

Investigating Consumer Innovativeness for New Media Infusion: Role of Literacy in the Context of OTT Services in Korea

Keon Chul Park¹, and Sangmin Lee^{2*}

¹ Advanced Institute of Convergence Technology
Suwon-si, Gyeonggi-do, Republic of Korea
[e-mail: parkkc07@snu.ac.kr]

² Department of Business Administration and Data Science, CHA University
Pocheon-si, Gyeonggi-do, Republic of Korea
[email: slee@cha.ac.kr]

*Corresponding author: Sangmin Lee

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Abstract

Consumer innovativeness plays a vital role in explaining consumer dynamics, such as adoption, usage, and behavioral intention, in the new world of disruptive online media. This empirical study aimed to examine the importance of consumer innovativeness and digital literacy in the adoption and expansion of new technology-based media services, focusing on OTT services. Extending the theory of adoption of new technologies by innovators to new media environment centered on OTT services, it examines the influence of the four dimensions of motivated consumer innovativeness on OTT service usage. The Korea Media Panel Data of 2019, where overall ICT usage and media consumption of a broad panel of respondents was collected, was used for the analysis. From the data of 10,864 respondents, 4,031 (37.1%) were found to have experience in using OTT services. To clarify the mediating effect of digital literacy on the correlations between cognitive innovativeness of consumers and their use of OTT services, Process Macro Model 4 was used. The bootstrap method was applied to reveal that all four dimensions of consumer innovativeness have a significant indirect effect on new media usage through digital literacy, thus indicating how digital literacy plays an important role in the spread of new digital services in addition to consumer innovativeness. The findings are important in that they can help in the efforts to introduce new technologies to the public and educate them to improve their digital literacy so that they can enjoy the complete experience of using these new digital products.

Keywords: Consumer Innovativeness, Digital Literacy, New Media Infusion, OTT, Mediating Effect

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1. Introduction

The worldwide spread of over-the-top (OTT) services such as Netflix, Amazon Prime, and Hulu in recent years has rapidly changed the market competition and consumer dynamics of the media market, leading to the demand for policy- and industry-related research [1]. As the most recent “disruptive innovation in media industry,” an OTT service is defined as an online video service that allows users to view broadcast media and videos over the internet without using a set-top box that is traditionally used to receive pay television services [2]. While traditional broadcast media delivers its services through a closed network (private network), OTT services provide media content through a general-purpose network. Therefore, while media consumers previously accessed content at a fixed time and place via the television, they are now offered content through streaming services that can be accessed any time and at any place via mobile devices such as tablets and smartphones, apart from the television. This change has also greatly expanded consumers’ media-related options by changing the unilateral media consumption, which is from TV to consumers, of the past and enabling the use of interactive media. Furthermore, this change is responsible for the cord-cutting and cord-shaving phenomena, wherein innovative media consumers cancel their subscription toward traditional pay television services such as CATV, DISH, and IPTV and adopt internet networks as their primary means of accessing television content [3].

In the new world of disruptive online media, media consumers’ innovativeness plays a vital role in explaining consumer dynamics, including its adoption, usage, and behavioral intention [4]. In general, lock-in and switching costs are high in the pay TV market, making it difficult for consumers to switch media services [5]; however, innovative media consumers willingly switch from expensive cable box and satellite dish services to OTT services, which offer more price savings and technological affordances as well as increase the value of their television experience by providing VOD services anytime and anywhere through diverse devices and an internet connection [6-7]. Accordingly, the growth and spread of OTT services may replace traditional media in terms of the media industry’s competitive and structural aspects besides spurring changes in the rules and standards of the market and its policies [8-9]. However, adopting new digital technologies and new media services (e.g., OTT services) cannot be attributed to only the innovativeness of consumers. Consumers’ continued use of new media services is not determined merely by their curiosity toward using new technologies, but also by how well they use these technologies and services, or in other words, by their ability to use digital devices [10]. This is because consumers’ use of innovative products will decrease and not persist if their ability to use and understand a technology is poor, although they tend to be active in new technological environments. If the initial adoption of a media service by innovators, or the earliest innovation adopters, does not lead to service usage expansion and does not spread to other classes of users, market growth will eventually reduce and the innovation will fail [11].

Therefore, to understand the adoption and expansion of new digital technology-based media services, such as OTT services, it is necessary to examine the digital literacy of consumers in addition to understanding their innovativeness. So far, there have been no empirical studies on the importance of consumer innovativeness and digital literacy in the adoption and expansion of new technology-based media services. In the case of OTT services, the usage and spread of these new media services vary greatly depending on consumers’ level of digital literacy even if consumers demonstrate a great degree of innovativeness. Based on this research motivation, this study seeks to extend the theory of adoption of new technologies by innovators to the context of new media environment, especially focusing on OTT services.

To achieve this, it investigates the impact of the four dimensions of motivated consumer innovativeness, which includes functionally, hedonically, cognitively, and socially motivated consumer innovativeness, on OTT service usage. In addition, the mediating role of digital literacy in the relationship between consumer innovativeness and OTT service usage is examined.

2. Literature Review

2.1 Consumer Innovativeness

Innovativeness is defined as “the degree to which an individual or [any] other unit is relatively earlier in adopting new ideas than other members of a system” [12]. According to Rogers’ diffusion theory, innovators show a keen enthusiasm for technology, are willing to be the first to adopt an innovation, and tend to accept the uncertainties of a new technology’s function and performance as they demonstrate a strong affinity for new technologies [12]. In this context, innovativeness is a personal characteristic of a technology enthusiast who positively accepts the novel stimuli provided by new technologies, new media, as well as new products and services. Innovativeness can also be described as individuals’ inclination to seek novelty and their willingness to accept the uncertainties of a technology’s function and performance. If this is applied to the context of consumers, consumer innovativeness can be defined as the degree to which consumers adopt innovative products, services, or new technologies earlier than others do as a result of their intrinsic novelty-seeking tendency [13-14].

Consumer innovativeness may be defined, first, as “innate innovativeness,” which is an intrinsic characteristic of consumers; and second, as “actualized innovativeness,” which is the actual behavior involved in consumers adopting new products and technologies owing to the aforementioned intrinsic characteristic [14]. A consumer’s innate innovativeness is the consumer’s cognitive value as well as intrinsic value based on the consumer’s innovative personality, tendency, and cognitive style [15]. Innately innovative consumers tend to adopt new products in a particular product category earlier than other consumers do after the product appears in the market [16].

Besides, they tend to enjoy change and, hence, buy new and different products rather than stay with the current consumption patterns and existing products [17]. Based on these findings, existing studies on consumer innovativeness have measured the intrinsic characteristics and behavioral tendencies of consumers only in one dimension and subdivided these to measure them as various dimensions to measure innovativeness. As shown in **Table 1**, the construct of consumer innovativeness is now used in studies in different fields to explain the process of selecting and adopting new technologies, products, and services.

Table 1. Previous Researches on Consumer Innovativeness

Author(s)	Context/Scenario	Operationalization	Role of Consumer Innovativeness
Hong et al.(2017) [18]	Smartwatch	One-dimensional (Consumer Innovativeness)	Indirect effect (Hedonic/Utilitarian Value as Mediators)
Kranthi & Ahmed(2018) [19]	Smartwatch	One-dimensional (Personal Innovativeness)	Direct effect (antecedents for Behavioral Intention toward Smartwatch Adoption)

Leicht et al.(2018) [20]	Autonomous Car	One-dimensional (Consumer Innovativeness)	Moderating effect (Interaction effects of Performance expectancy/ Effort expectancy/ Social influence x Consumer Innovativeness for Purchase Intention)
AydoĖAn et al.(2019) [21]	Opinion Seeking on SNS(Instagram)	One-dimensional (Consumer Innovativeness)	Mediating effect (mediator on the relation between SNS Usage Attitude and Opinion Seeking)
Chouk & Mani(2019) [22]	Smart Services	One-dimensional (Technological Innovativeness)	Direct effect (antecedents for Resistance to smart services)
Pal et al.(2019) [23]	IoT-Based Smart Products	One-dimensional (Personal Innovativeness)	Moderating effect (Interaction effect of Trust x Personal Innovativeness for Continuance Intention)
Zhang et al.(2020) [24]	Smart Toys(Dash Robot)	One-dimensional (Consumer Innovativeness)	Direct effect (antecedents for four dimensions of Perceived Value on dash robot)
Patil et al.(2020) [25]	Mobile Payment/Service	One-dimensional (Personal Innovativeness)	Direct effect (antecedents for attitude toward using the mobile payment systems)
Mew & Millan(2021) [26]	Mobile Wallets	One-dimensional (Personal Innovativeness in Information Technology)	Direct effect (antecedents for Perceived Usefulness, Perceived Relative Advantage, Behavioral Intention to Adopt a Mobile Wallet)
V. Bogicevic et al.(2021) [27]	VR/Technology	One-dimensional (Technology Innovativeness Trait)	Moderating effect (Interaction effects of Preview Mode x Technology Innovativeness on Visit Intention/Self-brand Connection)

2.2 Digital Literacy

According to the Better Life Index report published by the OECD (2017), young people need to acquire a range of skills and competencies such as cognitive, social, and emotional skills to succeed in all areas of life [28]. The report also mentioned how the overall ability to use

information technology has an important effect on improving quality of life. Depending on the context in which a technology is being used as well as the purpose of the user, digital literacy is variously referred to as information literacy [29], computer literacy [30], media literacy [31], internet literacy [32], or multi-modal literacy [33]. Digital literacy narrowly refers to the ability to decipher digital content. However, in a broader sense, it includes the ability to access digital devices and critically understand their operating principles and content. Furthermore, it encompasses the ability to handle digital devices appropriately and the ability to use them in creative ways [34]. Accordingly, digital literacy can be defined as the ability to communicate with other members of society by analyzing and selecting information that is conveyed by various forms of media [35].

Skills and competencies in using various digital technologies and media, such as computers, social media, and the internet, affect not only affect Information and Communication Technology (ICT) usage, but also digital information acquisition and sharing. This in turn affects the adoption, behavioral intention, and usage of digital technology services, such as ICT, digital media, smart devices, and social media [36-39], and the quantity and quality of communication conveyed through such digital media [40]. Acquiring these skills and competencies also affects work performance [41], search for information and expression of opinion [42], and the civic engagement of users [43]. The concept of literacy thus refers to the various abilities for using and sharing ICT and digital information. In summarizing the above studies, one can distinguish the concept of literacy as a tool that indicates the ability to access and use digital devices from the concept of symbolic literacy, which indicates the ability to acquire the content one wants from a device and to fully use the functions that the device offers [44].

3. Conceptual Model and Hypothesis

3.1 Conceptual Model Development

This study aims to investigate the effect of consumer innovativeness on new media infusion in the context of OTT service usage. In particular, it aims to explore the mediating role of digital literacy in such a relationship. Earlier, in the literature review, the theoretical root regarding the impact of consumer innovativeness on new media usage have been described. As seen in previous studies, media consumers' media choices and usage decisions are determined by the utility consumers feel in each media's consumption, and these consumers' utility is determined by consumers' innovative tendencies and literacy needed to use media. Consumers with innovative consumption tendencies want to enjoy new adventures and challenges without being bound by existing customs, but the basic knowledge and skills required to do so can promote these adventures and challenges and act as a resistance factor.

Moreover, consumer innovativeness is affected by various dimensions depending on the context of which device or service is applied. This implies a limitation in viewing innovativeness from a single dimension [45]. In this study, we examine how the four dimensions of innovativeness proposed by Vandecasteele & Geunes (2010) affect the adoption of OTT services [46]. The conceptual model is presented in **Fig. 1**. The first four hypotheses, H1-1, H1-2, H1-3, and H1-4, focus on the total effect of each of the dimensions of consumer innovativeness on new media infusion.

The next four hypotheses, H2-1, H2-2, H2-3, and H2-4, explore the mediating effect of digital literacy on the correlations between each dimension of consumer innovativeness and

new media infusion. We consider the theoretical background for each of the hypotheses in the following subsection.

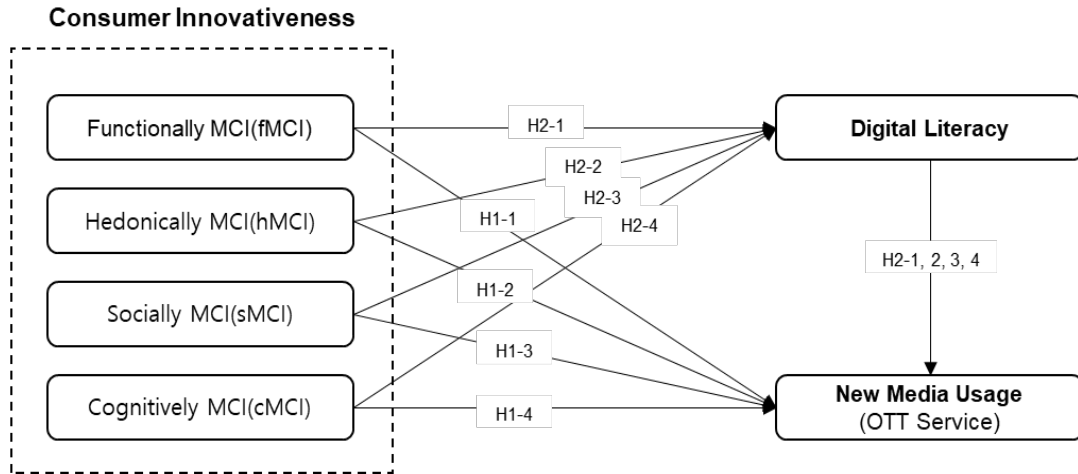


Fig. 1. The Conceptual Model

3.2 Hypothesis Development

Fig. 2 describes the mediated and unmediated models, where the dimensions of consumer innovativeness are not specified for simplicity. In the unmediated model as shown, we posited that consumer innovativeness positively influence new media usage of which path c illustrate the total effect of the model. On the other hand, in the mediated model, we hypothesized that the effect of consumer innovativeness on new media usage is mediated by media consumer’s level of digital literacy. Path c’ illustrates the direct effect, while paths a and b illustrate the indirect effect of the model.

As shown in Fig. 1, we established one hypothesis for each dimension of consumer innovativeness in the unmediated model, where we formulated four additional hypotheses in order to examine the mediating role of digital literacy in the relationships between each dimension of consumer innovativeness and media usage.

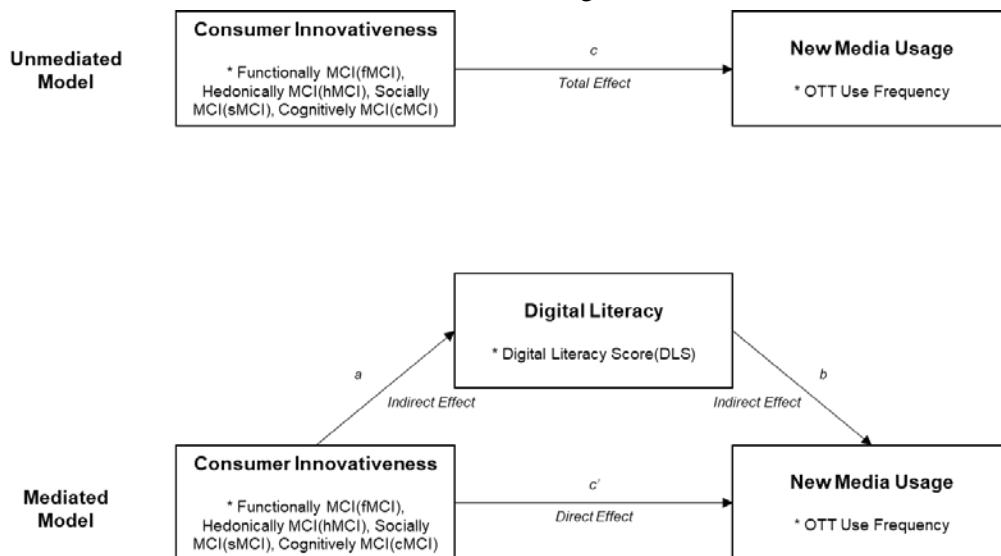


Fig. 2. The Total Effect, Direct Effect, and Indirect Effect

3.2.1 Consumer Innovativeness

First, as one of the dimensions of consumer innovativeness, “functional innovativeness” involves having a “mindset that seeks the convenience and efficiency of new products” [13]. The simplicity, usefulness, convenience, efficiency, suitability, reliability, and usability of a new product describe the functional aspects of an innovation, and consumers who seek these characteristics are functional innovators. Functional innovators using an OTT service (which provides interactive communication and expands consumers’ options by breaking away from viewing television at a fixed time and place) can increase the efficiency of acquiring information from the media while it also allows them to consume media content more conveniently as the content they want to view will be available as VODs.

Second, hedonic innovativeness of consumers is related to intrinsic motivations such as pleasure, fun, satisfaction, and moving experiences. To satisfy these goals, consumers with hedonic innovativeness consume products that provide new and interesting internal stimuli [47]. OTT services are expected to provide consumers with new enjoyable experiences that cannot be experienced via traditional broadcasting services. This is achieved by providing consumers with a service that is distinct from existing TV services, namely, they are offered the freedom to select genres, as well as games and entertainment applications.

Third, social innovativeness refers to consumers’ willingness to adopt innovative products earlier than others belonging to their social system [14]. These consumers may try to maintain or form social bonds [48], want to be recognized by other members of society, or want to express themselves differently by using innovative products [49]. OTT services provide such consumers an interactive method of communicating with other consumers by allowing them to evaluate and participate in media content with comment sections, content ratings, recommendations, real-time chats, and more. These social bonds are expected to increase consumer engagement for OTT services as well as promote a more active media consumption.

Finally, cognitive innovativeness refers to the tendency of consumers to participate in new experiences as a form of mental stimulation [50]. Cognitive innovators enjoy thinking and solving problems and tend to seek more information regarding a new product so that they can understand how to use it, how it works, and evaluate its efficiency [51]. Cognitive innovativeness is strongly related to characteristics such as logical thinking, insightfulness, new product information, knowledge, as well as enthusiasm for learning, and such inclinations have been found to affect the adoption and purchase of innovative products [52]. With OTT services, it is possible to access broadcasting services at any time and any place with various devices. Thus, consumers can break away from the unilateral broadcast schedule provided by broadcasting companies and instead use their own planned schedule to view media content when and where it is convenient for them. In other words, by going through an active cognitive process, consumers are able to choose the content that will give them the most satisfaction.

Based on the above discussion on consumer innovativeness, each dimension of consumer innovativeness is expected to have a positive effect on new media usage. We therefore propose the following four hypotheses to measure the total effect on the relationship between consumer innovativeness and media usage:

- H1-1: Functionally motivated consumer innovativeness positively affects new media usage.
- H1-2: Hedonically motivated consumer innovativeness positively affects new media usage.
- H1-3: Socially motivated consumer innovativeness positively affects new media usage.
- H1-4: Cognitively motivated consumer innovativeness positively affects new media usage.

3.2.2 Digital Literacy

As discussed previously, innovative consumers make greater efforts to obtain information about innovations when compared to non-innovative consumers. Therefore, when consumer innovativeness leads to the actual selection and usage of new media technologies, the following two factors significantly impact the selection and usage of media: the degree to which innovative consumers have more information and knowledge than other people, and whether they are good at solving complex situations and problems that arise in the process of adopting innovations [12].

According to Deursen & Dijk (2014), people with a higher degree of innovativeness have higher education and income levels, and a large proportion of these people are engaged in a professional occupation [53]. In addition, most of these people are found to own a large number of digital home appliances or products relating to ICT that work on innovative technologies [54]. In other words, besides consumer innovativeness, digital literacy also plays a vital role in the process of expanding new technologies or new media fields. Given the discussion above, we propose the following four hypotheses to examine the mediating effect of digital literacy on the relation between consumer innovativeness and new media usage:

H2-1: The level of media consumer's digital literacy mediates the relationship between functionally motivated consumer innovativeness and new media usage.

H2-2: The level of media consumer's digital literacy mediates the relationship between hedonically motivated consumer innovativeness and new media usage.

H2-3: The level of media consumer's digital literacy mediates the relationship between socially motivated consumer innovativeness and new media usage.

H2-4: The level of media consumer's digital literacy mediates the relationship between cognitively motivated consumer innovativeness and new media usage.

4. Research Methodology

Aiming to investigate the consumer dynamics involved in the innovative consumers' selection of new media as well as its expansion by employing Vandecasteele and Geuens's motivated consumer innovativeness model to analyze the process of adopting OTT services, secondary data established and published by the Korea Information Society Development Institute (KISDI) were used. Since 2010, the KISDI has annually collected and published the Korea Media Panel Data (KMPD) regarding the overall ICT usage and media consumption of a broad panel of respondents. The KMPD are government-approved statistics that are collected at the national level and registered with Statistics Korea. They are considered the most credible data in South Korea in the fields of ICT and media and are composed of personal surveys, family surveys, and media diary surveys.

In the present study, personal survey data of the 2019 KMPD that were collected by the KISDI were analyzed. The 2019 KMPD was the ninth annual survey and conducted over a month in June 2018 investigating 10,864 members of 4,116 households in 17 South Korean metropolitan cities nationwide. In particular, the 2019 survey included questions that were based on Vandecasteele and Geuens's motivated consumer innovativeness model to evaluate the innovativeness of media consumers. From the KMPD's personal survey data, this study used items that dealt with the levels of OTT service usage to establish the dependent variables. The KMPD investigates respondents' usage of OTT services in two ways: first is the frequency of OTT services use, and second is the average usage time per use. The hypotheses to be tested in this study are related to the selection of media by innovative media consumers and thus are

related to how often innovative media consumers use new types of services.

In addition, as the average usage time of media per use is dependent on the content that is being viewed rather than on innovativeness, the frequency of use was considered a measurement item. Furthermore, a user group of respondents was selected based on whether they had experience with using OTT services, and the group became the subject of data analysis. Of the total panel of 10,864 respondents, 4,031 (37.1%) respondents were found to be experienced in using OTT services. The basic statistics of the data panel that were used in the final analysis are as shown in **Table 2**. The independent variables are those that measure consumer innovativeness. They relate to the following four items of consumer innovativeness regarding the intrinsic characteristics that individuals perceive when purchasing new products and services: functional, hedonic, social, and cognitive innovativeness. The questionnaire items to measure each dimension of consumer innovativeness are as shown in **Table 2**. Each item was measured on a 5-point Likert scale scored on the respondents' level of agreement.

Table 2. Measurement Instruments for Consumer Innovativeness

Construct	Item	Wording
Functionally Motivated Consumer Innovativeness (fMCI)	fMCI1	If an innovation is more functional, then I usually buy it.
	fMCI2	If a new time-saving product is launched, I will buy it right away.
	fMCI3	If a new product gives me more comfort than my current product, I would not hesitate to buy it.
	fMCI4	If a new product makes my work easier, then this new product is a "must" for me.
Hedonically Motivated Consumer Innovativeness (hMCI)	hMCI1	It gives me a good feeling to acquire new products.
	hMCI2	Acquiring an innovation makes me happier.
	hMCI3	Innovations make my life exciting and stimulating.
	hMCI4	The discovery of novelties makes me playful and cheerful.
Socially Motivated Consumer Innovativeness (sMCI)	sMCI1	I like to own a new product that distinguishes me from others who do not own this new product.
	sMCI2	I like to outdo others, and I prefer to do this by buying new products which my friends do not have.
	sMCI3	I love to use innovations that impress others.
	sMCI4	I deliberately buy novelties that are visible to others and which command respect from others.
Cognitively Motivated Consumer Innovativeness (cMCI)	cMCI1	I find innovations that need a lot of thinking intellectually challenging and therefore I buy them instantly.
	cMCI2	I often buy new products that make me think logically.
	cMCI3	I often buy innovative products that challenge the strengths and weaknesses of my intellectual skills.
	cMCI4	I mostly buy those innovations that satisfy my analytical mind.

In addition, respondents' media use behaviors were investigated to measure the mediating effect of digital literacy on the correlations between the four variables of consumer innovativeness and OTT usage. New media's expansion, such as OTT services, not only to television, but also to tablet PCs and smart devices was also considered. Thus, this study objectively determined the usage level of these devices and scored them.

To measure the ability to use digital devices, a 20-item questionnaire was used across a total of four fields, which are as shown in **Table 3**. These items were measured with dummy variables and the number of items in which a respondent answered "Yes" were added to yield the total score, which was then normalized and used in the analysis.

Table 3. Measurement Instruments for Digital Literacy

Category	Wording
Text message/instant messenger	Can you view and check text messages that were sent to your cell phone?
	Can you compose text messages on a cell phone and send them to others?
	Can you view and check messages that were sent to your instant messenger (KakaoTalk, LINE, etc.)?
	Can you compose messages with an instant messenger (KakaoTalk, LINE, etc.) and send them to others?
Internet use	Can you set up a wireless network (Wi-Fi) on a smart device?
	Can you click on and visit an internet site that is bookmarked on a smart device?
	If you are given a specific website address on a smart device, can you enter it directly in the internet address bar and visit the site?
	Can you search for information on a smart device by entering search terms on a web portal or search engine site?
	Can you do internet banking on a smart device?
	Can you shop online or make online reservations for movies, shows, etc. on a smart device?
Email	Can you use a smart device to view and check emails that were sent to you?
	Can you compose emails on a smart device and send them to others?
	Can you attach files to emails on a smart device and send them to others?
	Can you use a smart device to download and open attached files in emails?
Other	Can you change the display(screen)/sound/security/alarm/input method settings, etc. on a smart device?
	Can you transfer files (photos, documents, and etc.) from a smart device to a computer?
	Can you send the files on a smart device (photos, documents, and etc.) to others?
	Can you find the application you need, install it on a smart device, and use it? (Including updating and uninstalling applications)
	Can you use a smart device to compose necessary documents or materials?
	Can you scan a smart device for malware (viruses, spyware, and etc.) and remove them?

5. Data Analysis and Results

5.1 Reliability and Validity of Instrument

In **Table 4**, the means, standard deviations and reliabilities of research variables are summarized. The scales show good reliability with Cronbach's alphas > 0.7 . We also conducted principal component factor analysis on the four independent variables (consumer innovativeness) with VARIMAX rotation as in **Table 5**.

Table 4. Results of Factor Analysis

	Mean	SD	α	fMCI	hMCI	sMCI
fMCI	2.598	0.820	0.880			
hMCI	2.964	0.872	0.885	0.541**		
sMCI	2.736	0.854	0.883	0.653**	0.696**	
cMCI	2.518	0.847	0.915	0.733**	0.547**	0.698**

** $p < .01$ **Table 5.** Results of Factor Analysis

	fMCI	hMCI	sMCI	cMCI
fMCI1			0.722	
fMCI2			0.747	
fMCI3			0.78	
fMCI4			0.744	
hMCI1	0.752			
hMCI2	0.826			
hMCI3	0.847			
hMCI4	0.706			
sMCI1				0.658
sMCI2				0.777
sMCI3				0.748
sMCI4				0.651
cMCI1		0.722		
cMCI2		0.762		
cMCI3		0.799		
cMCI4		0.777		
Eigen Value	3.196	3.172	3.033	2.727
% of variance	19.974	19.822	18.957	17.046

All of four factors were identified with eigenvalue greater than 1.0. All items of the variables loaded on each distinct factor and explained 75.799% of the total variance. Most variables showed convergent validity with factor loadings above 0.6. When compared across factors, the items were loaded highest on their own factors. Therefore, the results of the factor analysis indicate that the conditions of convergent and discriminate validity were satisfactorily met.

5.1 Result of Analysis

To clarify the mediating effect of digital literacy on the correlations between cognitive innovativeness of consumers and their use of OTT services, this study used the Process Macro Model 4 of the SPSS software to conduct analyses [55]. The results are presented in **Table 6**.

The results of verifying the significance of each path demonstrated that the functional innovativeness of consumers has a statistically significant effect on their digital literacy ($B = -0.043, t = -13.819, p < .001$) and on their use of new media services ($B = 0.337, t = 9.387, p < .001$); the hedonic innovativeness of consumers has a statistically significant effect on their digital literacy ($B = -0.040, t = -13.801, p < .001$) and on their use of new media services ($B = 0.067, t = 1.961, p < .001$); the social innovativeness of consumers has a statistically significant effect on their digital literacy ($B = -0.038, t = -12.810, p < .001$) and on their use of new media services ($B = 0.132, t = 3.803, p < .001$); the cognitive innovativeness of consumers has a statistically significant effect on their digital literacy ($B = -0.040, t = -13.314, p < .001$) and on their use of new media services ($B = 0.147, t = 4.183, p < .001$); digital literacy of consumers was found to have a significant effect on their use of new media services.

Table 6. Result of Analysis for Mediating Effect

	B	se	t	p	LLCI	ULCI
fMCI						
fMCI_M → NDLS	-0.043	0.003	-13.819***	0.000	-0.049	-0.037
fMCI_M → TT_Use	0.337	0.036	9.387***	0.000	0.267	0.408
NDLS → OTT_Use	2.041	0.179	11.402***	0.000	1.69	2.392
hMCI						
hMCI → NDLS	-0.040	0.003	-13.801***	0.000	-0.046	-0.034
hMCI → OTT_Use	0.067	0.034	1.961**	0.050	0	0.134
NDLS → OTT_Use	1.759	0.181	9.725***	0.000	1.404	2.113
sMCI						
sMCI_M → NDLS	-0.038	0.003	-12.810***	0.000	-0.044	-0.032
sMCI_M → OTT_Use	0.132	0.035	3.803***	0.000	0.064	0.2
NDLS → OTT_Use	1.819	0.18	10.102***	0.000	1.466	2.172
cMCI						
cMCI_M → NDLS	-0.040	0.003	-13.314***	0.000	-0.046	-0.034
cMCI_M → TT_Use	0.147	0.035	4.183***	0.000	0.078	0.216
NDLS → OTT_Use	1.838	0.18	10.198***	0.000	1.485	2.192

* $p < .05$, ** $p < .01$, *** $p < .001$

The bootstrap method was used to verify that digital literacy of consumers has a significant indirect effect on how consumers' cognitive innovativeness affects their use of new media services [54]. Bootstrapping was performed by repeatedly sampling the data 10,000 times with regard to the partial mediation of the path in which the cognitive innovativeness of consumers leads to new media consumption through digital literacy. The results of the analysis are presented in **Table 7**.

Table 7. Result of Analysis for Bootstrapping

IV	MV	DV	Effect	BootSE	BootLLCI	BootULCI
cMCI_M	NDLS	OTT_Use	-0.073	0.009	-0.092	-0.057
hMCI_M	NDLS	OTT_Use	-0.071	0.009	-0.089	-0.054
fMCI_M	NDLS	OTT_Use	-0.087	0.010	-0.107	-0.069
sMCI_M	NDLS	OTT_Use	-0.069	0.009	-0.087	-0.053

The findings show that the path in which consumer innovativeness leads to new media consumption through digital literacy is statistically significant ($B=0.073$, CI [0.057~0.092]) because the 95% confidence interval for the indirect effect does not include zero.

5. Conclusion

Although OTT service is the most recent technologies that revolutionized the delivery of broadcasting content in the media market, a fundamental question arises whether it is fully delivered to consumers beyond offering new media user experience with technological progress. This is because the level and extent of media adoption and usage depend on the ability to use fundamentally new digital technologies apart from curiosity and enthusiasm for new technologies. To address this question, the present study analyzed the behavior of innovative consumers with regard to their use of new media services. Hypotheses were established based on the four dimensions of consumer innovativeness presented by Vandecasteele and Geuens (2010) [46]. In addition, the study analyzed how media consumers use OTT services by applying them in the context of new media. It was found that among the cognitive, social, functional, and hedonic innovativeness of consumers all have a significant effect on their use of OTT services.

Through this, it was found that consumers with innovative tendencies consume more broadcasting contents through new service platform (OTT) based on their passion for new technology service. In addition, among the four dimensions of consumer innovativeness, it was found that the innovative tendency from the functional perspective, fMCI, has the most influence on OTT service consumption. Moreover, to investigate the mediating role of digital literacy in the relationship between consumer innovativeness and new media usage, using the Process Macro suggested by Hayes (2017) [55], the indirect effect of the four dimensions of consumer innovativeness on OTT usage through digital literacy was analyzed. The results showed that all four dimensions of consumer innovativeness have a significant indirect effect on new media usage through digital literacy, which indicates that digital literacy also plays a crucial role in the spread of new digital services in addition to consumer innovativeness.

The contribution of our research has both theoretical and practical dimensions. Theoretically, it will contribute to the existing body of knowledge by providing new insights into the mediating role of digital literacy in media industry with the relationships between dimensions of consumer innovativeness and media usage. Practically, the research will help both contents provider and service provider in OTT market develop strategies including programming the contents and designing user interface to reduce the gap between media consumer's 'enthusiasm' for new service and 'obstacle' for fully using the service.

Unlike traditional TV broadcasting, which is provided in one direction from service provider to consumers, OTT service expands the right of consumers to directly select and consume various broadcasting contents through the Internet and digital platforms. In other words, a high level of consumer engagement is required for the satisfactory media

consumption desired by the consumer, and the capability for searching and selecting the desired content is required. Therefore, OTT service providers should pay attention to overall user interface design such as menu composition, content arrangement, and related content so that consumers can quickly and easily search and watch for desired content. It is judged that securing the overall user experience by providing a user interface so that content can be used in a more intuitive and simple process will help expand the continuous use of the service. In addition, this trend will also play an essential role not only for OTT, but also for overall new digital technology services.

In particular, Korea is now expanding global OTT Market power such as Netflix, creating a digital media ecosystem such as production, supply, and securing users of native content, and preparing policies to revitalize the OTT market and promote the industry. The most important thing in enabling domestic OTT market players to complete the revenue model against large overseas suppliers is to design a usage model that can meet the needs and demands of users. This will start with understanding literacy as a user's innovation and media capacity presented by the results of this study.

With the increasing spread of digital technologies (e.g., smart devices) in recent years, public efforts are being made from a social perspective to establish an innovative culture to accelerate digital transformations and ensure that the benefits of new technologies are fully availed by the people. As such, efforts are being made to introduce new technologies by overhauling old regulations, and innovation parks and centers are being built so that people will be able to experience new technologies. These efforts are not limited to public efforts, but also include efforts by corporations that provide novel technology products and services. Efforts are also being made to resolve the social problem of technology gaps in using new technologies by working to develop people's digital literacy skills and educating them about new technologies.

While this study provides novel insights into consumer dynamics in recent broadcasting market with investigating the role of consumer innovativeness and digital literacy, it has a few limitations. Our research examined the role of consumer innovativeness independent of consumer's diverse demographic and social backgrounds (eg. age, education, job and etc.) which would have high influence on both consumer innovativeness and the level of consumer's digital literacy. In particular, as revealed by Deursen & Dijk (2014) [52], the consumer innovativeness for new technology can appear discriminatively depending on the background of age and educational background. These factors are also linked to literacy, such as skills in the use of technology. Therefore, if a study on the differential effects between groups according to various social backgrounds is conducted, it will be possible to present a differential strategy for solving literacy by various groups such as each age, educational background, and occupation. For example, by differentiating preferred content genres according to age or background, it is possible to develop a design strategy on the platform, and it is also possible to differentiate the process steps for content consumption according to the level of literacy. Based on the data obtained by the authors in the future, it is expected that this study will be able to further subdivide and identify the factors that can affect consumer innovation and literacy, and then expand the research through the analysis of mediating effects adjusted based on this.

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Keon Chul Park received the M.S and Ph.D degrees in Information Systems from the Yonsei University. He did his Postdoctoral studies at Sungkyunkwan University. He is currently a senior researcher at Advanced Institute of Convergence Technology which is under authority of Gyeonggi Province and Seoul National University. His research interests include Smart City and ICT-Media Policy.



Sangmin Lee received a Ph.D. in Engineering Management, a M.S. in Computer Science from the George Washington University, and a B.S. in Computer Science from Indiana State University. He is an assistant professor of School of Business Administration and Data Science at CHA University, Pocheon, Korea. Prior to joining CHA University, he served as an assistant professor at the School of Business at Soongsil University, Seoul, Korea. His current research interest includes big data analysis, business intelligence, fintech, and application of blockchain technology.