The Relationship between Physical Environment and Recommendation Intention: The Moderating Effect of University Image

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Abstract: Most of the existing studies related to education services of universities have been limited to satisfaction with education services and academic achievement. It is time to increase the competitiveness of universities through the behavior intention of positive recommendations by encouraging students as beneficiaries of educational services to take positive actions and psychology and promoting their image of universities. This study to understand the influence of the educational environment that affects the positive recommendation intention of the students, the relationship between the university image and the recommendation intention is examined in terms of the facility-centered educational environment factors from the perspective of the student who is the beneficiary of the educational service. To achieve the purpose of this study, a survey was conducted on 300 university students studying in Busan, South Korea. The sample obtained through the questionnaire was refined and then analyses were conducted on demographic analysis, validity analysis, reliability analysis, correlation analysis, multiple regression analysis, and moderating regression analysis by using SPSS Version 21. The results of this study are as follows. The physical educational environment factors of universities including indoor environment, external environment, operation management, and convenience were found to have a relevant effect on the recommendation intention. Therefore, hypothesis 1-1, hypothesis 1-2, hypothesis 1-3, and hypothesis 1-4 were all supported; therefore, hypothesis 1 was adopted. This study examined the moderating effect of university image verified in the relationship between physical education environment and recommendation intention. The university image had a significant moderating effect on the relationship between indoor environment, external environment, convenience, and recommendation intention which are sub-variables of the physical environment of education. So, hypothesis 2-1, hypothesis 2-2, and hypothesis 2-4 were supported. However, since the operation management did not show significant influence, hypothesis 2-3 was rejected. So, hypothesis 2 was partially supported. In the follow-up study, if the study is conducted through samples from more various regions, the results of the study can be generalized.

Keywords: University, Education Environment, Educational Service Quality, University Image, Recommendation Intention reasonably common within the subject discipline.

1. Introduction

The goal of higher education is to improve the learning capacity and produce excellent talents on the part of students [1]. In the global competitive environment, raising excellent talents is essential for securing the competitiveness and survival of universities. Corresponding to these demands of the times, there are various studies on the improvement of educational services focusing on the quality of education (lecture law) such as the development of educational contents and teaching methods to improve students' academic ability [2]. The physical environment becomes a stimulus factor and affects the emotional state of the customer. Such an emotional result affects the decision-making process of the behavior in the service situation [3]. The space that provides service in the service environment is important, and it can be confirmed through the previous studies that interaction between consumers and service providers in this physical environment affects consumer satisfaction and purchase decision making.

Accordingly, to understand the influence of the educational environment that affects the positive recommendation intention of the students, this study aims to examine the relationship between the university image and the recommendation intention of the facility-centered educational environment factors from the perspective of the student who is the beneficiary of the educational service.

2. The Theoretical Background

2.1. Higher Education Service and Quality of Education Service

Higher education service is a tangible or intangible education service provided to students who are service beneficiaries to achieve the purpose of education by professors and administrative staff who are service providers to cultivate useful manpower required by the market. It is a service that meets physical and mental satisfaction to the student who is a service beneficiary from the university's point of view [4]. It is also provided directly and indirectly by the university and contains physical and technical parts in the service [5]. Besides, researchers studying the service say that educational institutions are different from other profit-seeking groups and require more study on them form a range of perspectives. Service quality is defined as a measure of how well the delivered service level corresponds to customer expectations. As a result of comparing and evaluating the perceived service and the expected service of the service recipient, there are various variables such as technical quality, functional quality, image, and functional relationship [6]. As for the quality of education service, the ultimate goal is an education in itself. The goal of higher education (colleges and universities) is to improve the learning capacity and to produce excellent talents and human resources. In the global competitive environment, talents with excellent abilities are essential for securing competitiveness and survival of the university.

2.2. Image of University

Image is a concept that human conceives for objects. The images of an organization visualized by awareness and feelings are not only an entire perception and nexus of expectation about the organization but also an aspect established in public [7]. Image of university or college is a holistic concept that people have been aware of and, at the same time, a form that people expect to see. It is a comprehensive concept revolving around people's perceptive attitudes and can be defined as a level of familiarity, affection, and expectation towards a college or university that the person who makes the image has. The positive image of the university can be formed positively by achieving satisfactory results and earning such success by others, and it can be achieved in a relatively short period. Universities should also improve the educational environment of universities to improve their image so that their customers have a good image of their universities from now on.

2.3. The Intention of Recommendation

The intention of recommendation (recommendation intention) is often used as a synonym of word of mouth. Word of mouth in a broad sense is not limited to face-to-face communication based on the experience of individuals, but it is an influence between individuals and groups related to the characteristics of influence [8]. Also, it was defined as communication that is sometimes a source of information by talking to the recipient of face-to-face communication advertisements, his friend and colleague based on personal experience [9]. Word of mouth in this study refers to that in a narrow sense. It is not only a voluntary communication act but also a means of promotion that informally exchanges positive or negative information about personal direct or indirect experience to the surrounding acquaintance, external prospective customers, and all the people concerned through the students or parents.

3. The Design of the Research

3.1. Survey Object

This study verifies the effect of the physical environment of education in domestic universities on recommendation intention and the moderating effect of the university image through empirical analysis. For this purpose, a survey was conducted for 61 days from March 1, 2020 to April 30, 2020 for university students attending universities located in Busan. The questionnaire was filled out by a personal self-writing method by a face-to-face meeting. 300 copies of the questionnaire were distributed and 272 copies were collected. Of the collected questionnaires, 245 copies were used for the final study except for 27 questionnaires with unfaithful responses. Table 1 represents a demographical characteristic.

Table 1. Demographical Characteristics

question	division		frequency (number of person)	ratio(%)
Gender	male students		148	54.4%
	female students		124	45.6%
	Total		272	100.0%
grade	first grade		52	19.1%
	sophomore		67	24.6%
	Junior		85	31.3%
	Senior		68	25.0%
	Total		272	100.0%
majors	humanities and social sciences		62	22.8%
	engineering		104	38.2%
	natural sciences		68	25.0%
	medical science		12	4.4%
	arts and physical education		26	9.6%
	Total		272	100.0%
school attendance form	In-school		263	96.7%
	a leave of absence		9	3.3%
	Total		272	100.0%

3.2. Research Model and Hypotheses

To achieve the purpose of this study, a research model such as [Fig. 1] is presented based on literature research and previous studies.
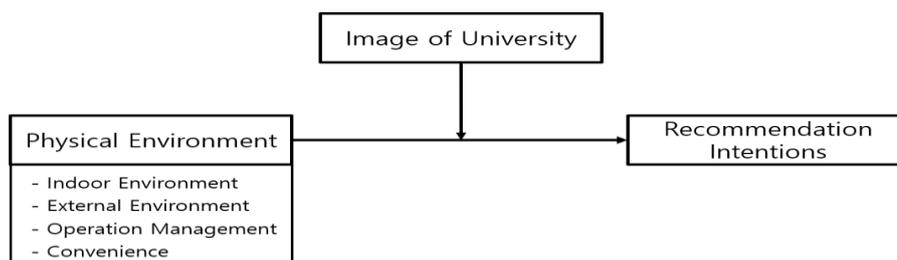

Figure 1. Research Model

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Also, under the premise that the physical education environment of the university will have a significant impact on the recommendation intention, a proposition was premised that the university image will play a moderating role in the relationship between the physical education environment and the recommendation intention. Based on the premise above, two major hypotheses and eight sub-hypothesis are established as follows.

Hypothesis 1 The physical environment of education at university will have a significant effect on recommendation intention.

Hypothesis 2 The effect of the physical environment of education on the recommendation intention of the university was moderated by the image of university or college.

4. The Empirical Analysis

4.1. Validity and Reliability

The KMO measurement of the research variables was .912, Bartlett's sphere formation test value was 4471.163, and the significance probability was .000, which was suitable for factor analysis by rejecting the null hypothesis. Cronbach's α value as a reliability judgment criterion was .838 for indoor environment, .828 for the external environment, .871 for operation management, and .840 for convenience, which was higher than .7 for internal consistency evaluation, indicating that internal consistency was shown. The factor analysis showed that all the scales used for measuring variables have appropriate convergence and discriminant validity. Besides, the reliability level of each variable was generally high, which was found to be appropriate for analysis in this study.

Table 2. The Result of Factor Analysis on Research Variable

Name of variable		Factor loading value	Eigenvalue	Explanation dispersion (%)	Reliability (α)
Physical environment of education	Indoor environment	.616 .702 .525 .698 .642	3.892	11.794	.838
	External environment	.653 .672 .702 .647 .562	3.870	11.792	.828
	Operation management	.592 .623 .726 .734 .697	3.376	10.229	.871
	Convenience	.681 .622 .683 .669 .543	3.313	10.039	.840
Recommendation intention		.613 .580 .672 .699	3.312	10.038	.863
University image		722 .635 .542	3.037	9.204	.862

	.621			
Keiser Meyer-Olkin measure of sampling adequacy = .912 Bartlett's test of sphericity χ2 = 4471.183, df = 528, Significance probability = .000				

4.2. The Relationship between Physical Environment of Education and Recommendation Intention

Multiple regression analysis was conducted to test hypothesis 1 on the relationship between the physical environment of education and recommendation intention. The results of the analysis are as shown in [Table 3]. The results of this study show that the indoor environment, external environment, operation management, and convenience in terms of the physical environment of education increase the positive recommendation intention to the students. Therefore, it can be seen that the physical environment of the university is limited to specific factors and does not have a positive effect on the students. And universities or colleges need to manage all the factors of the physical environment of education to encourage students' positive recommendation intention. Also, universities and colleges must have continuous interest and improvement in the physical environment of education.

Table 3. The Results of Multiple Regression Test on Physical Environment of Education and Recommendation Intention.

Model	Non-standardization coefficient		Standardization coefficient	t	Significance level	Collinearity statistic	
	B	Standard error	Beta			Tolerance	VIF
(Regulation)	.743	.233		3.196			
Indoor environment	.279	.048	.339	5.933	.006**	.718	1.346
External environment	.238	.056	.259	4.250	.000***	.608	1.645
Operation management	.390	.058	.408	6.664	.000***	.601	1.663
Convenience	.097	.052	.119	4.237	.000***	.565	1.918
R2 = .461, modified R2 = .452, D-W = 2.015, F value = 51.194							

4.3. The Moderating Effect of University Image

The result of verifying the moderating effect of university image in the relationship between physical education environment and recommendation intention follows as [Table 4].

Table 4. The Result of the Moderating Regression Analysis on University Image

	Model1			Model2			Model3		
	B	ß	p value	B	ß	p value	B	ß	p value
(constant)	.743		.000***	.611		.000***	3.406		.040*
Indoor environment	.279	.339	.006**	.257	.246	.000***	1.472	1.699	.000***
External environment	.238	.259	.000***	.139	.149	.013*	.726	.791	.008**
Operation management	.390	.408	.000***	.208	.197	.007**	-229	-.241	.500
Convenience	.097	.119	.000***	.247	.251	.000***	.953	1.103	.001***
University image				.314	.316	.000***	-.553	-.553	.171
Indoor environment x University image							.275	1.628	.003**
External environment x University image							.302	.243	.002**
Operation management x							.143	.932	.097

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University image								
Convenience x University image						.497	2.972	.000***
Modified R2	.452			.419		.337		
R2 variation	.461			.431		.412		
F increment	51.194			35.998		20.501		
Significance probability	.000***			.000***		.000***		

<center>* p<.05, ** p<.01, *** p<.001</center>

The result of the analysis shows that the overall explanatory power in model 1 is 45.2% (R^2=.452) and F=51.194 (p<.001), which is statistically significant. In model 2 which put the university image as a moderating variable, the explanatory power was 41.9% (R^2=.419) and F=35.998 (p<.001). As for model 3, the sub-variables of the physical environment of education such as indoor environment, external environment, operation management, and convenience were put into interaction with the university image.

The results of hypothesis 2 are examined in detail, indoor environment and university image combined, external environment and university image combined, convenience and university image combined had a statistically significant influence on recommendation intention, and the university image had a moderating effect.

The results of this study show that the university image plays a very important role in the relationship between the physical environment of education and the recommendation intention. Therefore, universities and colleges should continue to strive and pay attention to not only the physical environment of education but also to inspire the university image.

5. Conclusion

This study is not only to empirically investigate the influence of the physical environment of education on the recommendation intention of the university but also to show the moderating effect of the university image. This is considered to have a great practical meaning in that it provides implications for the improvement and securing of the physical environment of education and the enhancement of the university image.

The implications of the results of the empirical analysis are as follows.

First, the indoor environment, external environment, operation management, and convenience of the physical environment were found to increase the positive intention of recommendation to the acquaintances around the students.

These results prove that the physical environment of the university does not have a positive effect on students, limited to specific factors. Therefore, universities need to manage all the factors of the physical environment to encourage students' positive recommendation intentions. Also, it is necessary to have continuous interest and improvement in the physical environment of education.

Second, it is found that the university image plays a very important role in the relationship between the physical education environment and the recommendation intention. Therefore, universities should continue to strive and pay attention to not only physical education but also to the enhancement of the university image.

Through the limitations of the study, I would like to suggest future research directions.

First, the selection of samples limited to the Busan area might be not sufficient in generalizing the results of the study. If the follow-up study is conducted through samples from more various regions, the results of the study can be generalized.

Second, the study was conducted only with four-year colleges. In future studies, if detailed studies are conducted according to a range of educational systems including national universities, private universities, two-year universities, and four-year universities in various regions, it is expected to draw more effective results.

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