JISTaP http://www.jistap.org
Journal of Information Science Theory and Practice

RESEARCH PAPER
J Inf Sci Theory Pract 9(3): 1-13, 2021

eISSN : 2287-4577 pISSN : 2287-9099

https://doi.org/10.1633/JISTaP.2021.9.3.1

Smart Divide and the Paradigm Shift of Social Capital

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ABSTRACT

In the current smart device-based information environment, information utilization is closely related to social capital. Additionally, the smart divide that occurs owing to the differences in use of smart devices has a significant influence on social capital. In this respect, this research empirically analyzed how the smart divide affects social capital construction. The study found that the level of and proficiency in using smart devices and diversity of the information formats used through smart devices affect social capital construction. Further, people who fully utilize smart devices can enhance their participation in social activities, social networks, and reciprocal activities, leading people to construct social capital in a wider range. Contrarily, those who are unable to use smart devices adequately may be disadvantaged in terms of the opportunity to construct social capital and share public interests. Thus, to maximize the intrinsic value of social capital, it is necessary to consider the factors of the smart divide as a complicated and multi-faceted digital divide and the ways to utilize social capital as a driving force for integrating society, and not as a mechanism for dividing members of society.

Keywords: smart divide, digital divide, social capital, smart devices

Received: April 30, 2021 **Revised:** May 27, 2021
Accepted: June 16, 2021 **Published:** September 30, 2021

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1. INTRODUCTION

As the social structure has evolved into a digital-based knowledge and information society, the key driving force of the current society has shifted from physical and financial goods to intangible resources such as human capital and social capital. This implies that individuals are the core of the current social structure, and that the entire society is maintained through mutual relationships and cooperation between individuals. In this social environment, the social capital inherent in each individual has established itself as a new driving force leading society.

Particularly, as the power of social networks that create new values is emphasized because of the enormous spread of the Internet and the advent of social media, interest in social capital based on social networks among people has increased. Social capital is an intangible capital that has a significant meaning, not only concerning individuals of society but also the overall aspects of society. The more social capital is accumulated, the more individuals and society can continue to develop. However, the social, economic, and informational characteristics of individuals have a great influence on social capital construction. Additionally, social capital disparity may arise because of differences in the social status or economic levels between individuals. From this perspective, social capital and the digital divide have been closely related to each other as they share the same factors: The social and economic characteristics of individuals are major factors that cause the digital divide.

However, because of the rapid evolution of information technology and widespread dissemination of information devices, the digital divide is evolving from a quantitative to a qualitative and an intellectual divide. Specifically, as smart devices are the primary tool to support informational and social activities, the digital divide is gradually complicated and multi-faceted in the form of smart divides. Considering the digital divide evolution, not only is the digital divide linked to social capital, but the smart divide triggered by the widespread of smart devices also affects social capital construction.

Thus, the evolution of the digital divide into the smart divide can be an important issue in social capital construction. However, no research demonstrating the relationship between social capital and the digital divide caused by smart devices is yet conducted. Therefore, this research conceptualized the digital divide as the smart divide, and empirically identified how the smart divide affects the construction of social capital based on social relations and social participation.

2. THEORETICAL BACKGROUND

2.1. Conceptual Evolution of Social Capital

Social capital is a concept that can apply to many social sciences fields, including economics, sociology, and library and information science. It is now used as a new framework to better understand social phenomena. However, social capital is a complex concept in which various aspects of society should be considered. Thus, it is difficult to clearly define the concept of social capital.

Much research on social capital has been conducted since the mid-19th century. Among this research, Alexis de Tocqueville presented the concept of social capital for the first time in 1835, arguing that promoting equality among people and facilitating social participation are directly related to the United States' prosperity (Woolcock, 1998). Hanifan (1916) used the term *social capital* when referring to aspects like goodwill, fellowship, sympathy, and social intercourse among individuals. Since the 1960s, researchers like Jacobs (1961), Salisbury (1969), Bourdieu (1972), Loury (1977), Coleman (1988, 1990), Burt (1988), Putnam (1993), and others began to discuss the concept of social capital more concretely.

These studies explored social capital with more emphasis on the aspects of the social relations between people. Since then, the scope of the concept of social capital has expanded from the individual level to the social level. Further, these early social capital concepts focused on individuals' social participation, and social capital accumulation through participation in social activities was defined as an intangible capital that can promote public interest and develop the entire community.

Bourdieu's (1972, 1986) research focused on social capital's intrinsic value; however, several researchers stated that social capital can function as a mechanism for causing social inequality among people and reproducing existing social disparity. Thus, the social capital concept has been discussed from various perspectives and differentiated according to the direction of its application. However, concerning fundamental characteristics, social capital is defined as social relations or a social network that allows a group of people to work together effectively to achieve a common purpose or goal (Kenton, 2019). Based on these characteristics, the social capital concept has evolved and expanded into being networks with shared norms, values, and understandings that facilitate cooperation within or among groups of people (Keeley, 2007).

 https://doi.org/10.1633/JISTaP.2021.9.3.1

Social capital is now generally explained as a social phenomenon that encompasses both individual and social aspects. It is commonly based on mutual trust, cooperation, and reciprocity inherent in social networks between people (Krishna, 2007, p. 942). Further, it has a basic premise that social interactions, the formation of bonds, and social connections within the social networks' structure have become important capitals in maintaining and guiding society (Adler & Kwon, 2002).

2.2. Social Capital and the Paradigm Shift in the Formation of Social Relations

Social capital is constructed and accumulated along with social changes and does not exist independently. It is complexly linked with other societal capitals such as human capital and material capital (Coleman, 1988, p. 102). Additionally, social capital is not independently owned by individuals but is constructed and accessible only through relationships between people. Therefore, social capital is recognized as an important intangible capital that functions as a medium to sustain society by forming a sense of belonging and social trust in society and not just by generating profits at the personal level (Serageldin & Grootaert, 1998). As the social capital concept expands, social capital functions as a bridge capital that can connect individuals or groups of people with different social or economic statuses (Lee, 2016a).

Various researchers have presented several factors that construct social capital. Putnam (1993) insisted that social norms, social networks, and social trust are the three basic factors of social capital. Stone (2001) defined norms, values, networks, and voluntarily produced collective resources as the core social capital factors. Similarly, Coleman (1988) defined social capital as social networks shared by community members and normative values and beliefs.

Although several factors that construct social capital have been suggested, they are not independent. Most factors are based on the social relationship established between people, which can facilitate mutual trust, compliance with social norms, social reciprocity, and participation in social activities (Kahne & Bailey, 1999, p. 322). Thus, social networking is crucial in constructing social capital. People can create and share public interest and values at the individual and social level through social network participation.

However, with the rapid development of information technology and widespread advanced information devices such as smart devices, many changes have occurred in the way of building social networks. Traditionally, strong ties in the offline environment have been the mainstream method of establishing social relationships. In the current smart device-based environment, however, the significance of weak ties in the Internet-based environment is escalating. Particularly, as smart devices that require a certain level of knowledge, including smartphones, tablets, phablets, and smartwatches, are tools to build social networks and to facilitate informational and social activities, access to information and participation in various activities through smart devices have become more important in establishing social relationships, leading to the construction of social capital.

Smart devices combine various functions of existing independent devices into a single device and provide an environment in which people can perform social, informational, and cultural activities more conveniently. Moreover, various activities to establish social networks, such as social network services, the sharing economy, and online communities, can be performed in a wider context through smart devices. Thus, social capital accumulation based on the establishment of social networks is affected by the smart device-based information environment.

From this perspective, people can build a wider social network through the use of smart devices, leading to the construction of social capital. Contrarily, people who do not have smart devices or cannot proficiently utilize the functions of such devices may be disadvantaged in social capital construction. Thus, in a smart device-based environment, there can be a disparity between people depending on the accessibility to and proficiency levels of using smart devices, leading to the disparity in social capital construction. From this point of view, social capital construction is closely related to social equality and the digital divide in the current informational and social environment. It is now necessary to consider not only the traditional factors of social capital, but also the evolving aspects of the smart device environment when discussing social capital construction.

2.3. Evolution of the Digital Divide and Smart Divide

Although information technology that can support information activities is rapidly developed and broadly disseminated, there has been an informational and social disparity between people who can access and use information technologies and those who cannot; this is generally recognized as the digital divide.

The concept of digital divide has been represented in terms such as knowledge gap, information gap, or infor-

mation inequality since the 1970s. However, the term *digital divide* was first used in a newspaper article, "Schoolnet programs," by *New York Times* journalist Gary Andrew Pole (Molnár, 2002). Since the report "Falling through the net: A survey of the have nots in rural and urban America" by the National Telecommunications and Information Administration (NTIA) under the US Department of Commerce in July 1995, the term *digital divide* has become popular and widespread as a policy term.

Generally, digital divide can be explained by the social and informational differences between those who have access to new information technology and those who do not. However, digital divide is a social phenomenon encompassing various social factors, and thus the factors of the digital divide constantly change with the evolution of the information environment and social structure.

The quantitative divide between those who own information devices and those who do not was the core of the digital divide in its early stages. This quantitative digital divide, however, has been resolved with the widespread use of information devices such as personal computers and the Internet. However, the extensive dissemination of information devices has caused a qualitative divide between those who already have access to information and those who do not (Hargittai, 2010), which is recognized as the disparity that occurs in different levels of media literacy.

The emergence of smart devices, representatively of smartphones, is transforming the traditional social structure into that of a smart society. Smart devices are now becoming indispensable tools for information activities, communication with others, and participation in social activities. To adequately perform informational, social, and cultural activities using smart devices, it is necessary to have some levels of knowledge related to the use of smart devices. Thus, those who are unable to own smart devices because of economic, social, and physical constraints, or those who have low competence in utilizing smart devices are bound to have low participation in informational, social, and cultural activities. Eventually, the widespread dissemination of smart devices is stimulating the qualitative digital divide or creating a more complicated type of digital divide.

Lee (2016b, p. 262) termed this new type of digital divide caused by smart devices as the smart divide. The smart divide has a structure different from those of the existing quantitative and qualitative digital divides with different factors such that it is considered a more complicated and multi-faceted digital divide. The smart divide is not just limited to the ownership of or access to information devices, but is also becoming a concept that encompasses the proficiency of using smart devices and ways to evaluate and judge the value of information obtained through smart devices. In the smart divide, in addition to possessing smart devices, the competence to acquire and utilize information using these devices has become a more important issue.

Besides this, the smart divide is not simply a new dimension of the digital divide, but can lead to disparity in the construction of social networks or in participation in informational, social, and cultural activities, which can further lead to disparity in the social capital construction. Since the smart divide affects not only the informational aspect, but also the educational and economic disparity through the utilization of smart devices, it is becoming a critical social problem.

Although discussions related to the digital divide and social capital have been conducted from various aspects, research considering the digital divide caused by smart devices as a factor influencing the construction of social capital has not been conducted. Particularly, no research demonstrating the relationship between social capital and the smart divide is yet conducted. Therefore, this research discusses how the smart divide affects the construction of social capital based on social relations and social participation. This study conceptualized and redefined the digital divide caused by smart devices as the smart divide, and empirically verified how this divide affects social capital construction.

3. RESEARCH METHODOLOGY

3.1. Variables

Social capital is socially accumulated intangible capital, and the smart divide is a social phenomenon of social disparity and social divide. However, the smart divide and social capital are closely related rather than independent, as they share many factors. Thus, verifying the correlation between them is crucial in social capital construction. This research examines the factors of the smart divide and social capital and empirically analyzes how the factors of the former affect social capital construction through a survey.

Regarding the smart divide, the factors that can reflect the social capital aspects were set as independent variables based on the factors suggested in previous research (Lee, 2016b). Specifically, the smart divide is a social phenomenon that resulted from the use of smart devices.

 https://doi.org/10.1633/JISTaP.2021.9.3.1

Thus, it is important to examine the status of smart device possession. Additionally, the levels of informational and social activities through smart device applications need to be considered because such devices provide a variety of functions through smart device applications. As well, the competence and proficiency in using the smart device are set as the factors of the smart divide. Smart devices also provide images, sounds, videos, and text in multiple ways, thus the degree to which these various information formats are used can be considered as a factor triggering the smart divide.

Further, the factors that construct social capital have been presented from various perspectives in research, including trust, norms, social networks, sense of duty, reciprocity, and participation. Among these factors, this study established the social capital factors that are commonly presented in much research, such as reciprocity, trust, social network, and social participation. These factors were set as dependent variables. Additionally, in the current information environment, the ways of communication between people are rapidly expanding online, which is closely related to social network construction and social participation. Thus, this research included informational and social communication factors of social capital.

3.2. Data Collection

To empirically analyze how the smart divide affects social capital construction, this research surveyed smart device users. The questionnaire consists of 16 items according to the variables set by the aforementioned socio-economic characteristics, the smart divide factors, and the social capital factors (Table 1).

The survey was conducted on smart device users in their 20s or older for one week from March 10, 2021 to March 16, 2021. The survey's targets were limited to those in their 20s or older because middle and high school students below their 20s mainly use smart devices for learning or entertainment, and therefore social and informational activities for the construction of social capital are limited. The questionnaire consists of 16 items according to the aforementioned variables, including socio-economic characteristics, smart divide factors, and social capital factors. By applying simple random sampling approach for data collection, a total of 250 questionnaires were distributed online, and 245 questionnaires were analyzed. Five questionnaires were excluded as they did not provide satisfactory responses.

The collected data were analyzed using Pearson's correlation to verify the correlation between the factors of the smart divide and social capital. Multiple regression

Table 1. Variables and questionnaire items

	Variables	Number of items
Socio-economic characteristics	Gender	5
	Age	
	Education level	
	Economic level	
	Residence	
Social capital factors	Social network with other people	6
	Informational and social communication	
	Recognizing social issues	
	Participation in reciprocal activities	
	Trust in other people	
	Participation in social activities	
The smart divide factors	Possession of smart devices	5
	Number of applications on smart devices	
	Smart device usage level	
	Use of diverse information formats through smart devices	
	Proficiency in using smart devices	

analysis was also adopted to identify how the smart divide affects social capital construction.

To verify the internal reliability of the collected data, Cronbach's alpha was measured. Based on the analysis, the Cronbach's alpha for 11 items excluding socio-economic characteristics was 0.818; thus, the internal consistency of the collected data was suitable for the analysis.

4. FINDINGS

4.1. Socio-Economic Characteristics

To identify how the smart divide affects social capital construction, the respondents' socio-economic characteristics were analyzed. The respondents (N=245) consisted of 121 (49.4%) Mans and 124 Women (50.6%). Regarding the economic level, the respondents were evenly distributed. Additionally, the age range—20s to 50s—was evenly distributed. Concerning the education level, the percentage of university graduates (N=149, 60.8%) was the highest. Further, a majority of the respondents resided in metropolitan cities (N=171, 69.8%) (Table 2).

4.2. Relationship between the Smart Divide and Social Capital

Smart devices are now recognized as indispensable tools for various social activities. Such a smart device-

Table 2. Socio-economic characteristics of respondents

Socio-economic factors		Frequency (N)	Percentage (%)
Gender	Man	121	49.4
	Woman	124	50.6
	Total	245	100.0
Age	Between 20-29 years	39	15.9
	Between 30-39 years	80	32.7
	Between 40-49 years	73	29.8
	Between 50-59 years	40	16.3
	Over 60 years	13	5.3
	Total	245	100.0
Education level	High school diploma	35	14.3
	College graduate	34	13.9
	University enrolled	12	4.9
	University graduate	149	60.8
	Master's degree	12	4.9
	Doctoral degree	3	1.2
	Total	245	100.0
Annual family income	Under $20,000	25	10.2
	Between $20,000-$40,000	65	26.5
	Between $40,000-$60,000	54	22.0
	Between $60,000-$80,000	60	24.5
	Over $80,000	41	16.7
	Total	245	100.0
Residential area	Metropolitan city	171	69.8
	Small city	59	24.1
	Rural areas	15	6.1
	Total	245	100.0

 https://doi.org/10.1633/JISTaP.2021.9.3.1

based information environment not only increases information activity efficiency but also has a great influence on social benefit acquisition. In this respect, the use of smart devices and social capital are closely interrelated. Therefore, this research analyzed the relationship between the factors of the smart divide and social capital using the Pearson's correlation analysis (Table 3).

The construction of social networks, social participation, and reciprocity showed significant correlations with all factors of the smart divide. Additionally, the levels of using smart devices, diversity of the information formats used through smart devices, and proficiency in using smart devices show significant correlations with all the factors of social capital. These results show that proficiency in using the smart device functions and acquiring various information formats through smart devices are closely related to social network construction and expanding the range of informational and social activities. Besides this, use of smart devices is closely related to supporting social reciprocity, such as social network formation, participation in social activities, and pursuit of public interests. Particularly, social participation shows relatively high correlations with the diversity of information formats (r=0.439, p<0.01) and proficiency in using smart devices (r=0.439, p<0.01). Thus, the use of smart devices provides an environment that can support participation in social activities more efficiently.

Contrarily, the number of smart devices possessed shows no significant correlation with reciprocity and mutual trust, although it shows significant correlations with social network construction (r=0.172, p<0.01) and social participation (r=0.271, p<0.01). Thus, owning smart devices can function as an efficient factor in acquiring and utilizing information, but it does not show a significant relationship in terms of social activities that require strong relationships between people.

Overall, the factors that cause the smart divide are related to most of the factors that construct social capital, especially the construction of the social network and the expansion of the range of social participation. Contrarily, use of smart devices does not show a significant correlation with mutual trust between people. Thus, the use of smart devices is more closely related to the factors based on informational activities rather than social connections.

Table 3. Correlations between the smart divide and social capital factors

Factors		Correlations					
		Social network	Communication	Social issues	Reciprocity	Mutual trust	Social participation
Use of smart devices	Pearson correlation	0.286**	0.342**	0.356**	0.253**	0.278**	0.186**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.003
	N	245	245	245	245	245	245
Possession of smart devices	Pearson correlation	0.172**	0.271**	0.199**	0.123	0.051	0.153*
	Sig. (2-tailed)	0.007	0.000	0.002	0.054	0.424	0.016
	N	245	245	245	245	245	245
Number of applications	Pearson correlation	0.141*	0.172**	0.147*	0.102	0.108	0.125
	Sig. (2-tailed)	0.027	0.007	0.022	0.110	0.091	0.051
	N	245	245	245	245	245	245
Diversity of information formats	Pearson correlation	0.343**	0.439**	0.422**	0.287**	0.252**	0.320**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000
	N	245	245	245	245	245	245
Proficiency in using smart devices	Pearson correlation	0.366**	0.439**	0.344**	0.324**	0.278**	0.287**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000
	N	245	245	245	245	245	245

*Correlation is significant at the 0.05 level. **Correlation is significant at the 0.01 level.

4.3. Impact of the Smart Divide on Social Capital

Currently, the use of smart devices has radically changed the way informational, social, cultural, and economic activities are performed. It also causes disparity in activities between people at the personal and social level because social capital construction is greatly affected by information utilization. In this respect, the use of smart devices, which have been the primary tools for informational and social activities, can also affect social capital construction. Therefore, this research empirically analyzed how the factors of the smart divide affect social capital construction by applying multiple regression analysis.

4.3.1. The Smart Divide Effect on Social Networks

Traditionally, social networks have been constructed through strong ties with family and friends offline. Owing to information technology development and social network services, they are now constructed in a broad range through weak ties in the online environment. Particularly, the extensive use of smart devices and the development of social network applications are changing the social capital paradigm through social networks. In a smart device-based environment, social network construction leads not only to social activities but also to informational and economic activities based on social networks. In this respect, the disparity in smart device usage can lead to disparity in social capital construction through social networks. Therefore, this research analyzed how the factors of the smart divide affect social network construction (Table 4).

The results show that the levels of smart device utilization (r=0.028, p<0.05), diversity of the information formats through smart devices (r=0.016, p<0.05), and proficiency in using smart devices (r=0.002, p<0.01) have a significant effect on social network construction. In other words, acquiring and utilizing various information formats by using many smart device functions provides more opportunities to construct social networks, enabling people to increase the efficiency of informational, social, cultural, and economic activities. As such, smart devices can be useful for constructing social networks for those who are proficient in using them. Contrarily, those who are not good at using such devices may experience low levels of social networks, resulting in inequality in public interest and benefits.

Table 4. The smart divide effect on social networks

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. Error	Beta		
1	(constant)	1.267	0.326		3.888	0.000
	Use of smart devices	0.165	0.074	0.143	2.214	0.028
	Possession of smart devices	0.014	0.062	0.015	0.228	0.820
	Number of applications	-0.014	0.043	-0.021	-0.322	0.748
	Diversity of information formats	0.170	0.070	0.177	2.419	0.016
	Proficiency in using smart devices	0.238	0.075	0.223	3.167	0.002

Dependent variable: Social networks.

Table 5. The smart divide effect on communication

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. Error	Beta		
1	(constant)	0.947	0.290		3.268	0.001
	Use of smart devices	0.171	0.066	0.156	2.578	0.011
	Possession of smart devices	0.084	0.055	0.095	1.531	0.127
	Number of applications	-0.033	0.038	-0.052	-0.847	0.398
	Diversity of information formats	0.218	0.062	0.240	3.496	0.001
	Proficiency in using smart devices	0.246	0.067	0.244	3.690	0.000

Dependent variable: Communication.

 https://doi.org/10.1633/JISTaP.2021.9.3.1

4.3.2. The Smart Divide Effect on Communication

Social capital can be constructed not only through participation in social activities but also through informational and social communication with others. Communication between people can be considered as an important process in creating and sharing socially accumulated public interest and constructing social capital for individuals. Thus, informational and social communication are crucial for social capital construction, and in turn can be affected by smart device usage. Therefore, the effect of smart devices on communication was analyzed.

As shown in Table 5, the levels of using smart devices (r=0.011, p<0.05), diversity of information formats usage through smart devices (r=0.001, p<0.01), and proficiency in using smart devices (r=0.000, p<0.01) have a significant effect on informational and social communication. This indicates that various information and content can be obtained through communication with other people by fully utilizing smart device functions, leading to social capital construction. Thus, people who can fully use smart device functions can obtain opportunities to acquire various information and construct social capital more efficiently through communication. Contrarily, people who do not fully utilize smart devices can have relatively fewer opportunities to accumulate social capital because of their isolation from communication.

4.3.3. The Smart Divide Effect on Reciprocity

While social capital can be constructed individually, it is also accumulated socially and applied as an intangible capital of society. Social capital accumulated socially can be constructed through participation in social issues and mutually beneficial activities. However, in the current smart device environment, online communities related to social issues are actively formed, and opportunities to participate in new types of reciprocal activities, such as the sharing economy, are offered on the Internet. Participating in these activities involves constructing and accumulating social capital not only on an individual level but also throughout society. The social capital accumulated through these methods can bring reciprocal benefits to all members of society. Contrarily, those who are unable to participate in these activities through smart devices may face inequality in receiving reciprocal benefits. In this re-

Table 6. The smart divide effect on recognition of social issues

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. Error	Beta		
1	(constant)	1.321	0.301		4.389	0.000
	Use of smart devices	0.233	0.069	0.212	3.393	0.001
	Possession of smart devices	0.025	0.057	0.028	0.439	0.661
	Number of applications	-0.031	0.040	-0.050	-0.784	0.434
	Diversity of information formats	0.264	0.065	0.289	4.078	0.000
	Proficiency in using smart devices	0.125	0.069	0.123	1.802	0.073

Dependent variable: Social issues.

Table 7. The smart divide effect on reciprocity

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. Error	Beta		
1	(constant)	1.550	0.326			0.000
	Use of smart devices	0.151	0.074	0.135	2.028	0.044
	Possession of smart devices	-0.011	0.062	-0.012	-0.175	0.861
	Number of applications	-0.020	0.043	-0.032	-0.474	0.636
	Diversity of information formats	0.133	0.070	0.143	1.898	0.059
	Proficiency in using smart devices	0.221	0.075	0.213	2.947	0.004

Dependent variable: Reciprocity.

spect, this research analyzed the effect of the smart divide on social reciprocity.

As a result, the levels of using smart devices (r=0.001, p<0.01) and diversity of information formats used through smart devices (r=0.000, p<0.01) have a significant influence on the perception of social issues (Table 6). Additionally, the levels of use of smart devices (r=0.044, p<0.05) and proficiency in using smart devices (r=0.004, p<0.01) have a significant effect on performing socially and informationally mutual benefit activities (Table 7). Based on these results, smart devices influence the access to opportunities to participate in reciprocal activities and recognize social issues by expanding the range of social participation. Moreover, the use of various information formats through smart devices has an effect on recognizing social issues, and the proficient use of various smart device functions influences securing opportunities to participate in reciprocal activities.

4.3.4. The Smart Divide Effect on Building Mutual Trust

The establishment of trust relationships between people is the basis of most of the factors that construct social capital, including social reciprocity, social networking, and participation in social activities. Traditionally, the establishment of mutual trust in constructing social capital has been based on strong ties. However, the way of establishing mutual trust is now expanding to weak online ties. Furthermore, trust relationships established in a wide range lead to sharing of public interest through participation in informational and social activities. Using smart devices can affect the establishment of trust relationships in such a wide range, and thus the smart divide caused by smart device use can also affect the establishment of trust relationships. Therefore, this research analyzed how the factors of the smart divide affect the establishment of mutual trust relationships between people (Table 8).

As shown in Table 8, the levels of using smart devices (r=0.004, p<0.01) and proficiency in using smart devices (r=0.019, p<0.05) have a significant effect on building mutual trust. This indicates that the use of smart devices is not only related to the informational aspect but also to the expansion of the range of social activities. Thus, using smart devices provides opportunities to participate in various social activities and leads to the establishment of

Table 8. The smart divide effect on building mutual trust

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. Error	Beta		
1	(constant)	1.732	0.302		5.727	0.000
	Use of smart devices	0.199	0.069	0.192	2.876	0.004
	Possession of smart devices	-0.079	0.057	-0.094	-1.379	0.169
	Number of applications	0.007	0.040	0.012	0.171	0.865
	Diversity of information formats	0.105	0.065	0.122	1.607	0.109
	Proficiency in using smart devices	0.164	0.070	0.172	2.359	0.019

Dependent variable: Mutual trust.

Table 9. The smart divide effect on participation in social activities

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. Error	Beta		
1	(constant)	1.469	0.387		3.793	0.000
	Use of smart devices	0.065	0.088	0.050	0.740	0.460
	Possession of smart devices	0.025	0.073	0.023	0.335	0.738
	Number of applications	-0.012	0.051	-0.015	-0.225	0.823
	Diversity of information formats	0.242	0.083	0.220	2.904	0.004
	Proficiency in using smart devices	0.186	0.089	0.152	2.081	0.038

Dependent variable: Social activities.

 https://doi.org/10.1633/JISTaP.2021.9.3.1

mutual trust. However, both the levels of using smart devices (t=2.876) and the proficiency in using smart devices (t=2.359) have relatively low effects. Thus, the levels of mutual trust established through smart devices were not high compared to the traditionally strong ties.

4.3.5. The Smart Divide Effect on Participation in Social Activities

Participation in social activities is driven by several factors. The acquisition of information related to social activities and opportunities for participation can be considered important factors. In the current information environment, participation in online communities and the construction of social networks using smart devices provide opportunities for social activities, which, in turn, are linked to social capital construction. From this perspective, this research analyzed how the factors of the smart divide affect participation in social activities (Table 9).

As a result, the diversity of information formats used through smart devices (r=0.004, p<0.01) and proficiency in using smart devices (r=0.038, p<0.05) have a significant effect on participation in social activities. It indicates that people who proficiently use smart device functions can participate in social communities and obtain more opportunities related to social reciprocity, leading them to participate in social activities to a broader extent. Additionally, by accessing various information formats through smart devices, people can acquire information related to social activities, thereby enhancing their understanding and awareness of social activities.

In contrast, it was found that the use of smart devices itself does not lead to social activities. Rather, competency in utilizing information through smart devices and fully using the devices' functions can enhance social activity participation. However, smart device use is still recognized as a tool that expands the range of informational and social activities.

5. DISCUSSION AND CONCLUSION

Social capital is constructed by various factors throughout society. Specifically, information utilization is now having a significant effect on social capital construction. Particularly, advanced information devices, such as smart devices, affect not only information activities but also most factors that construct social capital, including social networking, participation in an online community, and reciprocal activities.

Although the use of smart devices has a positive effect on social capital construction at the personal and social levels, it also causes informational and social disparity across society, resulting in inequality in social capital. People who fully utilize smart device functions may have more opportunities to build social networks and participate in social activities, while those who do not may face disadvantages in constructing social capital. From this perspective, the smart divide—the digital divide caused by the use of smart devices—can serve as a mechanism to reproduce inequality in social capital. Therefore, this research empirically analyzed how the factors of the smart divide affect social capital construction.

The results indicated a close correlation between the factors of the smart divide and social capital. Thus, the levels of using smart devices affect social capital construction in the current social and information environment. Based on this, this research analyzed the effect of the smart divide on social capital to confirm whether the smart divide resulting from smart device usage causes disparity in social capital construction.

People who can fully utilize smart device functions can expand the range of their informational and social activities by utilizing various information formats more efficiently. It can also allow people to build social networks, leading to constructing and accumulating social capital. Contrarily, those who do not fully use smart device functions may have limited access to informational and social activities through smart devices, eventually leading to social disparity in communication with other people and in building social networks.

The use of various information formats through smart devices also affects the expansion of the range of awareness of social issues and provides opportunities for participation in reciprocal activities, allowing people to build and share social benefits. Concerning building mutual trust among people, the levels of use of smart devices and proficiency in using smart devices had a significant influence on building mutual trust among people. The use of smart devices is not limited to the informational aspect but expands opportunities to participate in social activities, building mutual trust in others. This is related to informational and social communication through smart devices and shows that participation in the communication process leads to building mutual trust among people.

Additionally, it was found that people who fully utilize smart device functions can participate in online communities, obtain more information related to social reciprocity, and have more opportunities to construct social capital. Contrarily, those who cannot proficiently use

smart devices may be disadvantaged from the opportunity to participate in social activities, which may appear as a disparity in constructing social capital.

Smart device usage levels, proficiency in using smart devices, and diversity of information formats used through smart devices affect most of the factors that construct social capital. Since a smart device provides a variety of functions through a single device, a certain amount of knowledge is needed to proficiently use the smart device functions. Thus, the smart divide can be created between those who can appropriately use smart devices and those who cannot, serving as a mechanism that causes inequality in social capital construction.

Contrarily, it was found that the possession of a smart device and the number of smart device applications used do not affect most factors of social capital. Thus, the traditional quantitative and qualitative digital divides have been resolved due to the widespread use of smart devices, and the smart divide as an evolved digital divide affects social capital construction. In this respect, the smart divide, as a more complex and multi-faceted digital divide, can lead to a new social divide issue in social capital.

The traditional quantitative and qualitative digital divide are disparities that focus on informational aspects such as information technology and information communications technology. However, in the current social environment where smart devices have a profound influence on informational, social, economic, and cultural activities, the smart divide caused by the competency in using smart devices can also affect social capital construction. Therefore, it is necessary to consider the evolving information environment to facilitate the construction of social capital as an intangible capital that can enhance public interest and develop entire communities. Furthermore, to prevent social capital from serving as a mechanism that reproduces inequality among people and to maximize the intrinsic value of social capital, an empirical analysis of the factors that cause the smart divide is needed. It is also necessary to consider the ways to utilize social capital as a driving force for integrating society and developing communities, and not as a mechanism for dividing society and excluding people.

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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