Selective Attribute which Influence Distance Continuing Education Learners' Selection of an Academic Institution and Market Segmentation according to Learner Demand

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Abstract. The purpose of this study is to develop a scale for measuring the "selective attributes" or characteristics which influence distance continuing education learners' decision-making in selecting an academic institution; and it presents practical implications for marketing by estimating how the factors which are classified through factor analysis form clusters. As a result of the exploratory factor analysis to develop a scale for measuring the selective attributes which are influential factors in selecting an academic institution, the attributes were categorized as "academic curriculum and convenience of facilities," "ease of obtaining the degree," "faculty and course quality," and "tuition discount and scholarship." As a result of the cluster analysis using factor scores, cluster types were classified as "tuition and scholarship group," "diverse purpose group," and "academic curriculum and convenience of facilities group." Multivariate analysis of variance (MANOVA) was performed to verify the validity of the cluster types, and each cluster was determined to carry statistical significance.

Keywords: Distance Continuing Education, Academic Credit Bank, Academic Institution Selective Attribute, Market Segmentation

1   Introduction

The term distance education became official in 1982 when ICCE (International Council for Correspondence Education) changed its name to ICDE (International Council for Distance Education)[1]. Distance education have been defined as education delivered at school and various forms of noncontiguous instruction and learning which encompass all forms of education; it is also defined as non-sustained education which does not provide immediate supervision from the off-site educators of the institution delivering the instruction[2]. Moreover, with the development of educational media using the computer, it is described as implementing interactive telecommunication systems to connect learners, resources, and faculty [3]. Various

terms such as e-Learning, online education, web-based training, cyber education, etc. are used synonymously with the term distance education.

Henceforth, increase in research is anticipated in the future due to quantitative expansion in the number of learners and the expansion of institutions into the private educational institutions. However, from the perspective of the various institutions across the country, research regarding how learners select the academic institution is a very important field which allows the educational institutions which promote policy and recruit students to understand consumers. Accordingly, this study intends to estimate the "selective attributes" which affect the distance continuing education learners' selection of an academic institution and into what types the selective attributes which have been classified are segmentalized.

1.1 Previous Research

Although previous research related to distance continuing education was mainly conducted in aspects of system development[4], or quality evaluation[5], and participation in learning management strategies[6], due to the quantitative expansion in the number of learners and educational institutions, research in various sectors have been conducted in learner satisfaction (for example, Biner, Dean & Mellinger, 1994), comparison of learning outcomes[7], the effectiveness of educational training[8], and so on. However, it has been determined that research described from the education consumers' perspective regarding the selective attributes which influence academic credit bank learners' selection of an academic institution through distance continuing education institutions and market segmentation has not been carried out at all.

Selective attributes have relevance to target goods satisfaction and intention to revisit; these variables play an important role in various academic disciplines as variables which affect number of visits. For example, for the selective attributes of a golf course by a golfer, the characteristics used would be the golf course, difficulty level of the course, tourist attractions in the surrounding areas, restaurants, green fees, et cetera; in tourist attraction research, selective attributes used would be the impression of the tourist attraction, natural scenery, and shopping venues. The intention of this study is to reflect the characteristics of the credit bank system learners by configuring 22 measurement items and to present the results from the exploratory factor analysis.

Market segmentation is used as a basis for establishing the target market by differentiating heterogeneous consumers that make up the market into homogeneous types. Thus, there is a necessity for the credit bank system to determine the different types of consumers and their differences and cluster them into commercially significant segmentalized market in order to satisfactorily meet the diversity of these learners due to various different motivational orientation between them.

2 Research Model

The research model used to analyze the selective attributes of the distance continuing education credit bank learners in selecting an academic institution is the analysis model which enables factor analysis, which after performing clusters analysis using the results, performs validity test using MANOVA.

2.1 Research Design

For this study, the survey was conducted on academic credit bank students from university-affiliated distance continuing education institution A in Choongnam area from October, 2014 to February 2015 in which a total of 300 questionnaires were collected. However, 241 questionnaires were used for analysis due to the elimination of responses which contained numerous missing values.

The questionnaire consisted of demographical characteristics such as gender and age and developed 22 measurement items for exploratory factor analysis. Each measurement item consisted of 5-point Lickert scale. The independent variables were set as reference variables and 1 and 0 were treated as dummy variables. For example, in case of gender, men were assigned 1, and women were assigned 0 to estimate the influence of men. The age variables were categorized into those who are at least in their 20's, 30's, 40's and 50's. In terms of educational background, the characteristics of this variable were taken into account in categorizing them into those who hold high school, associates, and bachelor's degrees. To reflect the characteristics of the occupation variable, these were categorized as white-collar, blue-collar, and other (retired, unemployed, housewives, other occupations).

3 Result

Table 1. Factorization of distance continuing education academic credit bank learners' selective attributes in selecting an academic institution and reliability analysis

Factors	Measurement items	factor loadingss	dispersion ration	Cronbach's α	Eigen value
academic curriculum and convenience of facilities	friendliness of the consulting staff	.793	40.576	.848	6.492
	convenience of registration process	.769			
	academic curriculum for obtaining qualification	.721			
	provision of textbooks	.716			
	use of the library	.604			
ease of obtaining the degree	examination system	.845	11.415	.869	1.826
	assignment system	.836			

	difficulty of course and the ease of obtaining qualifications	.758			
	attendance system	.656			
faculty and course quality	quality of lecture	.795	9.075	.771	1.452
	faculty specialization and teaching experience	.793			
	concern as to university-affiliated or private institution	.636			
	recommendation from other	.579			
tuition discount and scholarship	tuition	.891	7.653	.851	1.224
	tuition discount	.862			
	events and scholarship	.782			
Overall variance explanation power: 68.719%, KMO=.866 Bartlett sphericity test hypothesis χ2= 2109.206(p<0.000)					

Using the principal component analysis and Varimax method, the analysis was conducted after eliminating 6 categories which overlap or do not satisfy the factor loadings value of 0.5. As a result, the factors regarding selective attributes of academic credit bank institution were divided into 4 categories. To reflect the characteristics of the measurement items, the categorized factors were determined as "academic curriculum for obtaining qualification," "ease of obtaining qualifications," "faculty and quality of course," and "tuition discount and scholarship." Explanatory power of the overall variance at 68.719%, with KMO coefficient of .866, and Bartlett Sphericity test hypothesis χ^2 value of 2109.206 (p <0.01) has significance value indicating that the results of the analysis feature reliability and validity. The greatest factors in the credit bank learners' decision making was determined to be the attributes of convenience and academic curriculum such as the registration process and curriculum, and has an explanatory power of 40.57%. Next, examination and assignment systems which pertain to the factor of "ease of obtaining qualifications" have an explanatory power of 11.41%. The third factor "faculty and quality of course" has an explanatory power of 9.07% and "tuition discount and scholarships" was determined to have an explanatory power of 7.65%.

Table 2. Cluster Analysis and post-hoc test of online academic credit bank learners' selective attributes in selecting an academic institution (N=243)

Category	Cluster Ⅰ (n=82)	Cluster Ⅱ (n=125)	Cluster Ⅲ (n=36)	F-value	Scheffe multiple range tests		
					Ⅰ - Ⅱ	Ⅰ - Ⅲ	Ⅱ - Ⅲ
Academic curriculum for obtaining qualification	3.28	4.28	3.97	105.055***	***	***	***

Ease of obtaining qualifications	3.29	4.21	3.82	63.128***	***	***	***
Faculty and quality of course	3.16	4.10	3.57	70.009***	***	***	***
Tuition discount and scholarship	3.63	4.34	2.50	160.150***	***	***	***
Cluster Type	Tuition discount and scholarship group	Diverse Purpose group	Academic curriculum for obtaining qualification group	Pillai' s Trace=1.120P<0.001) Wilks' Ramda=0.190(P<0.001) HotellingLawley=2.624(P<0.001) Roy's Greatest Root=1.625(P<0.01)			

Average value is calculated using Likert 5-point scale (1=Strongly Disagree, 3=Average, 5=Strongly Agree),   *** p<.001

Using the resulting value of the factors for academic institution selective attributes, K-means clustering method was used to estimate the types of cluster groups formed by the selective attributes. Before implementing K-means clustering method, the number of clusters was determined from the hierarchical clustering analysis which was used as pre-stage method where there is the greatest increase in the number of clusters. As a result of the analysis, it was determined that three clusters were the most appropriate as the cluster schedule showed the greatest rate of increase. Cluster 1 showed the highest mean in tuition discount and scholarship factor among the 4 selective attributes and was named "tuition and scholarship group." Cluster 2 was named "diverse purpose group" and cluster 3 was named "academic curriculum for obtaining qualification" group. Multivariate analysis of variance was performed in order to ensure the validity of the results of the cluster analysis. The result of the analysis determined that the Pillai's Trace, Wilks' Lamda, Hotelling-Lawley, Roy's Greatest Root values were all statistically significant (p <0.001). Thus the validation test results show that the cluster analysis results using the 4 selective attributes in selecting an academic institution is valid. Therefore, it can be seen that the learners' market regarding distance continuing education academic credit bank is segmentalized into "tuition and scholarship," "diverse purpose," and "academic curriculum for obtaining qualifications" groups.

4   Result

In term of the marketing aspect of the distance continuing education credit bank institutions, the following has these practical implications. The learners' selective attributes in choosing an academic institution are categorized into four types; selective attribute which affect the learners' selection, "academic curriculum for obtaining qualification," such as consultation, registration process, and provision of textbooks, is the most important factor among the selective attributes. Furthermore, examination, assignment, and attendance system which pertain to the "ease of obtaining

qualification" is important. Moreover, "faculty and quality of course" is another factor; and lastly, "tuition discount and scholarship" needs to be recognized as the lowest selective attribute. In terms of market segmentation, cluster 2 "diverse purpose group" includes the most number of learners, thus it is necessary to recognize that the most important potential consumers of the target market of the distance continuing education credit bank institutions are the group with diverse purposes. The credit bank market segmentation result which has been classified through the cluster analysis provides an opportunistic factor for identifying the potential consumer target market regarding credit bank operated institutions. These opportunistic factors are information which needs to be identified as a priority for the characteristics of market segmentation; it signifies market or potential consumers' attributes and the inclination of the consumers. Thus, it's imperative that the results of the analysis as described above be carefully recognized since consumers regarding the credit bank institutions and consumer behaviors of potential consumers are variables which can reflect actual demand.

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