proven to be particularly beneficial in underserved places where competent clinical care is lacking or unavailable, such as in rural locations [12].

## 1.2 Social Capital

A strong network of relative ties or reciprocal exchanges is related with social capital, which is a real or potential resource [13]. According to Coleman [14] social capital encompasses a variety of views, including social structure and specific actions people engage in inside a framework. A structure's and potential resource is belong to definition of social capital, which is derived from a network of interpersonal ties [15]. It can be described that social capital has various characteristics, including 1) being practicable and changing, 2) being a long-lived asset, 3) being able to complement or replace other resources, 4) requiring maintenance, and being in the form of collective benefits [16]. Individuals' health has been influenced by social capital through a variety of mechanisms, including advancing the rapid spread of health data, increasing the likelihood of adhering to sound behavioral standards, establishing social control over bizarre health-related behaviors, and expanding administrations and offices. Aside from that, the social capital hypothesis suggests that knowledge commerce necessitates the presence of social capital [17]. The social and relevant components include social capital. Vertical levels of social cooperation, civic involvement, regulation beliefs, social belief, and interpersonal correspondence are common in social regimes with high levels of social capital. According to Nummela et al. [18], Social capital components such as social relationship and trustworthiness have a protective influence on happiness.

## 1.3 Social Efficacy (SCT)

A theoretical framework of SCT or social cognitive theory, is use t analyze a variety of personal aspects such as human motivation, thought, behavior and action, that are affected by behavior, cognition, and other individual characteristics, as well as environmental aspect, and all of those are done by two ways interaction [19, 20]. Self-efficacy is a key component of social cognition theory that describes a person's appraisal of his or her ability to finish and organize a task. Self-efficacy influences a person's actions, decisions, effort, and perseverance in dealing with and overcoming problems [21]. Self-efficacy is a critical aspect of performance of individual, according to SCT, with both psychological and non-psychological consequences on numerous aspects of human psychosocial functioning [20]. Self-efficacy is a significant aspect in determining the perceptions of technology use from an empirical standpoint in the information technology setting [22].

## 1.4 Attitude and Intention to Use

The user's trust, attitudes, intentions, and behavior are used to determine behavioral intention [9]. The fundamental predictor of technology use is the user's attitude in using some system. Positive or unfavorable feelings about information technology (IT) are

classified as attitudes. User intention, on the other hand, is defined as “a person’s subjective likelihood of someone willing to do or choose some behavior” [23]. Trustworthiness or beliefs, perceived ease of use, and perceived utility influence how people feel about the system.

Self-efficacy of ICT use refers to “people’s appraisal of their capacity to utilize ICT systems successfully” [24]. The innovation system or innovation technology is a specific use of a computer system in telemedicine. The self-efficacy of a telemedicine system was assessed by Rahimpour et al. [9] as a measure of a person’s capability to reap the benefits of the system. According to the survey, the person has either a great desire to use or a low level of confidence. As a result, Rahimpour et al. proposed models for patient acceptance of telemedicine, self-efficacy systems should be connected with client behavior [9].

In addition, earlier research has discovered a strong link between system self-efficacy and projected outcomes. [25]. The extent of people’s behaviors are regarded to be linked to gratifying results once they’ve been successfully completed is the subject of these investigations [26]. System self-efficacy has also been proven to have a favorable effect on behavior in a number of previous empirical research (21). In contrast, attitude has an impact on perceived utility and ease of use (9). Furthermore, the user’s intention to employ telemedicine is influenced by their attitude (9). As a result, self-efficacy is strongly related to attitude in this study, and attitude determines the user’s intention to use telemedicine.

As a result, the following hypothesis are proposed in this study:

Hypothesis 1: Attitude is positively influenced by social capital.

Hypothesis 2: Attitude is positively influenced by social efficacy.

Hypothesis 3: Intention to use is positively influenced by attitude.

## 2 Research Method

### 2.1 Survey Method

This research was carried out utilizing a quantitative approach and for the collecting data was done by online survey. The survey is disseminated across numerous social networking platforms, including WhatApps, Facebook, and Line. This platform was chosen since it is extensively utilized. The participants in this study were both physicians and patients who used telemedicine. In this study, the typical respondents were telemedicine customers who had utilized the service for at least a year. The questionnaire’s measuring items were adapted and created based on past research. The respondents’ reactions regarding their performance were with a 5-point Likert scale with 1 (strongly disagree) until 5 (strongly agree) (Fig. 2).

### 2.2 Measurement

The measurement items of the questionnaire were taken from a previous study. Social capital has five items from Nummular et al. [18]. Then, Venkatesh W’s concept of social cognitive using eight items was adopted [27]. Meanwhile, Paul J. et al.’s attitude (three items) and six items of intention to use were embraced [28].

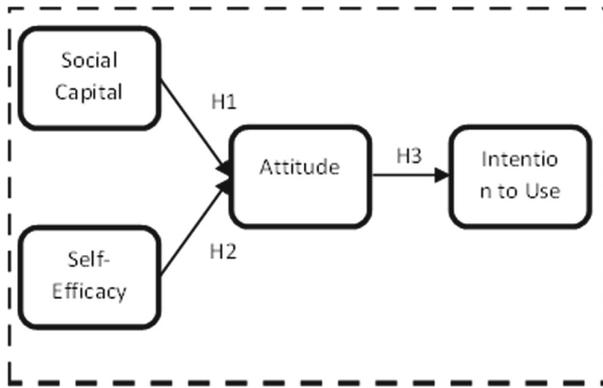


Fig. 2. Propose Hypothesis

### 2.3 Statistical Method

The model and hypothesis were validated and empirically tested using structural equation modeling (SEM). SEM is a test for multivariate analysis that confirms a method of investigating specific phenomena with structural theories or a causality test on a variable [29]. There are two stages to the testing process, that is confirmatory factor analysis and path analysis [30]. The validity both discriminant and convergent, and the reliability of the measurement model are all examined first. Second, the structural model is verified by examining the constructs' route linkages.

## 3 Results and Discussion

The factor loadings of each measurement item and the assessing the reliability and validity of constructs, including Average Variance Extracted (AVE) and composite reliability are provided in the Table 3. Due to poor factor loadings, certain goods were removed (below 0.5). The remaining items indicate qualified Cronbach's coefficients, which should be greater than 0.708 and have an AVE of at least 0.50. The discriminant validity (Table 1) of the result demonstrates that it is satisfactory.

The measurement model was then compared to the structural model. To validate the structural model, Smart-PLS employed. To assess the suggested model's overall goodness-of-fit, many goodness-of-fit statistics were used, including NFI and Chi-Square. The model has an NFI of 0.835 and a Chi-Square of 449.630, indicating that it is sufficient.

Table 2 shows the results of hypothesis testing, consist of estimates of path significance among constructs standardized path coefficients. The estimated standardized route coefficients indicate how the dependent and independent variables are related. The proportion of variation explained by the model's predictor variables is expressed as R-squared.

All of the assumptions are supported in Fig. 3. H1 demonstrates a favorable link between social capital and attitude. B is positive 0.562, as may be seen. Hypothesis 2,

**Table 1.** Discriminant Validity

|                  |          |                  |                |               |
|------------------|----------|------------------|----------------|---------------|
|                  | Attitude | Intention To Use | Social Capital | Self-Efficacy |
| Attitude         | 0.858    |                  |                |               |
| Intention to Use | 0.822    | 0.872            |                |               |
| Social Capital   | 0.655    | 0.657            | 0.773          |               |
| Self-efficacy    | 0.464    | 0.464            | 0.484          | 0.865         |

**Table 2.** Result

| Hypothesis   | Relationship                | Beta  | t-value | p-value | Results       |
|--------------|-----------------------------|-------|---------|---------|---------------|
| Hypothesis 1 | Social Cognitive → Attitude | 0.562 | 35.539  | 0.000   | Positive sig. |
| Hypothesis 2 | Self- Efficacy → Attitude   | 0.192 | 6.802   | 0.042   | Positive sig. |
| Hypothesis 3 | Attitude → Intention to Use | 0.822 | 2.037   | 0.000   | Positive sig. |

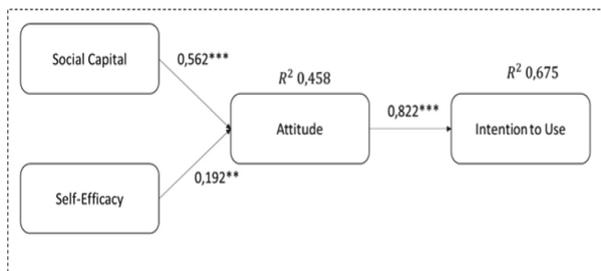
**Table 3.** The loading factor, convergent validity and reliability

| Construct         | Items | Loading | Average Variance Extracted (AVE) | Composite Reliability | Cronbach’s Alpha |
|-------------------|-------|---------|----------------------------------|-----------------------|------------------|
| Self-Efficacy-SEF | SEF1  | 0.864   | 0.748                            | 0.96                  | 0.952            |
|                   | SEF2  | 0.867   |                                  |                       |                  |
|                   | SEF3  | 0.784   |                                  |                       |                  |
|                   | SEF4  | 0.914   |                                  |                       |                  |
|                   | SEF5  | 0.853   |                                  |                       |                  |
|                   | SEF6  | 0.896   |                                  |                       |                  |
|                   | SEF7  | 0.854   |                                  |                       |                  |
|                   | SEF8  | 0.881   |                                  |                       |                  |
| Social Capital    | SCP1  | 0.960   | 0.597                            | 0.732                 | 0.416            |
|                   | SCP2  | DELETED |                                  |                       |                  |
|                   | SCP3  | 0.522   |                                  |                       |                  |
|                   | SCP4  | DELETED |                                  |                       |                  |
|                   | SCP5  | DELETED |                                  |                       |                  |

*(continued)*

**Table 3.** (continued)

| Construct        | Items | Loading | Average Variance Extracted (AVE) | Composite Reliability | Cronbach's Alpha |
|------------------|-------|---------|----------------------------------|-----------------------|------------------|
| Intention to Use | IU1   | 0.902   | 0.76                             | 0.927                 | 0.895            |
|                  | IU2   | 0.900   |                                  |                       |                  |
|                  | IU3   | DELETED |                                  |                       |                  |
|                  | IU4   | DELETED |                                  |                       |                  |
|                  | IU5   | 0.834   |                                  |                       |                  |
|                  | IU6   | 0.849   |                                  |                       |                  |
| Attitude         | AT1   | 0.913   | 0.736                            | 0.892                 | 0.820            |
|                  | AT2   | 0.727   |                                  |                       |                  |
|                  | AT3   | 0.919   |                                  |                       |                  |



**Fig. 3.** Hypothesis Testing Result

social efficacy and attitude have B positive 0.192. While hypothesis 3, attitude has a favorable influence on intention to adopt telemedicine, B is positive 0.822.

The findings reveal that attitudes and intentions to use technology are influenced by social characteristics such as social capital and social cognitive (measured by social efficacy). The phrases “social capital” and “social efficacy” allude to a person’s ability to be judged, implying that the structure of a social network can influence a person’s attitude about telemedicine use, regardless of whether they use it or not. These findings back up a prior study from Nummela O. et al. [18]. While social efficacy implies that measuring one’s ability effects one’s attitude, this explains how one’s ability influences one’s attitude toward adopting telemedicine. These findings back up a prior publication from Tsai, C.H. [8]. While someone’s attitude influences their behavioral intention, such as the use of telemedicine.

## 4 Conclusion and Suggestion

To develop a comprehensive human behavioral model in the investigation of user intention toward telemedicine use, this study blends sociopsychological, those are social capital, and social cognitive theories with a widely used behavioral theory (i.e., attitude and intention to use). The framework was expanded from the core sociopsychological theory by examining the links between social capital characteristics, social cognitive aspects (system self-efficacy), and intention to use the system. The suggested model has been found to be useful for analyzing and anticipating the behavioral goal of telemedicine because it provides an integrative approach that allows academics and professional to pay attention to the interdependence of these features. As a theoretical contribution, this study adds to the sociopsychological literature on the problem of adopting health technology. For the professional, the combining of psychosocial and technological perspective indicates that, in addition to technology, hospital administrators should include social capital and social efficacy. This research has limitations in addition to making a contribution. We propose that future sociopsychological studies on technology should include TAM theory such as perceived of use and perceived ease of use, allowing for a more holistic view of sociopsychological integrated theory and ICT.

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