Consumer Satisfaction Survey on Health Care Convergence College Students at a University

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Abstract

Purpose: This study aims to measure the level of satisfaction with the overall education of current students, who are major consumers of education by department at the Health Care Convergence University, and to establish development strategies such as improving education quality and satisfaction by deriving problems and improvements. **Research design, data and methodology:** This study drew conclusions through secondary data analysis based on data surveyed by the Educational Performance Management Center of a university in the academic year of 2020. The target of the education consumer satisfaction survey was 470 students of the College in the academic year 2020. Frequency analysis and correlation analysis were applied to the data using the statistical package program SPSS 25 version. **Results:** In the major curriculum satisfaction survey, the department with the highest score was optics and optics, 4.11, and the department with the lowest score was medical IT, 3.29. **Conclusions:** The department with the highest correlation in the correlation analysis result of the demand survey by department was the Department of Medical Management and the Department of Medical IT, with a correlation coefficient r=0.984, and the lowest correlation in the correlation analysis result of the demand survey by department was the Department of Medical IT and Dental Hygiene, with a correlation coefficient r= -0.085.

Keywords : Consumer satisfaction, College, Health care convergence, Survey, Students

JEL Classification Codes : II0, I20, I21, I23, I29

1. Introduction

In Korea, universities are striving to improve the satisfaction of education consumers, such as improving the quality of creative and artistic education, educational administrative services, and educational environment as new-Hallyu-specialized universities by continuously feedback and improving the satisfaction survey results. The process of assessing satisfaction with major curriculum and examining the level of requirements among students will ultimately be able to generate a plan to improve the employment rate for them (Jeong, 2019; Seo & Park, 2017). Therefore, universities are conducting surveys on the satisfaction of education consumers across the country for students almost every year. In the field of university education, as a means to increase the satisfaction of students who are educational consumers, they started to

get interested in improving the service quality of university education (Choi et al., 2018).

The education satisfaction survey measures the level of satisfaction with the overall education. For smooth two-way communication between education consumers and universities, a satisfaction survey with the right system should be conducted in parallel (Han & Kang, 2016; Ahn & Lee, 2017). The education satisfaction survey aims to establish a consumer-centered education support system by discovering areas with particular problems in satisfaction, improving them, and providing feedback. Satisfaction survey of consumers of major education will play a decisive role and contribute to fostering future talents in Korea, such as raising and improving the quality of practical university education and employment. Medical Convergence University is a new growth engine at the national level and a leading university in the field of convergence technology medicine, and a university that fosters cutting-edge new knowledge such as bio, artificial intelligence, management and IoT in conjunction with the 4th industrial revolution.

The reason why many universities conduct education consumer satisfaction surveys is not only to actively introduce the marketing concept to improve educational services and to reflect the voices of actual education consumers, but also loyalty measures to prevent students who are not satisfied with university education from leaving school are needed (Kang, 2017). The education system also has an open and cyclical character that is constantly influenced by the environment based on the interaction between various educational service components (Cho & Lim, 2007). The survey is also aimed at using it for government financial support projects and establishment of future plans for universities in the future. Educational consumer satisfaction is the most important factor in university education and is directly related to the survival of the university, but most of the educational consumer satisfaction models operated by universities partially reflect the educational environment (Jung et al., 2018). It shows that universities can improve student satisfaction and ultimately increase loyalty through the management of educational service quality components (Kim, 2018). And this survey is aimed at producing reliable diagnostic data by directly measuring the satisfaction level

of educational consumers with university education services on the students who are consumers by the school authorities. The college education satisfaction survey not only measures the level of satisfaction or perception of enrolled students, but also provides very wide and detailed information on the students' educational experiences (Shin et al., 2020).

In order for the educational satisfaction survey to fulfill its role as a quality management mechanism for university education, it is necessary to include a program that reflects the characteristics of the university as a component factor (Park, 2015). The educational satisfaction-related survey system in schools may differ somewhat depending on the relevant regulations and organizational structure of each university. Educational satisfaction generally refers to the degree of subjective evaluation of students in various fields related to education (Choi & Choi, 2020). The university curriculum is basically organized around majors and education. Centering on majors, orientation for new students, companionship with priests while attending school, and job placement after graduation from internships are being carried out. Also, in most cases, the first-year university curriculum is organized into a basic liberal arts curriculum, and the second, third, and fourth graders are organized into major-oriented curriculum.

In fact, in the basic circumstances and background of the education consumer satisfaction survey in universities, it is implemented with the following needs. For the development of educational satisfaction survey tools at universities, it is necessary to continuously develop survey tools that is systematic and can ensure feasibility to respond to the needs of students who are education consumers (Choi & Choi, 2020).

- The importance and necessity of satisfaction surveys for quality management of education are raised

University education satisfaction reflects the needs of students who are education consumers, and should play a role in managing and improving the quality of education (Park, 2015). As educational satisfaction acts as a mechanism for improving the quality of education on its own, the educational satisfaction survey tool is composed of the content that reflects the educational philosophy of the university and reflects the viewpoints on the educational and learning areas and students that are

important to the university. As it acts as a channel through which students, who are direct consumers of education, can evaluate and reflect their needs, it must be conducted periodically and reflected in university policy (Shin et al., 2020).

The result of the education demand satisfaction survey is to improve the quality of education, discover educational courses that meet social needs, produce talents needed by businesses and society, and improve the quality of administrative services. However, what is clear is that quality and customer satisfaction are inseparable from each other. In fact, there are various perspectives on the causal relationship between service quality and customer satisfaction. Contrary to the view that customer satisfaction is an antecedent variable of quality (Bitner, 1990), it is a view that regards quality as an antecedent variable of customer satisfaction (Woodside et al., 1989). In school education, it is said that not only functional quality, which is an interaction between service providers and customers, but also technical quality such as curriculum and guidance contents provided by school to students affects students (Lee, 2018).

As a result of analyzing the causal relationship of the satisfaction survey model, it was found that service product quality, delivery quality, environmental quality, and social quality have a positive effect on student customer satisfaction, and customer satisfaction has a positive effect on university performance and social performance. were analyzed (Jung et al., 2018). Finally, the result of this survey is to secure objective data for university policy making. It is used as data for students' sense of belonging to the school, affirmation of their identity, policy making on students' interests, and improvement of the quality of education (Han & Kim, 2003; Kim & Kim, 2019).

The goal of the satisfaction survey is to build a quality management system for education, improve the quality of education policies and administrative services through systematic surveys and feedback, and increase the satisfaction of education consumers with education services. There is also a goal to reflect the needs of members for university education and administrative services and use them as basic data to contribute to the promotion of the development strategy based on the survey result.

It is necessary to determine how satisfied education consumers are with school education in general and refer to them in setting and deciding the direction of school education and education policies (Kim et al., 2007). Universities try to understand the actual performance of university projects and strengthen their competitiveness through a satisfaction survey targeting highly effective education consumers (students, parents, graduates, industries, etc.) every year or every semester (Ahn & Lee, 2017). Undeniably, student satisfaction in higher education is one of the important key factors for university ranking and league table (Mohammad & Abdelhakim, 2019).

College of Health Care Convergence was first launched in 2017 to nurture creative and practical field-oriented convergence talent. In particular, with the focus on specialized education by linking education, research, and industry-academic cooperation in the medical field, it consists of 8 departments including Medical Management, Biomedical Science, Clinical Pathology, Optometry, Dental Hygiene, Medical Engineering, Medical IT Science, and Bio-Convergence Engineering. College of Health Care Convergence is playing a pivotal role in improving national health and establishing a new paradigm in which public health improvement and health care and environment are fused through the convergence of technologies and academics in various fields to improve the health of the people through prevention, diagnosis, management, treatment of human diseases, pollution control of the environment, and development of eco-friendly energy. The educational goal of the College of Health Care Convergence is to strengthen practical job competency through field training linked to hospitals and foster professional health care science talents through convergence specialization education based on convergence specialized education for the creative and practical use of health and medical science.

2. Research Method

This study drew conclusions through secondary data analysis based on data surveyed by the Educational Performance Management Center of a university in the

academic year of 2020.

2.1. Subjects and Duration of the Survey

Recent trends have focused on student-centered learning instead of a traditional teacher-centered approach, and on understanding how students acquire and process information (Gurpinar et al., 2010). The subjects of this study's educational consumer satisfaction survey were 470 students in the College of Health Care Convergence, a university college, in the academic year of 2020. The College of Health Care Convergence of one university consists of eight departments. There are a total of eight departments, including Medical Management, Biomedical Science, Clinical Pathology, Ophthalmic Optics, Medical Engineering, Medical IT Science, Dental Hygiene, and Bio-Convergence Engineering. The survey period was about one month from December 01 (Tue), 2020 to January 03 (Sun), 2021.

2.2. Implementation Department

Universities are making great efforts to meet the evaluation criteria presented in various evaluations, and in particular, they are conducting an education satisfaction survey to obtain basic data to improve the quality of education (Park, 2015). The survey was organized and conducted by the Education Performance Management Center, an affiliated institution of the Ministry of Education of a university. This institution established a detailed plan for the implementation of the satisfaction survey, developed questionnaire items, and prepared the evaluation result calculation criteria. In addition, this institution plans to conduct the survey and write a report after the survey, and follow-up measures to be taken, improvement plan, and improvement performance based on the result of the survey.

2.3. Implementation Method

The survey was conducted using Google docs and the university's VERUM-i system. For the survey scale, random samples were collected using a structured questionnaire composed of 5-point Likert scale items.

2.4. Sample Size and Analysis Method

Among the College of Health Care Convergence students who completed the questionnaire response within the survey period, 470 students who responded to the survey were used as reference data for analysis. Frequency analysis and correlation analysis were applied to all collected data using the statistical package program SPSS 25 version. The analysis techniques used were basically analyzed through

frequency analysis and correlation analysis, and the Cronbach alpha coefficient was used for reliability measurement between questionnaires.

3. Major Survey Contents

3.1. Contents of the Survey

The main areas and contents of this study consist of 5 questions. Satisfaction levels were measured in five areas: major curriculum, liberal arts curriculum, non-curricular curriculum, academic system, career guidance and psychological counseling. With this content, it is possible to grasp the satisfaction level consistent with improving the quality of education through the satisfaction of consumers of students belonging to the College of Health Care Convergence, which is in the health care field.

3.2. Major Curriculum and Liberal Arts Curriculum

Among the contents of the questionnaire, the measurement of satisfaction of education consumers for the overall major education service, which is the main content of the survey, is a core process of university major education. The details of the questionnaire are shown in the table below. Looking at these questions in detail, the educational goals of departments or schools such as major curriculum and liberal arts curriculum are reflected. The improvement of the quality of a service/product should represent a priority strategy for the decision makers to increase the productivity and competitiveness of an organization (Rigdon, 2016).

The major curriculum presents specific performance standards to determine the degree of achievement of a set target competency. The major curriculum reflects social demand and changes. The major curriculum is helpful for setting my career and employment. The major curriculum is helping me grow my competency through academic achievement. The major curriculum offers a wide variety of subjects to choose from. The credit system for the current major curriculum (including the modular curriculum) is appropriate. Various educational materials and teaching methods are used in the major lectures. It was composed of questions asking, "If you have any requirements regarding the major curriculum, please feel free to describe them."

College major is a very important matter that affects career choice as well as career direction after graduation. College students who are satisfied with the major department have a high level of self-efficacy in their careers and confidence in their decisions (Jeong, 2018). In particular,

students' psychological need satisfaction appears to be able to explain important educational outcomes such as engagement and achievement (Gilleta et al., 2019). Therefore, the major education satisfaction survey is a very important questionnaire that investigates how much and to what extent they are satisfied with the major education service, as well as the school service, as well as the academic advisor, while performing college life. The contents of this questionnaire are very meaningful in terms of the quality of the major curriculum.

Table 1: Specific Contents of the Questionnaire for Major Education

Number	Content of the questionnaire
A-1	The major curriculum reflects the educational goal of the department.
A-2	The major curriculum presents specific performance standards for judging the degree of achievement of the set target competency.
A-3	The major curriculum reflects social demands and changes.
A-4	The major curriculum helps me set my career path and find a job.
A-5	The major curriculum is helping me to grow my competency through academic achievement.
A-6	The major curriculum offers a wide variety of subjects to choose from.
A-7	The credit system for the current major curriculum (including the modular curriculum) is appropriate.
A-8	Various educational materials and teaching methods are used in the major lectures.
A-9	If you have any requirements related to the major curriculum, please feel free to describe them.

However, the liberal arts curriculum can be viewed as a process that established a liberal arts education system based on core competency, reorganizing into a liberal arts curriculum that can enhance core competencies by supplementing the existing liberal arts curriculum focused on basic learning ability, vocational basic ability, and basic character development in a rapidly changing environment such as the 4th industrial revolution, to improve the core competencies of our universities and contribute to nurturing talented people with these skills.

Table 2: Specific Contents of the Liberal Arts Education Questionnaire

Number	Content of the questionnaire
B-1	The liberal arts curriculum reflects my interests.
B-2	The liberal arts curriculum reflects social needs.
B-3	The liberal arts curriculum offers a wide range of choices as various liberal arts subjects are offered for each area.
B-4	The current system of credits required for liberal arts curriculum (character 8, academic foundation 8, humanities focus 8, humanities convergence 4, balanced liberal arts 8, total 36 credits) is appropriate.
B-5	Various educational materials and teaching methods are used in liberal arts lectures.
B-6	The basic learning ability was improved through the liberal arts curriculum.
B-7	The overall thinking ability was improved through the liberal arts curriculum.
B-8	The liberal arts curriculum is helpful for major education.
B-9	Video lectures in the liberal arts curriculum are helpful for learning.

3.3. Experimental Analysis and Methods

The concept of the conventional curriculum was limited to only the experience intended in the school curriculum. In other words, the existing curriculum was an apparent curriculum that provided the goals planned by the school in a visible form. But now, the concept of a latent curriculum that students learn while they are in school, that is, a non-curricular course, has emerged as important. A non-curricular course is a curriculum that is not a goal pursued by schools, but is implicitly learned without being documented or formalized. The difference between the apparent curriculum and the non-curricular course can be compared as follows.

3.3.1. Analysis of Fatty Acid Content, an Omega Trivalent Content

① While the apparent curriculum is intentionally organized and taught by the school, the latent curriculum is not intended by the school but is learned implicitly during school life.

② If the apparent curriculum is mainly related to the intellectual, the latent curriculum is mainly related to the non-intellectual (affective domain).

③ While the apparent curriculum is mainly related to the subject, the latent curriculum is mainly related to the cultural climate of the school.

④ While the apparent curriculum tends to be short-term and temporary, the latent curriculum has the persistence of long-term and repetitive learning.

⑤ The apparent curriculum is mainly influenced by the teacher's intellectual and functional aspects, but the latent curriculum is mainly influenced by the teacher's personality.

⑥ While the apparent curriculum has mainly desirable content, the latent curriculum includes not only desirable but also undesirable ones.

⑦ When the apparent curriculum and the latent curriculum are harmonious and complementary to each other, they can have a strong influence on student behavior.

⑧ Even if a latent curriculum is identified and planned, the structure of the apparent curriculum and the latent curriculum does not change.

⑨ The apparent curriculum has its own latent curriculum function.

⑩ When the apparent curriculum and the latent curriculum are in conflict, the latent curriculum prevails.

As above, it can be seen that non-educational curriculum exists as long as there are schools. Schools and professors should pay attention not only to the apparent curriculum but also to the latent curriculum, and strive to achieve a harmonious education (whole person education).

Table 3: Specific Contents of Extracurricular Courses and Learning Support

Number	Content of the questionnaire
C-1	Various information on non-curricular programs is provided.
C-2	Non-curricular programs are helpful for self-development.
C-3	VERUM CAMP is helpful in adapting to school life.
C-4	FESTA, an open intensive semester system in which current students, parents, and local residents participate together, is beneficial.
C-5	The non-curricular RC (Residential College) program related to the dormitory is beneficial.
C-6	For learning, the library's e-Learning course is being used.
C-7	VERUM-i system, a non-curricular integrated computer management program, is well utilized.
C-8	I am actively participating in non-curricular programs to compensate for the lack of competency.
C-9	Curriculum-related non-curricular programs (tutoring, academic basics clinic, learning community, etc.) help improve academic performance.
C-10	Learning competency reinforcement programs (learning method seminar/special lecture, learning method camp, tutoring, academic basics clinic, major clinic, step-up alpha mentoring, contest, etc.) are helpful in improving learning ability and self-development.

3.4. Academic System

The academic system can be applied to each university according to the conditions and circumstances of the university within the scope of laws and regulations considering the specificity of each university, and it can be seen that the operation of the academic system is different depending on the introduction of the new system and change in the future. The main direction of the academic system includes securing flexibility in academic management to overcome limitations such as insufficient multiple major completion ratio, and convergence, diversification, and openness of the academic structure in preparation for changes in the future society and improvement of the academic structure using a smart education system that actively reflects social needs.

Table 4: Details of the Academic System

Number	Content of the questionnaire
D-1	The multi-major (dual, interdisciplinary, convergence, and minor) coursework system has been properly established.
D-2	Grades by major and subject are handled fairly in accordance with evaluation standards.
D-3	There is a systematic system for grades, such as retaking class and giving up grade.
D-4	There are various opportunities to participate in the exchange student program.
D-5	I am satisfied with the internship and on-the-job training programs.
D-6	Information related to the academic system is provided smoothly.
D-7	The MIRACLE flexible semester system allowing students to request and take courses they want is utilized.

3.5. Career and Psychological Counseling

The main purpose of career and psychological counseling is to provide professional help so that students can develop their potential and grow into mature human beings and members of the community, especially through priest companion seminars. In other words, by providing tests and counseling programs related to college life adaptation, interpersonal relationship, career exploration, and social and emotional problems, student's own characteristics or difficulties can be checked through tests for various personalities, psychological adaptation, learning, and career exploration.

Table 5: Specific Contents of Career and Psychological Counseling

Number	Content of the questionnaire
E-1	Priest companion seminars are helpful in adjusting to university life.
E-2	Priest companion seminars are helpful for study.
E-3	Priest companion seminars are helpful in finding employment and career paths.
E-4	Various information on employment, start-up and career are provided.
E-5	Counseling and counseling-related extra-curricular programs conducted by the Student Counseling Center are helpful for school life.

4. Result of the Study

4.1. Reliability Analysis Result for Each Survey Area of Education Satisfaction Measurement

In order to secure the reliability of the items in each satisfaction area, Cronbach's α coefficient, which is an internal consistency reliability coefficient, was applied. Looking at the measurement result, the reliability coefficient of the five survey questionnaires ranged between 0.938 and 0.961, indicating a very high reliability coefficient, with an average reliability of 0.952. In conclusion, the result of the survey is reliable.

Table 6: Distribution by Department and Major

Domain	Cronbach's α coefficient	Number of items
Major education	0.961	8
Liberal education	0.953	9
Non-curricular courses and learning support	0.961	10
Academic system	0.938	7
Career guidance and psychological counseling	0.950	5
Average	0.952	

4.2. Distribution of College of Health Care Convergence Survey Subjects by Major Department

First, in Table 7, the total number of survey subjects was 470, and about 15% of the students participated in the survey. By department, 124 subjects in Medical Management 4.0%, 61 in Biomedical Science 1.9%, 65 in Clinical Pathology 2.1%, 28 in Ophthalmic Optics 0.9%, 76 in Medical Engineering 2.4%, 38 in Medical IT Science 1.2%, 59 in Dental Hygiene 1.9%, and 19 in Bio-convergence Engineering 0.6%. The order of the departments with the most participation in the survey were Medical Management with 124 people, Medical Engineering with 76, Clinical Pathology with 65, and the departments with the lowest participation were Ophthalmic Optics with 28 and Bio-convergence Engineering with 19.

The department with the highest participation rate in the survey was Medical Management at 4.0%, and the lowest was Bio Convergence Engineering at 0.6%.

Table 7: Distribution of College of Health Care Convergence by Major Department

College and major departments		Number of student	%
College of Health Care Convergence	Medical Management Department	124	4.0
	Biomedical Sciences Department	61	1.9
	Clinical Pathology Department	65	2.1
	Ophthalmic Optics	28	0.9

Department		
Medical Engineering Department	76	2.4
Medical IT Science Department	38	1.2
Dental Hygiene Department	59	1.9
Bio Convergence Engineering Department	19	0.6
Total (8 departments)	470	15.0

4.3. Satisfaction Level of Survey Area by College of a University

Table 8 summarizes the contents of the survey at a university by college on 5 questionnaires of; liberal arts curriculum, major curriculum, non-curricular course and learning support, and academic system, career guidance and psychological counseling. In this table, the university average in the major curriculum is 3.83, and the highest colleges are College of Human Service with 4.08, College of Education 3.99, and Medical College 3.96. In the liberal arts curriculum, the university average is 3.58, and the highest colleges are the Medical School at 3.68, the College of Education 3.66, and the College of Social Science at 3.61. The university average for non-curricular courses and learning support was 3.56, with the highest colleges being Human Service College 3.72, College of Education 3.69, and Medical College 3.59. In the academic system, the university average is 3.52, and the highest colleges are the College of Engineering and College of Education with 3.58, followed by the College of Social Sciences with 3.56. In career guidance and psychological counseling, the university average was 3.48, the highest college was Human Service College with 3.71, and the College of Aeronautics and Teachers College with 3.56.

Table 8: Satisfaction Level of Survey Area by College of a University

Domain (Average of total)	College of Engineering	College of Tourism & Sports	College of Media Arts	College of Education	College of Social Sciences	College of Medicine	College of Health Care Convergence	College of Aeronautics	College of Human Service
Major Curriculum (3.83)	3.80	3.71	3.70	3.99	3.81	3.96	3.84	3.89	4.08
Liberal Arts Curriculum (3.58)	3.59	3.58	3.43	3.66	3.61	3.68	3.58	3.56	3.50
Non-curricular courses and Learning support (3.56)	3.58	3.53	3.37	3.69	3.58	3.59	3.51	3.53	3.72
Academic system (3.52)	3.58	3.50	3.38	3.58	3.56	3.50	3.52	3.49	3.49
Career guidance and Psychological Counseling (3.48)	3.54	3.39	3.34	3.56	3.48	3.50	3.44	3.56	3.71

4.4. Area Satisfaction by Department of the College of Health Care Convergence

Table 9 summarizes the results of survey questionnaires by eight departments at the College of Health Care Convergence. First, looking at the major curriculum, the average of the College of Health Care Convergence is 3.83, and the highest department is Ophthalmic Optics with 4.11 and Biomedical Science with 4.09. The lowest departments are Medical IT Science Department with 3.29 and Bio

Convergence Engineering Department with 3.68. Looking at the liberal art curriculum, the average of the College of Health Care Convergence is 3.58, and the highest departments are Bio Convergence Engineering with 3.71 and Medical Management with 3.63. The lowest departments are Medical IT Science with 3.37 and Dental Hygiene with 3.47. The average of College of Health Care Convergence for non-curricular courses and learning support is 3.56. The highest departments are Ophthalmic Optics with 3.71 and Clinical Pathology with 3.65.

The lowest departments are Medical IT Science with

3.33 and Dental Hygiene with 3.40. The average of the College of Health Care Convergence for academic system is 3.52, and the highest departments are Ophthalmic Optics with 3.74 and Biomedical Science with 3.61. The lowest departments are Medical IT Science with 3.33 and Dental Hygiene with 3.39. The average of the College of Health Care Convergence for career guidance and psychological counseling is 3.48. The highest departments are Biomedical Sciences with 3.77 and Clinical Pathology with 3.72, and the lowest departments are Medical Management with 3.21 and Medical IT Science with 3.24.

Table 9: Satisfaction Level of Survey Area by Department of the College of Health Care Convergence

Domain (Average of total)	Bio Convergence Department	Ophthalmic Optics Department	Medical management Department	Medical Engineering department	Medical IT Department	Biomedical Science department	Clinical Pathology department	Dental Hygiene Department
Major Curriculum (3.83)	3.68	4.11	3.74	3.72	3.29	4.09	4.04	3.97
Liberal Arts Curriculum (3.58)	3.71	3.56	3.63	3.61	3.37	3.62	3.60	3.47
Non-curricular courses and learning support (3.56)	3.51	3.71	3.50	3.56	3.33	3.49	3.65	3.40
Academic system (3.52)	3.47	3.74	3.47	3.55	3.33	3.61	3.60	3.39
Career guidance and psychological counseling (3.48)	3.37	3.66	3.21	3.42	3.24	3.77	3.72	3.34

4.4.1. Details of Satisfaction Survey for Major Curriculum Consumers

Table 10 shows the contents of the survey of satisfaction with major education consumers by department of medical convergence college students. The average score of the major education satisfaction survey is 3.83, and the departments with higher scores than this average are 4.11 in optics and 4.11 in biomedical science, 4.09 in medical science, 4.4 in clinical pathology, and 3.97 in dental hygiene. The departments with lower average scores were Medical Management 3.74, Medical Engineering 3.72, Bio Convergence Engineering 3.68, and Biomedical Science 3.29.

Table 10: Details of Consumer Satisfaction Survey for Major Education

Domain	High satisfaction (Departments that are higher than the average for each domain)		Low satisfaction (Departments that are lower than the average for each domain)	
Major (3.83)	Ophthalmic Optics	4.11	Medical Management	3.74
	Biomedical Science	4.09	Medical Engineering	3.72
	Clinical Pathology	4.04	Bio Convergence Engineering	3.68
	Dental Hygiene	3.97	Medical IT Science	3.29

4.4.2. Details of Satisfaction Survey for Liberal Arts Curriculum Consumers

Table 11 shows the contents of the survey on the satisfaction level of consumers of liberal arts education by department of the College of Health Care Convergence students. The average score of the liberal arts education satisfaction survey is 3.58, and the departments with higher scores than this average are Bio Convergence Engineering with 3.71, Medical Management with 3.63, Biomedical Science with 3.62, Medical Engineering with 3.61, and Clinical Pathology with 3.60. The departments with a lower average score were Ophthalmic Optics with 3.56, Dental Hygiene 3.47, and Medical IT Science 3.37.

Table 11: Details of Consumer Satisfaction Survey for Liberal Education

Domain	High satisfaction (Departments that are higher than the average for each domain)		Low satisfaction (Departments that are lower than the average for each domain)	
Liberal arts (3.58)	Bio Convergence Engineering Medical Management Biomedical Science Medical Engineering Clinical Pathology	3.71 3.63 3.62 3.61 3.60	Ophthalmic Optics Dental Hygiene Medical IT Science	3.56 3.47 3.37
Non-curricular courses (3.56)	Ophthalmic Optics Clinical Pathology Medical Engineering	3.71 3.65 3.56	Bio Convergence Engineering Medical Management Biomedical Science Dental Hygiene Medical IT Science	3.51 3.50 3.49 3.40 3.33

Table 12: Details of Consumer Satisfaction Survey for Academic System

Domain	High satisfaction (Departments that are higher than the average for each domain)		Low satisfaction (Departments that are lower than the average for each domain)	
Academic system (3.52)	Ophthalmic Optics Biomedical Science Clinical Pathology Medical Engineering	3.74 3.61 3.60 3.55	Medical Management Bio Convergence Engineering Dental Hygiene Medical IT Science	3.47 3.47 3.39 3.33

4.4.3. Details of Satisfaction Survey for Career Guidance and Psychological Counseling Consumers

Table 13 shows the contents of the survey on the satisfaction level of consumers of career guidance and psychological counselling by department of the College of Health Care Convergence students. The average score of the liberal arts education satisfaction survey is 3.48, and the departments with higher scores than this average are Biomedical Science 3.77, Clinical Pathology 3.72, and Ophthalmic Optics 3.66. The departments with a lower average score are Medical Engineering 3.42, Bio Convergence Engineering 3.37, Dental Hygiene 3.39, Medical IT Science 3.33, and Medical Management 3.21.

Table 13: Details of Career Guidance and Psychological Counseling Consumer Satisfaction Survey

Domain	High satisfaction (Departments that are higher than the average for each domain)		Low satisfaction (Departments that are lower than the average for each domain)	
Career guidance (3.48)	Biomedical Science Clinical Pathology Ophthalmic Optics	3.77 3.72 3.66	Medical Engineering Bio Convergence Engineering Dental Hygiene Medical IT Science Medical Management	3.42 3.37 3.34 3.24 3.21

4.4.4. Correlation Analysis Result for Demand Survey by College

Table 14 shows the result of correlation analysis according to the satisfaction level of the demand survey for each college of a university. This table shows the contents of the psychological counselling consumer satisfaction survey. In this correlation analysis, as a whole, each college showed a high correlation with each other, and it was characterized by the fact that there was no college at all with an inverse correlation. Unexpectedly, the colleges with the highest correlation are College of Media Arts and College of Health Care Convergence with correlation coefficient r=0.993, followed by between College of Engineering and College of Media Arts with correlation coefficient r=0.992, and the next is between College of Social Sciences and College of Health Care Convergence with correlation coefficient r=0.991.

Table 14: Correlation Analysis According to the Satisfaction Level of the Demand Survey for Each College

	College of Engineering	College of Tourism & Sports	College of Media Arts	College of Education	College of Social Science	College of Medicine	College of Health Care Convergence	College of Aerospace	College of Human Service
College of Engineering	1								
College of Tourism & Sports	0.896702	1							
College of Media Arts	0.992947	0.901454	1						
College of Education	0.973634	0.910157	0.962974	1					
College of Social Science	0.975197	0.972275	0.97348	0.970674	1				
College of Medicine	0.952742	0.930919	0.969921	0.971429	0.969051	1			
College of Health Care Convergence	0.986374	0.944546	0.993013	0.961065	0.991248	0.972565	1		
College of Aerospace	0.955728	0.778489	0.962898	0.943323	0.894432	0.938488	0.927354	1	
College of Human Service	0.819428	0.565681	0.790411	0.856397	0.720056	0.770205	0.733671	0.903419	1

4.4.5. Correlation Analysis Result for Demand Survey

Table 15 shows the result of correlation analysis for the demand survey by department at the College of Heal Care Convergence. This table shows the contents of the psychological counselling consumer satisfaction survey. In this correlation analysis, as a whole, unlike the correlation analysis by college, there is a difference in correlation by department within the College of Heal Care Convergence, and some departments show an inverse correlation. The departments with the highest correlation are Medical Management and Medical IT Science with correlation coefficient r=0.984, followed by between Biomedical Science and Clinical Pathology with correlation coefficient r=0.935, and then between Bio Convergence Engineering and Medical Management Department with correlation coefficient r=0.929. Conversely, the departments with the lowest correlation are Medical IT Science and Dental Hygiene with correlation coefficient r = -0.085, followed by between Bio Convergence Engineering and Ophthalmic Optics with correlation coefficient r = 0.290, and between Bio Convergence Engineering and Biomedical Science with correlation coefficient r = 0.308.

Interestingly, Ophthalmic Optics, Biomedical Science, Clinical Pathology, Dental Hygiene, etc. showed inverse correlations with Medical IT Science. In particular, Medical IT Science and Dental Hygiene showed the least correlation and also showed an inverse correlation.

Table 15: Correlation Analysis According to Satisfaction Level of Demand Survey by Department of College of Health Care Convergence

	Bio Convergence Engineering	Ophthalmic Optics	Medical Management	Medical Engineering	Medical IT Science	Biomedical Science	Clinical Pathology	Dental Hygiene
Bio Convergence Engineering	1							
Ophthalmic Optics	0.290852	1						
Medical Management	0.929482	0.525872	1					
Medical Engineering	0.879199	0.665259	0.984743	1				
Medical IT Science	0.607954	-0.3243	0.576066	0.434702	1			
Biomedical Science	0.308079	0.815717	0.351031	0.483226	-0.51945	1		
Clinical Pathology	0.327874	0.91895	0.439854	0.5782	-0.47997	0.935374	1	
Dental Hygiene	0.657189	0.894032	0.764179	0.857019	-0.08513	0.851542	0.91057	1

5. Summary and Conclusion

This study is a survey of educational consumer satisfaction for major curriculum by department conducted at the College of Health Care Convergence of a university in Korea. The backgrounds of the education consumer satisfaction survey are; the importance and necessity of a satisfaction survey for quality management of education, the necessity of a satisfaction survey on education consumers in order to establish effective university policies and understand the actual performance of university projects, and the need to secure basic data for establishing a plan for strengthening the virtuous cycle of feedback system.

The purposes of the survey are; to measure the level of satisfaction with the overall education of current students who are major consumers of education in the College of Health Care Convergence, to produce basic data for establishing development strategies such as improving educational quality and satisfaction by deriving problems and improvements, to produce reliable diagnostic data by directly measuring the satisfaction level of education consumers for the educational service of the College of Health Care Convergence, and to discover improvement tasks such as education service and curriculum composition centred on education consumers and to explore ideas for improvement in order to improve the satisfaction of students, who are the main consumers of education.

In particular, by securing the data necessary for

improving the educational conditions of the College of Health Care Convergence and making policy decisions for each department of the College of Health Care Convergence, it is to promote the overall perception change of professors and faculty so that customer satisfaction can be improved by reflecting the needs of students, who are education consumers, for their overall university life. Universities were defined as service industries, and students as consumers whom, if satisfied, would continue to demand the product (Espinozaa & McGinnc, 2018), This study drew conclusions through secondary data analysis based on data surveyed by the Educational Performance Management Centre of a university in the academic year of 2020. Looking at the specific survey method investigated by the Education Performance Management Centre, the study period and are approximately one month from 2020.12.01. (Tuesday) to 2021.01.03. (Sunday), and the subject of the survey was the students enrolled in each department belonging to the College of Health Care Convergence in the academic year of 2020. The survey was conducted using the VERUM-i system and Google docs. For the questionnaire items, convenience sampling was conducted using a structured questionnaire consisting of a 5-point Likert scale and 5 open-ended questions. As for the analysis method, descriptive statistics such as reliability analysis of internal consistency Cronbach's α coefficient, frequency analysis, and correlation analysis were mainly applied. As for data analysis statistical program, data was analysed using SPSS 25 version.

The main conclusions of this study are as follows:

- In the major curriculum satisfaction survey, the highest department was Ophthalmic Optics with 4.11, and the lowest department was Medical IT Science with 3.29.
- In the liberal arts curriculum satisfaction survey, the highest department was Bio Convergence Engineering with 3.71, and the lowest department was Medical IT Science with 3.37.
- In the non-curricular course satisfaction survey, the highest department was Ophthalmic Optics with 3.71, and the lowest department was Medical IT Science with 3.33.
- In the academic system satisfaction survey, the highest department was Ophthalmic Optics with 3.74, and the lowest department was Medical IT Science with 3.37.
- In the career guidance and psychological counselling satisfaction survey, the highest department was Biomedical Science with 3.77, and the lowest department was Medical Management with 3.21.
- Medical IT Science shows the lowest level of consumer satisfaction in 4 out of 5 questionnaire items, so it is necessary to check the overall curriculum and strengthen communication with the students.

- The Department of Medical Management has the lowest score in the career guidance and psychological counselling survey, so it is necessary to closely communicate with students as well as provide employment and career guidance to the students.
- In the correlation analysis result of the demand survey by department, the departments with the highest correlation are Medical Management and Medical IT Science, with correlation coefficient r=0.984.
- The departments with the lowest correlation in the correlation analysis result for the demand survey by department are Medical IT Science and Dental Hygiene, with a correlation coefficient r=-0.085. In particular, Medical IT Science and Dental Hygiene show the least correlation and inverse correlation, so it is necessary to check and confirm the overall curriculum, educational system, and educational goals at the level of the College of Health Care Convergence.

Considering that the basic purpose of the consumer satisfaction survey is to find departments with low satisfaction scores, feedback to the education system and improve the quality of education, the fact that Medical IT Science, a specific department, showed the lowest score in 4 of the 5 questionnaires in the survey shows there is an obvious need to check and identify the educational system of Medical IT Science Department once again. Although it does not reach this level, Dental Hygiene Department also shows very low scores along with Medical IT Science Department, so for Dental Hygiene Department also, there is a need to check and identify the curriculum. The fact that the two departments with the lowest scores, Medical IT Science and Dental Hygiene, showed the lowest correlation in the result of the correlation analysis of the demand survey by department of the College of Health Care Convergence is very suggestive. In other words, it informed the necessity of a detailed checking from the perspective of educational goal, educational method, and curriculum, which are far from consumer demands.

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