



Information Competency and Sustainable Consumption Practices in Korean Adolescents: Dual Mediation Model of Digital Social Relationships and Digital Self-Efficacy

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ABSTRACT

Introduction. The problem and the aim of the study. Despite the growing digital competencies among adolescents, their actual engagement in sustainable consumption behaviors remains limited. Furthermore, prior research lacks an integrated understanding of how digital social relationships and digital self-efficacy jointly influence such behaviors. Addressing these gaps, this study examines the effect of adolescents' information competency on sustainable consumption practices, focusing on the dual mediating roles of digital social relationships and digital self-efficacy.

Research methods. A total of 400 middle and high school students in South Korea participated in an online survey conducted between February and April 2024. Data were analyzed using SPSS 27.0 and PROCESS macro 4.3 (Models 4 and 6). Mediation and dual mediation analyses were employed to explore the hypothesized relationships.

Results. The results demonstrated that, first, adolescents exhibited high levels of information competency ($M=3.815/5$), digital social connectedness ($M=3.145/5$), and digital self-efficacy ($M=3.897/5$), whereas their engagement in sustainable consumption behaviors was relatively low ($M=2.986/5$). Second, digital social relationships were found to partially mediate the relationship between information competency and sustainable consumption practices (indirect effect = .039, 95% CI [.007, .084]). Third, digital self-efficacy also partially mediated this relationship (indirect effect = .133, 95% CI [.052, .220]). Fourth, the dual mediation model confirmed a complete mediation effect, indicating that these digital factors fully explained the pathway from information competency to sustainable consumption behaviors (indirect effect = .006, 95% CI [.000, .015]). These findings underscore the significance of digital education and social motivation in fostering sustainable consumption behaviors among youth.

Conclusion. This study confirmed that digital social relationships and digital self-efficacy fully mediate the relationship between information competency and sustainable consumption among Korean adolescents. The findings emphasize the necessity of promoting not only digital skills but also meaningful online interactions and digital confidence to encourage sustainable consumer practices among the younger generation.

KEYWORDS

information competency, digital self-efficacy, digital social relationships, sustainable consumption practices, dual mediation, Korean adolescents

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INTRODUCTION

Over the past several decades, industrial development has led to overproduction and overconsumption, exacerbating global issues such as climate change and resource depletion. Although criticism of overconsumption dates to the 18th century, the importance of sustainable and responsible consumption was formally emphasized at the 1972 United Nations Conference on the Human Environment held in Stockholm [1]. Subsequently, the World Commission on Environment and Development was established under the United Nations General Assembly in 1982, and the landmark report *Our Common Future*, addressing sustainable development, was published in 1987 [2].

Since then, various international discussions, including the World Summit on Sustainable Development (WSSD), have emphasized a "moderated consumption" approach that prioritizes quality of life and the fulfillment of basic needs, leading to a more concrete conceptualization of sustainable consumption. Sustainable consumption is defined as behavior that preserves and utilizes resources for future generations [3] and includes the consumption of ethical and eco-friendly products (e.g., fair-trade goods, green products) [4], thereby encompassing both moral and environmental responsibilities of consumers.

Sustainable consumption should not merely be an intention to purchase eco-friendly products but must be manifested through self-regulated, rational use of goods and services [5]. In particular, social awareness of environmental crises has surged since the COVID-19 pandemic, further amplifying consumer attitudes and awareness toward sustainable consumption [6]. Such consumption behaviors are shaped by the interaction of individual and social factors. Key individual factors include consumption values, habits, brand image, product knowledge [7], environmental concerns, and ethical identity [8]. Social factors involve subjective norms [9], ethical consumption images shaped through social sharing, and the desire to express social status [10]. Conversely, the lack of institutional support, high prices, and absence of social norms are barriers to sustainable consumption practices [11].

Sustainable consumption practices should ideally begin during adolescence, a critical period for the development of independent consumer behaviors. However, adolescents have been found to engage in sustainable behaviors at lower levels than other generations [12]. As a generation highly adept in digital environments, adolescents skillfully use smartphones and social networking services and frequently make consumption decisions based on online searches and community activities [6]. In response, efforts are underway to raise awareness of sustainable consumption via SNS [13] and to provide information about products' environmental impacts [14]. Previous research also found that greater accessibility to and utilization of digital information are positively associated with sustainable consumption practices [15].

Globally, 33% of consumers report obtaining purchasing information through SNS [16], and the smartphone ownership rate among Korean adolescents is among the highest in the world, at 96.5% [17]. Adolescents use smart devices to collect, analyze, and compare information from various sources to obtain reliable data [18]. This set of skills is referred to as digital information competency. Furthermore, adolescents, who are highly influenced by their peers, use SNS to communicate and share their daily lives [19], strengthening their identity through digital social relationships [20].

Through digital social relationships, adolescents not only explore diverse information but also form a sense of community [21], potentially motivating sustainable consumption behaviors [22]. As noted earlier, greater access to and utilization of digital information is associated with enhanced levels of sustainable consumption behavior [15]. Digital literacy also strengthens digital social relationships [23], and motivations for SNS participation can positively influence sustainable consumption through self-expression [24]. Thus, it is plausible to infer that digital social relationships may mediate the relationship between information competency and sustainable consumption practices.

In addition, digital self-efficacy – the belief in one's ability to effectively use digital tools – enhances online interactions and information sharing [25]. Digital self-efficacy has been shown to directly and indirectly influence sustainable consumption practices. For example, Hu and Meng [15] found that digital literacy impacts green consumption behavior, and the availability of eco-friendly products enhances self-efficacy. Tsimonis [26], based on the Value-Belief-Norm Theory, analyzed how consumer spirituality, digital experiences, environmental beliefs, and digital self-efficacy affect

sustainable consumption behaviors, finding that higher levels of digital self-efficacy significantly increase the likelihood of engaging in sustainable consumption. Similarly, Luo et al. [27] reported that greater digital information processing capabilities are associated with higher engagement in sustainable consumption practices. Safdar et al. [25] also suggested that digital information competency enhances digital self-efficacy, which in turn promotes sustainable consumption behaviors, highlighting the mediating role of digital self-efficacy in this relationship.

Furthermore, greater activation of digital social relationships is expected to enhance digital self-efficacy. Previous studies have shown that both online and offline social capital positively influence social self-efficacy [28], and greater social support leads to enhanced self-efficacy [29]. In addition, studies investigating the relationship between social connectedness, academic self-efficacy, and life satisfaction have shown that higher levels of social connectedness are associated with greater academic self-efficacy [30]. These findings suggest that digital social relationships may have a positive impact on digital self-efficacy.

Therefore, synthesizing previous research on the relationships among adolescents' information competency, sustainable consumption practices, digital social relationships, and digital self-efficacy, it is hypothesized that digital social relationships and digital self-efficacy jointly mediate the effect of information competency on sustainable consumption practices.

However, existing studies have analyzed these variables only partially and separately. Thus, this study aims to comprehensively examine the influence of Korean adolescents' information competency on sustainable consumption practices, while verifying the dual mediating roles of digital social relationships and digital self-efficacy.

Specifically, this study seeks to answer the following research questions:

1. Do digital social relationships mediate the effect of information competency on sustainable consumption practices among Korean adolescents?
2. Does digital self-efficacy mediate the effect of information competency on sustainable consumption practices among Korean adolescents?
3. Do digital social relationships and digital self-efficacy jointly mediate the effect of information competency on sustainable consumption practices among Korean adolescents?

Through this study, an integrated analytical model incorporating major factors such as digital information competency, social relationships, and self-efficacy can be proposed, thereby providing a theoretical basis for understanding adolescents' sustainable consumption behaviors. Additionally, the findings may offer practical insights for designing sustainable consumption education programs and SNS-based campaigns targeted at adolescents.

MATERIALS AND METHODS

Data Collection Procedures and Characteristics of the Study Sample

The participants of this study consisted of 400 Korean adolescents enrolled in middle and high schools. Data collection was conducted following approval from the Kyungpook National University Institutional Review Board (IRB No. 2024-0023), and informed consent was obtained from both the legal guardians and the adolescents themselves. The survey was administered using Google Forms between February 1, 2024, and April 6, 2024, and all 400 responses were included in the final analysis.

Among the participants, 45.8% were female and 54.3% were male. Regarding grade level distribution, 21.0% were in the second year of middle school, 26.0% were in the third year of middle school, 38.5% were in the first year of high school, and 14.5% were in the second year of high school. Overall, the proportion of high school students was slightly higher than that of middle school students. In terms of academic achievement, 52.8% of students rated their academic performance as 'above average' while 47.3% rated it as below average.

Measurement Tools

All measurement instruments used in this study were based on a five-point Likert scale, where higher scores indicated greater information competency, greater sustainable consumption practices, stronger digital social relationships, and higher digital self-efficacy.

The independent variable, information competency, as well as the mediating variables, digital social relationships and digital self-efficacy, were measured using items adapted from the Digital Informatization Level Survey developed by the Ministry of Science and ICT and the National Information Society Agency [18]. The dependent variable, sustainable consumption practices, was measured using the scale developed by Park [31].

Information competency was assessed with 14 items, consisting of 7 items related to PC usage skills (e.g., installing/updating software, configuring browser settings, connecting external devices, using the Internet) and 7 items related to smart device usage skills. The reliability of this scale was high, with a Cronbach's alpha of .920.

The first mediating variable, digital social relationships, was measured with 5 items assessing activities such as using SNS, instant messaging, personal blogs, online communities, and cloud services for information sharing via smart devices. The Cronbach's alpha for this scale was .728.

The second mediating variable, digital self-efficacy, was measured with 8 items (e.g., performing tasks similar to installing, managing, or sharing resources across multiple digital platforms). The Cronbach's alpha for this scale was .888.

The dependent variable, sustainable consumption practices, was assessed using 33 items (e.g., practicing environmentally responsible consumption behaviors and ethical purchasing habits). The Cronbach's alpha for this scale was .970.

Data Analysis Methods

Data analysis was conducted using SPSS Win 27.0. Reliability analysis, frequency analysis, descriptive statistics, and correlation analysis were performed. In addition, SPSS PROCESS Macro version 4.3 (Models 4 and 6) was utilized to examine the dual mediating effects.

For reliability analysis, Cronbach's alpha coefficients were calculated. The statistical analysis methods for each research question were as follows:

First, descriptive statistics and correlation analysis were conducted to identify the general trends of the major variables and the relationships among them.

Second, to examine the mediating effects of digital social relationships and digital self-efficacy, Model 4 of PROCESS Macro, as proposed by Hayes [32], was employed.

Third, to analyze the dual mediating effects of digital social relationships and digital self-efficacy, Model 6 of PROCESS Macro, also proposed by Hayes [32], was used.

To verify the significance of the indirect effects, bootstrapping with 5,000 resamples was performed, and the confidence interval was set at 95%.

RESULTS

General Trends of Major Variables and Correlations Among Variables

Before analyzing the research model, the means, standard deviations, skewness, and kurtosis of the major variables were examined (see Table 1).

The results showed that, on a 5-point scale, Korean adolescents reported an average score of 3.815 for information competency, 3.145 for digital social relationships, and 3.897 for digital self-efficacy. In contrast, the average score for sustainable consumption practices was 2.986. Based on the midpoint value of 3, it can be interpreted that Korean adolescents exhibited relatively high levels

of information competency, digital social relationships, and digital self-efficacy, whereas their level of sustainable consumption practices was relatively low.

To verify the normality of the major variables, the criteria suggested by Kline [33] were applied. According to Kline [33], data are considered normally distributed if the absolute value of skewness is less than 3 and the absolute value of kurtosis is less than 10. In this study, the absolute values of skewness ranged from .136 to .643, and the absolute values of kurtosis ranged from .022 to .827, indicating that the variables satisfy the assumptions of normality.

Table 1

General Trends of Major Variables <N=400>

	Mean		Skewness		Kurtosis	
	Statistics	S.D.	Statistics	S.E.	Statistics	S.E.
Information Competency	3.215	.334	-.131	.134	.408	.268
Digital Social Relationships	3.363	.432	-.300	.134	-.004	.268
Digital Self-Efficacy	5.830	1.506	.330	.134	1.645	.268
Sustainable Consumption Practice	3.917	.574	-.183	.134	-.057	.268

A correlation analysis was conducted to examine the relationships among the variables and to check for multicollinearity (see Table 2). Focusing on the dependent variable, sustainable consumption practices, the results revealed that higher levels of information competency ($r = .268$, $p < .001$), digital social relationships ($r = .202$, $p < .001$), and digital self-efficacy ($r = .306$, $p < .001$) were all significantly associated with higher levels of sustainable consumption practices. Furthermore, the correlation coefficients (r) among the variables ranged from .202 to .619, indicating that there was no serious risk of multicollinearity.

Table 2

Correlations among Major of Variables <N=400>

	Information Competency	Digital Social Relationships	Digital Self-Efficacy	Sustainable Consumption Practice
Information Competency	1			
Digital Social Relationships	.319***	1		
Digital Self-Efficacy	.619***	.282***	1	
Sustainable Consumption Practice	.268***	.202***	.306***	1

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

Mediating Effect of Digital Social Relationships

The mediating effect of digital social relationships on the relationship between information competency and sustainable consumption practices among Korean adolescents was examined (see Table 3).

The results showed that all mediation paths were statistically significant. Specifically, information competency had a significant positive effect on digital social relationships (coefficient = .357, $p < .001$), and digital social relationships, in turn, had a significant positive effect on sustainable consumption practices (coefficient = .110, $p < .05$). These findings indicate that digital social relationships mediate the relationship between information competency and sustainable consumption practices. In other words, higher levels of information competency are associated with

stronger digital social relationships, which subsequently enhance sustainable consumption practices among Korean adolescents.

Moreover, the total effect of information competency on sustainable consumption practices was .255. When digital social relationships were included as a mediator, the direct effect decreased to .216, suggesting that digital social relationships partially mediate the relationship between information competency and sustainable consumption practices (see Table 3).

Finally, to verify the significance of the mediating effect of digital social relationships, a bootstrapping method was applied. The indirect effect was estimated at .039, with a 95% bootstrap confidence interval ranging from .007 to .084. As zero was not included within this interval, the mediating effect was found to be statistically significant. Therefore, it can be concluded that digital social relationships partially offset the direct effect of information competency on sustainable consumption practices among Korean adolescents.

Table 3

The Mediating Effect of Digital Social Relationships <N=400>

Mediating Variable Model (DV: Digital Social Relationships)						
Variables	Coeffect	SE	t	p	LLCI	ULCI
Constant	1.782	.207	8.601	.000	1.375	2.190
Information Competency	.357	.053	6.707	.000	.252	.462
$R^2 = .102$, $F=44.979$, $p=.000$						
Dependent Variable Model (DV: Sustainable Consumption Practice)						
Variables	Coeffect	SE	t	p	LLCI	ULCI
Constant	1.816	.193	9.408	.000	1.438	2.197
Information Competency	.216	.048	4.492	.000	.121	.311
Digital Social Relationships	.110	.043	2.557	.011	.025	.194
$R^2 = .087$, $F=18.940$, $p=.000$						
Verification of the Mediating Effect (Indirect Effect)						
	Effect	BootSE	BootLLCI	BootULCI		
Total Effect	.255	.046	.165	.345		
Direct Effect	.216	.048	.121	.311		
Indirect Effect	.039	.019	.007	.084		

The mediating effect of digital self-efficacy in the relationship between information competency and sustainable consumption practices among Korean adolescents was examined (see Table 4).

The results indicated that all mediation paths were statistically significant. Specifically, information competency had a significant positive effect on digital self-efficacy (coefficient = .576, $p < .001$), and digital self-efficacy, in turn, had a significant positive effect on sustainable consumption practices (coefficient = .231, $p < .001$). These findings suggest that digital self-efficacy mediates the relationship between information competency and sustainable consumption practices. In other words, higher information competency is associated with greater digital self-efficacy, which subsequently leads to higher levels of sustainable consumption practices among Korean adolescents.

Moreover, the total effect of information competency on sustainable consumption practices was .255. When digital self-efficacy was included as a mediator, the direct effect decreased to .122, indicating that digital self-efficacy partially mediates the relationship between information competency and sustainable consumption practices.

Finally, to verify the significance of the mediating effect of digital self-efficacy, a bootstrapping method was applied. The indirect effect was estimated at .133, and the 95% bootstrap confidence interval ranged from .052 to .220. As zero was not included within this interval, the mediating effect was found to be statistically significant. Therefore, it can be concluded that digital self-efficacy partially offsets the direct influence of information competency on sustainable consumption practices among Korean adolescents.

Table 4

The Mediating Effect of Digital Self-Efficacy <N=400>

Mediating Variable Model (DV: Digital Self-Efficacy)						
Variables	Coeffect	SE	t	p	LLCI	ULCI
Constant	1.699	.143	11.895	.000	1.418	2.190
Information Competency	.576	.037	15.711	.000	.504	.462
$R^2 = .383$, $F=246.841$, $p=.000$						
Dependent Variable Model (DV: Sustainable Consumption Practice)						
Variables	Coeffect	SE	t	p	LLCI	ULCI
Constant	1.621	.205	7.922	.000	1.219	2.197
Information Competency	.122	.058	2.126	.034	.009	.311
Digital Self-Efficacy	.231	.062	3.737	.000	.109	.194
$R^2 = .104$, $F=22.942$, $p=.000$						
Verification of the Mediating Effect (Indirect Effect)						
	Effect	BootSE	BootLLCI	BootULCI		
Total Effect	.255	.046	.165	.345		
Direct Effect	.122	.058	.009	.235		
Indirect Effect	.133	.043	.052	.220		

Dual Mediating Effects of Digital Social Relationships and Digital Self-Efficacy

The dual mediating effects of digital social relationships and digital self-efficacy on the relationship between information competency and sustainable consumption practices among Korean adolescents were examined (see Table 5 and Figure 1).

Information competency was found to have a significant positive effect on digital social relationships (coefficient = .357, $p < .001$). In turn, digital social relationships had a significant positive effect on digital self-efficacy (coefficient = .079, $p < .05$), and digital self-efficacy demonstrated a significant positive effect on sustainable consumption practices (coefficient = .215, $p < .001$). These results indicate that digital social relationships and digital self-efficacy jointly mediate the relationship between information competency and sustainable consumption practices among Korean adolescents.

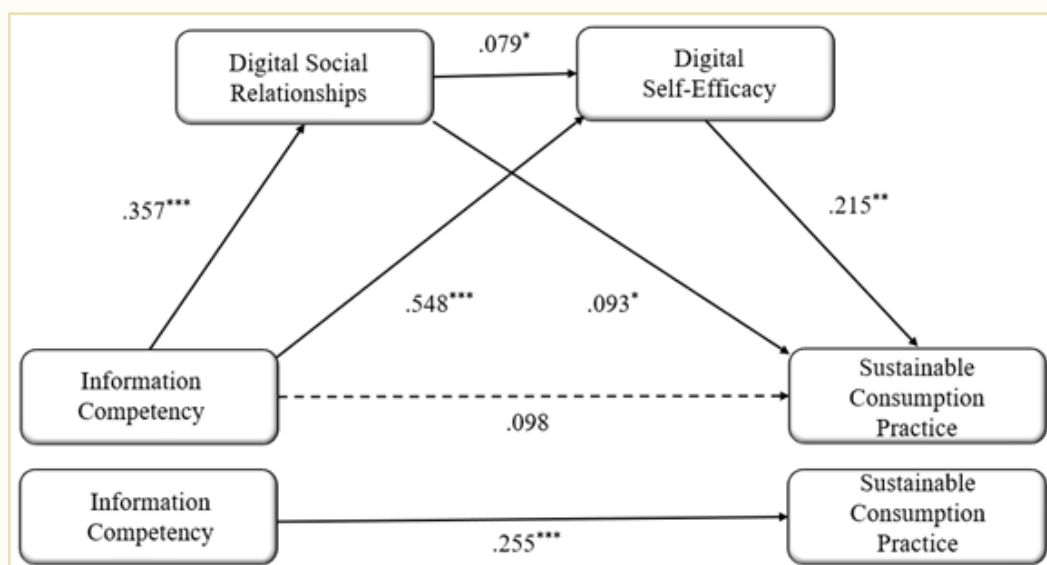
Additionally, the total effect of information competency on sustainable consumption practices was found to be significant (coefficient = .255). However, when digital social relationships and digital self-efficacy were included as mediators, the direct effect decreased to .098 and became statistically nonsignificant. This result provides evidence for a full dual mediation effect, wherein the influence of information competency on sustainable consumption practices is completely mediated through digital social relationships and digital self-efficacy.

Table 5

Dual mediation effect of Digital Social Relationships and Digital Self-Efficacy <N=400>

Mediating Variable Model (DV: Digital Social Relationships)						
Variable	Coeffect	SE	t	p	LLCI	ULCI
Constant	1.782	.207	8.601	.000	1.375	2.190
Information Competency	.357	.053	6.707	.000	.252	.462
$R^2 = .102, F=44.979, p=.000$						
Mediating Variable Model (DV: Digital Self-Efficacy)						
Variable	Coeffect	SE	t	p	LLCI	ULCI
Constant	1.558	.155	10.073	.000	1.254	1.862
Information Competency	.548	.039	14.241	.000	.472	.624
Digital Social Relationships	.079	.034	2.295	.022	.011	.146
$R^2 = .391, F=127.377, p=.000$						
Dependent variable Model (DV: Sustainable Consumption Practice)						
Variable	Coeffect	SE	t	p	LLCI	ULCI
Constant	1.482	.214	6.942	.000	1.103	1.902
Information Competency	.098	.058	1.681	.094	-.017	.213
Digital Social Relationships	.093	.043	2.177	.030	.009	.177
Digital Self-Efficacy	.215	.062	3.481	.001	.094	.337
$R^2 = .114, F=17.019, p=.000$						

Verification of the Dual Mediating (Indirect) Effects					
		Effect	BootSE	BooLLCI	BooULCI
Total effect		.255	.046	.165	.345
Direct effect		.098	.058	-.017	.213
Indirect effect	Information Competency→ Digital Social Relationships →Sustainable Consumption Practice	.033	.018	.001	.071
	Information Competency→ Digital Self-Efficacy→ Sustainable Consumption Practice	.118	.040	.042	.201
	Information Competency→ Digital Social Relationships →Digital Self-Efficacy→ Sustainable Consumption Practice	.006	.004	.000	.015

**Figure 1** Dual Mediation Effect of Digital Social Relationships and Digital Self-Efficacy

Finally, to verify the significance of the dual mediating effect, a bootstrapping method was applied. The indirect effect along the path of Information Competency → Digital Social Relationships → Digital Self-Efficacy → Sustainable Consumption Practices was estimated at .006. The 95% bootstrap confidence interval ranged from .000 to .015 and did not include zero, indicating that the dual mediation effect was statistically significant. Thus, it can be concluded that digital social relationships and digital self-efficacy fully account for the influence of information competency on sustainable consumption practices among Korean adolescents.

DISCUSSION

The primary findings of this study can be discussed as follows.

First, Korean adolescents exhibited relatively high levels of information competency, digital social relationships, and digital self-efficacy, whereas their level of sustainable consumption practices was comparatively low. This finding is partially consistent with that of Parzonko et al. [12], who reported that adolescents tend to demonstrate lower levels of environmentally sustainable consumption behaviors compared to other generations.

Second, a positive association was observed between information competency and sustainable consumption practices among Korean adolescents. This result is in line with previous research [15], which indicated that greater accessibility to and proficiency in utilizing digital information contribute to the enhancement of sustainable consumption behaviors.

Third, digital social relationships were found to partially mediate the relationship between information competency and sustainable consumption practices. Specifically, the direct influence of information competency on sustainable consumption practices was partially transmitted through digital social relationships. This finding is consistent with the work of Lee and Cho [22], who demonstrated that utilizing social networking services (SNS) for informational purposes enhances collective intelligence and that a sense of community mediates this relationship. Thus, it may be inferred that adolescents' information competency, particularly their ability to search for and analyze information via smart devices, contributes to fostering sustainable consumption practices within the community context.

Fourth, digital self-efficacy also emerged as a partial mediator between information competency and sustainable consumption practices. In particular, the influence of information competency on sustainable consumption practices was partially offset by digital self-efficacy. This result aligns with previous studies [25] suggesting that digital self-efficacy positively affects online social interactions and information-sharing behaviors.

Fifth, the results confirmed the full dual mediation of the relationship between information competency and sustainable consumption practices through both digital social relationships and digital self-efficacy. In other words, the direct effect of information competency on sustainable consumption practices was fully accounted for by these two mediators. This finding corresponds with prior research emphasizing that digital literacy strengthens digital social relationships [23], that motivations for SNS participation positively influence sustainable consumption through self-expression [24], and that information competency enhances digital self-efficacy, which subsequently leads to sustainable consumption behaviors [25].

Based on the results of this study, several practical strategies to enhance sustainable consumption practices among Korean adolescents can be proposed.

First, with regard to improving digital social relationships, it is suggested to establish communities among adolescents centered on sustainable consumption themes, encouraging them to share their interests and experiences. Furthermore, initiatives such as online sustainable consumption campaigns and challenge activities could be organized to promote experiential engagement. Efforts should also be made to spread positive social norms centered around peer groups, which represent critical social networks for adolescents.

Second, to foster digital self-efficacy, experiential educational programs that provide hands-on opportunities to utilize a variety of digital devices are essential. Reducing the burden or anxiety associated with digital device usage requires practice-oriented digital education that emphasizes active participation and real-world application.

CONCLUSION

This study aimed to verify the dual mediating effects of digital social relationships and digital self-efficacy in the relationship between information competency and sustainable consumption practices among Korean adolescents. Data were collected from 400 middle and high school students across South Korea. Reliability analysis, descriptive statistics, frequency analysis, and correlation analysis were conducted using SPSS Win 27.0, and mediation and moderated mediation analyses were performed using SPSS PROCESS Macro 4.2 (Models 4 and 6).

The key findings are as follows. First, Korean adolescents demonstrated relatively high levels of information competency, digital social relationships, and digital self-efficacy; however, their level of sustainable consumption practice was comparatively lower. Second, higher information competency among Korean adolescents was associated with higher levels of sustainable consumption practice. Third, digital social relationships partially mediated the relationship between information competency and sustainable consumption practices. Fourth, digital self-efficacy also partially mediated the effect of information competency on sustainable consumption practices. Fifth, the dual mediation effect was confirmed, whereby digital social relationships and digital self-efficacy fully mediated the influence of information competency on sustainable consumption practices.

By confirming the dual mediating effects of digital social relationships and digital self-efficacy in the relationship between information competency and sustainable consumption practices among Korean adolescents, this study provides important theoretical and practical implications. In particular, it offers concrete insights for educational policy development, emphasizing that in order to enhance the level of sustainable consumption practices among adolescents, it is crucial not only to strengthen their information competency but also to propose effective pathways for improving digital social relationships and digital self-efficacy through the use of social networking services (SNS).

Moreover, in the context of increasing adolescent engagement in community activities via SNS, this study empirically demonstrates that the positive formation and active utilization of digital social relationships can facilitate the translation of sustainable consumption attitudes and awareness into concrete practices and behaviors, thereby making a significant academic contribution.

However, several limitations should be acknowledged. First, the study's sample was limited to middle and high school students in South Korea, which restricts the generalizability of the findings. Future research should include comparative studies involving adolescents from diverse national and cultural backgrounds. Second, given the cross-sectional design of the study, there are limitations in establishing clear causal relationships; therefore, longitudinal research is needed to analyze the effects of digital competency on sustainable consumption practices over time. Third, as the study relied on self-reported survey data, the possibility of social desirability bias cannot be excluded. Thus, future research should incorporate objective, behavior-based measurement tools. Subsequent studies could also expand to include actual consumption behaviors of adolescents in digital environments and qualitative aspects of online communication, thereby empirically evaluating the effectiveness of digital education programs and policies.

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