

# Public Value

Vol. 9 No. 0

1. **The Influence of High School Students' Future-Oriented Time Perspective on Career Preparation Behavior: The Mediating Effects of Self-Leadership and Career Motivation**  
/ Kyunghee Lee, Chaemi Kang
2. **A Study on the Cultural Landscape Characteristics of Imha-Gugok**  
/ Byeonggu Yang, Hyangju Lee, Changjun Kim, Wonhyeon Lim
3. **A Study on the Learning Experience of Makeup Classes using the Metaverse Platform**  
/ Seohyun Song
4. **Study on the Effect of Adult Men and Women's Perception of Wearing Wigs on Wig Purchase Intention -Differences Depending on Hair Condition and Hair Loss Concerns-**  
/ Gilwon Kim, Eunjoo Choi
5. **A Study on the Relationship between Consumption Value and Repurchase Intention of Hair Beauty Devices and Differences in Hair Beauty Characteristics**  
/ Hyerim Jin, Eunjoo Choi
6. **Direction of Innovation in the Use of Smart Beauty Device for Sustainability of Korea's Beauty Industry**  
/ Chanhyung Lee, Jonghyeok Kim

## Public Value

Publisher: J-INSTITUTE  
ISSN: 2435-3337

Website: j-institute.org  
Editor: admin@j-institute.org

Corresponding author\*  
E-mail: thebride@hanmail.net

DOI Address:  
dx.doi.org/10.22471/value.2024.9.0.01



Copyright: © 2024 J-INSTITUTE

### The Influence of High School Students' Future-Oriented Time Perspective on Career Preparation Behavior: The Mediating Effects of Self-Leadership and Career Motivation

Kyunghee Lee<sup>1</sup>

Gaheung Elementary School, Yeongju, Republic of Korea

Chaemi Kang<sup>2\*</sup>

Samsung Electronics Service Life Coaching Center, Seoul, Republic of Korea

#### Abstract

**Purpose:** This study aimed to investigate the influence of high school students' future-oriented time perspective on career preparation behavior, and to explore the impacts of self-leadership and career motivation in this process.

**Method:** To this end, surveys were conducted with 650 high school students in Gyeongbuk, Daegu, Gyeongnam, and Ulsan regions, and data from 565 students were analyzed using a structural equation modeling approach.

**Results:** The analysis showed that both self-leadership and career motivation have mediating effects in the relationship between high school students' future-oriented time perspective and their career preparation behavior.

**Conclusion:** Furthermore, there was a dual mediation effect, where the future-oriented time perspective of high school students influences career preparation behavior through both self-leadership and career motivation.

**Keywords:** Future-Oriented Time Perspective, High School Students, Self-Leadership, Career Motivation, Career Preparation Behavior

## 1. Introduction

Today's youth are experiencing increased anxiety about their career choices as they witness the rapidly changing future society brought about by the Fourth Industrial Revolution, the emergence of new professions, and the disappearance of once-promising jobs. Given that the most representative concerns for youth are academic and career choices, they spend a lot of time thinking and worrying about academic stress and their future careers. Especially for high school students, many of them focus solely on college admissions, often regardless of their career interests or aptitudes[1][2]. Therefore, as academic tasks become central to important developmental tasks, there is a significant lack of proper career interventions. Instead of choosing a career based on their aptitudes, interests, and values, students often select universities or majors based on their grades or parental influence, leading to confusion after entering college[3][4].

Krumboltz (2009) stated that the goal of career counseling is not to assist with a single career decision, but rather to help clients learn to act in ways that lead to a more satisfying life[5]. Career counseling for adolescents should not solely focus on college admissions[6]. Instead, it should enable them to prepare and act independently during the process of selecting majors and universities, so that they can continue to develop professional competencies even after entering college[7].

## **2. Theoretical Background**

### **2.1. Career preparation behavior**

Career preparation behavior refers to the extent of effort one puts into deciding on a career and the extent to which one actively pursues the set career goals. After making a career decision, the specific actions taken to achieve these goals hold more significant importance[8][9].

Meanwhile, preparing for a career can be seen as taking actions in the present with the future in mind[10].

### **2.2. Future time perspective**

Future time perspective can be considered a variable that aids career preparation behavior. It is a sub-variable of time perspective, emphasizing the value placed on the future and the recognition that one's current actions are linked to the future. This awareness influences the regulation and control of current behaviors[11][12].

It has been stated that individuals with a future-oriented time perspective possess a sense of control over their professional futures and exhibit an increased interest in the future[13].

### **2.3. Self-leadership**

Self-leadership, as defined by Manz in 1998, is the leadership one exercises over oneself by changing one's own thoughts and actions. This concept is particularly crucial during adolescence, especially for high school students who are preparing for college admissions or entering the workforce. Hence, it is essential for high school students to develop self-leadership more than at any other time, as they need to be self-directed in their thoughts and actions[14][15][16].

### **2.4. Career motivation**

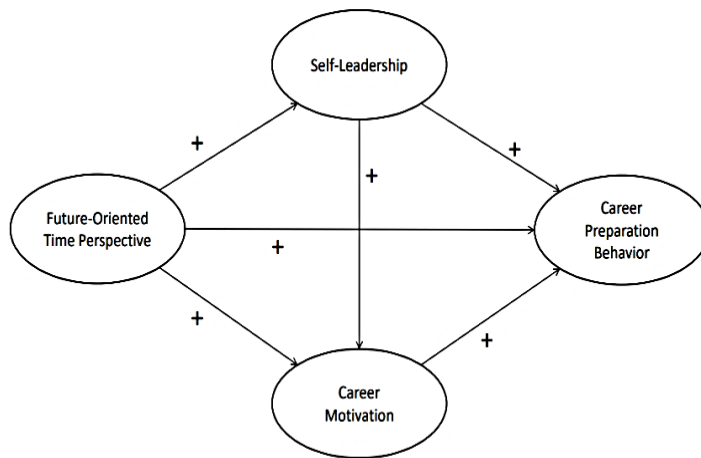
Career motivation is defined as the influence on an individual's career identity, insight into factors affecting their career, and the flexibility demonstrated in setting career goals and making decisions related to their career path (London, 1983). Motivating high school students who are solely focused on college admissions but lack self-motivation for their career paths can aid their career preparation behaviors. This support not only helps during their college life but also assists in making informed career decisions[17][18][19].

Therefore, it was hypothesized that self-leadership and career motivation would act as mediating variables in the relationship between high school students' future-oriented time perspective and their career preparation behavior. The study aimed to establish and test the structural relationships among these variables. The specific research questions, hypotheses, and models are as follows.

Research Question 1. What relationship exists between future-oriented time perspective, self-leadership, career motivation, and career preparation behavior?

Research Question 2. Do self-leadership and career motivation serve as mediating variables in the effect of future-oriented time perspective on career preparation behavior?:

**Figure 1.** Research Model.



### 3. Research Method

#### 3.1. Study subject

##### 3.1.1. Research subjects

The study was conducted among male and female high school students currently enrolled in schools in Gyeongbuk, Daegu, Ulsan, and Gyeongnam. Homeroom teachers and Wee Class counselors provided guidance on the survey and facilitated the survey process. The study targeted students without intellectual disabilities or other limitations on their capacity for self-determination who participated voluntarily. A total of 650 questionnaires were distributed, and 598 were collected. Out of these, 33 questionnaires that were filled out in an insincere manner were excluded, leaving 565 questionnaires for the final analysis.

### 4. Data Analysis

For the data analysis in this study, SPSS 18.0 and AMOS 22.0 statistical software were utilized. Firstly, confirmatory factor analysis was conducted on the measurement model to assess whether the measured variables adequately represented the latent variables. The fit of the measurement model and the parameters were evaluated to ensure reliability. Additionally, factor loadings and the correlations between latent variables were examined to confirm the convergent and discriminant validity of the observed variables. Secondly, For the analysis of the structural model, the fit of the hypothesized structural regression model and the examination of path coefficients were conducted to verify the causal relationships between variables. Additionally, various fit indices were used to assess the model's suitability which helps verifying how well the proposed model represents the data. Thirdly, the path coefficients were examined to confirm the causal relationships between variables within the model. Fourthly, to confirm the mediating effects of the final model variables, phantom variables and bootstrapping were conducted[20][21].

### 5. Research Results

### 5.1. Descriptive statistics and correlation among key variables

Skewness and kurtosis were analyzed to examine multivariate normality, which was necessary to determine the estimation method and input data for the structural equation modeling in this study. The absolute values of skewness for the measured variables were found to be less than 3.0, and the absolute values of kurtosis were less than 7.0, indicating that multivariate normality was ensured. Detailed results are presented in <Table 1>. To ensure the stability of the structural equation model, multicollinearity among observed variables was assessed. Following Kline's (2010) criteria, multicollinearity was diagnosed based on tolerance ( $>0.10$ ) and variance inflation factor ( $VIF < 10$ ). Results indicated tolerance values ranging from 0.42 to 0.84 and VIF values ranging from 1.19 to 2.38. These findings meet the criteria of tolerance greater than 0.10 and variance inflation factor less than 10. Therefore, it was verified that the observed variables in this study did not trigger multicollinearity, allowing for the execution of structural equation modeling analysis. Specific results are outlined in <Table 2>.

**Table 1.** Descriptive statistics of key variables.

(N=565)

Variable	M	SD	Converted mean	Minimum	Maximum	Skewness	Kurtosis
Future-oriented time perspective	68.24	8.14	3.59	36	95	-.23	.47
Value	22.43	3.40	3.20	9	35	-.40	.96
Instrumentality	45.81	6.32	3.82	25	60	-.31	.20
Self-leadership	118.00	16.47	3.37	71	166	.10	.01
Action-oriented	61.17	9.05	3.40	32	90	.11	.21
Intrinsic rewards	16.60	2.84	3.32	6	25	.01	.21
Constructive thinking	40.24	7.26	3.35	21	60	.02	.03
Career motivation	53.52	9.12	3.34	22	80	.14	.26
Career identity	16.79	4.14	3.36	5	25	-.08	-.19
Career insight	20.64	3.69	3.43	9	30	.07	.17
Career resilience	16.09	3.02	3.22	7	25	.25	.36
Career preparation behavior	50.64	10.12	2.53	22	80	.14	.17
Career & Major decision	14.47	2.80	2.89	5	20	-.14	.20
Career experience	11.94	3.33	2.38	5	20	.18	-.21
Information gathering	24.23	5.68	2.42	10	40	.15	-.13

**Table 2.** Univariate and multivariate normality test results for observed variables.

Variable	Tolerance	VIF
Career preparation behavior		
Career & Major decision	-	-
Career experience	.48	2.10
Information gathering	.58	1.73



Future-oriented time perspective		
Value	.84	1.19
Instrumentality	.71	1.42
Self-leadership		
Action-oriented	.46	2.18
Intrinsic rewards	.65	1.54
Constructive thinking	.46	2.18
Career motivation		
Career identity	.43	2.34
Career insight	.42	2.38
Career resilience	.63	1.60

Note: The dependent variable is career experience.

## 5.2. Measurement model and structural model validation

### 5.2.1. Validation of the measurement model

Prior to validating the structural model, a measurement model validation was conducted to assess the effectiveness of the observed variables in measuring the latent variables. The results of the measurement model validation are presented in <Table 3>. The analysis of fit indices for the measurement model yielded the following results: GFI = 0.91, NFI = 0.89, CFI = 0.90, and SRMR = 0.06. After refinement, the fit indices for the modified measurement model improved to GFI = 0.94, NFI = 0.92, CFI = 0.93, and SRMR = 0.04, indicating a satisfactory model fit.

**Table 3.** Model fit of the measurement model. (N=565)

Fit Indices	$\chi^2$	df	GFI	NFI	CFI	SRMR
Hypothetical Model	276.07	38	.91	.89	.90	.06
Modified Measurement Model	162.17	35	.94	.92	.93	.04

To determine whether the observed variables validly measure the latent variables, factor loadings were analyzed as shown in <Table 4>. The path coefficient analysis results showed that all observed variables had factor loadings (standardized path coefficients) of .5 or higher. Therefore, the measurement model was deemed valid, and structural equation modeling was conducted without adding or removing any observed variables.

**Table 4.** Factor loadings of the measurement model.

Variable	Unstandardized coefficients	Standardized coefficients	S.E	C.R	P
Future-oriented time perspective					
Value	.41	.51	.06	7.30	***
Instrumentality	1	.67	-	-	-
Self-leadership					

Action-oriented	1.39	.87	.09	15.56	***
Intrinsic rewards	.30	.607	.03	10.31	***
Constructive thinking	1	.78	-	-	-
Career motivation					
Career identity	1	.60	-	-	-
Career insight	1.74	.85	.12	14.29	***
Career resilience	1.88	.82	.13	14.07	***
Career preparation behavior					
Career & Major decision	.60	.84	.04	14.00	***
Career experience	.54	.63	.04	13.24	***
Information gathering	1	.69	-	-	-

The discriminant validity of a measurement tool refers to whether each observed variable appropriately distinguishes its corresponding latent variable from other latent variables. Discriminant validity is assessed by analyzing the correlations between latent variables. The results of the correlation analysis estimated from the confirmatory factor analysis are shown in <Table 5>.

**Table 5.** Estimated correlation coefficients between latent variables in the measurement model.

Item			Estimated Correlation Coefficient
Future-oriented time perspective	↔	Self-leadership	.64***
Future-oriented time perspective	↔	Career preparation behavior	.37***
Future-oriented time perspective	↔	Career motivation	.50***
Self-leadership	↔	Career preparation behavior	.53***
Self-leadership	↔	Career motivation	.62***
Career motivation	↔	Career preparation behavior	.79***

Note: \*\*\*p<.001.

In the context of correlations between latent variables, a correlation coefficient ranging from .80 to 1.00 is considered a strong correlation, according to Rea & Parker (2005). If the correlation coefficients are below .80, the variables are deemed to have discriminant validity. In this study, all correlations between latent variables were below .80, confirming the presence of discriminant validity.

## 5.2.2. Validation of the research model

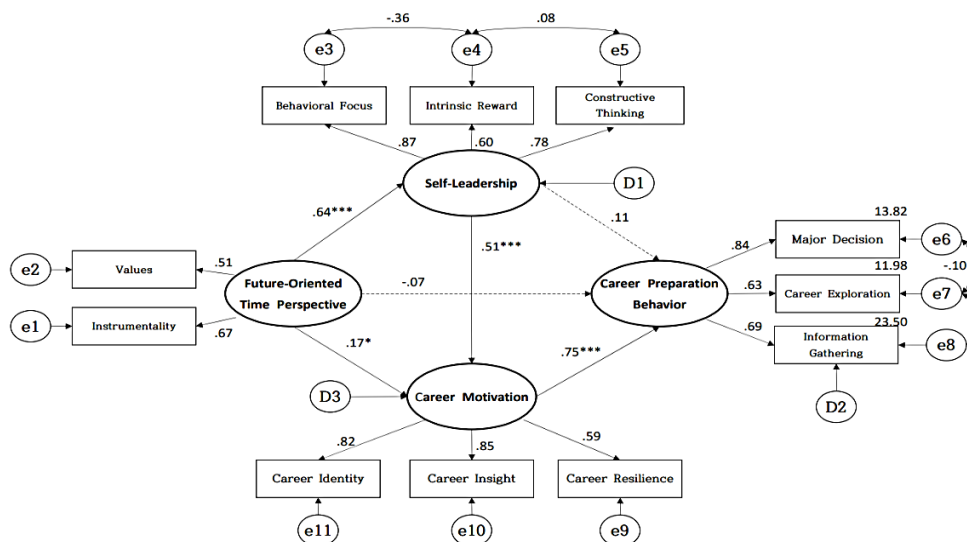
To examine whether the research model fits the sample data well, the fit indices of the structural model were analyzed. As shown in Table 6, the fit indices for the research model are as follows:  $\chi^2=276.07$ ,  $df=38$ ,  $GFI=.91$ ,  $NFI=.89$ ,  $CFI=.90$ ,  $SRMR=.06$ .

**Table 6.** Model fit indices of the research model.

Fit index	$\chi^2$	df	GFI	NFI	CFI	SRMR
Research model	276.07	38	.91	.89	.90	.06
Modified model	135.60	34	.93	.91	.92	.04

In assessing the fit of the original research model, some parts did not meet the established criteria, leading to modifications based on the modification indices (MI) between e3 and e4, e4 and e5, e6 and e7, and e7 and e8. The fit indices for the revised model were significantly improved, with  $\chi^2=135.60$ ,  $df=34$ ,  $GFI=.93$ ,  $NFI=.91$ ,  $CFI=.92$ ,  $SRMR=.04$ , thus meeting the standards for model adequacy. Consequently, the modified research model is considered suitable for explaining the data and predicting the causal relationships among the variables.

**Figure 2.** Modified research model.



Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ . Coefficients are presented as standardized coefficients.

The adequacy of the research model's fit was confirmed, validating that the structural model is suitable for the sample used in this study. Additionally, an analysis of the path coefficients within the structural model was conducted. The findings are detailed in <Table 7>. The results of the path coefficient analysis revealed that the relationships of future-oriented time perspective → self-leadership, self-leadership → career motivation, and career motivation → career preparation behavior were statistically significant at the  $p < .001$  level. Additionally, the path future-oriented time perspective → career motivation was significant at the  $p < .01$  level. However, the paths self-leadership → career preparation behavior and future-oriented time perspective → career preparation behavior were not statistically significant. Thus, the hypothesis positing that a future-oriented time perspective directly and positively influences career preparation behavior among humanities track high school students was not supported. Similarly, the hypothesis that self-leadership has a direct positive impact on career preparation behavior was also rejected.



**Table 7.** Path coefficients of the research model.

Item	Unstandardized coefficients	Standardized coefficients	S.E	C.R	P
Future-oriented time perspective → Self-leadership	1.18	.64	.17	7.00	***
Self-leadership → Career motivation	.12	.51	.02	6.14	***
Future-oriented time perspective → Career motivation	.07	.17	.04	1.97	*
Self-leadership → Career preparation behavior	.03	.11	.02	1.56	.12
Career Motivation → Career preparation behavior	.98	.75	.10	10.00	***
Future-oriented time perspective → Career preparation behavior	-.04	-.07	.04	-.90	.37

Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

### 5.2.3. Mediation effect validation

The indirect effects of a future-oriented time perspective on career preparation behavior consist of the sum of the indirect effects through self-leadership, career motivation, and the combined effect of both self-leadership and career motivation. The statistical significance of these effects was analyzed using phantom variables and bootstrapping techniques. The results are presented in the following <Table 8>.

**Table 8.** Analysis of indirect effects between variables through effect decomposition.

Classification	Direct Effect			Indirect Effect			Total Effect		
	Unstand-ardized coefficient ( $\beta$ )	Stand-ardized coefficient ( $\beta$ )	C.R	Unstand-ardized coefficient ( $\beta$ )	Standard-ized coefficient ( $\beta$ )	Bootstrap estimated p-value	Unstand-ardized coefficient ( $\beta$ )	Standard-ized coefficient ( $\beta$ )	Bootstrap estimated p-value
Future-oriented time perspective → Career motivation → Career preparation behavior	-	-	-	.63	.45	.00**	-	-	-
Future-oriented time perspective → Self-leadership → Career motivation → Career preparation behavior	-	-	-	.58	.38	.01**	-	-	-

Note: Bootstrap confidence level of 95%, with 500 bootstrap samples. \*\* $p < .01$ .

The path coefficient ( $\beta$ ) of the indirect effect of high school students' future-oriented time perspective on career preparation behavior through career motivation was .45 ( $p < .01$ ), indicating statistical significance. This implies that the future-oriented time perspective of humanities high school students exerts a direct influence on career motivation, and career motivation, in turn, directly impacts career preparation behavior. Thus, the future-oriented time perspective indirectly influences career preparation behavior through its indirect effect on career motivation.

The path coefficient ( $\beta$ ) of the indirect effect of high school students' future-oriented time perspective on career preparation behavior through self-leadership and career motivation

was .38 ( $p < .01$ ), indicating statistical significance. This suggests that among general high school students, the future-oriented time perspective indirectly impacts career preparation behavior through its indirect effects on self-leadership and career motivation. More specifically, the future-oriented time perspective influences self-leadership, which subsequently affects career motivation, and ultimately influences career preparation behavior.

## 6. Discussion and Conclusion

This study investigated the influence of future-oriented time perspective on career preparation behavior among 565 male and female high school students attending general high schools in the Gyeongbuk, Daegu, Gyeongnam, and Ulsan regions. Throughout this process, the study examined whether self-leadership and career motivation mediate this relationship. Additionally, the study explored whether there were differences in the structural relationships between variables based on gender[22][23].

The research findings of this study are as follows:

Firstly, to analyze the relationships between future-oriented time perspective, self-leadership, career motivation, and career preparation behavior, a structural model was validated. In the initial research model, there were parts where the fit between future-oriented time perspective and career preparation behavior, as well as between self-leadership and career preparation behavior, did not meet the criteria. Consequently, a modified model, which incorporated adjustments based on Modification Indices (MI), was selected as the final model. Based on statistical validation, it was found that high school students' future-oriented time perspective did not exert a direct influence on career preparation behavior[24][25][26]. However, it indirectly impacted career preparation behavior through self-leadership and career motivation. Two pathways emerged regarding the influence of future-oriented time perspective on career preparation behavior: one where future-oriented time perspective indirectly affects career preparation behavior through self-leadership preceding career motivation, and another where future-oriented time perspective indirectly influences career preparation behavior through career motivation[27][28][29]. The above research finding deviates from the established research results. They do not align with the existing research findings, such as those by Jo (2015), which suggest a direct influence of future-oriented time perspective on career preparation behavior. Additionally, they do not coincide with previous research, including studies by Nam (2010), Bae & Sung (2016), Song (2013), Ahn (2016), Song & Yang (2015), and Choi (2015), which indicate that higher levels of self-leadership are associated with higher levels of career preparation behavior.[30]

Upon examining the results of this study, an intriguing finding is that career motivation serves as a common mediator in both pathways. This observation provides an opportunity to reflect on the current state of education in South Korea. Firstly, it can be inferred that high school students in South Korea, due to the excessive focus on college entrance exams in society, may not invest much time in career-related activities or exploration. Despite the importance of career exploration during high school years, the prevailing societal emphasis on intense competition for college admissions may result in a lack of interest in career-related pursuits and hinder proper career development and growth[27][28]. This overall lack of interest in careers may lead to high school students not engaging in career preparation behavior, even if they possess future-oriented time perspective or self-leadership skills. Secondly, in South Korea, the primary focus of high school students is often on academic achievement and preparing for the college entrance exam[29][30]. Consequently, even if students have high levels of future-oriented time perspective or self-leadership skills, their focus may be solely on academics, leading to a lack of interest in career-related pursuits and, consequently, a lack of engagement in career prepara-

tion behavior. This highlights the multifaceted approach needed to enhance high school students' engagement in career preparation behavior. It emphasizes the importance of instilling a future-oriented time perspective, where students recognize how their current actions impact their future. Furthermore, it underscores the significance of developing self-leadership skills, enabling students to take charge of their own actions and decisions. Additionally, it emphasizes the need for initiatives aimed at boosting students' motivation towards their future careers[28][29][30].

The limitations and suggestions of this study are as follows:

Firstly, the study sample was limited to the Yeongnam region, including Gyeongbuk, Daegu, Ulsan, and Gyeongnam provinces, which may restrict the generalization of findings to the entire population. Future research should consider sampling from various regions to ensure broader representation and generalizability of results.

Secondly, the study was unable to examine the direct influence of future-oriented time perspective on career preparation behavior, as well as the direct impact of self-leadership on career preparation behavior. While the findings shed light on the current situation of South Korean high school students, especially those aiming for college admission, they underscore the need for further research due to the lack of prior studies in this area.

## 7. References

### 7.1. Journal articles

- [1] Kim GH & Kim JH. The Trend of Self Leadership Research. *The Korean Leadership Review*, 6(1), 77-98 (2014).
- [2] Choi KB. A Study on Stress, Self-esteem and Resilience for Korean Nursing Students' Safety Management. *International Journal of Crisis & Safety*, 4(1), 8-18 (2019). [\[Read More\]](#)
- [3] Bae JY & Kim YJ. Youth Mental Health Crisis and Countermeasure in Korean. *International Journal of Human & Disaster*, 1(1), 13-18 (2016). [\[Read More\]](#)
- [4] Yang SJ & Song YS. The Effect of Self-leadership Level on Career Preparation Behavior of College Students. *Research on Youth Studies*, 22(12), 443-470 (2015).
- [5] Choi YH & Jung CS. The Relationship between Self-leadership, Self-efficacy and Empowerment of Nursing Students. *Korean Society of Industry-academic Technology*, 16(7), 4604-4613 (2015).
- [6] Park YS. The Effect of Self leadership Program on the Psychological Well-being of High School Students. *Studies in Adolescence*, 20(1), 1-24 (2013).
- [7] Kang HW. The Relationship between Learning Stress, Result and Learned Helplessness. *Counseling Studies*, 5(4), 883-897 (2004).
- [8] Yang SJ & Song YS. The Effect of Self-leadership Level on Career Preparation behavior of College Students: Focusing on the Mediating Effect of Emotional Intelligence. *Studies in Adolescence*, 22(12), 443-470 (2015).
- [9] Cho HJ. A Study on the Structural Relationship between College Students Self-leadership, College Life Adaptation and Career Decision-making Self-efficacy. *Career Education Research*, 30(2), 63-80 (2017).
- [10] Shin YG & Kim MS & Han YS. A Study on the Validation of the Self-leadership Scale. *The Korean Journal of School Psychology*, 6(3), 313-340 (2009).
- [11] Houghton JD & Neck CP. The Revised Self-leadership Questionnaire. *Journal of Managerial Psychology*, 17(8), 672-691 (2002).
- [12] Kim GH & Kim JH. The Trend of Self-leadership Research. *The Korean Leadership Review*, 6(1), 77-98 (2014).
- [13] Miller IW & Norman WH. Learned Lethargy in Human: A Review and Attribution Theory Model. *Psychological Bulletin*, 86, 93-118 (1979).

- [14] Lee BK & Lee JC. The Effects of Learned Lethargy and Self-efficacy on Internet Addiction. *Youth Counseling Research*, 11(2), 47-56 (2003).
- [15] Moon ES & Bae JY. The Structural Relationships among History of Academic Achievement, Social-motivational Variables, and Learned Helplessness: A Comparison of Boy and Girl High School Students. *Educational Psychology Study*, 24(1), 183-205 (2010).
- [16] Neck CP & Houghton JD. Two Decades of Self-leadership Theory and Research. *Journal of Managerial Psychology*, 21(4), 270-295 (2006).
- [17] Manz CC. Self-leadership: Toward an Expanded Theory of Self-influence Processes in Organizations. *Academy of Management Review*, 11(3), 585-600 (1986).
- [18] London M & Noe RA. London's Career Motivation Theory: An Update on Measurement and Research. *Journal of Career Assessment*, 5(1), 61-80 (1997).
- [19] Kang HJ & Kang SH & Lim EM. A Study on the Possibility of Group Classification based on Academic Motivation and Career Motivation of General High School Students. *Asian Journal of Education*, 17(2), 151-175 (2016).
- [20] Kim BJ. Time and Happiness. *The Korean Journal of Social and Personality Psychology*, 28(1), 49-67 (2014).
- [21] Park WS. Development and Validation of Career Preparation Behavior Test for High School Students. *The Korean Journal of Educational Methodology Studies*, 15(2), 121-143 (2003).
- [22] Park MH & Kang HS. The Relationship between Social Support and Social Competence in High School Students: Mediating Effect of Career Motivation. *Career Education Research*, 28(2), 41-63 (2015).
- [23] Seo KH. The Effect of Self-leadership on Career Decision Self-efficacy and Career Readiness Behavior -Focusing on College Students Majoring in Culinary Arts-. *Culinary Science & Hospitality Research*, 23(2), 146-158 (2017).
- [24] Shin JH. Analysis of Potential Profiles on Career Stress and Career Preparation Behavior of College Students and Verification of the Influence of Career Motivation. *Journal of the Korean Psychological Association: Schools*, 13(2), 349-373 (2016).
- [25] Lee YJ & Lee GH. Relationship between Clustering Types and Career Readiness Behaviors by Career Motivation Level: Based on the Theory of Self-determination. *Research in Vocational Education*, 29(2), 267-287 (2010).
- [26] Park YI & Ha J. The Mediating Effect of Career Motivation in Relation of Family Support and Career Preparation Behavior. *Youth Facility Environment*, 17(3), 81-91 (2019).
- [27] Noe RA & Noe AW & Bachhuber JA. An Investigation of the Correlates of Career Motivation. *Journal of Vocational Behavior*, 37(3), 340-356 (1990).
- [29] London M. Toward a Theory of Career Motivation. *Academy of Management Review*, 8, 620-630 (1983).
- [30] Cho YA & Keum KH. Middle School Students' Perception of the Relationship between Mothers' Involvement in Learning and Career Preparation Behavior: Focusing on the Mediating Effect of Hope. *Journal of the Korean Society of Industry-academia Technology*, 18(1), 269-281 (2017).

## 7.2. Books

- [28] Kim BH & Kang EH & Kang K & Hwang MH. Career Counseling. Hakjisa (2013).

## 8. Appendix

### 8.1. Author's contribution

	Initial name	Contribution
Lead Author	KL	<ul style="list-style-type: none"><li>-Set of concepts <input checked="" type="checkbox"/></li><li>-Design <input checked="" type="checkbox"/></li><li>-Getting results <input checked="" type="checkbox"/></li><li>-Analysis <input checked="" type="checkbox"/></li><li>-Make a significant contribution to collection <input checked="" type="checkbox"/></li><li>-Final approval of the paper <input checked="" type="checkbox"/></li><li>-Corresponding <input checked="" type="checkbox"/></li><li>-Play a decisive role in modification <input checked="" type="checkbox"/></li></ul>
Corresponding Author*	CK	<ul style="list-style-type: none"><li>-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/></li><li>-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/></li><li>-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/></li></ul>

\*Copyright: ©2024 by the authors. Licensee **J-INSTITUTE**. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

#### Submit your manuscript to a J-INSTITUTE journal and benefit from:

- Convenient online submission
- Members can submit papers in all journal titles of J-INSTITUTE
- Rigorous peer review
- Open access: articles freely available online
- High visibility within the field
- Retaining the copyright to your article

Submit your next manuscript at ► [j-institute.org](https://j-institute.org)

## Public Value

Publisher: J-INSTITUTE  
ISSN: 2435-3337

Website: j-institute.org  
Editor: admin@j-institute.org

Corresponding author\*  
E-mail: hyang-anna@hanmail.net

DOI Address:  
dx.doi.org/10.22471/value.2024.9.0.13



Copyright: © 2024 J-INSTITUTE

### A Study on the Cultural Landscape Characteristics of Imha-Gugok

Byeonggu Yang<sup>1</sup>

Daegu Haany University, Gyeongsan, Republic of Korea

Hyangju Lee<sup>2\*</sup>

Daegu Haany University, Gyeongsan, Republic of Korea

Changjun Kim<sup>3</sup>

Daegu Haany University, Gyeongsan, Republic of Korea

Wonhyeon Lim<sup>4</sup>

Daegu Haany University, Gyeongsan, Republic of Korea

#### Abstract

**Purpose:** Imhagugok, located in the Banbyeoncheon area east of Andong, upstream of the Nakdong River, and managed by a clan group, was called 'Banbyeongugok' because it was set in Banbyeoncheon and was often visited by Confucian scholars. However, the construction of the Imha Dam brought about profound landscape changes in the Imhagugok. Therefore, by referring to pre-submergence photo albums, old literature databases, and related research papers, including the submerged valley points, researchers extract landscape elements and interpret them from a human and natural perspective to understand the characteristics of the cultural landscape.

**Method:** Landscape elements were extracted by classifying them into natural elements and cultural elements using Kim Hyun's (1993) classification method, and were divided by characteristics into three elements: form, climate, and human. Form elements were divided into topography/geology, architecture, water space, vegetation, and animals. Climate elements were divided into visuals, climate and weather, and seasons, and human elements were divided into thought and meaning. The cultural landscape interpretation method was to visit a valley and analyze how the physical and cognitive characteristics of the valley were expressed.

**Results:** Among the landscape elements of Imhagugok, the first valley had a large proportion of natural elements, and from the second to fourth valleys, natural elements and cultural elements were similar. The proportion of cultural elements increased in the fifth valley, and the proportion of natural elements increased again in the sixth and seventh valleys. From the eighth to the ninth valley, natural and cultural elements appeared similarly. Gyeongpodae in the first valley, Songseok in the sixth valley, and Doyeon Falls in the seventh valley had beautiful scenery, so it could be assumed that the proportion of natural elements was increasing.

**Conclusion:** Near Imhagugok, there are Yaksan, Waryongsan, Gaehosong Forest, Songseok, and Baekunjeong, which have outstanding natural scenery, and the scenic spot 'Baekunjeong and Gaehosong Forest' with great historical value is located. Through this study, researchers hope to look back on the forgotten and disappearing old scenery of the Imhagugok, to understand the spirit of the times through the travel culture of ancient scholars, to awaken the importance of the remaining scenery and serve as an opportunity to think about the relationship between humans and nature.

**Keywords:** Imhagugok, Gugok Culture, Cultural Landscape, Baekunjeong, Landscape Elements

## 1. Introduction

About 63% of Korea's land comprises forests so you can see landscapes anywhere. Due to the influence of agricultural culture, the tendency to live a harmonious life by adapting to nature has been passed down[1][2]. Because of this, our ancestors tried to live in harmony with nature, and this tasteful attitude developed into a culture that enjoyed nature as a medium of filtration that could purify the gap with reality[3].

\*This paper summarizes Byeonggu Yang's Daegu Haany University Doctoral Thesis.



The culture of seeking out, experiencing, and enjoying nature emerged as an elegant culture of mountain and river excursions. Based on Confucianism, ancestors also pursued a natural life, surrounded by nature, mountains, and water[4]. Mountains and water greatly influenced the consciousness and view of nature of noblemen. In particular, as the academic traditions of Toegye and Yulgok during the Joseon Dynasty greatly influenced society, Gugok management and the establishment of pavilion became widely popular as a process of learning the management philosophy and ideals of Zhu Xi[5][6].

The life of Zhu Xi became more prominent in the process of trying to solidify a specific academic and political position, leading to the formation of a faction and political catastrophe. The noblemen who suffered political defeat showed their will to escape from the complex political reality and live in the open air, showing their will to live alone or live in seclusion. In particular, many Confucian scholars lived in seclusion in the Andong region during the Joseon Dynasty[1][7][8].

Andong is a place where two large streams of the Nakdong River meet. Imha Gugok, located in the Banbyeon Stream that flows in front of Cheonjeon-ri, Imha-myeon is Gugok primitive forest[1].

On the surface, Gugok has a sense of place that advocates the moral practice of Neo-Confucianism in Zhu Xi. In addition, scholars of the Joseon Dynasty enjoyed arts in valleys, expressed their wishes for the world of immortals located in their inner world, discovered the hidden beauty of mountains and rivers in natural scenery, and enjoyed the mood of seclusion[9][10][11].

Accordingly, this study attempted to look back on forgotten old landscapes through the interpretation of the landscape elements and consideration of the cultural landscape of the Imhagugok, while awakening the importance of the remaining landscape and finding the relationship between humans and nature.

## 2. Prior Research

As a result of reviewing previous research on Gugok culture, it was classified into the fields of Korean literature, Chinese literature, landscape architecture, art, geography, architecture, and environmental ecology[12]. In Korean literature, many studies interpret Gugok poetry and research on Neo-Confucian scholars based on Neo-Confucianism. In Chinese literature, many studies introduced the names of Gugok and analyzed Gugok Chinese poetry that explored Gugok's landscapes. In landscape architecture, research was conducted to find Korea's unique horizontal aesthetics by examining the landscape elements shown in Gugok or comparing them with the topographical terms used in Gugok poetry.

In art, there have been many studies revealing the special meaning of Gugok painting. In geography, there have been many case studies on the distribution and type classification of Gugok, topographical characteristics, and classification by type. In architecture, many studies have investigated the status of the Eight Views and identified the structural characteristics of the Eight Views through analysis of landscape resources[13][14][15]. In environmental ecology, research was focused on ways to improve the damaged cultural and natural landscapes of Gugok[16][17]. As a result of reviewing previous research on cultural landscape, it was classified into landscape interpretation and cultural landscape interpretation[18]. Research on landscape interpretation mainly focused on the structural interpretation of the landscape and the characteristics of the relationship between the people who accept the landscape and the environment[19]. Studies on the interpretation of cultural landscapes have included studies on the regional identity of cultural landscapes and studies on the preservation, use, and restoration of

landscapes[20][21][22]. In addition, a reinterpretation of place and symbolism was carried out from a cultural and geographical perspective.

The specific location of Imhagugok slightly depends on the scholar. Baekunjeong and Seonyujeong appeared in six books. Baekunjeong appeared in 3 volumes in the first valley, 1 volume in the 2nd valley, and 2 volumes in the 3rd valley. Seonyujeong appeared in two volumes in the 6th valley and 4 volumes in the 8th valley. The comparison table for the location of Imhagugok is shown in <Table 7>.

**Table 1.** Comparison table of estimated locations of imhagugok.

	Yoo Do-won (1891)	Moonki Kim et al. (2012)	Kim Jeong-moon et al. (2012)	Shin Doo-hwan (2015)	Deokhyeon Kim (2017)	Hyungdae Kim (2017)
Division	Toegye's literary collection historical research	Gyeongbuk gugok cultureⅡ	Yesterday and today of twelve excellent Sceneries at Banbyeoncheon Expressed in Heojoo's Sansuyucheop	A study on the Imha-Gugog and Gang-ho-Ga-do	Seclusion culture of Imhagugok	A Study on Eco-Cul- tural landscape analysis of wonlim (Historic and Natural Site) in Banbyeonch- eon Culture Region
1st valley	Gyeongpo dae	Baekun jeong	Baekun jeong	Gyeongpo dae	Gyeongpo dae	Baekun jeong
2nd valley	Hansong jeong	Imcheon	Imcheon and Imcheon seowon	Hansong jeong	Baekun jeong	Imcheon and imcheon seowon
3rd valley	Baekun jeong	Chiltan and mangcheon	Mangcheon and chiltan	Baekun jeong	Imcheon (imho sseowon, ayangru)	Mangcheon
4th valley	Ayangru	Sabine	Sandy beach sabin seowon	Ayangru (sansoojeong)	Chiltan and mang- cheon	Sandy beach sabin seowon
5th valley	Song seok-jeong	Songseok	Songseok	Song Seok-jeong (youngheungwon)	Sabin (sabin seowon)	Songseokjaesa
6th valley	Seonyu jeong	Wharf	Suseok of the dock	Seonyujeong	Songseok	Suseok of the dock
7th valley	Doyeon	Doyeon falls	Nakyeon hyeonryu (doyeon falls)	Doyeon (doyeon falls, nakyeon)	Doyeon falls	Nakyeon (nakyeon falls)
8th valley	Morogul	Seonyu jeong	Seonchalsa and seonyujeong	Morogul (jangyukdang)	Seonyujeong	Seonchalsa and seonyujeong
9th valley	Ssanggyeongdae	Pyo eun yuheo	Pyo eun yuheo	Ssanggyeongdae	Waryongchodang (pyo eun yuheo)	Pyo eun yuheo bi

### 3. Methods

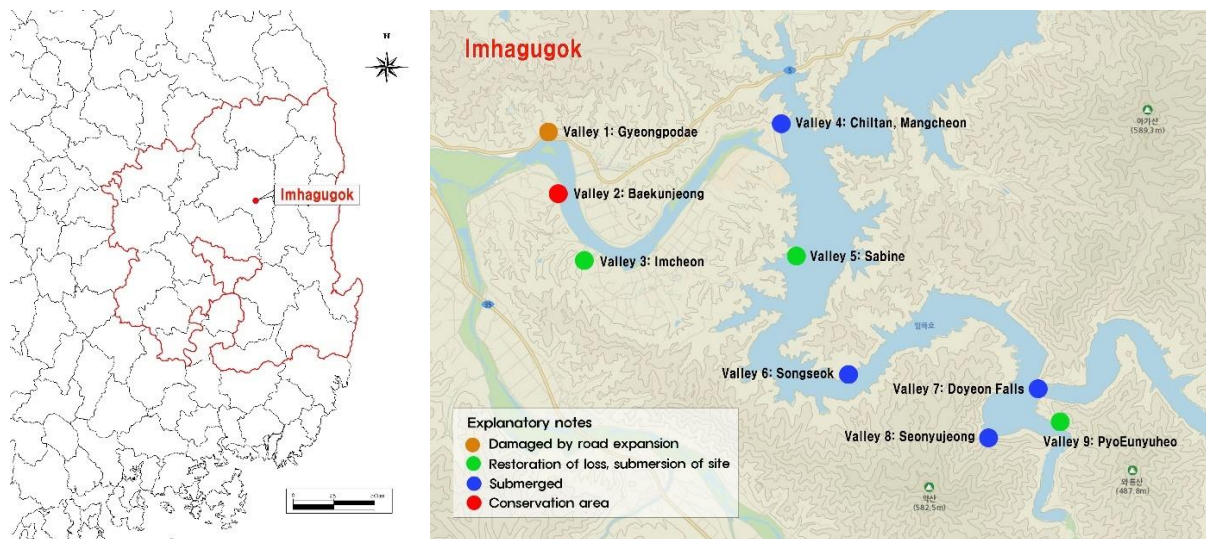
#### 3.1. Research scope

The scope of the study is Imhagugok, located in Banbyeoncheon, Andong-si, Gyeongsangbuk-do, with a total length of approximately 13.5km. The administrative district starts from the first valley in Cheonjeon-ri, Imha-myeon, Andong-si, and extends to the northern stem of Waryongsan Mountain in Yonggye-ri, Gilan-myeon, Andong-si, where the last valley is located.

‘Imhagugok’ refers to nine valleys in the Imha region. The names of the Imha nine Valleys are as follows; No. 1 Gyeongpodae, No. 2 Baekunjeong, No. 3 Imcheon, No. 4 Chiltan·Mangcheon, No. 5 Sabin, No. 6 Songseok, No. 7 Doyeon Falls, No. 8 Seonyujeong, and No. 9 Pyo Eun Yuheo. These names were reconstructed by the author based on a review of previous research and fieldwork that deduced individual places in the Imhagugok.

The locations of the nine valleys in the Imha area are shown in <Figure 1>.

**Figure 1.** Location status map of the Imhagugok region.



### 3.2. Data analysis

The landscape elements of Imhagugok were extracted by classifying them into natural elements and cultural elements using the classification method of Kim Hyun (1993). Landscape elements were divided into three elements: form, natural characteristics, and human beings, and divided by characteristics. Form elements were divided into topography/geology, architecture, water space, vegetation, and animals. Climate factors were subdivided into viewpoint, climate/meteorology, and season. Human elements were subdivided into ideas and meanings[18][23].

The cultural landscape interpretation method is intended to reveal how the physical and cognitive characteristics of the valley are expressed by exploring the valley and can be divided into the historical approach method, interpretive approach method, and physical approach method[24].

The historical approach method gives priority to past regions or cultures to find out about current regions or cultures. It is a method of viewing the past and present of the cultural landscape as a continuous time series and identifying and analyzing the many cultural landscapes that appear therein from the past to the present[25].

In the interpretive approach method, the relationship between meaning elements, that is, meaning givers and referents, landscapes and objects, and the meaning itself, is important, and reading and interpreting the meaning elements is more important than anything else[26].

The physical approach method analyzes the region where cultural elements or culture are located, the natural environment of the region, and the occurrence, survival, change, and adaptation of local culture[18][27][28].

The physical approach method analyzes natural landscapes influenced by climate, geology, hydrology, vegetation, and topography and interprets culture.

## 4. Consideration of the Cultural Landscape of Imhagugok

### 4.1. Current status by valley

Imhagugok was not set up and managed by a specific Confucian scholar, but was led and managed by a family group called the 'Naeap Branch of the Uiseong Kim Clan.' The decisive records that can infer Imhagugok are Shinam Lee Man-gak's 'Dongyusipsogi' and the picture

contained in Heojubugun 'sansuyucheop' housed in Imcheonggak, the head house of the Lee clan in Goseong, Andong[7][29].

The first valley, Gyeongpodae, is located along the national highway at the entrance to Naeap Village, and there is a 'Gaehosong' pine grove in front of it. In the second valley, Baegunjeong, there is a framed picture of 'Baegunjeong' written by Heo Mok, a signboard on the 'Iyomun' gate and 'Joyangmun' gate written by Toegye Lee Hwang, and there are many plaques. The third bend, Imcheon, is the former site of 'Imcheon Seowon' and is currently the site of 'Imho Seowon'. The fourth valley, Chiltan, Mangcheon had 'Mongseongak'. In the fifth valley, Sabin, there was 'Sabine Seowon'.

The sixth bend, Songseok, had 'Songseokjeong'. The seventh valley, Doyeon Falls, had 'Doyeon Waterfall'. In the eighth valley, Seonyujeong, there was the 'Seonchalsa' temple. In the ninth valley, Pyoeunyuheo, there were 'Songjeong', 'Waryongchodang', 'Sungjeongcheosayuheobi', and 'Doyeonseodang'.

Imhagugok was run by Yakbong Kim Geuk-il following Cheonggye Kim Jin in the 16th century.

The first valley, Gyeongpodae, was damaged due to road expansion, and most of the fourth to ninth valleys were submerged due to the construction of the Imha Dam in 1990.

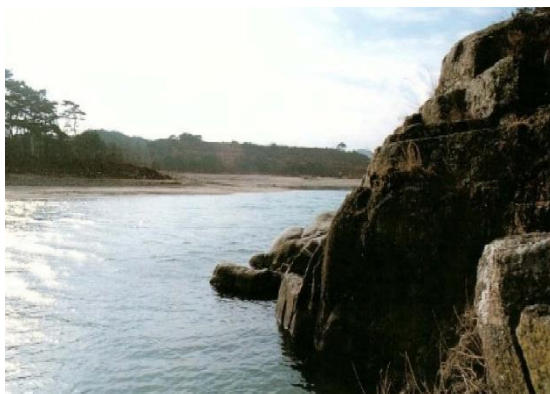
Currently, the second valley, Baegunjeong, remains, and in the third valley, Imcheon, the water level is high, making it difficult to identify the beautiful humanities and natural landscape elements.

The people involved in each valley of Imhagugok could be estimated as follows. The 1st valley Gyeongpodae is Yakbong Kim Geuk-il, the second valley Baegunjeong is Gwibong Kim Su-il, the third valley Imcheon is Hakbong Kim Seong-il, the fourth valley Chiltan Mangcheon is Woltan Kim Chang-seok, the fifth valley Sabin and the eighth valley Seonyujeong are Cheonggye Kim Jin, and the sixth valley Song Seok is Daebak Kim Cheol, the seventh valley Doyeon Falls and the ninth bend Pyo Eun Yuheo are Pyo Eun Kim Si-on.

## 4.2. Interpretation of landscape elements

The characteristics of the landscape elements that appear in Gyeongpodae in the first valley are that Dengwanggak and Aeyangru are expressed in the architectural elements, and the landscape scenery of Gyeongpodae is compared to the spectacular scenery of Dengwanggak and Aeyangru on the Yangtze River in China. Wind and lightning appeared in the climate and meteorological elements of Gyeongpodae. In water space elements, water, East Sea, Gyeongho, and West River were expressed. These factors can be inferred that the clear and deep place under Gyeongpodae was good for enjoying a cruise on a boat <Figure 2>.

**Figure 2.** Panoramic view of the first valley, gyeongpodae, before submersion.



Note: Teacher cheonggye's 'yukbujajeon'.

**Figure 3.** Panoramic view of baekunjeong in the second valley.





The characteristics of the landscape elements that appear in Baekunjeong in the second valley include the architectural elements of Hoeunjeong, Seonyujeong, Cheonggye Jongga, and Gwibong Jongga among the formative elements. The boatman and mast that appear in the human element represent the means of transportation by boat when heading to Baekunjeong, and it is inferred that the boat was used when moving from Naeapun Village to Baekunjeong. Among the climatic elements, the visual elements include a cloud-cleared sky, blue peaks, clear and beautiful rivers and mountains, mirror-like water, sky, blue rocks, clear water bends, mellow scenery, outstanding scenery, clear waves, violent rapids, flat forests, lined mountain peaks, and cooking smoke were expressed. Baekunjeong is a pavilion that is great for viewing the riverside scenery. Many landscape elements such as rock walls, rivers and mountains, long sand islands, and pine trees infer that the scenery around Baekunjeong is beautiful <Figure 3>.

<Figure 4> In Imcheon, the third valley, the characteristics of landscape elements include pavilions and ayang as architectural elements among form elements. Ayang is a historic site where Ayangru was located in the 16th century and is presumed to be the building in Yeongheungwon, the first shrine in Imha-Hyeon. Among the climatic elements, visual elements were expressed such as sky, water, blue mountains, streams of water, and mysterious mountain ranges. In terms of human elements, it can be inferred that it depicts the scenery and clear water around Imcheon, as it depicts silk, jade hairpin, and a stringless harp.

**Figure 4.** Panoramic view of the third valley, imcheon, and Imcheon ayangru.



Note: Right-teacher cheonggye's 'yukbujajeon'.

<Figure 5> In the characteristics of the landscape elements shown in Chiltan and Mangcheon in the 4th Valley, a small attic and Mongseongak were expressed as architectural elements among the form elements. In Chiltan, there was Kim Chang-seok's Mongseongak. Chiltan flows north toward the cliffs arranged on the river hill north of Banbyeoncheon, but as Banbyeoncheon turns to the southwest, the flow slows down. Gravel and sand transported from upstream are widely deposited, and most times, except during floods, a net-like waterway appears between the gravel and sand deposited on the river bed, dividing the water into several channels. The view of the river is very refreshing. Among the climatic elements, the visual elements can be inferred as expressing the rolling moon, clear light, white dew, and cool energy.

As for the characteristics of the landscape elements shown in the 5th Valley Sabin <Figure 6>, Sabin Seowon was expressed as an architectural element among the form elements. Sabin, meaning the waterside of Sasu, is a stream in the country of Lu where Confucius taught. Therefore, it means the riverside where Confucius's studies flourished. Here was Sabin Seowon, a shrine dedicated to Kim Jin and his five sons. Sabin's topographic and geological elements include mountains and rock walls, and the water space elements include water, riverbanks, and riversides. Due to the topographical influence, a wide sand field and gravel top appeared in

front of the seowon. It is believed that it was depicted as a mirror and folding screen as it looks at the cliff across the river.

**Figure 5.** Chiltan mangcheon and panoramic view of the fourth valley.



**Figure 6.** Current view of the fifth valley sabine.



In the characteristics of the landscape elements shown in Songseok of the sixth Valley <Figure 7>, the topographical and geological elements among the formative elements were expressed as towering rocks, stone pillars, rock formations, peaks of Songseokam, inclined rocks, protruding stones, rocks, and strangely shaped rocks. It appears to depict the strange stones spread throughout the city. In Songseok's water space elements, deep rivers, Yeosan Falls, and river terraces were expressed. In the process of going from Nakyeon, where Seonyujeong and Waryong Seodang are located, to the village through the narrow and dangerous Songseok Valley, it is reminiscent of the ancient story of Hogue Samso, who crosses the famous mountain of Yeosan in China to go to the secular world. It can be inferred that Songseok is compared to Hogue.

**Figure 7.** Panoramic view of songseok in the sixth valley before submersion.



Note: Teacher cheonggye's 'yukbujajeon'.

**Figure 8.** Panoramic view of doyeon falls in the seventh valley before submersion.



The characteristics of the landscape elements shown in the 7th Valley Doyeon Falls <Figure 8> are mostly topographic and geological elements, water space elements, and human elements. Additionally, the ratio of climatic elements and visual elements is also high. This trend is believed to mean that Doyeon Falls, located in the Imhagugok, was a very important scenic spot and showed outstanding scenery. Doyeon Falls is one of the Eight Scenic Views of Yeongnam and is a proud sight among the 26 scenic views of Imha. A large number of landscape elements that appear regardless of classification, such as silk, thread, foam, sprinkling rain, whirlwind, thick fog, ringing ajaeng, and a fire-filled bowl, depict the water stream of Doyeon Falls. It can be inferred that the core of the Imhagugok landscape is Doyeon Falls.



The characteristics of the landscape elements shown in Seonyujeong in the 8th Valley <Figure 9> include Hoeunjeong, Seonyujeong, a small pavilion, Namduseong, Seonchalsa Temple, and small temples among the architectural elements among the form elements. Judging from the architectural elements, it refers to Seonyujeong in front of Seonchalsa Temple as recorded in the Yeongjiji. Inferring the presence of large rocks, deep valleys, rock walls, mountain peaks, okgyeop, clearings, huge rocks, and mountain peaks from the topographic and geological elements, it is judged that the mountain range leading to Seonyujeong is close to a cliff.

Seonyujeong's climate and meteorological elements include cold rain, clouds, and wind, and visual elements include autumnal leaves, golden silk, sunset, sunset, and round moonlight. The scenery of Seonyujeong at sunset is very beautiful. Seonyujeong's seasonal elements include autumn wind, fall, maple leaves, autumn colors, frost, etc., so it can be inferred that Seonyujeong's autumn scenery was especially beautiful.

**Figure 9.** Panoramic view of seonyujeong submerged due to the construction of the imha dam in the eighth valley.



Note: The rock writing of Andong.

**Figure 10.** Panoramic view of pyoeunyuheo in the seventh valley before submersion.



The characteristics of the landscape elements shown in the 9th Valley Pyoeunyuhe <Figure 10> are mostly human elements, and the ratio of topographic and geological elements and water space elements is also high. Pyoeunyuheo was originally located upstream of Doyeon Falls in Yonggye-ri, Gilan-myeon, Andong-si, and there were Songjeong, Waryongchodang, and Sungjeongcheosa monuments here. Lee Man-gak records the beautiful scenery and deep meaning of this bend in "Dongyusipsogi". Night rain and clear wind appear in Pyo Eun Yu-heo's climate and meteorological elements, and in topography and geology elements, mountains and streams, green cliffs, Waryong's Mountain, and hills are expressed. In terms of water space elements, rough currents, angry waterfalls, streams, and the sea were expressed. Although Pyoeunyuheo is located in the upper reaches of Gugok, it has abundant water, so it was possible to use boats, and it can be inferred that Confucian scholars enjoyed the scenery while cruising in boats.

In summary, among the landscape elements of Imha Valley, the first valley had a large proportion of natural elements, and from the second to fourth valleys, natural elements and cultural elements were similar. The proportion of cultural elements increased in the fifth valley, and the proportion of natural elements increased again in the sixth and seventh valleys.

From the eighth to the ninth valley, natural and cultural elements appeared similarly. Gyeongpodae in the first valley, Songseok in the sixth valley, and Doyeon Falls in the seventh valley had beautiful scenery, so it could be assumed that the proportion of natural elements was increasing.

In the Imhagugok, there are 'Yaksan', 'Waryongsan', 'Gaehosong', 'Songseok', and 'Doyeon Falls' with outstanding natural scenery, and there are historically valuable viewing points such

as 'Gyeongpodae', 'Baekunjeong', and 'Seonyujeong'. There are 'Imcheon seowon', 'Sabin seowon', and 'Doyeon seodang' for training future generations. The location of the Seowon was selected in consideration of geographical conditions and natural scenery, and the Seowon is mainly located within the residential area[30][31]. The living area refers to the spatial range for use and maintenance within the neighborhood, where close neighborly relations are possible and where activities can take place within a short walking distance[32][33]. As a result of marking on the old map the 800m radius, which is the spatial unit of Perry's neighborhood district, and the 2km radius, which is Oh Byeong-rok's living area, with a focus on nearby residential areas, each bend in Imhagugok is consistent with Perry's neighborhood theory and is also in line with Oh Byeong-rok's neighborhood life zone[32][34].

## 5. Conclusion

Gyeongpodae, the first valley in the Imhagugok, has relatively excellent natural scenery but is now damaged due to road expansion. Baekunjeong, the second valley, is still well-preserved as a landscape consisting of both natural and cultural landscapes. The third valley is Imcheon, a landscape composed of both natural and cultural landscapes, with no significant changes. Mongseongak in Chiltan, the fourth valley, was relocated to Cheonjeon-ri. The surrounding natural and cultural landscapes were submerged and disappeared due to the construction of Imha Dam. Sabin Seowon in Sabin, the fifth Valley, was relocated due to the construction of the Imha Dam, and the cultural landscape disappeared. The sixth valley, Songseok, and the seventh valley, Doyeon Falls, had predominant natural scenery, but were submerged due to the construction of the Imha Dam and the natural scenery naturally disappeared. The natural and cultural landscapes of the eighth valley, Seonyujeong, and the ninth valley, Pyounyuheo, were also submerged due to the construction of the Imha Dam.

In the Imhagugok, there are Yaksan Mountain, Waryongsan Mountain, Gaehosong, Songseok Falls, and Doyeon Falls, which have outstanding natural scenery. The viewing spots of Gyeongpodae, Baekunjeong, and Seonyujeong have outstanding historical value. In addition, there are Imcheonseowon, Sabinseowon, and Doyeonseowon for training future generations.

Through this study, researchers hope to look back on the forgotten and disappearing old scenery of the Imha Valley, to understand the spirit of the times through the travel culture of ancient scholars, to awaken the importance of the remaining scenery and serve as an opportunity to think about the relationship between humans and nature.

## 6. References

### 6.1. Journal articles

- [2] Kwon GS & Cheon WK & Lim WH. A Study on the Actual Condition and Improvement Plan of Hierarchical Safety Management in Natural Parks. *International Journal of Crisis & Safety*, 5(1), 21-34 (2020). [\[Read More\]](#)
- [4] Rho JH & Choi YH & Kim SB. The Present Status and Characteristics of Landscape Components of Gugokwonlim Created by Classical Scholars of Joseon Dynasty. *Journal of Korean Institute of Traditional Landscape Architecture*, 36(3), 37-47 (2018).
- [5] Rho JH. A Study on the Textuality of China's Wuyi-gugok, the Origin of Gugok-wonlim -Focus on the Tradition Process to Korea-. *Journal of Korean Institute of Landscape Architecture*, 21(3), 11-19 (1993).
- [6] Jeong WL. The Patterns of Gugokwonrim and the Meanings of Gugoks in Gyeongbuk in the History of Culture. *The Study of Confucianism*, 37, 369-407 (2019).

- [7] Rho JH. A Study on the Topo-aesthetics and Giomorphometrical Characteristics of Wuyi-gugok in China -Focus on Comparison with GuGok in Korea-. *Journal of Korean Institute of Traditional Landscape Architecture*, 26(4), 1-11 (2008).
- [8] Kim JM & Rho JH. Yesterday and Today of Twelve Excellent Sceneries at Banbyeoncheon Expressed in Heojoo's Sansuyucheop. *Journal of Korean Institute of Traditional Landscape Architecture*, 30(1), 90-102 (2012).
- [9] Kee KD. Yulgok's View of Ideal Landscape Depicted in Gosangugok. *Journal of Korean Institute of Traditional Landscape Architecture*, 3, 1-9 (2005).
- [10] Lee HS. Sense of Place of Appearing in the Poetry of Hwaseo School Members. *The Korean Language and Literature*, 168, 265-296 (2014).
- [11] Rho JH & Shin SS & Huh J & Lee JH & Han SY. Characteristic on the Layout and Semantic Interpretation of Chungryu-gugok, Dongaksan Mountain, Gokseong. *Journal of Korean Institute of Traditional Landscape Architecture*, 32(4), 24-36 (2014).
- [12] Rho JH & Park JS & Sim WK. Storyboard of Immortal Land in Gugok-wonlim -A Special Reference to Goisan-. *Journal of Korean Institute of Traditional Landscape Architecture*, 29(1), 90-104 (2011).
- [13] Kim MK. A Study on Dosangugok and Dosangugok Poems. *Toegye Studies and Korean Culture*, 43, 193-233 (2008).
- [14] Kee KD. Making Storytelling of Geomorphological Landscape of Yongyu-dong. *Journal of the Korean Geomorphological Association*, 20(4), 133-145 (2013).
- [15] Chang EM & Park K. The Relationship between Natural Heritage and Nine Valleys and Eight Scenery in Korea using Location Data and Statistics. *Journal of the Korean Cartographic Association*, 18(2), 39-52 (2018).
- [16] Lee CS & You YH. Cultural Landscape of Korea, Its Entity, Changes and Values Evaluation from New Paradigm. *Journal of Ecology and Environment*, 24(5), 323-332 (2001).
- [18] Kim H & Kim YK. A Study on Landscape Characteristics of the Ratreating Villa Sosewon Garden though a Woodcut of Sosewon Garden and the Analysis of the Kim, In Hu's 48 Poems. *Journal of Korean Institute of Landscape Architecture*, 21(3), 11-19 (1993).
- [19] Jang DS & Lim CC. A Study on the Landscape Meaning of Pyeokgye Gugok. *Journal of Korean Institute of Traditional Landscape Architecture*, 19(1), 19-29 (2001).
- [21] Lee SH & Lee HY. Cultural Landscape Characters of Kokwungukok. *Journal of Korean Institute of Traditional Landscape Architecture*, 19(4), 47-59 (2001).
- [22] Hong J & Lee H & Cheon W & Lim W. An Investigation on the Differences of Management in Landscape Construction Projects. *Public Value*, 5(2), 32-38 (2020). [\[Read More\]](#)
- [23] Kang KR & Lee HJ & Kim HC & Lee HC & Kim DP. Study On the Geographic Locations of Gugoks and Dongcheons in Seoul, Gyeonggi-do and Gangwon-do. *Journal of Korean Institute of Traditional Landscape Architecture*, 35(3), 67-75 (2017).
- [24] Kim HB & Jang DS. A Study on the Landscape Meaning of Village Grove -In the Case of Hampyung and Youngkwang in Chonranamdo Province. *Journal of Korean Institute of Landscape Architecture*, 20(4), 12-25 (1993).
- [26] Ok CS & Park SW. The Meaning of Plant Species in Korean Gugok Poems. *Journal of Korean Institute of Traditional Landscape Architecture*, 38(2), 77-94 (2020).
- [27] Kang YJ. A Study on Dynamic Character of Landscape. *Journal of Korean Institute of Traditional Landscape Architecture*, 27(3), 39-49 (1999).
- [28] Kee KD. The Geomorphological Features of Dongcheon-gugok in the Eastern Part of Gyeongsang Province. *Journal of the Korean Geomorphological Association*, 15(2), 95-109 (2008).
- [29] Shin DH. A Study on The Imha-gugog and Gang-ho-Ga-do. *Dongbang Korean Classics*, 62, 343-376 (2015).
- [30] Kim WY. A Study on Dynamic Character of Landscape. *Journal of The Urban Design Institute of Korea*, 12(6), 17-28 (2011).
- [31] Kee KD. The Geomorphological Features of Dongcheon-gugok in Korea. *Journal of the Korean Geomorphological Association*, 19(3), 123-135 (2012).

- [32] Lee SH & Park SI. Analysis of Research Direction for Planning on Senior-friendly Residence through A Consideration of Neighborhood Unit Principle -Focusing on Radius & Center Facility of Neighborhood Unit-. *The Korean Society of Living Environmental System*, 22(2), 196-208 (2015).
- [33] Lee JH & Kim SH & Seo UH & Lee JK. Conservation and Restoration of Historical and Cultural Landscape on Seochon in Seoul. *Journal of Korean Institute of Traditional Landscape Architecture*, 29(4), 98-110 (2011).
- [34] Park KH & Lee WS & Byeon JH. An Evaluation of the Neighborhood Walking Environment using GIS Method -Focusing on the Case Study of Changwon City-. *Journal of the Korean Association of Geographic Information Studies*, 13(4), 78-90 (2010).

## 6.2. Thesis degree

- [1] Kim HD. A Study on Eco-cultural Landscape Analysis of Wonlim(Historic and Natural Site) in Banbyeoncheon Culture Region. Sangmyung University, Doctoral Thesis (2017).
- [3] Park EH. A Study on the Interpretation of Cultural Landscape of Dosangugok. Sangmyung University, Doctoral Thesis (2014).
- [17] Jang JS. Interpretation of Korean Traditional Sansu Landscape using Ecological Analysis: A Case Study on the Gugok Landscape of Songnisan(Mt.). University of Seoul, Doctoral Thesis (2014).
- [20] Son HK. A Study on the Current Status and Characteristics of Provincial Eupchi Palgyeong in Modern Korea. Woosuk University, Doctoral Thesis (2021).
- [25] Kim TS. Ideal World and Nature Management at Hemits of Neo-confucian Scholar in Joseon Dynasty. Korea University, Doctoral Thesis (2009).

## 7. Appendix

### 7.1. Author's contribution

	Initial name	Contribution
Lead Author	BY	-Set of concepts <input checked="" type="checkbox"/>
		-Design <input checked="" type="checkbox"/>
		-Getting results <input checked="" type="checkbox"/>
		-Analysis <input checked="" type="checkbox"/>
Corresponding Author*	HL	-Make a significant contribution to collection <input checked="" type="checkbox"/>
		-Final approval of the paper <input checked="" type="checkbox"/>
		-Corresponding <input checked="" type="checkbox"/>
		-Play a decisive role in modification <input checked="" type="checkbox"/>
Co-Author	CK	-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>
	WL	-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>
		-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

\*Copyright: ©2024 by the authors. Licensee **J-INSTITUTE**. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

**Submit your manuscript to a J-INSTITUTE journal and benefit from:**

- ▶ Convenient online submission
- ▶ Members can submit papers in all journal titles of J-INSTITUTE
- ▶ Rigorous peer review
- ▶ Open access: articles freely available online
- ▶ High visibility within the field
- ▶ Retaining the copyright to your article

Submit your next manuscript at ▶ [j-institute.org](https://j-institute.org)

# Public Value

Publisher: J-INSTITUTE  
ISSN: 2435-3337

Website: j-institute.org  
Editor: admin@j-institute.org

Corresponding author\*  
E-mail: bellesong11@gmail.com

DOI Address:  
dx.doi.org/10.22471/value.2024.9.0.25



Copyright: © 2024 J-INSTITUTE

## A Study on the Learning Experience of Makeup Classes using the Metaverse Platform

Seohyun Song

Osan University, Osan, Republic of Korea

### Abstract

**Purpose:** This study examines the learning experience of make-up classes by evaluating the curriculum design of make-up courses using the Metaverse platform and the satisfaction levels of freshmen students of Generation Z. The findings of this study will inform the potential use of make-up classes using the Metaverse and contribute to the development of educational programmers.

**Method:** In order to verify the satisfaction of make-up education among college freshmen, basic make-up was selected, and a questionnaire on the satisfaction of the class was conducted on 60 college students in the first year of beauty major, and the comparison was analyzed using a paired sample (pre-post) t-test.

**Results:** After reviewing the case study method selected according to the research topic, this study selected ifland among the metaverse platforms for first-year students who participated in the basic make-up course and applied it to the class. The educational factors, psychological factors, and environmental factors of class satisfaction were found to be significantly different with higher mean values for ifland educational factors compared to traditional make-up education. These results suggest that students can develop self-directed learning skills, problem-solving skills, and digital literacy in the new environment, and instructors need not only teaching and learning methods and subject matter expertise that are different from the traditional classroom environment, but also metaverse literacy as a basic competence to understand and freely utilise the metaverse.

**Conclusion:** This study was designed and conducted by the researcher for freshmen beauty majors, so it is difficult to generalise the findings to the education as a whole. In addition, there are limitations that may result in different results depending on the instructor's teaching method, but the positive results of this study on basic make-up education in the metaverse suggest that follow-up studies on education using various metaverse platforms should be conducted.

**Keywords:** Metaverse Platform, Ifland, Make-Up Classes, Learning Experience, Satisfaction

## 1. Introduction

Social distancing to prevent the spread of infectious diseases has become commonplace in the post-COVID era, changing the perception of educational spaces and promoting the transition to a digital society[1]. In order for students to spend their university life smoothly without psychological wandering and disengagement due to academic limitations[2], non-face-to-face classes are being conducted in parallel after the transition to face-to-face classes as the new normal of education[3]. It indicates the time for a phenomenological examination of the teaching orientation of university education[4].

Metaverse, which has recently attracted attention along with various contactless consumer cultures, refers to a world that is realised in an online virtual space where social, economic, and cultural activities and interactions similar to reality are possible[5][6][7][8]. In particular,



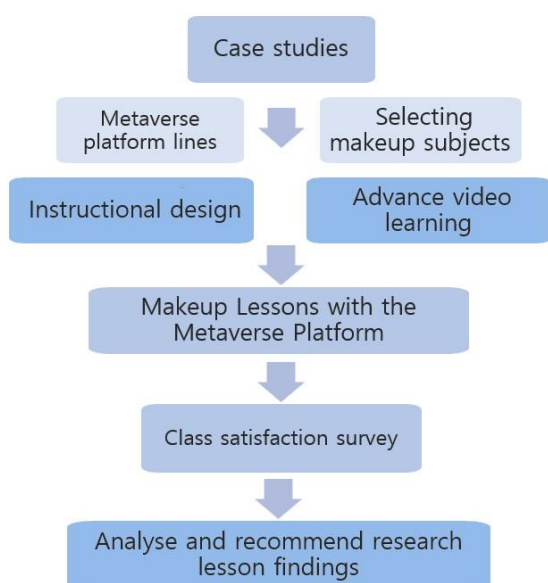
metaverse is attracting the attention of Generation Z, who are familiar with smartphones and digital environments and devices. Generation Z is a generation born between 1995 and mid-2000 who have been exposed to digital advanced communication, technology, etc. by using smartphones and social media since childhood[9][10]. Because they have grown up in a different birth environment than previous generations, they are quick to respond to new technologies, familiar with the Internet and IT, and prefer image and video content to text content[11]. They are outspoken in expressing their thoughts and opinions through avatars, prefer taste-driven relationships, and are self-centred in social media communities where they share their hobbies[12][13].

Metaverses differ significantly from traditional programmes in that students access the ‘same space’ with their avatars, and the variety of ways of communication (text, voice, emoji, photos, videos, etc.) and virtual experiences through avatars in metaverses create an educational environment that is different from the real world[14]. These metaverses have been applied in the field of education, and it has been shown that students' concentration and educational effectiveness are comparatively higher than live video lectures or recorded lectures[15][16][17], and it is also used as a programme for freshmen students to help them adapt to university life and academics for the so-called “game generation”[18][19].

Currently, there is a lot of research on educational cases[20][21], and applications[22][23] using the Metaverse platform, but there is no research on the learning experience of makeup courses using the Metaverse platform. Avatar-based make-up classes on the Metaverse platform can increase the interest and understanding of new learning, especially for freshmen, as they can create and decorate their virtual character designs according to the make-up theme. Considering these benefits, it is worthwhile to study the learning experience of make-up courses on the Metaverse platform.

In this study, we conducted a study on the learning experience of make-up classes by verifying the curriculum design of make-up courses using the Metaverse platform and their satisfaction among freshmen students of Generation Z who value newness and experience. Through this study, we hope to suggest the possibility of makeup classes using Metaverse and help develop educational programmes.

**Figure 1.** Research model.



## 2. Theoretical Background

### 2.1 Definition of metaverse

The metaverse first appeared in Neal Stephenson's science fiction novel *Snow Crash* and is a portmanteau of meta, meaning virtual, and universe, meaning world and cosmos, and refers to a shared, three-dimensional virtual world created by combining real and virtual worlds[24]. It is defined as a space where virtual space and reality actively interact, another world where the intersection of virtual world and reality is realised by 3D technology, a new world contained in digital media such as smartphones and the Internet[25], and a digital environment of transcendental experience where reality and virtuality are interconnected [26].

### 2.2 Metaverse platform

Platforms that have implemented metaverses include Roblox, Fortnite, ZEPETO, Animal Crossing, Minecraft, and Gather Town. With the surge in interest, the number of platform users has increased, and the market for metaverses is growing rapidly.

Roblox, like YouTube, provides only a platform service and is user-generated and monetised, while Minecraft allows users to create new content with a high degree of freedom and authoring tools and share it with other users. Recently, Minecraft has been used for various events (entrance ceremonies, graduation ceremonies, various events, etc.) as the issue of Minecraft has increased as a result of successful events[27].

Among the Metaverse platforms, ZEPETO, operated by NAVER JET (Z), is an augmented reality (AR) avatar service that allows users to create various types of texts (ZEPETO dramas, videos, games, etc.) on the ZEPETO platform. The Gether town platform is used for various purposes such as virtual classes, lectures, and LAN parties, and is especially popular for job fairs and recruitment events[28]. Currently, the MZ generation is no stranger to non-face-to-face culture, so they easily accept seminars and briefings using the Metaverse platform [29].

Ifland is a 3D social network communication platform that provides a space with various avatars and virtual themes, and exchanges voice along with content. It is a communication environment that allows users to share materials such as photos, documents (PDF), and videos (MP4) in a variety of ways, including lectures, meetings, and presentations. Users can create their own Lands (chat rooms), which are very easy to set up, and one Land can have 130 people [30].

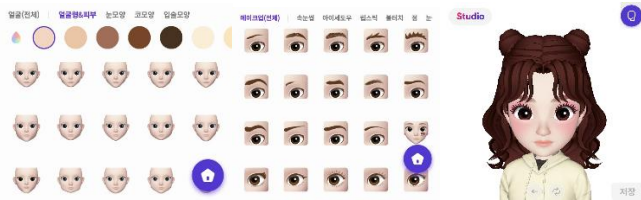



**Table 1.** Platform features.

Platform	Features
Roblox	Launched in the US in 2006. 3D virtual platform based on online games Users create and consume content in Roblox studios Free to sign up, but purchase Robux to buy items
Gather town	Coming to the US in 2020 Metaverse and Convergence Delivers Virtual Workspaces Spatial Audio technology provides a space for interactive communication Popular for job fairs and career fairs
ZEPETO	Augmented Reality (AR) based platform to launch in Korea in 2018 Facial recognition. AR. 3D technology to create personalised 3D avatars 200 million global subscribers, 80% of users are teenagers Favourite virtual spaces, fan signings, concerts, etc.
Minecraft	Launched in the US in 2011 Create block-like structures and content Create virtual campuses for classes and virtual graduation ceremonies
ifland	Coming to South Korea in 2021 Mobile app available for download Highly customisable avatars, items and virtual themed spaces 3D social network communication with voice interaction alongside content

## 2.3. Ifland features

After setting up your own avatar, when you launch the app, you'll see your avatar and profile at the top of the screen, where you can check your status, and a list of currently open Island 'Lands' at the bottom of the screen. You can search and select your favourite area to visit from among the open Lands. Users can primarily create their own Lands (chat rooms), and the process has been greatly simplified. The screen the button to create a room is active at the bottom, and anyone can easily create and run a land by entering a title. The avatars used in ifland are called 'ifmi,' and individual users can quickly and easily create avatar costumes based on 11 different templates in the ifland studio.

**Table 2.** Ifland features.

Ifland features	Photos
Avatar settings	
A variety of if homes and lands	
Share materials (PDFs, videos, photos)	
Chat rooms	

## 3. Research Method

### 3.1 Research subjects

This study is a case study of the application of metaverse platforms, and after reviewing the research, we selected ifland, a metaverse platform that allows students to download mobile apps, share materials, communicate in real time, and set up avatars and items in a delicate way so that they can participate easily and comfortably <Table 3>. Basic makeup was selected as the subject of the study to verify the satisfaction of makeup education for freshmen who are new to makeup, and 60 first-year beauty majors received basic makeup education using Metaverse Friend once a week for a total of four weeks.

**Table 3.** Compare training utilisation.

Platform	Compare training utilisation
Roblox	Text-based chat only
Gather town	Share materials, interact in real-time, but only train 25 people or less
ZEPETO	Can upload video photos, but can't share materials
Minecraft	Voice conversations only
Ifland	Share videos, PDFs, and other materials and communicate in real-time







### 3.2. Instructional design

The curriculum design of this study is as follows.

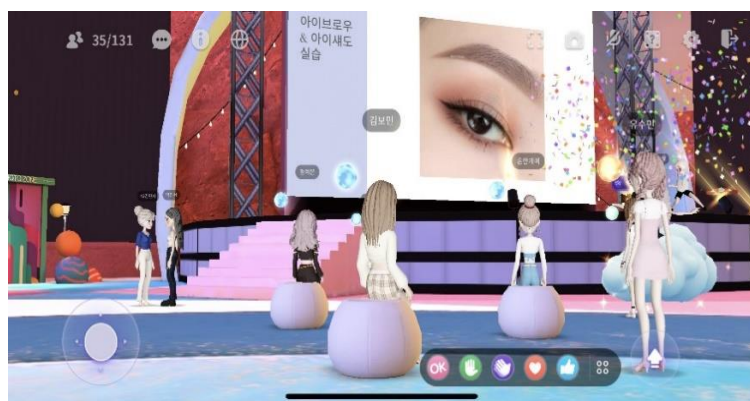
For the basic makeup class, the curriculum of natural makeup, lovely makeup, and smoky makeup was set as a learning using eLearning. In addition, a character creation video was created and uploaded to the LMS to guide students in joining the Metaverse.

Students participating in the Metaverse classes were asked to coordinate their avatars with makeup and hair according to the themed makeup topics. Attendance was checked through room information and chat room access history, and after learning the basic themed makeup videos in the Ifland space, the Metaverse platform, students were free to play games such as clouds, boarding, dancing, and shooting water guns in the basic makeup land space.

**Table 4.** Create metaverse (Ifland) avatar makeup and hair coordination based on the makeup theme.

Theme	Makeup and hair	Coordination
Natural makeup		
Lovely make-up		
Smoky make-up		

**Figure 2.** Learning with visuals in the metaverse.



### 3.3. Lesson satisfaction measurement tool

The questionnaire developed by Ragheber & Beard (1980) to measure leisure satisfaction was modified and used to measure class satisfaction[24][31], and the questionnaire was modified, supplemented, and reconstructed for the purpose of this study, and all the questions in the questionnaire consisted of 15 questions on a 5-point Likert scale from 'not at all' to 'very much so'.

The questionnaire data collection was conducted from June 12 to June 16, 2023, and 60 copies of questionnaires were collected to identify the class satisfaction of the existing class before the basic makeup training using IFRAND, and then the same questionnaire was distributed to analyse the class satisfaction using Metaverse IFRAND, and the difference between the two questionnaires was compared and analysed using a paired sample (pre-post) t-test.

## 4. Research Method

### 4.1. Factor analysis and reliability analysis

The factor analysis of the existing basic make-up satisfaction showed a commonality of .654~.929, an explanatory power of 81.025 <Table 7>, and a KMO value of .791, which met the criterion. The reliability analysis was conducted by calculating Cronbach's  $\alpha$ , and the reliability coefficient was .756~.890, which met the criteria <Table 5>. As a result of the factor analysis of basic make-up class satisfaction using Metaverse ifland, items 2, 7, and 14, which were not tied in the factor analysis, were removed from the factor analysis and the factor analysis was re-run, and the commonality was .552~.856, the explanatory power was 69.66 <Table 8>, and the KMO value was 0.622, which met the criterion. Reliability analysis was conducted by calculating Cronbach's  $\alpha$ , and the reliability coefficient was .761~.878, which met the criterion <Table 6>.

**Table 5.** Analyse existing class satisfaction reliability.

No.	Factors	Ask a question	Commonality	Reliability
1	Educational	Lesson content related materials will help you understand makeup techniques	.856	890
2		Your instructor's explanations make it easy to understand makeup.	.896	
15	Psychological	Make-up classes help relieve stress and tension.	.842	.756
13		I look forward to make-up class time.	.654	

14		Make-up classes bring joy to life.	.824	
3	Environmental	Your teaching style is engaging and interesting.	.789	.881
4		My instructor's teaching helps me learn.	.712	
5		Classes give you the opportunity to expose yourself to new knowledge.	.833	
6		I enjoy participating in make-up classes.	.929	
7		Make-up classes give you a sense of accomplishment.	.808	
8		Make-up classes can make you feel more confident.	.899	
9		I want to learn more makeup classes.	.868	
10		Make-up class equipment is appropriate.	.779	
11		The equipment for make-up classes is easily adaptable.	.686	
12		No hassle using the teaching assistant app.	.779	

**Table 6.** Metaverse ifland training lesson satisfaction reliability analysis.

No.	Factors	Ask a question	Commonality	Reliability
3	Educational	Your teaching style is engaging and interesting	.656	.761
4		My instructor's teaching helps me learn.	.744	
13		I look forward to make-up class time.	.829	
1		Lesson content related materials will help you understand makeup techniques.	.574	
15	Psychological	Make-up classes help relieve stress and tension	.856	.878
5		Classes give you the opportunity to expose yourself to new knowledge	.811	
6		I enjoy participating in make-up classes.	.780	
8		Make-up classes can make you feel more confident.	.552	
9		I want to learn more makeup classes.	.654	
10	Environmental	Make-up class equipment is appropriate.	.721	.840
11		The equipment for make-up classes is easily adaptable.	.702	
12		No hassle using the teaching assistant app.	.769	

**Table 7.** Analyze existing class satisfaction factors.

No.	Factors	Component		
		1	2	3
6	Environmental	.891	.356	.087
8		.891	.303	-.112
9		.825	.413	-.130
3		.792	.387	.105
7		.785	.319	.300



5		.765	.371	.332
4		.748	.186	.343
10		.699	.499	-.205
12		.653	.517	.291
11		.590	.564	.138
14	Psychological	.403	.758	.294
13		.264	.729	.231
15		-.346	.651	.547
2		.086	.035	.942
1		.023	.275	.883
Eigenvalues		6.282	3.255	2.618
% Dispersion		41.877	21.698	17.450
Cumulative %		41.877	63.575	81.025
KMO & Bartlett= .0.791				

**Table 8.** Metaverse ifland training lesson satisfaction factor analysis.

No.	Factors	Component		
		1	2	3
13	Psychological	.909	.163	.065
15		.887	.153	-.026
6		.862	.179	.066
9		.789	.017	.178
8		.687	.282	.016
12	Environmental	.162	.856	.099
11		.103	.820	-.141
10		.340	.807	.128
1	Educational	.088	.011	.906
3		.108	.107	.796
5		.172	-.106	.658
4		-.524	.195	.657
Eigenvalues		3.977	2.674	2.406
% Dispersion		30.590	20.566	18.504
Cumulative %		30.690	51.156	69.660
KMO & Bartlett= 0.622				

## 4.2. Analyse lesson satisfaction gaps

A paired sample t-test was conducted to analyse the difference in class satisfaction between the conventional basic makeup education and the basic makeup education using Metaverse e-field. As a result, the difference in satisfaction with 'educational factors' was  $t = -9.331$ ,  $p = 0.000$ , which is statistically significant at the significance level of 0.05, and the mean value (M) in-

creased from 3.38 to 4.07. Therefore, there is a difference in satisfaction with 'educational factors' between the existing basic make-up education and the basic make-up education using Metaverse Ifland.

The difference in satisfaction with 'psychological factors' is  $t=-10.930$ ,  $p=0.000$ , which is statistically significant at the 0.05 level of significance. The mean value (M) increased from 3.93 to 4.72. Therefore, there is a difference in the satisfaction level of 'psychological factors' between the existing basic make-up education and the basic make-up education using Metaverse Infra-structure.

The result of the difference in satisfaction with 'environmental factors' is  $t=9.866$ ,  $p=0.000$ , which is statistically significant at the 0.05 level of significance. The mean value (M) increased from 3.52 to 4.20. Therefore, there is a difference in the 'environmental factors' of class satisfaction between the existing basic make-up education and the basic make-up education using the Metaverse Infrastructure. In other words, the mean values of the factors (educational, psychological, and environmental) of class satisfaction are higher after the training using Metaverse Efflorescence, indicating that the students are more satisfied with the class than the traditional basic makeup training. In a previous study, Korean contemporary dancers' satisfaction was also higher than that of conventional education through Metaverse e-Learning[24].

**Table 9.** Difference in lesson satisfaction paired samples t-test.

Separation		D			t(p)
		N	Mean (M)	Standard deviation(SD)	
Educational	Existing	60	3.38	.585	-9.311***
	Ifland	60	4.07	.312	
Psychological	Existing	60	3.93	.312	-10.930***
	Ifland	60	4.72	.454	
Environment	Existing	60	3.52	.537	-9.866***
	Ifland	60	4.20	.537	

Note: \* $p<0.05$ , \*\* $p<0.01$ , \*\*\* $p<0.001$ .

## 5. Conclusion and Discussion

This study was conducted to verify the curriculum design and satisfaction of the makeup course using the Metaverse platform by selecting ifland among the Metaverse platforms for first-year students who participated in the basic makeup course, and the results are as follows.

Firstly, the educational factors of class satisfaction were conventional make-up education ( $M=3.38$ ) and ifland education ( $M=4.07$ ), and a significant difference was found with a higher mean value of ifland educational factors. This is because educational experience involves active participation of students[32], and it is necessary to provide attractive factors that meet the characteristics of Generation Z to induce participation and increase satisfaction while working together in a virtual space[33].

The psychological factors of class satisfaction were conventional makeup education ( $M=3.93$ ) and eFland education ( $M=4.72$ ), with eFland education showing a higher mean value, confirming a significant difference. Metaverse education is like playing a game, so students can enjoy the class and feel stress relief, so it is expected that education using game elements can further increase class satisfaction.

The environmental factors of class satisfaction showed a significant difference between the existing makeup education ( $M=3.52$ ) and eLearning ( $M=4.20$ ), with eLearning having a higher

mean value, and students were more focused compared to the existing class. These results suggest that students can develop self-directed learning skills, problem-solving skills, and digital literacy skills in the new environment[1].

In addition, instructors need teaching and learning methods and subject matter expertise that are different from the traditional classroom environment, as well as metaverse literacy as a basic competency to understand and freely utilise the metaverse.

This study was designed and conducted by the researcher for freshmen beauty majors, so it is difficult to generalise the results to the education as a whole. In addition, there is a limitation that the results may differ depending on the instructor's teaching method, but the positive results of this study on basic makeup education in the metaverse suggest that follow-up research on education using various metaverse platforms should be conducted.

## 6. References

### 6.1. Journal articles

- [1] Han D. An Exploratory Study on the Metaverse-Based Learner-Centered English Learning Program: Focusing on Culture and Art Contents. *Robotics & AI Ethics*, 7(2), 34-46(2022). [\[Read More\]](#)
- [2] Kim JN & Lim YJ. The Relationship between Self-esteem and Gratitude Tendency of University Students during the Corona-19 Era of Human Disaster. *International Journal of Human & Disaster*, 6(1), 26-35(2021). [\[Read More\]](#)
- [3] Hwang Y. Preliminary Investigation on Student Perspectives and Satisfaction with Distance Education in the Metaverse World: Focusing on the Use of Ifland App. *The Journal of Korea Contents Association*, 22(3), 121-133 (2022).
- [4] Choi H. A Study on the Direction of College Freshman Education after Covid-19: Focusing on the Experiences of Face-to-face/Non-face-to-face Classes of College Freshmen through Grounded Theory. *Asia-pacific Journal of Convergent Research Interchange*, 9(9), 719-731 (2023).
- [5] Bang W & Park G. Entrepreneurial Marketing in the Era of Multicultural Metaverse. *Robotics & AI Ethics*, 6(4), 55-63 (2021). [\[Read More\]](#)
- [6] Song SW & Chung DH. Explication and Rational Conceptualization of Metaverse. *Informatization Policy*, 28(3), 3-22 (2021).
- [7] Han D. Exploration for Educational Application of Metaverse: Focusing on Implication for Use in English Education. *Robotics & AI Ethics*, 7(1), 10-21 (2022). [\[Read More\]](#)
- [8] Hong H. Exploratory Study for Educational Application of Metaverse. *Culture and Convergence*, 43(9), 1-23 (2021).
- [9] Kang JY & Lee YD & Kim JS. 2020 A Semantic Networking Analysis of News Data Regarding Generation Z Utilizing Text Mining. *Journal of Future Oriented Youth Society*, 17(2), 25-47 (2020).
- [10] Yang YJ & KIM KO. Latent Profile Analysis of Smartphone Usage Patterns among Z Generation and Millennial Generation. *Journal of Consumer Studies*, 31(4), 159-182 (2020).
- [11] Jo YS & Cho TY. A Study on a Change in Spatial Value Pursuit by Generation with the Changes of the Times. *Journal of the Korea Institute of Spatial Design*, 14(3), 39-58 (2019).
- [12] Park H. A Study on the Characteristics of New Generation with Life Style: Focus on Generation Z. *Journal of Humanities and Social Sciences*, 21, 7(6), 753-768 (2016).
- [13] Choo J. Research on Cognitive Research on SNS about New Generation -Generation Y and Generation Z Associations using Social Big Data Mainly on Comparison. *Journal of Korea Design Forum*, 25(1), 117-128 (2020).
- [14] Lee H. A Study on Developing the Metaverse-based English Learning Program: Focusing on Ifland. *The Journal of Humanities and Social Science*, 13(3), 42-56 (2022).
- [15] Choi HS & Kim SH. A Research on Metaverse Content for History Education. *Global Cultural Contents*, 26, 209-226 (2017).

- [16] Lee JK & Kim YC. A Study on the Immersive Metaverse System to Improve the Concentration of Education. *E-business Studies*, 22(6), 3-14 (2021).
- [17] Kim SI & Kim HJ. The Effect of Game-based Learning Design Class on the Learning Flow of 1st Grade Middle School Students: Based on Minecraft. *Journal of Art Education*, 64, 37-71 (2021).
- [18] Cha BJ & Seong SH. Current Status and Future Developmental Prospects of University Freshman Preparatory Programs. *The Journal of General Education*, 25, 61-98 (2023).
- [19] Baik SM & Jeong SH. A Study on the Humanities-based Preliminary University Model: Focused on the P University. *Journal of the Korea Convergence Society*, 13(1), 357-364 (2022).
- [20] Kim YA & Han JY. A Case Study on the Formative Arts Education for Alpha Generation based on Metaverse and the Utilization Plan. *Journal of the Korea Institute of Spatial Design*, 17(7), 273-282 (2022).
- [21] Kim YB & Nam YH. Analysis of User Experiences to Improve Elementary Llearner's Interactivity in the Exhibition Appreciation Class through Metaverse Platform: Focusing on Zepeto. *Journal of Korea Multimedia Society*, 25(3), 476-492 (2022).
- [22] Yu JB & Lee CW. A Study on UX Design for Extensibility of User Experience-based Exhibitions in the Metaverse Environment: Focusing on Domestic and Foreign Art Exhibition Platforms. *Journal of Communication Design*, 82, 192-209 (2023).
- [23] Zhang YC & Park SH. A Study on Immersion and Value of Content using Metaverse: Focusing on ZEPETO Convenience Store. *Journal of Communication Design*, 81, 379-390 (2022).
- [25] Seo S. A Study on R&D Trends and Prospects of Metaverse. *Korean Society for Computer Game*, 12, 15-23 (2008).
- [26] Woo SM & Chang DR. A Study on Metaverse Brand Communication in Trans-media Environment. *Journal of Brand Design Association of Korea*, 19(2), 29-48 (2021).
- [27] Yun HJ & Lee J & Yun HY. A Preliminary Study on Concept and Types of Metaverse: Focusing on the Possible World Theory. *Humanities Contents*, 62, 57-80 (2021).
- [28] Lee B. The Metaverse World and our Future. *Review of Korea Contents Association*, 19(1), 13-17 (2021).
- [29] Kim H. Metaverse Era and User Experience Research. *Industrial Engineering Magazine*, 28(4), 17-22 (2021).
- [32] Yoon SM & Lee CK. Response of Visitor for Local Festival toward Satisfaction, Trust, and Support, based on the Perspective of Experiential Marketing. *Seoul Studies*, 18(4), 53-67(2017).
- [33] Hong H. Exploratory Study for Educational Application of Metaverse. *Culture and Convergence*, 43(9), 1-22 (2021).

## 6.2. Thesis degree

- [24] Jo H. The Educational Utilization Plan on Korean Contemporary Dance History using Metaverse Ifland: Focusing on the Flow of Korean Contemporary Dance in the 20th Century. Sejong University, Master's Thesis (2022).
- [30] Yoon S. A Study on an Experiential Metaverse Platform Linked to an LMS for Effective Non-face-to-face Education. Hansung University, Doctoral Thesis (2022).
- [31] Yang J. A Effect of Transformational Leadership of Dance-teachers on Sudents' Class Satisfaction and Dance Flow: Focus on Arts High School. Sejong University, Master's Thesis (2019).

## 7. Appendix

### 7.1. Author's contribution

	Initial name	Contribution
Author	SS	<ul style="list-style-type: none"><li>-Set of concepts <input checked="" type="checkbox"/></li><li>-Design <input checked="" type="checkbox"/></li><li>-Getting results <input checked="" type="checkbox"/></li><li>-Analysis <input checked="" type="checkbox"/></li><li>-Make a significant contribution to collection <input checked="" type="checkbox"/></li><li>-Final approval of the paper <input checked="" type="checkbox"/></li><li>-Corresponding <input checked="" type="checkbox"/></li><li>-Play a decisive role in modification <input checked="" type="checkbox"/></li><li>-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/></li><li>-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/></li><li>-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/></li></ul>

\*Copyright: ©2024 by the authors. Licensee **J-INSTITUTE**. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

#### Submit your manuscript to a J-INSTITUTE journal and benefit from:

- Convenient online submission
- Members can submit papers in all journal titles of J-INSTITUTE
- Rigorous peer review
- Open access: articles freely available online
- High visibility within the field
- Retaining the copyright to your article

Submit your next manuscript at ► [j-institute.org](https://j-institute.org)



## Public Value

Publisher: J-INSTITUTE  
ISSN: 2435-3337

Website: j-institute.org  
Editor: admin@j-institute.org

Corresponding author\*  
E-mail: wellskin7@gmail.com

DOI Address:  
dx.doi.org/10.22471/value.2024.9.0.37



Copyright: © 2024 J-INSTITUTE

### Study on the Effect of Adult Men and Women's Perception of Wearing Wigs on Wig Purchase Intention -Differences Depending on Hair Condition and Hair Loss Concerns-

Gilwon Kim<sup>1</sup>

Westminster Graduate University, Yongin, Republic of Korea

Eunjoo Choi<sup>2\*</sup>

Westminster Graduate University, Yongin, Republic of Korea

#### Abstract

**Purpose:** As concerns about hair loss increase, perceptions of wigs also increase, and wigs are beginning to receive attention as an important aspect of appearance management. There is a very limited amount of research that has verified the differences in purchasing intention, wig wearing perception, and related characteristics related to wigs. Therefore, this study analyzed the effects of men and women's perceptions of wearing wigs on wig purchasing intentions, as well as the differences in major variables according to hair condition and hair loss concerns, and suggested implications for this.

**Method:** To achieve the purpose of the study, an online survey was conducted targeting 313 adult men and women in their 20s or older. Statistical analysis of the survey results was performed using the SPSS 25.0 program to analyze reliability analysis, factor analysis, frequency analysis, and difference analysis to identify information about the respondents, and multiple regression analysis to identify the influence relationship.

**Results:** First, as a result of research on scalp and hair-related characteristics, many of the respondents felt that their hair volume had decreased and considered themselves thin and weak. In addition, 53.4% of respondents answered that volume (hair volume) was the most important aspect of hairstyles. Second, the differences in major variables by gender, age, marital status, highest level of education, occupation, interest in hair loss, and hair condition were significant. Third,, the results of the regression coefficient verification showed that wig wearing perception had a positive (+) effect on wig purchase intention.

**Conclusion:** It was verified that wig wearing perception had an effect on wig purchase intention. In addition, it was possible to identify differences in major variables according to scalp hair characteristics. Through this, it is expected that it will be possible to derive an in-depth understanding of the wig market and contribute to the development of wig purchase services for the development of the wig industry.

**Keywords:** Wig Wearing Perception, Purchase Intention, Hair Condition, Hair Loss Concerns, Wig

## 1. Introduction

In modern society, hair loss is a source of fear for people. It is not just hair loss, but in severe cases, it can disappear completely, which causes constant worry about the future [1][2]. Hair protects the scalp, but it is also an essential part of appearance management [3][4]. Healthy hair symbolizes youth and is a very important means of expressing health and beauty [5]. Hair loss is not the only hair loss, and hair thinning is also a part of hair loss [6][7], so scalp and hair management are also our lifelong homework [8]. According to a survey by the Health Insurance Review & Assessment Service, the number of hair loss patients has been continuously increasing, and it was reported that more than 18% of people in their 20s to 50s are hair loss [9]. Furthermore, hair damage and scalp problems can have a serious psychological impact on the 20s and 30s, who are sensitive to their appearance, and can cause disadvantages to the individual in

various social situations[10]. It is estimated that the actual hair loss population is up to 10 million, and the domestic market size is expected to approach 4 trillion won. In addition, it is expected that there will be a significant number of people in their 20s and 30s in the future[11]. The increase in hair loss is threatening not only internal health but also external health, and it is causing a loss of confidence in one's appearance, which is having a negative impact on social life[12][13][14]. In this situation, various pharmaceutical companies are continuously conducting research to develop hair loss treatments, and the scale of this is also not small[15]. In summary, it is reported that even the younger generation cannot escape the risk of hair loss, and efforts are being made to develop drugs as a solution, but no clear treatment has been developed yet[16][17][18]. Modern society plays an important role in the continued concern about hair loss and hair. In other words, in modern society, a beautiful appearance is a major way to form power. Since it is an important part of the quality of life, various methods are being tried, such as plastic surgery, body management, and skin care, and one of them is the effort for hairstyle[19]. In addition to hair, there are makeup and clothing for expressing appearance, but hairstyle plays the main role[20]. As such, hairstyle plays an important role because it forms an external image. Therefore, efforts are being made to form a hairstyle that suits oneself, and as part of this, there are increasing cases of people becoming interested in wigs and even experiencing wearing them[21]. In a study by Kang Jeong-hee, the results of verifying the relationship between awareness of wearing wigs, interest in hairstyles, self-efficacy, satisfaction, and purchase intention for women in Korea, China, and Japan showed that awareness of wearing wigs affected intention to purchase wigs, self-efficacy, and satisfaction with wearing wigs[22]. In a study by Kim Jeong-suk, the relationship between wig wearing perception, self-efficacy, and hairstyle satisfaction was identified, and wig wearing perception affected both hairstyle satisfaction and self-efficacy, and wig wearing perception was shown to have a mediating effect on hairstyle satisfaction through self-efficacy[23]. According to a study by Kim Eun-hee, men also spare no effort in investing and making efforts to express themselves to others in social life and create a favorable image of themselves as expected in the workplace and groups[24]. Men's lifestyle tendencies focus on successful social life, and that appearance management is an important keyword for men in modern times through interest in appearance and active appearance management[25][26]. Furthermore, by producing a partial wig for hair loss management and examining its effectiveness, it was revealed that wigs are an important factor in forming an image for men, especially those with hair loss. In summary, wig wearing perception is confirmed to be an important factor influencing wig purchase intention. In this way, many studies have been conducted on the relationship between perception of wigs and purchase intention, and additionally, the relationship with self-efficacy and satisfaction has been verified. However, most studies have targeted a specific gender, and there is a lack of generalized results targeting both men and women. In order to overcome the limitations of these previous studies, this study aims to derive generalized results targeting both men and women, and to conduct an in-depth study on the effects of wig wearing perception of men and women on wig purchasing intention and the differences in major variables according to hair and scalp characteristics.

In this study, the effects of wig wearing perception of men and women on wig purchasing intention were set as a research model, and the following research questions were set to achieve the research purpose.

First, does wig wearing perception affect wig purchasing intention?

Second, is there a difference in major variables according to general characteristics?

Third, is there a difference according to hair condition?

Fourth, is there a difference according to hair loss concern? Accordingly, it is expected that the results of this study can be used as basic data to improve wig purchase intention by increasing wig wearing perception.

## **2. Research Method**

### **2.1. Research subjects**

Data to be used for analysis were collected online from April 22 to April 28, 2024, and a survey was conducted targeting adult men and women nationwide. A total of 313 questionnaires were collected.

### **2.2. Survey design and definition of variables**

The contents of the questionnaire were designed by referring to previous research results and modifying and supplementing to suit the purpose of the study. Wig wearing perception was set as independent variables, and wig purchase intention was set as a dependent variable. Sub-factors of wig wearing perception are psychological perception and aesthetic perception.

#### **2.2.1. Wig wearing perception**

Perception is a broad intellectual function that includes perception, imagination, reasoning, judgment, and conception, as well as the basic meaning of “knowing by discerning and judging things.” Perception is fundamentally dependent on the foundation such as society and knowledge level, so it cannot help but change continuously. Therefore, the perception of wigs also reflects the atmosphere of society. 60% of wig wearers prefer partial wigs among wigs, which indicates that it is easy to express natural and beautiful images by connecting with one’s own hair. On the other hand, full wigs have almost no limitations on hairstyles, unlike partial wigs, so they are currently used to complement hair defects and fashion wigs necessary for hairstyle styling have emerged, and they can be used as a functional hairstyle. In addition, a change in social perception of wigs is required, and when various people other than hair loss people accept wearing wigs and perception changes, the boundary between fashion wigs and hair loss wigs will disappear and they are expected to become a symbol of individuality expression. In this way, wigs help to complement the shortcomings of the consumer's original hair and express beauty, and as a form of general hairstyle, they are steadily growing as a fashion item that expresses individual differentiation and changes the image.

Wig wearing perception refers to the degree of thoughts and feelings about wearing wigs for better hairstyle styling, and the perception that can complement the shortcomings of hairstyles that can express beauty. Wig wearing perception is defined as the degree of feelings and thoughts about wearing wigs for appearance care. Based on this definition, wig wearing perception in this study is to utilize wig wearing to satisfactorily style one's own hairstyle. Wig wearing perception is generally used as a single factor, but in this study, it is composed of psychological perception and aesthetic perception in order to examine it more deeply. Under the concept of general perception, psychological perception is to judge based on psychological criteria, and aesthetic perception is to judge based on aesthetic criteria.

The questions consisted of a total of 11 questions.

#### **2.2.2. Purchase intention**

In previous studies, wig purchase intention was defined as the willingness to purchase when satisfied with wearing a wig. In other previous studies, wig purchase intention was defined as a psychological attitude to continue purchasing wigs in the future, such as work life, harmonious interpersonal relationships, and self-confidence recovery that can be obtained by wearing a wig. The variables that affect purchase intention are very extensive, and whether or not a consumer will purchase a product is more affected by purchase intention than attitude. Therefore, purchase intention can predict behavior more accurately than attitude toward the object. Purchase intention for wigs is often purchased to change the external image. Therefore, wig purchase intention has a significant impact on the image due to changes in hairstyle in appearance. Wig

wearers for hairstyle carefully consider personal characteristics and trends to express purchase intention into action and decide on a product that suits them through information from those who have used the existing product. Therefore, the intention to purchase wigs in this study was defined as the will to continuously purchase wigs because of the positive changes in work life, interpersonal relationships, and self-confidence through wigs. The questions consisted of a total of 8 questions.

### 2.3. Research Model

The research model is shown in <Figure 1>.

### 2.4. Data analysis

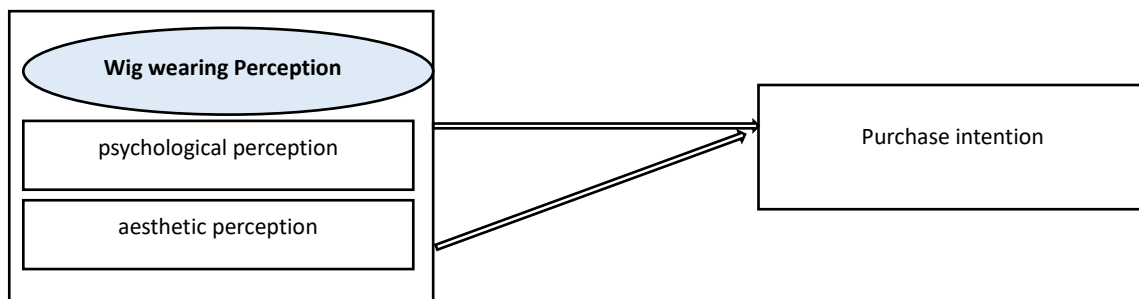
The data of this study were statistically analyzed using SPSS 25.0, and the contents are as follows.

First, exploratory factor analysis was performed to analyze the validity of the measurement tool. Reliability was analyzed using Cronbach's alpha coefficient to analyze the items constituting the factors.

Second, frequency analysis and descriptive statistical analysis were conducted to identify the cognition and general characteristics of the research subjects, and cross-tabulation, independent sample t-test, and one-way ANOVA were conducted.

Multiple regression analysis was performed. In the statistical analysis, statistical significance was judged based on the significance level of 5%.

**Figure 1.** Multiple regression analysis model.



## 3. Results

### 3.1. General characteristics of the study subjects

For this study, 313 people were analyzed, and the general characteristics of the study subjects are as follows. The gender was 197 women (62.9%) and 116 men (37.1%), and the age was 20–29 years old (27 people (8.6%)), 30–39 years old (79 people (25.2%)), 40–49 years old (128 people (40.9%)), 50–59 years old (58 people (18.5%)), and 60 years or older (21 people (6.7%)). The marital status was 69 unmarried (22.0%), 215 married (68.7%), and 29 others (9.3%). The highest level of education was 74 people (23.6%) who graduated from high school or lower, 96 people (30.7%) who graduated from a two-year university, 101 people (32.3%) who graduated from a four-year university, and 42 people (13.4%) who graduated from a graduate school or higher. The occupations were 52 people (16.6%) who were housewives, 76 people (24.3%) who were self-employed, 43 people (13.7%) who worked in sales and service, 86 people (27.5%) who were professionals, 24 people (7.7%) who worked in production, and 32 people (10.2%) who worked in other occupations. The monthly income was less than 1 million won for 23 people (7.3%), 1–

2 million won for 33 people (10.5%), 2–3 million won for 54 people (17.3%), 3–4 million won for 64 people (20.4%), and 4–5 million won for 23 people. 61 people (19.5%) received 5 million won or more, 52 people (16.6%) received allowance (living expenses), 24 people (7.7%) received other expenses, and 2 people (0.6%) received other expenses.

### 3.2. Scalp and hair related characteristics

The scalp and hair related characteristics of the research subjects are as follows. The current hair condition was 'thin and weak' for 140 people (44.7%), 'split or broken ends' for 19 people (6.1%), 'thick and stiff' for 31 people (9.9%), 'soft and shiny' for 18 people (5.8%), 'frizzy' for 25 people (8.0%), 'oily' for 20 people (6.4%), 'average' for 57 people (18.2%), and 'other' for 3 people (1.0%). The level of interest in hair loss was 'very much' for 60 people (19.2%), 'a lot' for 88 people (28.1%), 'average' for 118 people (37.7%), 'a little' for 28 people (8.9%), and 'nothing' for 19 people (6.1%). The percentage of one's appearance that one's hairstyle accounts for was 'less than 20%' 15 people (4.8%) answered '20~40%', 54 people (17.3%) answered '40~60%', 115 people (36.7%) answered '60~80%', 79 people (25.2%) answered '80% or more', and 50 people (16.0%) answered '100~150%'. When purchasing a custom wig, the appropriate price range was 'under 300,000 won' for 105 people (33.5%), 'under 400,000 won' for 39 people (12.5%), 'under 500,000 won' for 94 people (30.0%), 'under 600,000 won' for 26 people (8.3%), 'under 700,000 won' for 18 people (5.8%), 'under 800,000 won' for 14 people (4.5%), 'under 900,000 won' for 8 people (2.6%), and 'over 1 million won' for 9 people (2.9%). When purchasing a fashion wig, the appropriate price range was 'under 100,000 won' for 139 people (44.4%), 'under 200,000 won' for 109 people (34.8%), 'under 300,000 won' for 50 people (16.0%), and 'over 400,000 won' for 15 people (4.8%). The most important part to look younger was 'hairstyle' with 85 people (27.2%), 'skin' with 166 people (53.0%), 'makeup' with 16 people (5.1%), and 'clothes' with 46 people (14.7%). The most important part of hairstyle was 'volume (hair volume)' with 167 people (53.4%), 'hair length' with 23 people (7.3%), 'hair color (gray hair)' with 33 people (10.5%), 'hair shine (damage)' with 33 people (10.5%), and 'cut or wave' with 57 people (18.2%). The degree to which they felt the difference between their previous hair volume and their current hair volume was 'feeling' the difference, 73 people (23.3%) 'cannot feel the difference', and 'don't know'. 23 people (7.3%) responded that hair loss causes the most harm in social life, and the responses that they thought were 'lack of self-confidence' with 177 people (56.5%), 'lack of favorability from the opposite sex for dating/marriage' with 32 people (10.2%), 'lack of sociability' with 7 people (2.2%), 'lack of opportunities for employment or promotion' with 2 people (0.6%), and 'worsening impression (looking older)' with 95 people (30.4%). Among wigs and scalp care, the ones with the highest satisfaction in terms of time were 'wigs' (109 people, 34.8%) and 'scalp care' (204 people, 65.2%). The ones with the highest satisfaction in terms of investment cost were 'wigs' (122 people, 39.0%) and 'scalp care' (191 people, 61.0%). When asked to choose one of the two, the responses were 'wigs' (98 people, 31.3%) and 'scalp care' (215 people, 68.7%). When getting wig fitting and management done at a regular beauty salon at the same time, the degree of influence on wig selection was as follows: 19 people (6.1%) answered 'not at all', 27 people (8.6%) answered 'no', 118 people (37.7%) answered 'average', 125 people (39.9%) answered 'yes', and 24 people (7.7%) answered 'very much so'. As for whether or not they wear wigs, 8 people (2.6%) answered 'yes', and 305 people (97.4%) answered 'no'.

### 3.3. Descriptive statistics

To determine the level of the research variables measured in this study, the mean and standard deviation were calculated. The average of the perception of wearing wigs was 3.73 out of 5 points, and the sub-factors of aesthetic perception were 4.31 points and psychological perception was 3.52 points. The average of wig purchase intention was 3.70 out of 5 points. All variables were found to meet the assumption of normality. It is as shown in <Table 1> below.



**Table 1.** Descriptive statistics.

Variables		Minimum	Maximum	Mean	Standard deviation	Skewness	Kurtosis
Wig wearing perception	Psychological perception	1.00	5.00	3.52	0.89	-0.45	0.21
	Aesthetic perception	1.00	5.00	4.31	0.65	-1.24	3.33
	Total	1.00	5.00	3.73	0.76	-0.46	0.40
Purchase intention	-	1.00	5.00	3.70	0.81	-0.69	1.00

### 3.4. Validation

#### 3.4.1. Wig wearing perception

The perception of wig wearing was finally factor analyzed with 11 items, excluding one item (item 4) that hindered the validity. As a result of the analysis, the KMO measure was .924, and the result of Bartlett's sphericity test was also significant ( $p < .001$ ), so the factor analysis model was judged to be appropriate. The perception of wig wearing was classified into two factors, and the two factors showed a factor explanatory power of 71.092%. The first factor consisted of three items called 'aesthetic perception', and the second factor consisted of eight items called 'psychological perception', and psychological perception was higher than aesthetic perception.

#### 3.4.2. Purchase intention

The wig purchase intention was factor analyzed with a total of 8 items. As a result of the factor analysis, the KMO measure was .931, and the Bartlett's sphericity test result was also significant ( $p < .001$ ), so the factor analysis model was judged to be appropriate. The wig purchase intention was classified into 1 factor, and 1 factor showed a factor explanatory power of 72.188%. The wig purchase intention was generally high, and if wearing a wig made others look good, the wig purchase intention was the highest.

### 3.5. Reliability analysis

In order to determine whether respondents consistently responded to the survey in this study, a reliability analysis was conducted. Reliability means that the same results are obtained even when the measurement target is measured multiple times, and that there is consistency among the items that make up any indicator. To verify this, Cronbach's alpha coefficient was used. Generally, if the alpha coefficient is 0.6 or higher, it is considered to be relatively reliable. Wig wearing perception is .928, and wig purchase intention is .943. All variables in this study showed Cronbach's alpha coefficients of .60 or higher, so it was determined that there was no problem with the reliability of the scale. It is as shown in <Table 2> below.

**Table 2.** Reliability analysis.

Variables		Questions	Cronbach's $\alpha$
Wig wearing perception	Psychological perception	8	.942
	Aesthetic perception	3	.739
	Total	11	.928
Purchase intention		8	.943

### **3.6. Differences in major variables according to general characteristics**

To determine whether there were differences in research variables according to general characteristics, an independent sample t-test, one-way ANOVA, and Scheffe's post hoc test were performed.

#### **3.6.1. Gender**

The difference in wig purchase intention according to gender was statistically significant. Women had higher wig purchase intention ( $t=3.767$ ,  $p<.001$ ) than men.

#### **3.6.2. Age**

One-way ANOVA and Scheffe's post hoc test were conducted to determine if there were differences in research variables according to age.

The analysis results showed that the difference in wig wearing perception according to age was statistically significant. The post hoc test results showed that wig wearing perception ( $F=6.334$ ,  $p<.001$ ) and psychological perception ( $F=7.146$ ,  $p<.001$ ) were higher in the 30-39, 40-49, 50-59, and 60 years or older age groups than in the 20-29 age group. The wig wearing perception was found to be higher in aesthetic perception than in psychological perception in terms of numerical values. The post-hoc analysis showed that the 20s had lower wig wearing perceptions than other age groups, indicating that they were important from the 30s onwards. There was no significant difference in wig purchase intentions by age group.

#### **3.6.3. Marital status**

The difference in wig wearing perceptions according to marital status was statistically significant. As a result of the post-hoc test, wig wearing perceptions ( $F=3.813$ ,  $p<.05$ ) and psychological perceptions ( $F=3.397$ ,  $p<.05$ ) were higher in the others than in the unmarried. Wig purchase intentions were at similar levels regardless of marital status.

#### **3.6.4. Highest level of education**

The difference in wig wearing perceptions according to highest level of education was statistically significant. As a result of the post-hoc test, wig wearing perceptions ( $F=3.358$ ,  $p<.05$ ) and psychological perceptions ( $F=3.374$ ,  $p<.05$ ) were higher in graduate school or higher than in 4-year college students or graduates. That is, the overall wig-wearing Perception and psychological Perception were found to vary by educational background. Through post-hoc analysis, those with graduate school or higher had higher wig-wearing Perception compared to those enrolled or graduated from a 4-year university. This shows that adults with graduate school or higher have a positive perception of wig-wearing.

#### **3.6.5. Occupation**

The difference in wig-wearing Perception according to occupation was found to be statistically significant. As a result of the post-hoc test, wig-wearing Perception was found to be higher in the self-employed than in others ( $F=2.265$ ,  $p<.05$ ). This means that the self-employed consider appearance care more important than other occupations. This result can be interpreted as self-employment including beauty salons and, since they are often the owners of the business, they are more interested in their appearance than other occupations.

#### **3.6.6. Monthly income**

The differences in research variables according to monthly income were not statistically significant ( $p>.05$ ).

### 3.7. Differences in major variables according to scalp and hair related characteristics

#### 3.7.1. Differences according to hair condition

The difference in wig wearing perception according to hair condition was statistically significant. As a result of the post hoc test, wig wearing perception ( $F=3.295$ ,  $p<.05$ ) and psychological perception ( $F=3.734$ ,  $p<.05$ ) were higher in thin and weak hair than in thick, dry hair and oily hair, and hair care perception was higher in thin and weak hair than in thick, dry hair ( $F=9.002$ ,  $p<.001$ ). The thinner and weaker the hair, the higher the wig wearing perception and hair care perception compared to people with other hair types. As inferred from the results, it was confirmed that many people have experienced and have many concerns about thin and weak hair, and wig wearing perception and scalp/hair care perception showed a high level of interest in resolving this. The differences according to hair condition (according to) are as shown in <Table 3>.

**Table 3.** Differences according to hair condition.

Variable		Division	N	Mean	SD	F	p (Scheffe)
Wig wearing perception	Psychological perception	Thin and weak hair <sup>a</sup>	159	3.67	0.89	3.734*	.012 (b,c<a)
		Thick and dry hair <sup>b</sup>	56	3.27	0.85		
		Oily hair <sup>c</sup>	20	3.26	0.60		
		Healthy hair <sup>d</sup>	75	3.47	0.91		
	Aesthetic perception	Thin and weak hair <sup>a</sup>	159	4.36	0.65	0.875	.454
		Thick and dry hair <sup>b</sup>	56	4.31	0.57		
		Oily hair <sup>c</sup>	20	4.17	0.71		
		Healthy hair <sup>d</sup>	75	4.25	0.67		
	Total	Thin and weak hair <sup>a</sup>	159	3.86	0.77	3.295*	.021 (b,c<a)
		Thick and dry hair <sup>b</sup>	56	3.56	0.69		
		Oily hair <sup>c</sup>	20	3.50	0.56		
		Healthy hair <sup>d</sup>	75	3.68	0.77		
Purchase intention		Thin and weak hair <sup>a</sup>	159	3.75	0.80	0.619	.603
		Thick and dry hair <sup>b</sup>	56	3.65	0.79		
		Oily hair <sup>c</sup>	20	3.52	0.64		
		Healthy hair <sup>d</sup>	75	3.71	0.88		

Note: \*  $p<.05$  \*\*  $p<.01$  \*\*\*  $p<.001$ .

#### 3.7.2. Differences according to hair loss interest

The difference in wig wearing perception according to hair loss interest was statistically significant. As a result of the post hoc test, wig wearing perception ( $F=14.332$ ,  $p<.001$ ), psychological perception ( $F=16.324$ ,  $p<.001$ ), and wig purchase intention ( $F=15.221$ ,  $p<.001$ ) were higher in moderate and high than in no. The differences according to hair loss interest are as shown in <Table 4>.

**Table 4.** Differences according to hair loss interest.

Variable		Distinction	N	Mean	SD	F	p (Scheffe)
Wig wearing perception	Psychological perception	Very interested <sup>a</sup>	148	3.74	0.81	16.324***	<.001 (c<a,b)
		Moderately interested <sup>b</sup>	118	3.47	0.87		
		Not interested <sup>c</sup>	47	2.93	0.93		
	Aesthetic perception	Very interested <sup>a</sup>	148	4.37	0.62	2.127	.121
		Moderately interested <sup>b</sup>	118	4.29	0.64		
		Not interested <sup>c</sup>	47	4.16	0.73		
	Total	Very interested <sup>a</sup>	148	3.91	0.71	14.332***	<.001 (c<a,b)
		Moderately interested <sup>b</sup>	118	3.70	0.73		
		Not interested <sup>c</sup>	47	3.26	0.78		
Purchase intention		Very interested <sup>a</sup>	148	3.88	0.75	15.221***	<.001 (c<a,b)
		Moderately interested <sup>b</sup>	118	3.69	0.73		
		Not interested <sup>c</sup>	47	3.16	0.95		

Note: \*p<.05 \*\*p<.01 \*\*\*p<.001.

### 3.8. Differences in the characteristics of the research subjects according to hair condition and interest in hair loss

#### 3.8.1. Differences in general characteristics according to hair condition

A chi-square test was conducted to determine whether there were differences in the general characteristics of the research subjects according to their hair condition.

The analysis results showed that there were statistically significant differences in gender and marital status according to hair condition. When looking at gender according to hair condition, the proportion of women was higher than men in 'thin and weak', 'thick and dry', and 'healthy hair', and the proportion of men was higher than women in 'oily hair' ( $\chi^2=13.858$ ,  $p<.01$ ). When looking at marital status according to hair condition, the proportion of married people was high in 'thin and weak', 'thick and dry', 'oily hair', and 'healthy hair', but the proportion of unmarried people was relatively high in 'oily hair' ( $\chi^2=13.145$ ,  $p<.05$ ).

#### 3.8.2. Differences in scalp and hair-related characteristics according to hair condition

A chi-square test was conducted to determine whether there were differences in scalp and hair-related characteristics according to the hair condition of the research subjects.

As a result of the analysis, there was a statistically significant difference in the level of concern about hair loss and the difference between the previous and current hair volumes according to hair condition. When looking at the level of concern about hair loss according to hair condition, the percentage of those with high hair loss concern was the highest at 57.2% and 50.0% for 'thin and weak' and 'oily hair', while the percentage of those with moderate hair loss concern was the highest at 44.6% and 38.7% for 'thick and dry' and 'healthy hair' ( $\chi^2=22.431$ ,  $p<.01$ ). When looking at the difference between the previous and current hair volumes according to hair condition, the percentage of those who 'felt the difference' was very high at 80.5% for 'thin and

weak', followed by 'healthy hair' at 57.3%, 'thick and dry' at 57.1%, and 'oily' at 55.0% ( $\chi^2=21.769$ ,  $p<.01$ ).

On the other hand, there was no statistically significant difference in the appropriate wig price according to hair condition, the most important part to look young, the most important hairstyle, and the aspect in which hair loss causes the most damage to social life ( $p>.05$ ). It can be said that the appropriate wig price, the most important part to look young, the most important hairstyle, and the aspect in which hair loss causes the most damage to social life are perceived similarly regardless of hair condition.

### **3.8.3. Differences in general characteristics according to hair loss interest**

A chi-square test was conducted to determine whether there were differences in general characteristics according to the research subjects' interest in hair loss.

As a result of the analysis, there was a statistically significant difference in occupation according to hair loss interest. The highest interest in hair loss was found to be in the order of professionals (33.8%), self-employed (28.4%), sales and service workers (14.2%), full-time housewives (13.5%), others (6.8%), and production workers (3.4%) ( $\chi^2=22.719$ ,  $p<.05$ ).

### **3.8.4. Differences in scalp and hair-related characteristics according to hair loss interest**

A chi-square test was conducted to determine whether there were differences in scalp and hair-related characteristics according to the research subjects' interest in hair loss. The results of the analysis showed that there was a statistically significant difference in the most important hairstyles according to hair loss interest and the difference between the previous and current hair volumes. When looking at the most important hairstyles according to hair loss interest, the ratio of volume (hair volume) was the highest at 61.5% and 51.7% for those with a lot of hair loss interest and those with a moderate amount of hair loss, while the ratio of cut or wave was the highest at 36.2% for those with no hair loss interest ( $\chi^2=20.507$ ,  $p<.01$ ). When looking at the difference between the previous and current hair volumes according to hair loss interest, the ratio of 'feeling a difference' was high at 85.1% and 62.7% for those with a lot of hair loss interest and those with a moderate amount of hair loss, while the ratio of 'not feeling a difference' was the highest at 53.2% for those with no hair loss interest ( $\chi^2=46.337$ ,  $p<.001$ ). On the other hand, there was no statistically significant difference in the appropriate wig price according to the level of interest in hair loss, the most important part to look young, and the aspect in which hair loss causes the most damage in social life ( $p>.05$ ). It can be said that the appropriate wig price, the most important part to look young, and the aspect in which hair loss causes the most damage in social life are perceived similarly regardless of the level of interest in hair loss.

## **3.9. The effect of wig wearing perception on wig purchase intention**

To verify the factors affecting wig wearing perception on wig purchase intention, multiple regression analysis was performed.

As a result of verifying the regression model,  $F=136.357$  ( $p<.001$ ) showed that the regression model was appropriate, and the explanatory power of the model was approximately 46.8%. Meanwhile, the Durbin-Watson statistic was 1.815, which was close to 2, indicating that there was no problem with the assumption of independence of residuals, and the tolerance was all 0.1 or more, and the variance inflation factor (VIF) was less than 10, indicating that there was no multicollinearity problem.

As a result of verifying the significance of the regression coefficient, the psychological Perception and aesthetic Perception of wig wearing Perception showed a significant positive (+) effect on wig purchase intention. In other words, the higher the psychological Perception and aesthetic Perception of wig wearing Perception, the higher the wig purchase intention. It was



found that psychological Perception ( $\beta=.593$ ,  $p<.001$ ) and aesthetic Perception ( $\beta=.148$ ,  $p<.01$ ) had an influence on wig purchase intention in that order, and the influence of wig wearing Perception on wig purchase intention is as shown in <Table 5>.

**Table 5.** The Effect of wig wearing perception on wig purchase intention.

Independent variable	B	S.E	$\beta$	t	p	tolerance	VIF
(constant)	1.005	0.227		4.430***	<.001		
Psychological Perception	0.539	0.045	.593	12.043***	<.001	.708	1.413
Aesthetic Perception	0.185	0.062	.148	2.998**	.003	.708	1.413

F=136.357( $p<.001$ ),  $R^2=.468$ , adjusted  $R^2=.465$ , Durbin-Watson=1.815

Note: \*  $p<.05$  \*\*  $p<.01$  \*\*\*  $p<.001$ .

## 4. Discussion and Conclusion

In modern society, interest in appearance is increasing to the point that the saying, “Appearance is also a specification” is common. Perception of appearance is considered a very important factor in our society. Issues related to appearance have a great impact on an individual’s self-esteem and social and cultural perception. As the number of people with hair loss increases, various beauty markets for hair loss have developed, and perception of wigs is also receiving attention. Hairstyles have many elements related to image changes in appearance. Hairstyles play an important role in highlighting one’s strengths and covering up one’s weaknesses, making them an important factor in appearance. Since hair plays a large role as a means of expressing one’s beauty, interest in wigs is also increasing along with hair loss. Hair loss is a disease caused by stress and various other causes, and it has a great impact on our self-esteem. Hair loss is a lifelong homework for both men and women in that it has a great social impact regardless of age. As perception and interest in hair loss increase, perception of wigs also increases. This study aims to identify men and women’s perceptions of wigs and to identify the relationship between wig wearing perception and wig purchase intention. To this end, this study conducted a survey on wig-related characteristics and previous studies targeting adult men and women, including perception of wig wearing, wig purchase intention, general characteristics, and hair-related characteristics. To this end, an online survey was conducted for 7 days from April 22 to April 28, 2024 targeting 313 adult men and women. The results of the analysis using the data obtained through the survey will be examined.

The results of this study are as follows.

First, the demographic characteristics of the subjects of this study were confirmed to be 62.9% for ‘women’ and 37.1% for ‘men.’ Age was 40.9% for ‘40s’ and 25.2% for ‘30s,’ which is interpreted as the age group with the most social activities and the most exposure to stress and hair loss and the most interest in it. Marital status was ‘married’ at 68.7% and ‘single’ at 22%, showing that even married people are interested in continuous self-care, unlike in the past society. Highest level of education was ‘4-year’ at 32.3% and ‘2-year’ at 30.7%, which can be interpreted as showing that the level of education in Korea is quite high. Occupation was ‘professional’ at 27.5% and ‘self-employed’ at 24.3%, and monthly income was ‘3 million won or more to less than 4 million won’ at 20.4% and ‘4 million won or more to less than 5 million won’ at 19.5%, showing that the majority have a monthly income of 3 million won or more to less than 5 million

won. This shows that hairstyle, or scalp and hair care perception, is a topic of interest that everyone has regardless of their personal situation.

Second, in the research results on scalp and hair characteristics, 36.7% answered '40~60%' and 25.2% answered '60~80%', indicating that more than half of the respondents think that hairstyles play a large role in their appearance. This can be interpreted as meaning that hairstyles play a large role in most people's expression of their beauty and individuality. Hair is important in expressing one's image, and hair is important in that it complements the strengths and weaknesses of one's appearance. In this study, the most important hairstyle was 'volume (hair volume)' at 53.4%, and the difference between the previous and current hair volume was 'felt a difference' at 69.3%. The most damaging thing that hair loss would do to social life was 'lack of confidence' at 56.5%, and the question of whether having wig fitting and care at a regular hair salon would affect the choice of wigs at the same time was answered as 'yes' at 39.9% and 'very much so' at 7.7%. Many people consider volume (hair volume) to be the most important, and hair loss is felt, and problems related to hair loss in social life are interpreted as having a great impact on an individual's self-esteem and social perception. It shows the trend of increasing interest in hair care and scalp health in modern society. The research results showed that there were many concerns about hair condition and hair loss, which suggests that social pressure on appearance and interest in self-image are increasing[27].

Third, in order to determine the level of the research variables measured in this study, the results of calculating the mean and standard deviation showed that most variables were above the median. This means that the research subjects had relatively positive intentions regarding perception and purchase intention of wigs.

Fourth, in order to determine whether there were differences in research variables according to general characteristics, independent sample t-test, one-way ANOVA, and Scheffe's post hoc test were performed. As a result, differences in variables were found according to gender, age, marital status, education level, occupation, hair condition, and interest in hair loss, and differences in scalp and hair-related characteristics were statistically significant according to hair condition and interest in hair loss.

Fifth, the regression coefficient verification result showed that wig wearing perception had a positive (+) effect on wig purchase intention, and the sub-factors also had a positive (+) effect. The results of this study are similar to the results of Kang Jeong-hee that wig wearing perception had an effect on wig purchase intention[28]. In other words, it can be interpreted that the higher the wig wearing perception, the higher the wig purchase intention.

Despite the results and significance of this study, the following limitations exist. First, since no separate study was conducted on wig wearers, it is necessary to conduct follow-up studies targeting people who have experience wearing wigs[29]. Second, various partial wigs such as bang wigs have been used since before. Generally, when we say wig, we often think of full wigs, but there are many cases where partial wigs are worn. Therefore, in follow-up research, there is a need for comparative research that divides people who wear partial wigs and full wigs into groups. Therefore, we hope that the results of this study will contribute to the development of wig-related industries and wig purchase services, and will be used as basic data that can improve wig purchase intention by increasing wig wearing perception.

## 5. References

### 5.1. Journal articles

- [1] Lim M & Lee J. Research on Creative Works using Hair Pieces and Public Value. *Public Value*, 7(1), 62-70 (2022). [\[Read More\]](#)

- [2] Park JH & Choi KH. A Study on the Job Satisfaction of Scalp Care Workers. *Journal of the Korean Society of Cosmetology*, 17(6), 1028-1038 (2011).
- [3] Han J & Kim J & Cho M. Analysis of the Public Value of Celebrity Hair Color Trend in Milbon Collection. *Public Value*, 6(3), 32-40 (2021). [\[Read More\]](#)
- [4] Lee GR & Kim JD. A Study on Awareness and State of Scalp & Hair Care -The Case of Gangweon and North Chungcheong Province-. *Journal of the Korean Society of Cosmetology*, 14(4), 1244-1263 (2008).
- [5] Im EJ & Kim HR. The Market Study of Scalp and Hair Care Product. *Journal of the Korean Society of Cosmetology*, 14(3), 708-716 (2008).
- [6] Song JA & Kim JS. Research Trends of Scalp Care through a Bibliometric Analysis. *Journal of Beauty Industry*, 10(1), 23-37 (2016).
- [7] We SY & Im EJ. Customer Utilization and Satisfaction of the Scalp and Hair Care Salons. *The Journal of Cosmetological Science*, 6(1), 7-14 (2010).
- [8] Jang JY. Correlation due to the Subjective Symptoms Recognized Students of the Scalp and Hair Care and Hair Loss. *Journal of the Korean Society of Design Culture*, 19(2), 485-497 (2013).
- [10] Kim DH & Kim SN. The Effect on Hair Loss for Impression Formation and Interpersonal Anxiety. *Asian Journal of Beauty and Cosmetology*, 8(4) 247-258 (2010).
- [11] Heo JA & Hong MR. The Investigation of Fashion Wig Perception and Purchase Behavior in 20~40 Ages' Women: Focusing on Fashion Wig Wearers. *Journal of The Korean Society of Cosmetology*, 29(6), 1353-1377 (2023).
- [12] Jang MH & Bae SK. Recognition Change Before and After Wearing Wigs of the Female Cancer Patients. *The Journal of the Korea Contents Association*, 10(4), 198-205 (2010).
- [13] Lee J & Choi J & Yeom J. Analysis of Properties of Deconstruction & Hair Expression Components in Maison Margiela Collection. *Public Value*, 6(1), 38-50 (2021). [\[Read More\]](#)
- [14] Jang M & Lim D. A Study on the State Hair Stylist Licensing System according to the Globalization of the Korean Beauty Industry. *Protection Convergence*, 7(1), 47-58 (2022). [\[Read More\]](#)
- [16] Lee EJ & Lee KK. A Study on the Behavioral of Scalp, and Care of Losing Hair of Middle Aged Men's Hair-losers. *Journal of The Korean Society of Cosmetology*, 16(3), 674-686 (2010).
- [17] Lee EJ & Kim SH & Lee JH. People's Perception of Scalp Care Behavior and Customized Cosmetics. *The Korean Society of Beauty And Art*, 22(4), 239-252 (2021).
- [18] Park JS & Im EJ. A Study on the Hair Cosmetics Buying Behavior. *Asian Journal of Beauty and Cosmetology*, 7(1), 145-154 (2009).
- [19] Ko KS. A Study on Appearance Satisfaction and Hairstyle Behavior Dependence in College Students Majoring in Beauty Design. *The Korean Society of Beauty And Art*, 13(4), 225-242 (2012).
- [20] Song YH & Oh KW. Adolescents Purchasing Behavior for Hair-care Products. *Journal of Home Economics Education Research*, 23(2), 1-16 (2011).
- [23] Kim JS & Jeon HJ. Analysis of MZ Generation Women's Face Image and Hair Style. *The Korean Society of Beauty And Art*, 24(4), 1-15 (2023).
- [25] Lee HK & Kwon GH. The Effect of Consumer Value of Wig Consumers on Cognitive Satisfaction, Emotional Satisfaction and Purchase Intention. *Journal of Beauty Art Management*, 15(1), 57-74 (2021).
- [26] Yoon BH & Kim YS & Choi EJ. The Influence of NCS-based Curriculum on Learning Satisfaction of the Beauty Related Sector Learners for Job Protection -Focusing on the Mediating Effect of Learning Immersion-. *Protection Convergence*, 6(4), 47-57 (2021). [\[Read More\]](#)
- [27] Ryu HS & Kim JD. A Study on Wig-wearing, Care Realities, and Recognition in People with Alopecia Hair. *Journal of the Korean Society of Cosmetics and Cosmetology*, 1(1), 25-43 (2011).
- [28] Kang JH & Jung JY & Ko KS. Self-efficacy, Satisfaction, and Purchase Intention according to the Awareness of Wearing Wigs of Korean · Chinese · Japanese Women. *Journal of the Korean Society of Cosmetology*, 25(2), 245-254 (2019).
- [29] Kang HS & Song YS. The Effect of Wig Wearers' Perception and Self-efficacy on Satisfaction. *Journal of the Korean Society of Cosmetology*, 24(2), 312-319 (2018).

## 5.2. Thesis degree

- [22] Kang JH. A self-efficacy, Satisfaction and Purchase Intention according to Hair Style Interest and Awareness toward a Wing of Korean, Chinese, Japanese Women. Wonkwang University, Doctoral Thesis (2018).
- [24] Kim EH. A Study on the Relationship between Appearance Management Behavior and Self-esteem of Unmarried Professional Men in Clothing Purchase. , Kyunghee University, Master's Thesis (2006).

## 5.3. Additional references

- [9] <https://www.hira.or.kr> (2023).
- [15] <https://stock.mk.co.kr> (2023).
- [21] Park JH & Park YS & Jang YW. A Study on Factors Influencing Intention to Use Scalp (Hair Loss, Hair) Care Services. Academic Society of Global Business Administration Academic Conference Presentations (2016).

## 6. Appendix

### 6.1. Author's contribution

	Initial name	Contribution
Lead Author	GK	<ul style="list-style-type: none"><li>-Set of concepts <input checked="" type="checkbox"/></li><li>-Design <input checked="" type="checkbox"/></li><li>-Getting results <input checked="" type="checkbox"/></li><li>-Analysis <input checked="" type="checkbox"/></li><li>-Make a significant contribution to collection <input checked="" type="checkbox"/></li><li>-Final approval of the paper <input checked="" type="checkbox"/></li><li>-Corresponding <input checked="" type="checkbox"/></li></ul>
Corresponding Author*	EC	<ul style="list-style-type: none"><li>-Play a decisive role in modification <input checked="" type="checkbox"/></li><li>-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/></li><li>-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/></li><li>-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/></li></ul>

\*Copyright: ©2024 by the authors. Licensee **J-INSTITUTE**. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

#### Submit your manuscript to a J-INSTITUTE journal and benefit from:

- Convenient online submission
- Members can submit papers in all journal titles of J-INSTITUTE
- Rigorous peer review
- Open access: articles freely available online
- High visibility within the field
- Retaining the copyright to your article

Submit your next manuscript at ► [j-institute.org](https://j-institute.org)

## Public Value

Publisher: J-INSTITUTE  
ISSN: 2435-3337

Website: j-institute.org  
Editor: admin@j-institute.org

Corresponding author\*  
E-mail: wellskin7@gmail.com

DOI Address:  
dx.doi.org/10.22471/value.2024.9.0.51



Copyright: © 2024 J-INSTITUTE

### A Study on the Relationship between Consumption Value and Repurchase Intention of Hair Beauty Devices and Differences in Hair Beauty Characteristics

Hyerim Jin<sup>1</sup>

BM Art Beauty Research Institute, Seoul, Republic of Korea

Eunjoo Choi<sup>2\*</sup>

Westminster Graduate University, Yongin, Republic of Korea

#### Abstract

**Purpose:** In modern society, as interest in appearance increases, interest in hairstyles has also increased. Accordingly, research on hair beauty devices related to hairstyle styling has also begun. Previous studies often focus on hairstyles or hair care products. This study focuses on hair beauty devices, which have rarely been studied. The purpose of this study is to study the effect of hair beauty device consumption value on repurchase intention. In addition, we aim to analyze the differences in major variables according to hair beauty characteristics.

**Method:** To achieve the purpose of the study, an online survey was conducted targeting 262 subjects from their teens to their 60s living across the country. The data of this study were statistically analyzed using the SPSS 25.0 program as follows. First, exploratory factor analysis was performed to analyze the validity of the measurement tool, and reliability was analyzed. Second, frequency analysis and descriptive statistical analysis were performed to identify the level of research variables. Third, independent sample t-test, one-way ANOVA, and Scheffe's post hoc test were performed to identify differences in research variables depending on the characteristics of the research subjects. Fourth, chi-square test was performed to identify differences in hair beauty-related characteristics depending on the subjects' experience with wet heat magic machines. Fifth, multiple regression analysis was performed to determine the effect of consumption value on repurchase intention. The statistical analysis above was judged to be statistically significant based on a significance level of 5%.

**Results:** First, hair beauty devices used for hairstyles are diverse, but the most frequently used ones are hair dryers and magic wands. The most frequently used locations are the bangs, and the most difficult locations are the crown and the back of the head. Second, in the results related to wet heat magic wands, more than half of the respondents had used them, and they also had some intention to purchase them. Third, in the results of verifying the differences according to general characteristics and hair beauty device-related characteristics, there were significant differences in variables according to gender, age, marital status, and occupation. Fourth, consumption value was found to have a significant effect on repurchase intention.

**Conclusion:** This study confirmed how much influence the consumption value of hair beauty devices has on the intention to repurchase. In addition, it is expected that the purchase or repurchase of hair beauty devices will occur according to consumer satisfaction in the beauty industry field, as it provides an opportunity to understand the differences between dry heat and moist heat hair beauty devices, and at the same time, if moist heat hair beauty devices are gradually expanded, customers will be able to style their hair in a better environment and help them have safe and healthy hair.

**Keywords:** Hair Beauty Devices, Consumption Value, Moist Heat Type Magic Devices, Hair Style, Repurchase Intention

## 1. Introduction

Today, the value of investing time and capital to maintain a more beautiful appearance is considered important[1][2]. Today, as the quality of life improves according to the cultural level,



people pursue their own unique and free lives, and accordingly, the desire to stand out with their own individuality unlike others is projected into their appearance [3]. As the number of people who take care of themselves in a way that is oriented toward appearance increases, the growth of the beauty industry has also developed rapidly [4][5], and along with this, the cosmetics industry in Korea has also grown significantly to a scale of 10 billion dollars. The number of workers in the beauty service industry has also continuously increased, and a sample survey reported that the average sales of stores was more than 100 million won (Korea Health Industry Development Institute, 2021) [6]. As emphasized in the conclusion of this report, it was reported that cosmetics and beauty services are important industries in Korea, and it is necessary to obtain the consent of various stakeholders and develop them as policies. When the research institute investigated the importance of appearance, it was confirmed that the percentage of those who responded that it was important and the percentage of those who responded that they were interested in appearance did not change much from 1994 to the present. In addition, the highest response to the question of what is important in appearance was hairstyle, which accounted for 33% of the total. In other words, it can be seen that hairstyle is an important part of appearance. In the nail care, skin care, and makeup fields, management devices are referred to as beauty devices and are being marketed and studied, so this study will also name them based on this. Tools for managing hairstyles can be defined as hair beauty devices (hair beauty devices), and various hair beauty devices have been developed as interest in appearance continues and technology advances. In fact, interest in these hair beauty devices continues to this day, and sales volumes are also high. In this way, the preference for hair beauty devices can be confirmed to some extent. Accordingly, research on hair beauty devices has also been conducted in various ways. In other words, beauty devices used in accordance with the development and changes in hairstyles have also brought about many changes. If we look at previous studies, there have been studies conducted to confirm the usage status of various beauty devices or to examine the influence of variables according to them [7][8]. However, most of these studies mainly studied beauty devices, that is, beauty devices related to the skin, and there are not many studies conducted on hair beauty devices related to hairstyles. Therefore, little research has been conducted on related hair beauty devices. Jeong Yun-hee (2017) mentioned that there are differences in purchase satisfaction and behavior depending on the hairstyle status through research on self-hairstyles [9]. In addition, in the study of Oh Myeong-sik (2020), although research on hair beauty devices was conducted to some extent as mentioned above, an appropriate hair styling device was developed and the effectiveness was verified [10]. In this way, research is being conducted centered on hairstyles rather than on hair beauty devices themselves. Nevertheless, as the types of hair beauty devices are diversifying, research on them is also necessary. Research on hair has mainly focused on the actual state of hairstyles, satisfaction according to hairstyles, and changes in behavior. This study focuses on hair beauty devices. In general, consumers often use dry-heat hair beauty devices. However, in many areas, wet-heat hair beauty devices have advantages over dry-heat hair beauty devices.

Ultimately, the purpose of this study is to examine the effect of hair beauty device consumption value on repurchase intention. Furthermore, the differences between general characteristics and hair beauty device characteristics and major variables will be analyzed and verified. Hair beauty devices refer to tools that directly help with hair styling in relation to hairstyles. In other words, hair beauty devices refer to tools for hairstyles and hair care management. Hair beauty devices can be used to easily and quickly style hair styles at home, in addition to professional hair salons. In terms of the functional aspect of hair beauty devices as heat tools, hair beauty devices can be said to be hair beauty devices that help to dry hair and style hair styles that can be maintained for a certain period of time. The electric hair beauty device uses the heat generated in a specific part of the body of the hair beauty device to shape the hair and quickly create various shapes, and the style created at this time does not become untidy for a certain period of time. Currently, hair beauty devices are being released as products that can be easily styled by not only professionals but also ordinary people without difficult techniques.

Hair beauty devices include hair dryers, diffusers, dry heat magic machines, moist heat magic machines, dry heat irons, moist heat irons, curling irons, electric rollers, and other devices that utilize heat. Consumption value is the value that affects consumers when they choose a market, and it is considered to affect consumers' cognitive processes and purchasing behavior regarding products[11]. Value is ultimately directly related to behavior as an individual consumer. In other words, it is said to be an activating role that moves individuals as consumers to want certain things by providing goals for activating consumer behavior[12]. Depending on various situations, consumers' standards for behavior change according to the values in order to achieve the goals of the consumption values they want. This is because values affect behavior as an individual's internal standards. Sheth, Newman, & Gross defined consumption value as a concept that serves as a standard and goal for decision-making in various processes, from deciding to purchase a product or commodity to selecting a specific brand[13]. Consumption value can be said to be the internal criteria that consumers have when choosing a product or service. Repurchase intention is a purchasing behavior that comes from consumer satisfaction. Repeated purchasing behavior provides an increase in the consumer's love for the product or service, loyalty to the brand, a reduction in marketing failure costs, and a rebound in customer defection. According to previous studies, repurchase intention refers to the possibility that the customer can continue to use the service they want in the future as well as in the present[14], and it refers to the consumer's will to purchase a specific product again in the future based on their past purchasing experience[15].

In addition, the repurchase intention is defined as the possibility that a customer will repeatedly use the same or similar product or service in the future, and it is defined as the possibility that the customer will spread word of mouth about the product or service or make a decision to repurchase. The repurchase intention will be determined by the good or bad perception of the consumer about the service. If the consumer has a good perception of the service, the consumer's repurchase intention will increase, while if it is bad, the consumer's repurchase intention will decrease. Through the repurchase intention, it can be said that consumer retention is important and is one of the important factors in maintaining and creating the performance of a company in the long term. Therefore, the cost of retaining consumers is much more economical than the cost of investing in acquiring new customers. When the possibility of becoming a fixed customer increases according to the repurchase intention, it is very important for most companies in forming a long-term demand base[16]. In the area where repurchasing occurs, repurchasing for consumer satisfaction does not only extend to the purchasing area, and consumers who repeatedly repurchase also replace the promotion of the product under the name of introduction. A company's growth is not only due to the repurchase of a single consumer, but also by obtaining resources that can cause other purchases and repurchases. Considering the definition of repurchase intention, the repurchase intention in this study is the consumer's intention to repurchase a product or service that he or she has purchased and used in the past or to purchase and use a product or service that he or she is currently using in the future. In other words, it is the consumer's intention to use it repeatedly based on his or her past experience using a product or service.

By verifying the relationship between the above major variables, we will examine the path leading to repurchases of hair beauty devices. We will use these results as basic data for activating and developing hair beauty devices in the hair beauty industry. In addition, we will present the necessity of wet heat hair beauty devices through analysis considering wet heat hair beauty devices.

## **2. Theoretical Background**

### **2.1. Hair beauty device**

### 2.1.1. Hair beauty device

Hair beauty devices refer to tools that directly help with hair styling. In other words, hair beauty devices refer to tools for hair styling and hair care management. Hair beauty devices are devices that help with hair styling, and they refer to heat tools that have the function of drying wet hair, helping with hair styling, and maintaining the hair styling for a certain period of time. The hair beauty devices mentioned here are electric hair beauty devices that can be used for various hair styling designs in addition to drying hair, and they use appropriate heat from the lowest temperature to the highest temperature (60°C to 220°C) to create hair styling. They can be made in various shapes, such as straight or wavy, and are tools that can be maintained for a long time and can be used to create hair styling in a short period of time. Hair beauty devices can be used not only at professional hair salons but also at home to easily and quickly create hair styling. Ji-yoon Kim stated that hair styling tools are heat tools that help with hair styling easily and quickly anywhere[17]. In terms of the functional aspect of hair beauty devices as a heat tool, it can be said to be a hair beauty device that helps dry hair and maintain the hair style for a certain period of time. The electric hair beauty device uses the heat generated in a specific part of the body of the hair beauty device to shape the hair and quickly create various shapes, and the hairstyle created at this time does not become messy for a certain period of time. Currently, hair beauty devices are being released as products that can be easily styled by not only professionals but also ordinary people without difficult techniques. Hair beauty devices are defined as heat tools with performance and functions suitable for hairstyles so that they can sufficiently play the role of hair styling during aesthetic management. Hair beauty devices can be classified into dry heat and wet heat types as they generate heat in a specific part of the body with an electric tool and directly transfer heat to the hair to create a hairstyle shape. In the past, hair beauty devices were mainly used by professionals before they were used by general consumers, and general consumers had difficulty handling them in proportion to the frequency of use by professionals and the frequency of use. Jeong Yun-hee (2017) stated that hair beauty devices were mainly used by professionals, and that general consumers who had difficulty using hair beauty devices inevitably had difficulty in creating their own hairstyles[9]. Currently, the distribution of hair beauty devices in the general market and the diversification of performance [function], design, usability, quality, and convenience of use are increasing, and at the same time, they communicate through media such as YouTube, SNS, and Instagram. As a result, the general public's interest and skills in hair beauty device functions and use methods, and hair styling methods through video lectures are increasing just as much as those of professionals. In a study by Lee Ji-yong and Kim Yong-sun, among consumers in their 10s to 40s who watched self-hair beauty videos, women who purchased hair beauty devices after watching the videos had high expectations for appearance management[18]. Therefore, in this study, the scope of hair beauty devices includes all devices that utilize heat, such as hair dryers, diffusers, dry heat magic machines, moist heat magic machines, dry heat irons, moist heat irons, curling irons, and electric rollers.

### 2.1.2. Dry heat devices and moist heat devices

In order to help understand the purpose of hair beauty devices according to their performance, we reviewed the differences between dry heat and moist heat and the effects on hair by referring to various references and records to examine the performance and types of various hair beauty devices. In other words, we want to understand one of the characteristics of hair beauty devices, which is their function of transferring heat as a medium and helping to create styles. In order to understand the effects of hair beauty devices on hair, if we look at the composition of hair, the hair cuticle is composed of 10-15% of hard keratin protein, and is usually made up of 5-15 layers of transparent and thin cells that overlap like scales[19]. The cortex is the part that determines the quality of hair, accounting for 80-90% of the hair structure, and is composed of cortical cells whose main component is keratin protein and intercellular bonding

substances. The medulla is a central, vacant, dead cells in various shapes (continuous, discontinuous), and in the case of Asians, it contains a small amount of melanin pigment, and forms keratin that is softer than the epidermis and cortex. Hair has hydrophilicity and lipophilicity, and among them, hair has a high moisture absorption property because it has hydrophilicity, and even in normal condition, hair has 10% absolute moisture. Immediately after shampooing, it absorbs about 30-35% of water, and even after drying with a brow dryer, it absorbs about 10-15% of water. If hair loses this absolute moisture, it cannot maintain its shape, and hair damage due to the use of hair beauty devices can be seen as moisture loss due to heat.

Dry heat and wet heat are different methods that affect hair damage due to heat. In dry heat, hair begins to change on the surface of the hair due to heat generation of 70°C, and swelling occurs at 100°C to 120°C, and hardening and deformation of keratin proteins occur. There are differences depending on the temperature of the heat transferred, and when the temperature exceeds 80°C to 100°C, the hair is gradually stimulated, becomes dry, and thinner [20]. When the heat rises above 130°C to 150°C, the hair expands and discolors, and at 270°C to 300°C, the hair begins to burn and decompose [21]. In the case of the hair beauty devices we use, the magic machine or iron is used at 180°C or higher, and at this time, the hair expands and decomposes, and with repeated use, the carbonization phenomenon begins. When the temperature transferred to the hair is around 220°C to 260°C, most of the hair cuticle melts, and when a temperature of 270°C to 300°C is transferred to the hair, the hair burns and decomposes. In other words, if the temperature of the hair beauty device is set to 200°C, the moisture in the hair is rapidly lost due to the temperature of 200°C transferred from the tool during hair styling. At this time, if the heat transfer is not constant, the wavelength becomes irregular and the temperature transferred increases rapidly. Therefore, you can see that the phenomenon of hair burning or breaking is visibly changed. Using heat to style hair shortens the time and is positive in terms of treatment effect, but in terms of hair damage, the degree of damage caused by heat treatment is significant. Currently, most hair beauty devices are made of dry heat principles. Dry heat hair beauty devices use heat, and they are effective in helping to create hair styles by acting as a good medium for transferring wind or heat. However, it is said that the components of hair such as moisture or protein are burned or excessively dried. In other words, irregular heat transfer causes rapid oxidation or deterioration, resulting in phenomena such as damage to the surface or interior of the hair. Depending on the type, dry heat hair beauty devices can cause hair damage, and this can vary depending on the number of times used or the temperature used. Ultimately, when used repeatedly, all dry heat hair beauty devices cause damage to the hair, resulting in a state where the hair cannot maintain its shape. In a study by Kwak Hyung-shim and Kim Yong-im [22], it was warned that irons are temporary setting methods that can temporarily change the shape of hair by directly transferring heat to the hair during hair styling and maintain that shape for a long time, and therefore special care is needed because they can cause damage. However, among these, moist heat hair beauty devices with a design similar to a magic device are made in a form where a special silicone pad acts as a medium to transfer heat to the hair, so damage can be minimized. In general, the advantages of silicone rubber include that the heat usable temperature range is 130°C to 280°C, and it is strong in weather resistance and cold resistance, that is, it maintains elasticity well at very low or high temperatures, and the material is strong. It has electrical properties such as electrical conductivity and flexibility, so it has the advantage of maintaining electrical properties such as insulation resistance and insulation strength over a wide temperature range. Joo Young-cheol et al [23]. reported that the amount of heat lost through natural convection into the air is significantly less than the high thermal conductivity of the substrate to which silicone is bonded. When using a special silicone pad, the wavelength of the heat transferred is constant, so the temperature is transferred evenly with a constant wavelength without the irregular wavelength of the moisture inside the hair, and the temperature transferred to the hair is kept constant. At the same time, since it operates in the same way as the steam principle that uses moisture vaporization, the moisture inside the hair is not lost. When using a moist heat hair beauty device equipped with

a special silicone pad, styling is possible by vaporizing the moisture inside the hair, so the procedure can be performed while holding a large amount of hair.

## 2.2. Consumption value

Values are the most basic and fundamental cognitive expressions of personal desires and goals that are directly related to the “goals of life,” and they also make individuals strive to achieve their goals in life. In this way, values play a role in guiding behavior. In other words, values are personal and socially preferred enduring beliefs about an individual’s behavioral patterns or the final state of existence, and are defined as important beliefs that lead to ultimate goals in all given situations and guide judgment and behavior toward those goals. Depending on the situation, the influence of values theoretically ranges from abstract values to intermediate attitudes to specific behaviors, and the order is value, attitude, and behavior [24].

If we consider the values that humans speak of as general values, consumption values are related to general values, but they are not the same concept. General values are what drive an individual’s life, and consumption values are the standards and beliefs that drive consumption life. An individual’s consumption values are influenced by an individual’s general values, and the tendencies that appear in general values are generally similarly reflected in consumption values [25]. In this way, consumption values are a concept that is limited to values related to consumption. When consumers choose a market, they consider consumption value as a criterion or goal for decision-making in the process of deciding to purchase a product or choosing a specific brand. At this time, consumption value should be considered in various dimensions, not just as a single dimension such as utility or emotional satisfaction. In that sense, it is a concept that strongly and comprehensively influences an individual’s cognitive process and purchasing behavior regarding a product [13].

Consumption value refers to the consumer’s preference and evaluation of the results that occurred after use, not only in terms of performance and attributes, but also in terms of how much the consumer’s purpose or goal was achieved. Other scholars defined consumption value as the totality of products evaluated based on the perception that the consumer paid an appropriate price and received benefits. As we have seen, the concept of consumption value seems to have originated from foreign scholars, and domestic scholars also began to study and conceptualize consumption value as the academic discipline developed.

Consumption value began to be studied as consumption began to become more widespread. Initial consumption value was conceptualized with a focus on products. In other words, products are purchased according to consumption value, and therefore, when the consumption value structure is different, each person purchases a product that fits their value structure [26]. However, it is also possible to purchase the same product even if the value structure is different. Other scholars viewed it as a stable upper-level belief that is personally and socially preferred regarding consumption value in terms of the direction of belief, and as a motive that leads to individual consumption behavior [27]. In this way, the initial focus was on product purchases, but recently, as various services and their values were discussed, the concept of consumption value began to expand. After defining consumption value as an important variable that affects consumer behavior, it was studied [28].

Yoon Soo-mi and Kwon Oh-hyeok, who studied consumption values related to beauty, selected face sensitivity and conspicuous consumption tendency as influential factors and surveyed the general public in their 20s to 50s residing in the metropolitan area [29]. The results showed that some of the sub-factors of face sensitivity had a significant positive effect on beauty consumption value, while all sub-factors of conspicuous consumption tendency had a significant positive effect on beauty consumption value. In other words, other-consciousness, shame, brand orientation, high-price orientation, and conspicuous consumption tendency for



pursuing individuality were all confirmed to be causes of increasing beauty consumption value. Lee Soo-yeon and Kim Seong-nam surveyed SNS consumers and analyzed the relationship between SNS consumption value, satisfaction, and hair product purchase intention in depth[30]. The results of the analysis showed that among the sub-factors of SNS consumption value, hedonic value, utilitarian value, and social value had a strong positive influence on satisfaction, and satisfaction had a significant influence on hair product purchase intention. In particular, the mediating effect was verified, showing that satisfaction partially mediated the influence of SNS consumption value on hair product purchase intention. In this way, SNS consumption value suggests the importance of the consumption value they have through SNS in that it affects both satisfaction and purchase intention.

The classification of consumption value can be composed in various ways depending on the scholar. In the course of this study, by referring to previous studies, the sub-factors of hair beauty device consumption value were largely composed of functional value, economic value, social value, situational value, and emotional value

### **2.3. Repurchase intention**

Intention is generally used as an important variable that predicts and determines behavior in various information technology studies such as the Theory of Reasoned Action (TRA) and the Technology Acceptance Model[31]. As a result, many studies have been conducted based on the intention for a specific behavior, and intention has been studied in various ways depending on the purpose and structure of the study. When the research subject is a product, it is used as purchase intention, when it is repeated, it is used as repurchase intention, and in the case of a tourist destination, it is used as visit intention, revisit intention, etc. Before the concept of repurchase intention, it is necessary to define purchase intention in detail. Purchase intention refers to a consumer's planned future behavior, and it is the possibility that the attitude of belief will be transferred to behavior[32]. In other words, purchase intention is a direct determinant of purchase behavior and is the consumer's intention to perform purchase behavior[33]. In summary, purchase intention refers to the consumer's will to perform purchase behavior as a determinant of consumer purchase behavior. Or, purchase intention refers to the expected or planned future behavior of consumers, and can be said to be the degree to which beliefs and attitudes are translated into actual behavior. The concept that adds the prefix 're' to this concept is repurchase intention. Furthermore, repurchase intention is simply the intention to repurchase, but it has been recognized as an important concept in various studies and fields, and has begun to be studied in detail.

Many scholars have studied repurchase intention, and the concept has also been presented in various ways. Repurchase intention was recognized as one's belief to purchase a product again based on an evaluation of past purchase experience of a specific product. There is a possibility that consumers will be satisfied with the service provided in the future and use it again. In this way, repurchase intention is a concept that emphasizes the consumer's attitude toward repeated purchases, but customer retention is a concept that encompasses the customer's actual usage behavior and attitude of continued usage intention.

In addition, scholars in various fields have defined revisit intention. The main context can be defined as the intention to revisit the business that provides the product or service and repurchase the service or product through satisfaction evaluated through experience. Furthermore, the importance of repurchase intention can be confirmed in that it can examine the image and sustainability that customers have of the product or service through repurchase intention.

There have been various studies on repurchase intentions, but relatively few studies have been conducted on beauty devices. Recently, as the beauty device market has expanded, research has been conducted. In particular, research on hair-related products such as wigs and



hair care products has been conducted, and little research has been conducted on hair beauty devices. Previous studies on repurchase intentions have focused on previous studies related to consumption value and selection attributes as well as repurchase intentions.

Among the studies on consumption value, selection attributes, and repurchase intentions, the following are previous studies related to beauty. In a study by Baek Hyun-jin and Lee Jae-nam[20], the relationship between value consciousness, purchase behavior, and repurchase intentions was studied for women in the self-beauty tribe and women who use beauty devices on their own. The results showed that the correlation between value consciousness, purchase behavior, and repurchase intentions was significant (+), and value consciousness had a positive effect on both purchase behavior and repurchase intentions. This shows that value consciousness plays an important role in consumers purchasing personal beauty devices. Cha Min-kyung and Han Ji-su examined the relationship between AI beauty device experience, satisfaction, brand loyalty, and purchase intention for women who experienced AI beauty devices[34]. The results showed that the more positively the AI beauty device experience was perceived, the higher the satisfaction, and it also had a positive effect on brand loyalty and purchase intention. This proved that marketing through AI is effective.

In this way, in research related to hair and beauty, it seems that both consumption value and selection attributes can have a great influence on repurchase intention.

### **3. Research Method**

#### **3.1. Research subjects**

In this study, a survey was conducted and data was analyzed. In line with the purpose of this study, a survey was conducted for approximately one month from April 9 to May 1, 2024, targeting 262 subjects from their teens to their 60s living across the country.

#### **3.2. Survey design and definition of variables**

The contents of the questionnaire were designed by referring to previous research results and modifying and supplementing to suit the purpose of the study. Hair beauty device consumption value (17 items) was set as independent variables, and repurchase intention (5 items) was set as a dependent variable. Sub-factors of hair beauty device consumption value are 'functional value (6 items)', 'economic value (2 items)', 'social value (2 items)', 'situational value (3 items)', and 'emotional value (4 items)'.

#### **3.3. Research Model**

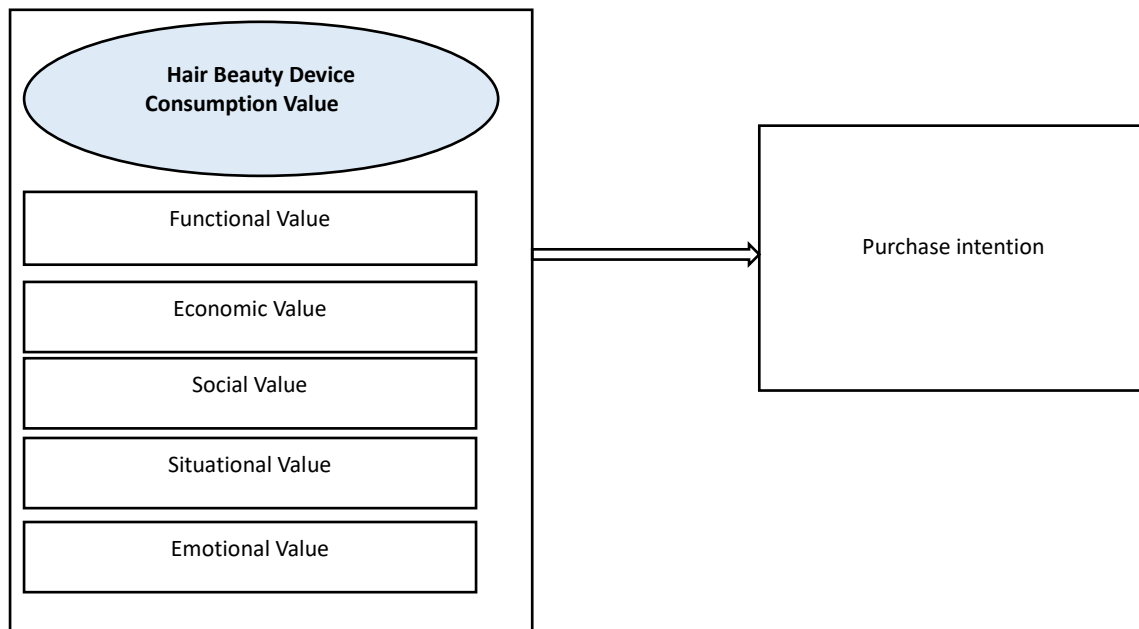
The research model is shown in <Figure 1>.

#### **3.4. Data analysis**

The data of this study were statistically analyzed using the SPSS 25.0 program as follows. First, exploratory factor analysis was performed to analyze the validity of the measurement tool, and the reliability of the items that constituted the factors was analyzed using the Cronbach's alpha coefficient. Second, frequency analysis was performed to identify the general characteristics of the research subjects, and descriptive statistical analysis was performed to identify the level of the research variables. Third, independent sample t-test, one-way ANOVA, and Scheffe's post hoc test were performed to identify whether there were differences in the research variables depending on the characteristics of the research subjects. Fourth, a chi-square test was performed to identify whether there were differences in hair beauty-related characteristics depending on the research subjects' experience with wet heat magic machines. Fifth, multiple regression analysis was conducted to determine the effect of consumption value on repurchase

intention. The statistical analysis was conducted at a significance level of 5% to determine statistical significance.

**Figure 1.** Multiple regression analysis model.



### 3. Results

#### 3.1. General characteristics of the study subjects

For this study, 259 people were analyzed, and the general characteristics of the study subjects are as follows. The gender was 78 men (30.1%) and 181 women (69.9%), and the age was 19 years or younger (3 people) (1.2%), 20~29 years old (79 people) (30.5%), 30~39 years old (26 people) (10.0%), 40~49 years old (90 people) (34.7%), 50~59 years old (52 people) (20.1%), and 60 years or older (9 people) (3.5%). The marital status was 114 unmarried (44.0%) and 145 married (56.0%). The highest level of education was 82 people (31.7%) who graduated from high school or lower, 12 people (4.6%) who were attending junior college, 38 people (14.7%) who graduated from junior college, 33 people (12.7%) who were attending college, 59 people (22.8%) who graduated from college, and 35 people (13.5%) who had completed graduate school or higher. The occupations were 21 people (8.1%) who were full-time housewives, 46 people (17.8%) who were self-employed, 33 people (12.7%) who worked in sales and service, 57 people (22.0%) who were professionals, 4 people (1.5%) who worked in production, and 98 people (37.8%) who worked in other fields. The monthly income was less than 1 million won for 54 people (20.8%), 1 to 2 million won for 37 people (14.3%), and 2 to 3 million won for 54 people (20.8%). 42 people (16.2%) earned between 3 million won and 4 million won, 25 people (9.7%) earned between 4 million won and 5 million won, and 47 people (18.1%) earned over 5 million won.

#### 3.2. Characteristics of using hair beauty devices

##### 3.2.1. Characteristics of using hair beauty devices in hair salons

The characteristics of the research subjects' hair beauty device usage are as follows. In response to the experience of using a moist heat magic machine at a hair shop, 156 people responded that they had 'experienced it'. The purchase intention due to positive experience with

a moist heat magic machine was 127 people (81.4%) who 'wanted to buy it' and 29 people (18.6%) who 'did not want to buy it'. Even if the price of the moist heat magic machine is high, the response to the purchase intention was 115 people (73.7%) who 'intend to purchase' and 41 people (26.3%) who 'not intend to purchase'. The response to the purchase and use of the moist heat magic machine was 110 people (70.5%) who 'purchased' and 46 people (29.5%) who 'tried it but did not purchase'. The awareness of the fact that using a moist heat magic machine reduces hair damage compared to a dry magic machine was 135 people (86.5%) who 'yes' and 21 people (13.5%) who 'no'. The response to the question of whether the use of other hair beauty devices decreased after using the moist-heat magic machine was 'yes' for 106 people (69.2%) and 'no' for 50 people (30.8%). The response to the question of whether they would repurchase and use the moist-heat magic machine was 'yes' for 108 people (69.2%) and 'no' for 48 people (30.8%). The response to the question of whether they would recommend the moist-heat magic machine to others was 'yes' for 117 people (75%) and 'no' for 39 people (25%). The response to whether it would be good if the moist heat magic machine was widely known was 'yes' for 134 people (85.9%) and 'no' for 22 people (14.1%). The response to the response that they would be willing to purchase the moist heat magic machine if it were a general model that was a bit cheaper than the professional model was 'yes' for 126 people (80.8%) and 'no' for 30 people (19.2%). The response to the response that they would be willing to purchase the professional model even if it was more expensive than the general model was 'yes' for 110 people (70.5%) and 'no' for 46 people (29.5%).

### 3.2.2. Characteristics of using hair beauty devices in hair salons

The characteristics of the use of hair beauty devices as home care for the research subjects are as follows. In response to the experience of using a moist heat magic machine at a hair shop, 126 people answered 'I have experienced it'. The purchase intention due to the positive experience of the moist heat magic machine was 115 people (91.3%) who answered 'I want to buy it' and 11 people (8.7%) who answered 'I do not want to buy it'. The response to whether they would purchase a moist heat magic curler even if it was expensive was 94 people (74.6%) who said they would 'intend to purchase' and 32 people (25.4%) who said they would 'not purchase'. The response to whether they would purchase or use a moist heat magic curler was 99 people (78.6%) who 'purchased' and 27 people (21.4%) who 'tried it but did not purchase'. The response to whether they were aware that using a moist heat magic curler reduces hair damage compared to a dry magic curler was 106 people (84.1%) who 'agreed' and 20 people (15.9%) who 'disagree'. The response to the question of whether the use of other hair beauty devices decreased after using the moist-heat magic machine was 'yes' for 99 people (78.6%) and 'no' for 27 people (21.4%). The response to the question of whether they would repurchase and use the moist-heat magic machine was 'yes' for 96 people (76.2%) and 'no' for 30 people (23.8%). The response to the question of whether they would recommend the moist-heat magic machine to others was 'yes' for 105 people (83.3%) and 'no' for 21 people (16.7%). The response to whether it would be good if the moist heat magic machine was widely known was 'yes' for 119 people (94.4%) and 'no' for 7 people (5.6%). The response to the response that they would be willing to purchase the moist heat magic machine if it were a general model that was a bit cheaper than the professional model was 'yes' for 109 people (86.5%) and 'no' for 17 people (13.5%). The response to the response that they would be willing to purchase the professional model even if the moist heat magic machine was more expensive than the general model was 'yes' for 91 people (72.2%) and 'no' for 35 people (27.8%).

### 3.3. Descriptive statistics

In order to determine the level of the research variables measured in this study, the mean and standard deviation were calculated. The average of consumption value was 4.03 out of 5 points, and the sub-factors were functional value 4.55 points, economic value 4.36 points, social value 3.01 points, situational value 3.50 points, and emotional value 4.00 points. The average

of repurchase intention was 4.09 points out of 5 points. All variables met the normality assumption, as shown in <Table 1> below.

**Table 1.** Descriptive statistics.

Variable		Minimum	Maximum	Mean	Standard deviation	Skewness	Kurtosis
Hair beauty device consumption value	Functional value	1.67	5.00	4.55	0.57	-1.57	2.95
	Economic value	2.00	5.00	4.36	0.74	-0.93	0.14
	Social value	1.00	5.00	3.01	1.21	0.22	-0.88
	Situational value	1.00	5.00	3.50	1.03	-0.17	-0.61
	Emotional value	1.00	5.00	4.00	0.81	-0.36	-0.38
	Total	2.47	5.00	4.03	0.58	0.04	-0.68
Repurchase intention		1.00	5.00	4.09	0.73	-0.45	0.10

### 3.4. Validation

#### 3.4.1. Consumption value

Consumption value was finally factor analyzed with 17 items after excluding 9 items that hindered validity. As a result of the analysis, the KMO measure was .904, and the Bartlett's sphericity test result was also significant ( $p < .001$ ), so the factor analysis model was judged to be appropriate. Consumption value was classified into 5 factors, and the 5 factors showed a factor explanatory power of 80.349%. The first factor consisted of 6 items as 'functional value', the second factor consisted of 2 items as 'economic value', the third factor consisted of 2 items as 'social value', the fourth factor consisted of 3 items as 'situational value', and the fifth factor consisted of 4 items as 'emotional value'. Perception of wig wearing was finally factor analyzed with 11 items, excluding one item (item 4) that hindered the validity. As a result of the analysis, the KMO measure was .924, and the result of Bartlett's sphericity test was also significant ( $p < .001$ ), so the factor analysis model was judged to be appropriate. The perception of wig wearing was classified into two factors, and the two factors showed a factor explanatory power of 71.092%. The first factor consisted of three items called 'aesthetic perception', and the second factor consisted of eight items called 'psychological perception', and psychological perception was higher than aesthetic perception.

#### 3.4.2. Repurchase intention

The repurchase intention was factor analyzed with a total of 5 items. As a result of the factor analysis, the KMO measure was .862, and the Bartlett's sphericity test result was also significant ( $p < .001$ ), so the factor analysis model was judged to be appropriate. The repurchase intention was classified into 1 factor, and 1 factor showed a factor explanatory power of 78.030%.

### 3.5. Reliability analysis

All variables in this study had Cronbach's alpha coefficients of .60 or higher, indicating that there were no issues with the reliability of the scale. Details are provided in <Table 2> below.

**Table 2.** Reliability analysis.

Variable		Items	Cronbach's $\alpha$
	Functional value	6	.930

Hair beauty device consumption value	Economic value	2	.842
	Social value	2	.813
	Situational value	3	.846
	Emotional value	4	.921
	Total	17	.901
Repurchase intention		5	.927

### 3.6. Differences in major variables according to general characteristics

To determine whether there were differences in research variables according to general characteristics, an independent sample t-test, one-way ANOVA, and Scheffe's post hoc test were performed.

#### 3.6.1. Gender

An independent sample t-test was conducted to determine whether there were differences in research variables depending on the gender of the research subjects. The analysis results showed that there were statistically significant differences in social and situational values depending on gender. Social values ( $t=3.464$ ,  $p<.001$ ) and situational values ( $t=2.986$ ,  $p<.01$ ) were higher for men than for women.

#### 3.6.2. Age

In order to determine whether there were differences in research variables by age, one-way ANOVA and Scheffe's post hoc test were performed. The results of the analysis showed that there were statistically significant differences in overall consumption value, functional value, emotional value, and repurchase intention by age. The results of the post hoc test showed that overall consumption value ( $F=3.746$ ,  $p<.05$ ), functional value ( $F=3.178$ ,  $p<.05$ ), emotional value ( $F=2.974$ ,  $p<.05$ ), and repurchase intention ( $F=6.760$ ,  $p<.001$ ) were higher in those aged 29 or younger than in those aged 40 to 49.

### 3.7. Differences in hair beauty-related characteristics according to hair beauty device characteristics

#### 3.7.1. Differences in hair beauty-related characteristics depending on whether or not you have experience with moist heat type magic device at hair salons

In order to determine whether there were differences in hair beauty-related characteristics depending on whether or not they had experience with moist heat magic machines at hair shops, a chi-square test was conducted. As a result of the analysis, there was a statistically significant difference in the differences in the main hair beauty devices, hair beauty device purchase cost, number of hair beauty devices, and the most difficult hair styling depending on whether or not they had experience with moist heat magic machines. When examining the main hair beauty devices depending on whether or not they had experience with moist heat magic machines, those with 'experience with moist heat magic machines' had a higher proportion of moist heat magic machines than those with 'no', and those with 'no experience with moist heat magic machines' had a higher proportion of 'dryers and dry heat magic machines' than those with 'yes' ( $\chi^2=19.640$ ,  $p<.01$ ). When looking at the purchase cost of hair beauty devices by experience with moist-heat magic devices, those with moist-heat magic devices had a higher rate of purchasing between 150,000 and 200,000 won and over 200,000 won than those without, and a higher rate of purchasing under 50,000 won than those with no moist-heat magic device experience ( $\chi^2=10.767$ ,  $p<.05$ ). When looking at the number of hair beauty devices by experience with moist-heat magic devices, those with moist-heat magic devices had a higher rate of purchasing

5 or more than those without, and a higher rate of purchasing 1 hair beauty device than those with no moist-heat magic device experience ( $\chi^2=11.241$ ,  $p<.05$ ). When looking at the most difficult hairstyles by experience with moist-heat magic devices, those with experience with moist-heat magic devices had a higher rate of volume styles [root volume] and wave styles than those without, and a higher rate of straight styles than those with experience with moist-heat magic devices ( $\chi^2=10.808$ ,  $p<.05$ ).

**Table 3.** Differences in hair beauty-related characteristics depending on whether or not you have experience with Moist heat type magic device at hair salons.

				Numbers(%)
Item		Experienced (N=156)	no Experience (N=103)	$\chi^2(p)$
Main use hair beauty device	Hair diffuser	3(1.9)	3(2.9)	19.640** (.003)
	Dryer	67(42.9)	56(54.4)	
	Roll-type setting device	5(3.2)	2(1.9)	
	Circular curling device	6(3.8)	3(2.9)	
	Automatic curling device	6(3.8)	4(3.9)	
	Dry heat type magic device	26(16.7)	28(27.2)	
	Moist heat type magic device	43(27.6)	7(6.8)	
Purchase cost	Less than 50,000 won	31(19.9)	33(32.0)	10.767* (.029)
	50,000 won to less than 100,000 won	35(22.4)	25(24.3)	
	100,000 won to less than 150,000	17(10.9)	12(11.7)	
	150,000 won to less than 200,000	16(10.3)	2(1.9)	
	200,000 won or more	57(36.5)	31(30.1)	
Hair beauty device quantity	1	46(29.5)	45(43.7)	11.241* (.024)
	2	47(30.1)	31(30.1)	
	3	28(17.9)	18(17.5)	
	4	9(5.8)	4(3.9)	
	5 or more	26(16.7)	5(4.9)	
Hair type	Straight hair	44(28.2)	29(28.2)	4.481 (.214)
	Semi-curly	98(62.8)	58(56.3)	
	Curly	11(7.1)	9(8.7)	
	Strong curly	3(1.9)	7(6.8)	
The most difficult hair styling	Straight [natural hair] style	20(12.8)	23(22.3)	10.808* (.029)
	Volume style [root volume]	67(42.9)	40(38.8)	
	C-curl style	12(7.7)	11(10.7)	
	Wave style	51(32.7)	20(19.4)	
	Part ones' hair style	6(3.8)	9(8.7)	

Note: \*  $p<.05$  \*\*  $p<.01$  \*\*\*  $p<.001$ .

### 3.7.2. Differences in hair beauty-related characteristics according to experience using moist heat type magic device used for home care



In order to determine whether there were differences in hair beauty-related characteristics depending on whether or not they had experience using a moist heat magic device, a chi-square test was conducted. The results of the analysis showed that there were statistically significant differences in the differences in the primary hair beauty devices, hair beauty device purchase costs, number of hair beauty devices, and hair types depending on whether or not they had experience using a moist heat magic device. When examining the primary hair beauty devices depending on whether or not they had experience using a moist heat magic device, those who had experience using a moist heat magic device had a higher proportion of moist heat magic devices than those who had not, and those who had experience using a moist heat magic device had a higher proportion of 'dryers and dry heat magic devices' than those who had not ( $\chi^2=41.429$ ,  $p<.001$ ). When looking at the cost of purchasing hair beauty devices by experience with using a moist-heat magic device, those who 'had experience using a moist-heat magic device' had a higher rate of purchasing between 150,000 won and 200,000 won and over 200,000 won than those who 'did not have experience using a moist-heat magic device', and those who 'did not have experience using a moist-heat magic device' had a higher rate of purchasing under 50,000 won than those who 'did' ( $\chi^2=19.571$ ,  $p<.001$ ). When looking at the number of hair beauty devices by experience with using a moist-heat magic device, those who had experience using a moist-heat magic device had a higher rate of purchasing 5 or more than those who had no experience using a moist-heat magic device, and those who had no experience using a moist-heat magic device had a higher rate of purchasing 1 than those who had experience using a moist-heat magic device ( $\chi^2=19.435$ ,  $p<.001$ ). When looking at hair types according to experience using a wet heat magic machine, those with experience using a wet heat magic machine had a higher rate of semi-curly hair than those without, and those without experience using a wet heat magic machine had a higher rate of straight hair than those with experience ( $\chi^2=9.384$ ,  $p<.05$ ). Details are as shown in <Table 4> below.

**Table 4.** Differences in hair beauty-related characteristics according to experience using Moist heat type magic device used for home care.

		Numbers(%)		
Item		Experienced (N=126)	no Experience (N=133)	$\chi^2(p)$
Main use hair beauty device	Hair diffuser	2(1.6)	4(3.0)	41.429*** (<.001)
	Dryer	54(42.9)	69(51.9)	
	Roll-type setting device	4(3.2)	3(2.3)	
	Circular curling device	5(4.0)	4(3.0)	
	Automatic curling device	4(3.2)	6(4.5)	
	Dry heat type magic device	14(11.1)	40(30.1)	
	Moist heat type magic device	43(34.1)	7(5.3)	
Purchase cost	Less than 50,000 won	21(16.7)	43(32.3)	19.571*** (<.001)
	50,000 won to less than 100,000 won	28(22.2)	32(24.1)	
	100,000 won to less than 150,000 won	11(8.7)	18(13.5)	
	150,000 won to less than 200,000 won	15(11.9)	3(2.3)	
	200,000 won or more	51(40.5)	37(27.8)	
Hair beauty device quantity	1	35(27.8)	56(42.1)	19.435*** (<.001)
	2	36(28.6)	42(31.6)	
	3	23(18.3)	23(17.3)	

	4	6(4.8)	7(5.3)	
	5 or more	26(20.6)	5(3.8)	
Hair type	Straight hair	32(25.4)	41(30.8)	9.384* (.025)
	Semi-curly	85(67.5)	71(53.4)	
	Curly	8(6.3)	12(9.0)	
	Strong curly	1(0.8)	9(6.8)	
The most difficult hair styling	Straight [natural hair] style	20(15.9)	23(17.3)	5.296 (.258)
	Volume style [root volume]	53(42.1)	54(40.6)	
	C-curl style	7(5.6)	16(12.0)	
	Wave style	40(31.7)	31(23.3)	
	part ones' hair style	6(4.8)	9(6.8)	

Note: \*p<.05 \*\*p<.01 \*\*\*p<.001.

### 3.8. The effect of consumption value on repurchase intention

Multiple regression analysis was conducted to verify the effect of consumption value on repurchase intention. As a result of verifying the regression model,  $F=88.171(p<.001)$  was found to be appropriate for the regression model, and the explanatory power of the model was approximately 63.5%. Meanwhile, the Durbin-Watson statistic was 1.875, which was close to 2, indicating that there was no problem with the assumption of independence of residuals. The tolerance was all 0.1 or more, and the variance inflation factor (VIF) was less than 10, indicating that there was no multicollinearity problem.

As a result of verifying the significance of the regression coefficient, the functional value, situational value, and emotional value of consumption value were found to have a significant positive (+) effect on repurchase intention. In other words, the higher the functional value, situational value, and emotional value of consumption value, the higher the repurchase intention. It was found that emotional value ( $\beta=.681, p<.001$ ), functional value ( $\beta=.143, p<.01$ ), and situational value ( $\beta=.120, p<.05$ ) had an effect on repurchase intention in that order. Details are as shown in <Table 5> below.

**Table 5.** Effect of consumption value on repurchase intention.

Independent variable	B	S.E	$\beta$	t	p	tolerance	VIF
(constant)	0.623	0.232		2.684**	.008		
Functional Value	0.184	0.066	.143	2.778**	.006	.543	1.842
Economic Value	-0.016	0.054	-.016	-0.292	.771	.493	2.028
Social Value	-0.026	0.028	-.043	-0.934	.351	.686	1.457
Situational Value	0.086	0.037	.120	2.314*	.021	.532	1.879
Emotional Value	0.619	0.045	.681	13.870***	<.001	.597	1.675

$F=88.171(p<.001)$ ,  $R^2=.635$ , adjusted  $R^2=.628$ , Durbin-Watson=1.875

Note: \*p<.05 \*\*p<.01 \*\*\*p<.001.

## 4. Discussion and Conclusion

In This study focused on hair beauty devices that have recently been widely used. The purpose of the study was to examine whether the repurchase intention varies depending on the consumption value of hair beauty devices. In addition, the relationship between the sub-factors of consumption value and the repurchase intention was analyzed through multiple regression analysis. Through this, the path leading to the repurchase of hair beauty devices was examined, and it was intended to serve as basic data on hair beauty devices in the hair beauty industry. To this end, this study identified the general characteristics of the research subjects, hair-related characteristics, and descriptive statistics of variables, and verified them through difference analysis, cross-analysis, and multiple regression analysis.

The research results verified according to the analysis method are as follows.

First, hair beauty devices used for hair styling are diverse, but the most frequently used ones are hair dryers and magic machines, and the most frequently used locations are the forehead, and the most difficult locations are the crown and the back of the head. The hair devices mainly used for hair styling (shaping) were hair diffusers, used by 6 people (2.3%), and dryers (when used for hair styling) were used by 123 people (47.5%), excluding those for drying wet hair. Others included roll-type setting devices by 7 people (2.7%), circular curling devices by 9 people (3.5%), and automatic curling devices by 10 people (3.9%), followed by magic devices (dry heat) by 54 people (20.8%) and magic devices (wet heat) by 50 people (19.3%). Among these, the location that consumers consider most important when using home styling hair beauty devices was the forehead by 119 people (45.9%), followed by the crown and back of the head by 143 people (55.2%), which they found most difficult. That is, consumers were able to find out that they were concerned about the parts that were most visible in front of their faces and most visible during the day when using hair beauty devices, while on the other hand, it was judged that styling parts that were not easily visible was difficult, and that they did not have a sense of touch or long-term experience in the position or direction of holding the hair beauty device for hair styling, and that they were having difficulty in achieving the desired hair style due to the inconvenience of using the hair beauty device.

Second, in the results related to the wet heat magic device, 127 out of 156 people (81.4%) 'experienced' it at a hair shop, and 115 out of 126 people (91.3%) used it for home care, showing a high purchase rate based on experience. The response to purchasing the wet heat magic device was high based on the usage experience. The repurchase rate was high at 108 people (67.9) at a hair shop and 96 people (76.2%) at home care. More than half of general consumers are aware of the wet heat magic device. Considering that consumers who are aware of this are more likely to use wet-heat magic devices than expected, it is thought that the use of wet-heat magic devices will increase further if consumers who have not used wet-heat magic devices experience them.

Third, in the results of verifying the differences according to general characteristics and hair beauty device-related characteristics, it was found that there were significant differences in variables according to gender, age, marital status, and occupation. First, among the differences according to general characteristics, there were differences in consumption value and hair beauty device selection attributes according to gender. In the study of Yang Yoon and Lee Eun-ji (2002), who studied past consumption values, women showed higher consumption values than men[27]. On the contrary, in this study, men showed higher consumption values and hair beauty device selection attributes than women. This indicates that men are more interested in hairstyles than women. In other words, it means that men's evaluation of aesthetic value has also increased. Most variables showed differences according to age. Except for perceptual value, those under 29 years of age had higher levels than those under 40-49 years of age, including

consumption value, hair beauty device selection attributes, purchase satisfaction, and repurchase intention. In addition, in the differences according to marital status, most variables were higher for singles than for marrieds. This suggests that it is easy to purchase hair beauty devices when single, and that the consumption value is measured higher. The fact that single people have a higher consumption value for aesthetics than married people can be seen as meaning that married people do not pursue aesthetic values. In other words, married people can be interpreted as pursuing other values rather than aesthetic values because their desires for love and marriage have been satisfied. Fourth, consumption value was found to have a significant effect on repurchase intention. Among consumption values, functional value, situational value, and emotional value had a significant effect on repurchase intention. Among them, emotional value showed the highest influence. Therefore, it seems that the buyer's emotion plays an important role in the purchase of hair beauty devices. The result that consumption value affects various variables can be seen as similar to the effect of consumption value consciousness on selection attributes and purchase intention. In summary, the value that consumers consider important is an important variable in the purchasing process in that it affects purchase satisfaction, selection attributes, and repurchase intention for various products[24][26][28]. Despite these research results, the following limitations and suggestions can be made.

First, this study conducted research on hair beauty devices targeting general consumers. However, the most common users of hair beauty devices are hairdressers. Therefore, it is suggested that follow-up research on hair beauty devices be conducted targeting hairdressers.

Second, this study conducted research on wet heat magic devices, but there is a limitation in that many people without knowledge about them were included. Therefore, in follow-up research, it is necessary to expand the experimental research to provide actual experience with wet heat magic devices and then examine the effects of this experience and other variables.

This study confirmed how much the consumption value of hair beauty devices affects repurchase intention. In addition, as the opportunity to understand the difference between dry heat and moist heat hair beauty devices is gradually expanded, it is expected that the purchase or repurchase of hair beauty devices will occur based on consumer satisfaction in the beauty industry, as it will allow customers to style their hair in a better environment and help them have safe and healthy hair.

## 5. References

### 5.1. Journal articles

- [1] Yoon BH & Kim YS & Choi EJ. The Influence of NCS-based Curriculum on Learning Satisfaction of the Beauty related Sector Learners for Job Protection -Focusing on the Mediating Effect of Learning Immersion-. *Protection Convergence*, 6(4), 47-57 (2021). [\[Read More\]](#)
- [2] Choi EJ. A Study of the Effect of Beauty Consumer Sentiment after Covid-19 on Hair Salon Revisit Intention. *Protection Convergence*, 8(2), 54-65 (2023). [\[Read More\]](#)
- [3] Jang MW & Lim DH. Emergence and Transformation of K-Smart Beauty Care. *Protection Convergence*, 7(1), 47-58 (2022). [\[Read More\]](#)
- [4] Kim SJ & Lee JB. Analysis of Properties of Deconstruction & Hair Expression Components in Maison Margiela Collection. *Protection Convergence*, 9(1), 25-33 (2024). [\[Read More\]](#)
- [5] Kim JM & Choi EJ. The Effect of Beauty Shop Service Quality on Revisit Intention. *Protection Convergence*, 9(1), 14-24 (2024). [\[Read More\]](#)
- [7] Kim SH & Jung SG. Design Study on the Home-care Beauty Devices based on the UX Product and Service Design of the Vibrating Cleanser. *Journal of Industrial Design Studies*, 10(3), 23-34 (2016).
- [8] Park JB & Kim MS. A Study on the Actual Condition and Satisfaction of Home Care using Beauty Devices. *Journal of the Korean Society of Cosmetics and Cosmetology*, 11(1), 1-22 (2021).

- [11] Lee CE & Chung KY. Differences of Determinant Attributes of Hotel Selection by Segmentation of Consumption Value: Focused on Foreign Hotel Customers of First Grade Hotels in Seoul. *Korean Journal of Hospitality and Tourism*, 20(4), 39-56 (2011).
- [12] Gutman J & Vinson DE. Value Structures and Consumer Behavior. *Advances in Consumer Research*, 6(1), 335-339 (1979).
- [13] Sheth JN & Newman BI & Gross BL. What We Buy: A Theory of Consumption Values. *Journal of Business Research*, 22(2), 159-170 (1991).
- [14] Chung IK & Park CJ. A Study of the Effects of the Customer Value and Switching Barriers on the Repurchase Intention in Internet Shopping Malls. *Asia Pacific Journal of Information Systems*, 14(1), 185-209 (2004).
- [15] Kim HA & Jung OJ & Park JY. The Effect of Essential and Selective Complementary Goods on Purchasing Intention: Focusing on the Moderating Effect of Functional and Hedonic Consumption Value. *Journal of Channel and Retailing*, 24(4), 77-97 (2019).
- [18] Lee JY & Kim YS. Differences on the Cosmetic Purchasing Behavior according to the Appearance Management of Female Audiences in their 10~40s for Self-beauty Videos. *Journal of the Korean Society of Cosmetology*, 21(5), 968-976 (2015).
- [20] Baek HJ & Lee JN. Influence of Value Consciousness on Purchase Behavior and Repurchase Intention for Personal Beauty Devices among Women in Self-beauty Care. *Journal of the Korean Applied Science and Technology*, 37(4), 958-96 (2020).
- [21] Lee YR. A Study on the Characteristics of Personal Beauty Devices in the Beauty Tech Industry. *The Korea Beauty Art Management Association*, 18(3), 85-104 (2024).
- [23] Joo YC & Lee JW & Joo YC & Kang CS. Effect of Moving Velocity of the Heat Source on Bonding Strength in the Direct Silicon Wafer Bonding using Linear Annealing Method. *Korean Journal of Metals and Materials*, 39(1), 110-116 (2001).
- [24] Seo SO & Kang SI & Kim YJ. A Study on Consumers' Purchasing Motives, Source, and Shop Choice Attributes of Beauty Service according to Their Values. *Journal of the Korean Society of Cosmetology*, 18(1), 60-69 (2011).
- [25] Koo MJ & Kim RD & Kim SY & Rha JY & Yeo JS & Choi HC. Measuring and Mapping Consumption Values. *Journal of Consumer Studies*, 26(6), 235-266 (2015).
- [26] Baek SY & Lee SJ. The Effect of Adolescents' Consumption Values on the Clothing Products Evaluation. *Journal of the Korean Society of Consume*, 50(6), 59-72 (2000).
- [27] Yang Y & Lee EJ. The Comparison of Male and Female College Students' Value System and Recognition of Importance in Product Attributes. *Korean Journal of Social and Personality Psychology*, 3(1), 63-87 (2002).
- [28] Kang HK & Cho HK. The Effect of Consumption Value on Eco Friendly Cosmetics Purchasing Behavior. *The Journal of the Korea Contents Association*, 21(2), 562-571 (2021).
- [29] Yun SM & Kwon OH. The Effect of Consumers' Face Sensitivity and Conspicuous Consumption Propensity on Beauty Consumption Value. *Journal of the Korean Society of Cosmetology*, 28(5), 962-971 (2022).
- [30] Lee SY & Kim SN. The Effect of SNS Consumption Value on Satisfaction and Intention to Purchase Hair Products. *Journal of Beauty Art Management*, 17(3), 179-199 (2023).
- [31] Kim MS & Han YS. Understanding Consumer Behavior on On-line Shopping: An Application of the Theory of Reasoned Action and the Theory of Planned Behavior. *Korean Journal of Social and Personality Psychology*, 15(3), 17-32 (2001).
- [33] Han SR & Park CK. Determinants of Consumer Buying Intention in Online Environment: Analysis of Flow Concept. *Korean Journal of Marketing*, 15(1), 187-204 (2000).
- [34] Cha MK & Han JS. Impact On Brand Loyalty And Buying Intention In The Fourth Industrial Revolution Experience Helped Cosmetic Brand of Device AI Beauty. *Journal of the Korean Society of Cosmetics and Cosmetology*, 10(2), 187-197 (2020).

## 5.2. Thesis degree

- [9] Jung YH. A Study on the Usage and Purchasing Behavior of Self-hair Styling Equipment. Seokyeong University, Master's Thesis (2017).
- [10] O MS. Wave-forming Effects with the Development and Application of Hairstyling Tools. Kwangju Women's University, Doctoral Thesis (2020).
- [16] Jin J. Relationship between Service Quality, Customer Satisfaction and Repurchase Intention. Paichai University, Master's Thesis (2010).
- [17] Kim JW. A Study on Recognition and Satisfaction about Beauty Product Launching on TV Home Shopping by Famous Hairdresser. Seokyeong University, Master's Thesis (2016).
- [19] Choi Ek. A Study on the Effect of Flat Iron Treatment on Hair Damage during Magic Straight Perm. Konkuk University, Master's Thesis (2016).

### 5.3. Books

- [22] Kwak HS & Kim Yi & An IH & Cho JM. A History of Beauty Culture (2014).
- [32] Engel JF & Blackwell RD & Miniard. Consumer Behavior. Holt, Rinehart and Winston (1990).

### 5.4. Additional references

- [6] <https://www.khidi.or.kr> (2021).

## 6. Appendix

### 6.1. Author's contribution

	Initial name	Contribution
Lead Author	HJ	-Set of concepts <input checked="" type="checkbox"/>
		-Design <input checked="" type="checkbox"/>
		-Getting results <input checked="" type="checkbox"/>
		-Analysis <input checked="" type="checkbox"/>
		-Make a significant contribution to collection <input checked="" type="checkbox"/>
		-Final approval of the paper <input checked="" type="checkbox"/>
Corresponding Author*	EC	-Corresponding <input checked="" type="checkbox"/>
		-Play a decisive role in modification <input checked="" type="checkbox"/>
		-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>
		-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>
		-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

\*Copyright: ©2024 by the authors. Licensee **J-INSTITUTE**. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

#### Submit your manuscript to a J-INSTITUTE journal and benefit from:

- Convenient online submission
- Members can submit papers in all journal titles of J-INSTITUTE
- Rigorous peer review
- Open access: articles freely available online
- High visibility within the field
- Retaining the copyright to your article

Submit your next manuscript at ► [j-institute.org](https://j-institute.org)



## Public Value

Publisher: J-INSTITUTE  
ISSN: 2435-3337

Website: j-institute.org  
Editor: admin@j-institute.org

Corresponding author\*  
E-mail: djkim0331@naver.com

DOI Address:  
dx.doi.org/10.22471/value.2024.9.0.70



Copyright: © 2024 J-INSTITUTE

### Direction of Innovation in the Use of Smart Beauty Device for Sustainability of Korea's Beauty Industry

Chanhyung Lee<sup>1</sup>

Myongji University, Seoul, Republic of Korea

Jonghyeok Kim<sup>2\*</sup>

Myongji University, Seoul, Republic of Korea

#### Abstract

**Purpose:** In Korean society, the use of scientific and data-based skin care and beauty equipment that can enhance skin improvement effects is rapidly increasing, and effectiveness research related to skin improvement effects is also increasing. This study was conducted with the purpose of proposing a smart beauty direction using skin care equipment for the sustainability of the Korean beauty industry, which is not limited to cosmetics exports. The contents of this study can help set the innovative direction of K-Smart Beauty.

**Method:** In this study, to investigate the sustainability of the Korean beauty industry, we conducted a literature search related to the beauty industry published within the past 10 years in Korea Research Information Sharing Service, PubMed, and Google Scholar. Among them, a literature review was conducted on papers judged to be deeply related to the content of the study.

**Results:** Smart beauty device utilizes convergence IT technology to measure physical condition and is becoming an innovative way to improve an individual's appearance to be healthy and beautiful. Providing a scientifically tailored beauty care method that individually considers the characteristics of each factor and type of the body can provide sophisticated and effective results, unlike beauty methods, and can scientifically reflect how to maintain and improve health. It is a system that exists. As a result of the study, the concept and licensing standards for non-medical health care services in Korea were confirmed through a literature review. We classified the types of smart beauty equipment, presented their main functions, and confirmed that a new leap forward is needed, including sustainability.

**Conclusion:** Smart Beauty can be seen as a field that integrates the management of individual beauty and health by expanding the concept of Beauty & Health based on modern technology and knowledge. The scientific field of smart beauty equipment is an essential part, and therefore, the direction of research will require a hybrid type of research that combines the fields of natural science and social science.

**Keywords:** Beauty Industry, Sustainability, Smart Beauty, Device, Innovation

## 1. Introduction

In Korean society, the use of scientific and data-based skin care and beauty equipment that can enhance skin improvement effects is rapidly increasing, and effectiveness research related to skin improvement effects is also increasing. Innovation in industrial technology that combines artificial intelligence and big data is being introduced in the beauty service industry, and the domestic and foreign beauty industry is also paying attention to strengthening beauty tech services, which are a fusion of beauty and technology[1][2].

In general, Beauty Tech is classified as a compound word of beauty and technology, and refers to the 'fusion of beauty and IT.' Currently, artificial intelligence (AI), Internet of Things (IoT), big data, cloud, mobile, biotechnology, and nanotechnology are converging in various ways[3]. In

Korea, the beauty industry is entering the technological era. This trend, called Smart Beauty or Beauty Tech, is showing rapid growth in the beauty device market as the consumer base is becoming more diverse and segmented.

In Korea, the new industry paradigm, represented by anti-aging and pure aging, is changing to suit the characteristics of pursuing healthy beauty and is expanding into new area [4]. As the home care trend continues to grow rapidly, the beauty industry has recently expanded into home care. Investment in and development of care beauty devices is increasing. In addition, as the size and sales of the beauty market grow, the capabilities required for beauty industry managers also increase, and the smart beauty field is emerging as a blue ocean [5][6][7].

In addition, looking at the view defining the concept of beauty device, beauty device is classified as something that is applied to people, such as skin, hair, and whole body. In addition, skin condition observation and measurement devices, vibrators using electric current force, skin brushing, scrubbing, skin steam injection, vacuum suction, body massage, hair removal, and others are classified as including equipment used using electricity [8][9][10]. Therefore, a beauty device can be said to be equipment for beautifying, maintaining, and protecting the entire body, including the face. Therefore, beauty device can be seen as a comprehensive concept for the pursuit of human beauty, focusing on various devices or devices used for beauty.

Beauty devices currently on the market in Korea can be mainly divided into two types: devices that measure and analyze the skin, and devices that treat the skin. These beauty devices have recently been attracting attention in the health industry for body shape management as well as for improving skin problems, because they provide higher effectiveness and convenience compared to existing methods [11][12]. In this study, we would like to suggest a smart beauty direction that utilizes skin care equipment for the sustainability of the Korean beauty industry, which is not limited to cosmetics exports. The contents of this study can help set the innovative direction of K-Smart Beauty.

## **2. Smart Beauty Device Types and Main Functions**

### **2.1. Korea's non-medical healthcare service concept and equipment approval standards**

Non-medical health care services in Korea are complex due to the conflicting positions of stakeholders such as the medical community, health care service providers, and consumer groups. Accordingly, Korea's Ministry of Health and Welfare attempted to establish standards for medical and non-medical health care services through in-depth discussions starting in May 2018, and finally, on May 21, 2019, the Ministry of Health and Welfare approved the standard for non-medical health care services. Management service guidelines were presented. These non-medical health care service guidelines are defined as a limited provider-centered area and clearly present permission and prohibition regulations [13].

First, in Korea, medical devices are devices, machinery, materials, or similar products that are used individually or in combination on humans or animals in accordance with Article 2 of the Medical Device Act, and are used for the purpose of diagnosis, treatment, or prevention of disease, or for inspection and replacement of structure or function. It is also stated that it is a product used for the purpose of modification. According to the Medical Device Industry Analysis Report of Korea Health Industry Development Institute (2019), the medical device industry is a complex and diversified industry that is highly influenced by government policies and management systems and demand is limited to medical institutions.

However, the concept of the health industry has a different interpretation. In Korea, there are no regulations defining the legal concept of beauty devices in positive law. However, if you look at Article 4, Paragraph 4, Item 1 of the Public Hygiene Management Act, it states that 'pure

makeup or skin care will be performed without the use of medical devices or medicines,' so the use of medical devices is prohibited. Since the use of medical devices is explicitly stipulated in the law, the legal concept of skin care equipment can be said to be devices used for beauty work excluding medical devices. Therefore, in Korea, skin care equipment is classified and managed as beauty equipment and industrial products. According to this classification, devices used in beauty salons or skin care salons for beauty purposes are classified as beauty devices. Excluding devices with a clear medical purpose, devices used for skin care purposes are classified as industrial products[14].

Currently, Korea's beauty & healthcare industry is changing in various fields with new concept convergence medical devices and smart healthcare, and includes clinical medicine, electronics, and machinery from the design and manufacturing stages. Materials, optics. It is transforming into a field characterized by the application and application of various disciplines such as electricity and the occurrence of technological convergence. However, since medical equipment permission and usage regulations are strictly regulated, this paper includes management of KC-certified products subject to the Electrical Appliances and Household Products Safety Management Act, excluding medical equipment, in the K Smart Beauty area.

In Korea, the Electrical Appliances and Household Products Safety Management Act is categorized as electrical appliances subject to safety confirmation and is approved with the Korea Certification (KC) mark. In order to protect people's lives, bodies, and property from hazards such as fire and electric shock caused by the use of electrical appliances, only electrical appliances whose safety has been verified can be distributed in the domestic market, targeting electrical appliances, household goods, and children's products. It is a mandatory certification system implemented in accordance with the Safety Management Act regarding the safety of food and production facilities. The following <Table 1> shows the researchers' classification of medical devices, non-medical devices, and labeling methods according to the approval standards [15][16].

**Table 1.** Device classification according to permit standards.

No.	Major category	Middle classification	Subcategory	Note
1	Medical equipment	Medical device	Ultrasound stimulator (pain relief)	Medical device marking
			Skin scrubber (medical scraping device)	Medical device marking
			HF10-PLUS high frequency equipment	Medical device marking
2	Non-medical equipment	Hairdressing & beauty device	Flyger	KC Certification
			Hi Pladual (Ilon Plasma)	KC Certification
			high frequency foot thermometer	KC Certification
			Hysonic IOT	Quality management and Industrial product safety act
			Zero feel	Quality management and Industrial product safety act
			RF beauty container	KC Certification
			Energy up	KC Certification
			Aqua peeling machine	KC Certification
			Mist sprayer	KC Certification
			Dual Motion Cleanser	KC Certification
			Infrared radiation skin care device (white tanning machine)	KC Certification

		Skin care device	Oxygen ion generator (O2Derm)	KC Certification
			HIFU	KC Certification
			Miraclezyme	KC Certification
			Electric massager (Terranova)	KC Certification
			PolkaRF (Fractional)	KC Certification
			Nanotherapy low level laser	KC Certification
			I-COOL-PLUS multi-ultrasonicator	Quality management and Industrial product safety act
		Etc.	Invidum	KC Certification
			Hair humidifier	KC Certification
			Hydrojection	KC Certification
			Eco tuning body device	KC Certification
			LED magnifying glass	KC Certification
		Selfies Electric MTS beauty device	Quality management and Industrial product safety act	
3	No classification	Electric MTS beauty device	No classification mark	
		Heated dome	No classification mark	
		Air gun	No classification mark	

## 2.2. Classification according to current size and effect of device

Biocurrent used in beauty devices is a method that uses the stimulation or sedative effect of electricity on nerves or muscles to soothe pain or spasms and restore paralysis of muscles or perception. Therapeutics and treatments that use electricity in the living body have been studied for a long time, and research is still actively underway. Electrical treatment is divided into direct current, alternating current, and pulsating current, and is widely used in medical devices and skin care devices in the form of focused ultrasound, low frequency, high frequency, and microcurrent. The following <Table 2> presents the classification of smart beauty devices according to current size and wavelength and their effects on the human body[15].

**Table 2.** Classification according to the size and wavelength of current and its effect on the human body[15].




Division	Size of electric current and its effect on the human body	
Low frequency	<ul style="list-style-type: none"> <li>Current with a frequency of 1 to 1,000 Hz or less</li> <li>Alternating current that can cause mechanical reactions without chemical effects</li> </ul>	<ul style="list-style-type: none"> <li>Muscle contraction, removal of waste products, removal of congestion</li> <li>Increased sebum secretion by promoting hormone metabolism and circulation metabolism</li> </ul>
Mid frequency	<ul style="list-style-type: none"> <li>Current that uses currents in the frequency range of 1,000 to 10,000 Hz by interfering with each other</li> <li>Frequency current with the least resistance to the human body</li> </ul>	<ul style="list-style-type: none"> <li>Strengthens cell metabolism and connective tissue</li> <li>Promotes cell activity and improves permeability of cell membrane, promoting transdermal absorption</li> <li>Stimulates the autonomic nerves to tighten tissues and strengthen muscles through muscle contraction and relaxation.</li> </ul>
High frequency	<ul style="list-style-type: none"> <li>Current with a frequency of 100,000 Hz or higher</li> <li>When electrical energy is applied to the tissue, the molecules that make up the tissue vibrate and rub against each other, converting it into heat energy.</li> </ul>	<ul style="list-style-type: none"> <li>Electromagnetic waves are transmitted to tissues and generate heat.</li> <li>Increased tissue temperature, improved cell function, and increased blood flow</li> </ul>






Microcurrent	<ul style="list-style-type: none"> <li>▪Current with a low frequency of 1~20Hz</li> <li>▪Using bioelectricity flowing through cells in the human body</li> </ul>	<ul style="list-style-type: none"> <li>▪Lifting effect by contracting and relaxing muscles, causing them to expand and then smoothing out wrinkles.</li> <li>▪Repair damaged tissue. Naturally recovers wounds and pain by producing protein</li> </ul>
Ultrasound	<ul style="list-style-type: none"> <li>▪Current with a frequency of 20KHz or higher</li> <li>▪Principle using strong vibration waves of 20,000 waves per second</li> </ul>	<ul style="list-style-type: none"> <li>▪Effect of increasing elasticity through microvibration</li> </ul>

### 2.3. Introduction to smart beauty device types and main functions

In this study, equipment for smart beauty management was divided into ultrasound, high frequency, microcurrent, high-brightness LED, and thermal equipment. <Figure 1> below is classified by our research team according to the size of the current used, wavelength, equipment specifications, and scope of application to the human body [17][18][19][20][21].

**Figure 1.** Classification according to size and wavelength of current used and equipment specifications.

Division	Actual photo	Mechanism of application to human body	Manufacturer and name
Radio Frequency (RF)		Energy transfer to the dermal layer of the skin, wrinkle improvement, skin elasticity, applied to thin skin on the face	Daeju Medical skin booster (Thermage)
Microcurrent radio frequency (RF),		Cellulite reduction effect, discharge of human waste,	MSR E-slim
Radio Frequency (RF) Ultrasound therapy Iontophoresis, Plasma		Skin regeneration, antibacterial effect, Scalp care, scalp condition measurement	MSR surpriseim
Microcurrent, Ultrasound Radio frequency (RF), Cavitation,		Increased skin elasticity, muscle relaxation effect, heat management	Daeho Electronics Industry Klia celline

Microcurrent		Muscle relaxation effect, nerve stability, blood circulation, facial contour, muscle pain relief	Herzej LIVEON
Ultrasound		Application of human fascia layer, wrinkle improvement, skin lifting	Dongseo Meditech Co., Ltd. Fluet (Hifu)
Ultrasound Microcurrent Iontophoresis		Skin regeneration, blemishes, freckles and skin tone improvement, whitening, moisturizing,	Daeju Medical Miraclezyme
High brightness LED blue, green, yellow, red, IR 5 wavelengths		Skin regeneration, acne, scalp, skin soothing	Dongseo Meditech Co., Ltd. Petit Lux
Heated bed Heated dome		Heating effect, muscle relaxation, improved blood circulation	Haheonju Thermal Health Science Co., Ltd. SNB Energy Dome Bed

### 3. Smart Beauty Concept and Three Elements of Sustainability

In Korea's recent prior research, the concept of smart beauty was meant as a mnemonic symbol for each habit to set a specific goal. Looking at the content, it is divided into S (Specific), M (Measurable), A (Action-oriented), R (Realistic), T (Time-sensitive), etc. It is expressing. Furthermore, smart beauty is eco-friendly, economical, efficient, and everyone-friendly, following a shift in perception to view health intervention factors and aesthetic pursuits as an integrated



whole. For etc. Therefore, it is claimed that it includes 4E elements and is oriented toward the characteristics of complex studies[22].

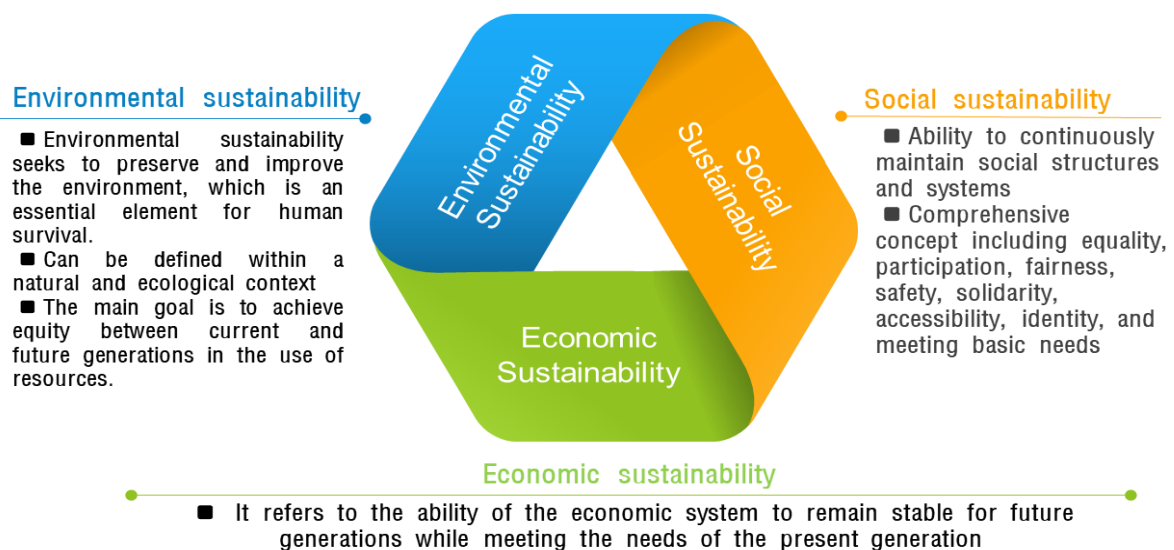
Sustainability of smart beauty refers to the overall ecosystem environment that will be maintained in the future, and is a comprehensive approach that meets the environmental, social, and economic needs of the current and future generations through an integrated approach. In other words, it is a systematic concept that includes the preservation of natural resources, social fairness, and economic prosperity, and can be interpreted as a common right encompassing all generations that meets the needs of the current generation and does not harm the permanence of future generations[23]. Sustainability is not limited to one concept and can generally be explained in three areas: environment, economy, and society.

First, environmental sustainability can be defined within a natural and ecological context to preserve and improve the environment, which is an essential element for human survival, and achieve equity between current and future generations in the use of resources. This is the main purpose[24]. This emphasizes the importance of whether the ratio between the consumption of non-renewable resources, the production of renewable resources, and the occurrence of environmental pollution can be sustainable in the long term[25].

Second, social sustainability refers to the ability to continuously maintain social structures and systems and is a comprehensive concept that includes equality, participation, fairness, safety, solidarity, accessibility, identity, and satisfaction of basic needs. It aims to create the ability of all humans to survive and thrive by strengthening their social capital through basic human rights and equal opportunities, including social fairness and inclusion, health and well-being, community empowerment, and cultural sustainability[26].

Third, economic sustainability refers to the ability of the economic system to remain stable for future generations while meeting the needs of the present generation. This is a concept that includes stable economic growth and efficient use and fair distribution of resources, and plays an important role in environmental protection, poverty reduction, and social stability. It is one of the important factors for sustainable development and ensures that economic growth does not have a negative impact on future generations by being interconnected and harmonious with environmental and social sustainability[27][28]. <Figure 2> below explains the three factors of sustainability.

**Figure 2.** Three areas of sustainability.



#### 4. Limitations of K-Beauty and a New Leap toward Smart Beauty

Smart Beauty can be seen as a field that integrates the management of individual beauty and health by expanding the concept of Beauty & Health based on modern technology and knowledge. Smart beauty includes beauty, fashion, hair, skin (face, body), nail art, makeup, eye-lashes, semi-permanent, waxing, scalp, inner beauty, diet, body shape management, obesity, exercise, massage, aroma, cosmetics, etc. Include a variety of elements. In other words, it can be said to be a digital beauty care centered on objective and scientific evidence that manages individual beauty and health convergently by utilizing each element of device.

Smart beauty care is divided into manual therapy, which is called manual management, and the use of smart beauty devices, and is composed of a convergence manual that uses both at the same time. It is based on smart beauty equipment for professional use, excluding home care equipment. Accordingly, the use of smart beauty devices can be broadly classified into scalp, face, and whole body, and human skin changes and ages due to various internal factors and external factors such as living environment and lifestyle habits[29][30]. Smart beauty device can maintain healthy beauty by managing space and time for busy modern people and the needs of each consumer on a continuous rather than one-time basis through a systematic and professional system that can provide customized care to each customer's needs.

We hope to receive effective expert care through the use of scientific devices for healthy beauty from specialized experts, so we visit scalp and hair care centers for scalp and hair care, and beauty shops for facial care and body care for a beautiful body type. look for Additionally, the number of customers seeking medical skin care with a dramatic medical background is increasing. Accordingly, with this background and environment, beauty devices are distributed in a more scientific, specialized, segmented, and specialized market, and various types of products are being introduced[15][31]. Rapid changes in the beauty market are showing a social trend of gradually expanding into medical skin care in the medical field. It is also important for us to be aware that receiving care at a hospital focuses on the reliability and safety of users. There is a need to become more specific and specialized.

In the 2000s, the era of the millennium, the medical skin care market expanded, and as medical staff entered the beauty industry, the number of medical skin care practitioners also increased due to the expansion of non-insurance programs for cosmetic procedures in dermatology and plastic surgery. Among the many changes brought about by the global pandemic, the spread of COVID-19 has led to an expansion of the market base for home care devices through mass media. Due to this phenomenon, the beauty market must also undergo development through research and continuous follow-up research. Beauty devices have become more multi-functional and compact, and with the quantitative growth of home care devices and beauty devices, beauty devices can now be found in home shopping channels.

According to data released in 2021 by Euromonitor International, a global market research agency, the global cosmetics market size in 2019 was \$420.3 billion, an increase of 4.5% compared to the previous year. However, due to COVID-19 in 2020, the cosmetics industry suffered a deterioration in global economic demand and supply. The market size has decreased. In comparison, the global market for beauty devices is expected to grow at an average annual rate of 19.4% from 2018 to 2024. Looking at the growth rate by beauty care device, the light/LED and light regeneration market is expected to grow at a rapid average annual rate of about 20%[11]. The domestic market has also launched products that enable home care and skin care, and will grow rapidly with continued technological advancement. These personal beauty devices have a short fashion cycle due to the influence of trends, and the number of users who visit professional shops to receive care from experts is increasing due to various reasons, such as the inability to accurately diagnose the skin when managed alone[32][33].

In Korea, there are no unified regulations for the names of skin care equipment using electrotherapy, and in a mixed situation, recent prior research is attracting attention for defining it. Looking at this, the Microcurrent device was named 'Smart Beauty Device', and MCC is an abbreviation for 'Microcurrent Care' and was operationally defined as 'Microcurrent Management'. In addition, an attempt was made to define new terms, and 'Microcurrent Care for Face' was defined as MCC-F, 'Microcurrent Care for Body' was defined as MCC-B, and 'Microcurrent Care for Face & Body' was defined as MCC-C (Complex). It is stipulated. These new definitions and regulations are believed to be because there was a need to define meaning academically to prevent confusion about the use of microcurrent devices and to enable them to be used in various fields[34].

The Korean beauty industry continues to change and develop into an area that goes beyond simple appearance care and improves health and quality of life. Currently, the cutting-edge technology of IoT, digital-based AI, and big data are being combined, leading to the development of customized services and products. Changes and innovations in various aspects, such as establishing an efficient work area, are also being recognized as a new trend in the use of smart beauty device[35].

## 5. Conclusion and Recommendations

The Korean medical community claims that if medical devices are classified as beauty devices and used by skin estheticians, it is a similar medical practice and there is a risk of serious damage to public health. Therefore, they are expressing strong opposition to the bill institutionalizing cosmetic devices, citing the possibility of side effects occurring at the same level as medical devices[16]. However, guidelines for the use of KC-certified skin care devices for 2023 have been established, with the main goal of mitigating some of the performance of medical devices and using non-invasive methods. Korea's Ministry of Health and Welfare delivered an official document titled 'Notice of Partial Revision of the 2023 Public Health Management Project Guidance Guidelines' to 16 cities and provinces. This revision specifically explains 'Precautions for using beauty equipment in skin care businesses.' It states that when using beauty devices (electrical appliances) for skin care, you must use products certified (KC certified) in accordance with the 'Electrical Appliances and Household Products Safety Management Act' or the 'Radio Act'.

Smart beauty devices are an innovative way to use AI technology and the functions of Io equipment to measure body condition and improve an individual's appearance to be healthy and beautiful. We provide a scientifically tailored beauty care method that individually considers the characteristics of each factor and type of the body. Therefore, unlike existing beauty methods, it is a beauty system that can provide sophisticated and effective results and can scientifically reflect how to maintain and improve health[36][37][38].

Korea is currently rapidly changing through the convergence of ICT technology and the beauty sector and is reaching a turning point for a new industry. Therefore, the development direction of the smart beauty service market and the need for research on experiential marketing are continuously mentioned in previous studies[39][40][41]. However, prior research on smart beauty services is still lacking, and research on experiences and consumers' emotional responses in the beauty industry is insufficient.

In order to innovate smart beauty, educational fields must actively accept technological changes in the industrial field and conduct continuous research and development. The scientific field of smart beauty equipment is an essential part, and therefore, the direction of research will require a hybrid type of research that combines the fields of natural science and social science. And in order to prove the objective effect, the face, scalp, and whole body using smart beauty equipment must be performed from the user's perspective according to the program.

Therefore, more specialized research will be conducted by confirming more systematic and technical analysis results through equipment such as body shape analyzer, plantar pressure analyzer, body heat analyzer, body composition analyzer, facial skin measurer, and scalp measurer.

## 6. References

### 6.1. Journal articles

- [1] Lee IH & Lee MN. A Study on Skin Efficacy of Skin Cosmetics and Nano Cosmetics. *Journal of the Korean Society of Beauty Art*, 18(3), 55-65 (2017).
- [2] Park JY. A Study on the Recognition and using of Estheticians Due to Commercialization of LED Skin Care Device. *Journal of the Korea Entertainment Industry Association*, 12(7), 63-71 (2018).
- [3] Yoon SY. Beauty Care Devices also belong to the Personal Era. *LG Economic Research Institute*, 11(25), 19-25 (2015).
- [4] Hwang YG & Jeong MG & Cho SY & Park SI & Cho EC. Electrospray-assisted Preparation of Polymer Microparticles Containing Water-insoluble Bioactive Compounds. *Journal of the Society of Cosmetic Scientists of Korea*, 43(1), 11-18 (2017).
- [5] Kim I & Lee J & We H & Kim E. Effect of the Women's Beauty Care Behavior on the Psychological Happiness after Covid-19. *International Journal of Human & Disaster*, 6(3), 75-84 (2021). [\[Read More\]](#)
- [6] Ji JH. A Study on the Use of Beauty Equipments among Adult Women and Preferences. *Journal of the Korean Society of Design Culture*, 24(4), 407-417 (2018).
- [7] Park HR. The Effect of Usage Behavior and Usage Satisfaction on Repurchase Intention of Facial Skin Care Devices: Focus on Skin Type. *Journal of Korean Society of Human Cosmetic Arts*, 23(3), 161-185 (2022).
- [8] Lee HE & Lee YM. A Study on the Cosmetology Devices and Product Liability. *Asian Beauty Cosmetics Journal*, 7(4), 451-46 (2009).
- [10] Lee YS & Lee MH & Lee JH & Nam HW. A Study on the Personalized Cosmetics and Beauty Devices Consumer for Perception/Preference Survey Model. *Korea Institute of Design Research Society*, 5(3), 70-80 (2020).
- [11] Choi EA. Paradigm Shift in Beauty Education in Response to the Digital Transformation Era-based on Analysis of Trends in the Cosmetics and Beauty Industry. *Journal of the Korean Society of Cosmetology*, 28(4), 675-688 (2022).
- [12] Kolimechikov S & Seijo M & Swaine I & Thirkell J & Colado JC & Naclerio F. Physiological Effects of Microcurrent and Its Application for Maximising Acute Responses and Chronic Adaptations to Exercise. *European Journal of Applied Physiology*, 123(3), 451-465 (2023).
- [13] Lee JB & Byeon YS & Liang D. Application of Exercise Prescription for Health Qigong in Non-medical Health Care Service: Focusing on the Elderly Health Care. *The Journal of Natural Healing*, 5(2), 1-10 (2021).
- [14] Jung BY & Kim EH. A Study on use of Skin Care Machinery in Esthetic Shop. *Asian Journal of Beauty Cosmetology*, 8(1), 155-164 (2010).
- [16] Oh SY. Issues in Disputes over the Scope of Work between Occupations Related to Health Care: Focusing on the Conflict between Doctors and Estheticians in the use of Medical Devices. *Dispute Resolution Studies Review*, 19(3), 5-24 (2021).
- [22] Kim S & Lee J. Emergence and Transformation of K-Smart Beauty Care. *Protection Convergence*, 9(1), 25-33 (2024). [\[Read More\]](#)
- [28] Simone L & Petracci B & Piva M. Economic Sustainability, Innovation, and the ESG Factors: An Empirical Investigation. *Sustainability*, 14(4), n2270 (2022).
- [29] Cho SK & Kim SG & Kim YM & Park SK & Lee CH & Kim HS. Clinical Test for Evaluation of Effectiveness of the Micro-current Stimulation in Facial Skin Care. *Korean Society of Biomedical Engineering*, 37(5), 195-207 (2016).

- [30] Kolimechkov S & Seijo M & Swaine I & Thirkell J & Colado JC & Naclerio F. Physiological Effects of Microcurrent and Its Application for Maximising Acute Responses and Chronic Adaptations to Exercise. *European Journal of Applied Physiology*, 123(3), 451-465 (2023).
- [31] Yu JY & Jung JG. The Effects of Microcurrent Stimulation for Gait Improvement. *Korea Electronics and Telecommunications Society*, 9(11), 1283-1290 (2014).
- [32] Lee HS & Han CJ. Meta-analysis of the Effects of Cosmetology Devices on Skin Improvement. *Journal of Korean Society of Human Cosmetic Arts*, 21(2), 253-262 (2020).
- [33] Park JS. Changes in Beauty Service Industry in Era of the Fourth Industrial Revolution and Aging: Focused on Expandability of the Smart Beauty Care Market. *Asian Culture Academy*, 11(1), 205-220 (2020).
- [34] Kim D & Lee J. Utilization of Microcurrent Care Device for Health Intervention and Beauty Care. *Protection Convergence*, 9(1), 34-45 (2024). [\[Read More\]](#)
- [35] Park BN & Kim JS. A Bibliometrics Analysis on Research Trends in the Field of Beauty Management. *Korea Beauty Industry Association*, 12(1), 87-102 (2018).
- [36] Kim HO. Women in their 20s and 40s use High-frequency Equipment for Back Management: Study on Muscle and Body Shape Change. *Journal of Beauty Industry*, 15(2), 69-89 (2021).
- [37] Lee HS & Han CJ. Meta-analysis of the Effects of Cosmetology Devices on Skin Improvement. *Journal of Korean Society of Human Cosmetic Arts*, 21(2), 253-262 (2020).
- [38] Yang HH & KIM HC & Jung SB & Yan HS & Shin TM. Development of Integrated Micro-current Irritation System for Improvement of Skin Moisture Level. *Korean Society of Electronic Engineers*, 11, 579-580 (2021).
- [39] Kim H & Lee C. The Effects of Women's Beauty and Health Multi-shop Consumption Perceptions and Selected Attributes on use Satisfaction, *Public Value*, 8, 61-73 (2023). [\[Read More\]](#)
- [40] Sin Y & Lee J & We H & Park M. Analysis of Male Semi-permanent Makeup Image Types using Q-Methodology. *Protection Convergence*, 7(1), 86-94 (2022). [\[Read More\]](#)
- [41] Lee H & Lee JB & Kim HW. A Qualitative Study on Changes in Women's Perception of Beauty Care After Covid-19. *Protection Convergence*, 6(3), 11-20 (2021). [\[Read More\]](#)

## 6.2. Books

- [9] Kim BI & Kang SK & Kim YJ & Kim SO & Kim HS & Kim HN & Sin SJ & Jang MJ & Choi MO & Ham MO. *Essence Beauty Equipment*. Medisian (2020).
- [15] Kang SO & Kim GS. *NCS-based Skin Care Device Management*. Hunminsa Temple (2017).
- [23] Theis T & Tomkin J. *Sustainability: A Comprehensive Foundation*. Connexions BC Campus (2013).
- [24] Khan N & Jhariya MK & Raj A & Banerjee A & Meena RS. *Ecological Intensification of Natural Resources for Sustainable Agriculture*. Springer (2021).
- [25] Altuntas O & Sohret Y & Karakoc TH. *Sustainable Aviation*. Springer (2019).
- [26] Dujon V & Dillard JF & Brennan EM. *Social Sustainability : A Multilevel Approach to Social Inclusion*. Routledge (2013).
- [27] Blewitt J. *Understanding Sustainable Development*. Taylor & Francis (2014).

## 6.3. Additional references

- [17] <https://beautyherjay.co.kr> (2024).
- [18] <http://www.kmsr.co.kr> (2024).
- [19] <http://www.daehoelec.com> (2024).
- [20] <https://www.daejoomedical.com> (2024).
- [21] <https://www.hohs.co.kr> (2024)

## 7. Appendix

### 7.1. Author's contribution

	Initial name	Contribution
Lead Author	CL	-Set of concepts <input checked="" type="checkbox"/>
		-Design <input checked="" type="checkbox"/>
		-Getting results <input checked="" type="checkbox"/>
		-Analysis <input checked="" type="checkbox"/>
		-Make a significant contribution to collection <input checked="" type="checkbox"/>
Corresponding Author*	JK	-Final approval of the paper <input checked="" type="checkbox"/>
		-Corresponding <input checked="" type="checkbox"/>
		-Play a decisive role in modification <input checked="" type="checkbox"/>
		-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>
		-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>
		-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

\*Copyright: ©2024 by the authors. Licensee **J-INSTITUTE**. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

#### Submit your manuscript to a J-INSTITUTE journal and benefit from:

- Convenient online submission
- Members can submit papers in all journal titles of J-INSTITUTE
- Rigorous peer review
- Open access: articles freely available online
- High visibility within the field
- Retaining the copyright to your article

Submit your next manuscript at ► [j-institute.org](https://j-institute.org)