La importancia de la calidad en la universidad pública. La percepción del estudiante en la Universidad Autónoma del Carmen

Importance of quality in the public university. The perception of the student at the Autonomous University of Carmen

A importância da qualidade na universidade pública. Percepção do aluno na Universidad Autónoma del Carmen

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Resumen

Las políticas públicas que liberalizaron la educación en México han intensificado la competencia entre instituciones educativas. En tal sentido, la educación superior debe ser reconocida como una industria de servicios, cuyo objetivo es satisfacer las necesidades del cliente, sobre todo en regiones con un fuerte dinamismo económico como el municipio de Carmen, Campeche. El objetivo del artículo fue determinar la percepción que tienen los estudiantes sobre la calidad del servicio de la Universidad Autónoma del Carmen y los factores que determinan estas percepciones. Para determinar la calidad del servicio se aplicó un cuestionario basado en el modelo SERVQUAL. Para analizar los factores que afectan a las percepciones y expectativas de los alumnos se estimaron modelos de regresión múltiple por el método de mínimos cuadrados ordinarios. Los resultados muestran una dificultad de la institución por superar las expectativas de los estudiantes. En una ciudad con un fuerte dinamismo económico y con alto ingreso, el tiempo de permanencia de los alumnos y su nivel de ingreso determinan su percepción sobre la calidad de servicios que ofrece la universidad. Las percepciones de los estudiantes pueden mejorar a medida que el personal universitario brinde un mejor servicio. Se concluye que la universidad debe enfocar su política administrativa en satisfacer las necesidades del estudiante para disminuir la deserción y mejorar la eficiencia terminal.

Palabras clave: educación, evaluación, ingreso.

Abstract

Public policies that liberalized education in Mexico have intensified competition between educational institutions. Higher education must be recognized as a service industry whose objective is to meet customer needs; especially in regions with a strong economic dynamism such as the municipality of Carmen, Campeche. The objective of the article was to determine the students' perception of the quality of service of the Autonomous University of Carmen and the factors that determine these perceptions. To determine the quality of the service, a questionnaire based on the SERVQUAL model was applied. To analyze the factors that affect students' perceptions and expectations, multiple regression models were estimated using the Ordinary Minimum Square method. The results show a difficulty of the institution to exceed the expectations of the students. In a city with a strong economic dynamism and high income, the time of permanence of the students and their level of income determine their perception of the quality of services offered by the university. Student perceptions may improve as university staff provide better service. It is

concluded that the university must focus its administrative policy on satisfying the needs of the student to reduce the decrease and improve terminal efficiency.

Keywords: education, expectation, income.

Resumo

As políticas públicas que liberalizaram a educação no México intensificaram a competição entre instituições de ensino. Nesse sentido, o ensino superior deve ser reconhecido como uma indústria de serviços, cujo objetivo é satisfazer as necessidades do cliente, principalmente em regiões com forte dinamismo econômico, como o município de Carmen, Campeche. O objetivo do artigo foi determinar a percepção que os alunos têm da qualidade de serviço da Universidade Autônoma do Carmen e os fatores que determinam essas percepções. Para determinar a qualidade do serviço, foi aplicado um questionário baseado no modelo SERVQUAL. Para analisar os fatores que afetam as percepções e expectativas dos alunos, vários modelos de regressão foram estimados usando o método dos mínimos quadrados ordinários. Os resultados mostram uma dificuldade da instituição em superar as expectativas dos alunos. Em uma cidade com forte dinamismo econômico e alta renda, o tempo de permanência dos estudantes e seu nível de renda determinam sua percepção da qualidade dos serviços oferecidos pela universidade. As percepções dos alunos podem melhorar à medida que os funcionários da faculdade prestam um serviço melhor. Conclui-se que a universidade deve focar sua política administrativa em satisfazer as necessidades do aluno para reduzir a evasão e melhorar a eficiência do terminal.

Palavras-chave: educação, avaliação, renda.

Introduction

The process of globalization and economic opening has increased business competition and the quality of goods and services, which determine the permanence of companies in the market (Rubinsztejn, Rivera-Torres and Grijalvo, 2015). In Latin America, reforms have been carried out with the aim of liberalizing education (Mollis, 2014) to increase private investment and to create more educational institutions. According to Laval (2004), the privatization of education has been the consequence of the deterioration of the material and pedagogical conditions of the public school.

The liberalization of education has intensified competition between public and private universities, and has served as a stage for students to choose between them taking into account prestige, recommendations, location, costs and the forefront of knowledge. In Mexico, for example, there are private education institutions that subsist thanks to the prestige achieved, which has also served to attract a large number of students despite the cost that this implies (Fabela-Cárdenas and García-Treviño, 2014). The increase in educational competence has forced institutions to work to achieve greater organizational excellence and offer students a more satisfactory service from a business perspective (Dos Santos, 2016).

Enrollment in higher education in Mexico went from less than one million students in 1980 to 3.2 million in 2014, growth that was driven not only by the increase in enrollment in existing higher education institutions (HEIs), but also by the emergence of new universities, both public and private (Mendoza-Rojas, 2015). In addition to the above, there is a link between the allocation of funds for universities and their institutional performance. Currently, the subsidies awarded are linked to the size of the teaching staff and enrollment (Moreno, 2017).

Educational institutions should consider it a policy to offer quality services that are reflected in the satisfaction of users to attract more students and improve their terminal efficiency (Juliá, Pérez and Meliá, 2014). Quality is a factor that distinguishes a university and gives it an advantage over other similar institutions, which determines its growth in the midst of strong competition (Naidu and Shuhada, 2016). Due to this, it can be affirmed that higher education should be recognized as a service industry, which is in charge of satisfying the needs and expectations of its students or clients (Boon, Ahmad, Ahmad and Ahmad, 2016). For this reason, this work addresses the issue of the quality of higher education as a case study at the Universidad Autónoma del Carmen (UNACAR).

Regional and economic context

In Campeche, a enrollment in higher education of 27,914 students was registered for the 2016-2017 cycle. Of the total enrollment in the state, 8,661 (31%) students belong to the municipality of Carmen. UNACAR is a public institution located in Ciudad del Carmen, Campeche, it has eight faculties and offers 33 degree programs attended by 5827 students, representing 67.3% of the municipality's enrollment and 20.9% of the state's enrollment (National Association of Universities and Institutions of Higher Education [ANUIES], 2018) .v

The municipality of Carmen is located in the south of the state of Campeche and has a strategic position in the economy due to its oil production. The city is the main base of operations for companies related to oil extraction in the Campeche Sound and is an important source of labor for other cities. In 2000, Carmen had a population of 172,076 inhabitants (National Institute of Statistics and Geography [Inegi], 2000), a figure that increased to 221,094 inhabitants in 2015 (Inegi, 2015). The strong growth of the population has generated an increase in the demand for goods and services, including educational ones.

This great demand for higher education and the income level of the population were the basis for the creation of various academic institutions, hence there are currently eight: three public and five private. In some cities and regions of the country —such as Mexico City, Guadalajara, Monterrey— the demand for higher education is greater than the supply, and public universities have a strong rate of rejection of applicants. Due to these circumstances, a significant part of students are in need of studying at private universities. In Carmen the difference between supply and demand is very small and the public university is immersed in an environment of strong competition. In addition to the above, the income level in Carmen allows the population to see a valid option in public and private schools, which is usually determined by the quality of the institutions.

In recent years, the city suffered a contraction in its economic activity due to the oil reform and the fall in oil prices. This crisis produced a sharp decrease in employment, which forced many to emigrate to their home states, which affected the various sectors of the economy (Pérez, Rivas, Martínez and Venegas, 2018), including education.

Competition in this sector and the decrease in demand have served as a stimulus for UNACAR to differentiate its services from those provided by its competitors, which has been done taking into account the rapid changes in supply and demand (Casadesús, Marimon and Alonso, 2010). For this reason, it is essential to evaluate the quality of the services provided by UNACAR to improve the care provided to the student.

Quality of service in higher education

Educational quality can be defined as higher academic instruction delivered as a whole (theoretical-practical) in order to allow graduates to respond to the demands of their profession. An institution that provides a quality education achieves that its graduates have acceptance in their economic environment and in other institutions of higher education (Fabela-Cárdenas and García-Treviño, 2014).

For McCowan (2018) "quality in higher education can refer to any of the diverse functions of the university" (p. 129). Excellence in education must include elements related to the teaching process and product, as well as the organization and management of university institutions (García-Jiménez, 2016).

Educational services are first consumed and then globally valued (Jain, Sinha & Sahney, 2011) as a university degree. Rubinsztejn et al. (2015) conceive of a university degree as the set of subjects organized in a given period, in a study plan and coordinated by teachers and administrators. The overall quality of the race, therefore, is reflected in the quality of the program, the activities carried out in classes and the complementary assignments (Sanchis, Gil-Saura and Berenguer-Contrí, 2015). All this is usually known to applicants thanks to the opinions of those who have lived the experience in each institution, which ultimately can serve as a basis for making the final decision to enroll in a certain university (Boyi, 2006). In short, in the recruitment of students, personal references among students is a very important factor (March, Pedraja and Rivera, 2005).

Capelleras and Veciana (2001) mention that the decision of the student to enter the university is determined by the competences of the teaching staff, the study plans, the facilities, the equipment and the organization. Other studies also analyze the quality of education taking into account aspects such as facilities, technological innovation, attention services, and the teacher-student relationship (Joseph and Joseph, 1997; Kwuan and Ng, 1999).

Oldfield and Baron (2000) affirm that the interaction between teachers and students is the central element of the educational service, which constitutes an important indicator of its quality. The personnel that provide the service is important for those who have certain expectations of the organization. In this sense, Zafiropoulos and Vrana (2008) evaluate the quality of service of educational institutions through the possible differences between staff and students.

The ability of teachers to transmit knowledge, university facilities and equipment, as well as the training and comprehensive development of students are factors that allow HEIs to attract more students (Alvarado-Lagunas, Luyando-Cuevas and Picazzo-Palencia, 2015). In this regard, Fabela-Cárdenas and García-Treviño (2014) identify seven factors that influence the success of institutions: leadership in administration, design of facilities, curriculum design, implementation of performance evaluation systems, school management, students and quality of teachers.

In this context, the SERVQUAL model allows evaluating the student's expectation and perception of the quality of the teachers, the facilities, the services they receive and the technological development of the universities; therefore, it has been used in various quality studies in higher education (Mejías, 2005; Prugsamatz, Heaney and Alpert, 2007; Vergara and Quesada, 2011). The services offered by the university can also be located in the five dimensions of the SERVQUAL model: reliability, tangible elements, responsiveness, guarantee and empathy.

Reliability is the ability of the HEI to deliver on the promise of service. The tangible elements relate to the appearance of the institution's physical facilities, equipment, and personnel. Responsiveness is linked to the willingness of university workers to collaborate with students and to provide the service promptly. The guarantee is the knowledge, courtesy, and ability of university employees to inspire goodwill and trust. Finally, empathy is associated with students' perceptions of feeling unique and special.

The previous studies show the need to evaluate the educational services offered by universities. When the services are of quality, the clients are satisfied and with this it is possible to obtain a loyalty of the clients towards the company (Vera, 2013). In the educational sector, the quality of the services offered by the university is reflected in student loyalty, the dropout rate and the increase in terminal efficiency. Evaluation is a starting point for continuous improvement of institutions, regardless of whether they are public or private.

Explained the above, the present work aims to evaluate the quality of educational services provided by the Universidad Autónoma del Carmen through the expectations and perception of students to identify variables that influence the evaluation of students.

Methodology

The quality of education can be evaluated externally taking into account the opinion of graduates, employers and accrediting bodies (Fabela-Cárdenas and García-Treviño, 2014) through standardized instruments (Vázquez, 2015). It can also be examined internally, considering the opinion of the student on the role of the teacher, the department heads or directors, the administrative staff and the rectors or vice-rectors (Durisová, Kucharcíková and Tokarcícová, 2015).

In this research, an internal evaluation of the university services has been carried out, so the target population was active students at the university. UNACAR has a total enrollment of 5 472 students, a number that served as the basis for choosing a sample of 359 students using the following formula:

$$n = \frac{Z^2 pqN}{Ne^2 + Z^2 pq}$$

Once the sample was determined, the participation percentage of each faculty within the total enrollment was calculated. From the obtained percentage, the sample was calculated by faculty. Through a simple random sampling, a total of 525 students were interviewed (Table 1).

Tabla 1. Estructura de la muestra por facultad

Facultad	Matrícula (alumnos)	Porcentaje (%)	Muestra calculada por facultad	Alumnos entrevistados por facultad
Ciencias de la Información	350	6	23	32
Ingeniería y Tecnología	1130	21	74	82
Ciencias Naturales	130	2	9	12
Educación y Humanidades	379	7	25	62
Ciencias Económicas Administrativas	950	17	62	147
Química	743	14	49	60
Derecho	550	10	36	43
Ciencias de la Salud	1240	23	81	87
Total	5472	100	359	525

Fuente: Elaboración propia

SERVQUAL questionnaire

To analyze the quality of service at UNACAR, the SERVQUAL model developed by Zeithaml, Berry and Parasuraman (1993) was used, considered by other authors as the most appropriate to assess the quality of educational services (Gathoni and van der Walt, 2019; Gregory, 2019; Makoe and Nsamba, 2019). The objective of the SERVQUAL model is to determine the gap caused by the deficiencies in the quality with which the services are provided and the quality expected by the consumer (Rushton, Croucher & Baker, 2017). The questionnaire that was applied is derived from the one designed by Parasuraman, Zeithaml and Berry (1994) and was adapted for the educational sector. The questionnaire consists of 28 items that cover specific aspects of the five dimensions. For each item, the student's expectation and perception of the quality of service at UNACAR were evaluated.

The evaluation was made on a scale of 1 to 10 (where 1 meant extremely poor and 10 extremely good). The gap is the difference between expectation and perception. A positive gap indicates that the student receives more than he expects, so he considers himself satisfied with the service. If the gap is negative, the student receives less than he expects and is therefore not satisfied.

Validity of the SERVQUAL questionnaire and factor analysis

To determine the validity of the applied questionnaire, Cronbach's alpha coefficient (Basfirinci and Mitra, 2015; Stefano, Casarotto, Barichelo, and Sohn, 2015) was used, which determines if the items used in the questionnaire are homogeneous. The reliability of the questionnaire depends on the number of questions or items and on the proportion of the total variance due to the covariance between its parts. When the value of the coefficient is less than 0.6, the items are considered to have low reliability; while a value greater than 0.6 indicates a high reliability of the items (Matsumoto, 2014).

Factor analysis was used to find homogeneous groups of variables. These groups are formed with the variables that are highly correlated with each other and ensuring that the groups are independent of others. To determine whether it is feasible to apply factor analysis to a data set, the Kaiser-Meyer-Olkin (KMO) sample adequacy measure is obtained.

Determining models of perception, expectation and gap

Most of the studies used to determine quality use the SERVQUAL model, which can be used to evaluate expectation and perception, although it is worth noting that these two variables depend on age, gender, monetary income and length of stay in the student's university (Rubinsztejn et al., 2015). To evaluate these relationships, the following model was applied for each of the SERVQUAL model dimensions:

$$Y_{mn} = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

As

Y_{mn} = dimension evaluated;

X_1 = student's age;

X_2 = student gender;

X_3 = time you have been a student at the institution;

X_4 = student's monthly family income;

β_i = parameters to study;

m = dimension;

n = aspect to evaluate (expectation, perception or gap), and

e = stochastic error term.

Results

Reliability of the questionnaire and factor analysis

Cronbach's alpha coefficient for expectation, perception and gap was close to 1, so it can be stated that the questionnaire has high reliability. The Kaiser-Meyer-Olkin (KMO) sample adequacy measure obtained for the expectation, perception and gap was greater than 0.7, which indicates that for the obtained data it is possible to perform the factor analysis. Bartlett's sphericity test obtained for expectation, perception and gap was 0.000. Based on this test, it can be ensured that the factor analysis is adequate to explain the data generated by the questionnaire (Table 2).

Tabla 2. Medida Kaiser, Meyer-Olkin, prueba de esfericidad de Bartlett y prueba alfa Cronbach

Prueba		Expectativa	Percepción	Brecha
Medida Kaiser-Meyer-Olkin de adecuación de muestreo		.972	.945	.962
Prueba de esfericidad de Bartlett	Aprox. Chi-cuadrado	12167.739	7464.582	8900.136
	Gl	378	378	378
	Sig.	0.000	0.000	0.000
Alfa de Cronbach		0.961	0.922	0.938
Alfa de Cronbach con elementos estandarizados		0.97	0.942	0.954

Fuente. Elaboración propia

Expectation, perception and gaps

The highest values that were obtained in the expectations of the students are related to the teachers. The image of the teacher, his ability and availability to serve the student, as well as his experience and ability to teach are aspects that the student values in his expectations.

Tabla 3. Evaluación de los estudiantes sobre los servicios universitarios

Ítem	Expectativa		Percepción		Brecha	
	Media	Desviación estándar	Media	Desviación estándar	Media	Desviación estándar
T1. Las instalaciones y equipos (edificios, talleres, laboratorios, biblioteca, auditorio, zonas verdes, baños) universitarios están bien conservados.	7.65	1.78	6.78	1.76	-0.88	2.27
T2. Las áreas públicas son agradables, cómodas y funcionales.	7.98	3.93	7.16	1.68	-0.83	4.03
T3. Los profesores universitarios se caracterizan por estar bien vestidos.	8.26	1.70	8.29	1.68	0.02	1.88
T4. El personal administrativo se caracteriza por tener un aspecto limpio.	8.52	1.54	8.45	1.57	-0.09	1.76
T5. Las instalaciones universitarias están limpias.	8.11	1.84	7.49	1.88	-0.62	2.14
T6. Las aulas tienen mobiliario y equipo adecuados para dar y recibir clases.	8.07	1.80	7.41	4.85	-0.67	5.01
F1. Los servicios universitarios (como servicios al estudiante, servicios escolares, servicios deportivos, bibliotecas, etc.) son eficientes.	7.93	1.91	7.00	2.01	-0.95	2.39
F2. El estudiante puede acceder libremente a los servicios e instalaciones universitarias.	8.30	1.76	7.78	1.88	-0.54	2.16
F3. Se abarcan por completo todos los temas de cada uno de los cursos del programa educativo.	8.32	1.70	7.93	1.65	-0.40	1.99
F4. Los documentos oficiales expedidos por alguna instancia de la universidad están libres de errores.	8.31	1.69	7.81	1.78	-0.50	1.85
F5. El personal administrativo cumple con los horarios de atención al estudiante, la entrega de documentos, los horarios de servicio según lo previamente establecido.	8.17	1.87	7.37	2.07	-0.82	2.25
C1. Los profesores siempre están disponibles para asesorar al	8.16	1.83	8.15	4.41	-0.02	4.48

alumno.						
C2. Los servicios y trámites universitarios se realizan con rapidez.	7.60	2.21	6.02	2.47	-1.58	2.90
C3. El personal directivo, administrativo y de servicios está siempre dispuesto a ayudar al alumno.	7.86	1.93	6.98	2.14	-0.90	2.37
C4. El personal de servicios al estudiante (servicio social y becas, movilidad, seguro facultativo, tutoría, psicología, etc.) está siempre disponible para atender al alumno.	7.87	2.07	6.85	2.28	-1.04	2.57
C5. El alumno tiene fácil acceso a los directivos universitarios para resolver sus problemas académicos.	7.75	2.03	6.80	2.23	-0.95	2.46

Fuente: Elaboración propia

UNACAR students also have high expectations for services and facilities, compliance with all course programs, documents issued by the university, and presentation of administrative staff.

Regarding perception, students gave higher scores to variables such as the teacher's experience, capacity and effort to teach (tables 3 and 4). The aspect with the lowest grade by the student was the registration system. An important percentage of the low evaluations were related to the empathy dimension, which indicates that in the university it is required to improve the attention to the student by the administrative, managerial and academic personnel. The students considered that the teachers do not make every effort to know and adapt to their needs. Another aspect with a low perception score was the physical state of the facilities.

On the other hand, the calculated gaps reached negative values, which means that the student's perceptions were less than their expectations. The greatest dissatisfaction was found in the administrative services (eg, enrollment methods, selection of subjects and student care in social service procedures, scholarships, mobility, medical insurance, tutoring, psychology, among others).

Tabla 4. Evaluación de los estudiantes sobre los servicios universitarios

Ítem	Expectativa		Percepción		Brecha	
	Media	Desviación estándar	Media	Desviación estándar	Media	Desviación estándar
G1. Los directivos, profesores y administrativos de la universidad generan confianza.	7.99	1.89	7.60	2.00	-0.39	2.10
G2. Los profesores tienen experiencia y están capacitados en los cursos que imparten.	8.39	1.78	8.33	1.68	-0.06	1.94
G3. Los métodos de inscripción y selección de materias son eficientes.	7.86	2.23	5.32	2.93	-2.54	3.40
G4. Las opciones de titulación son suficientes para garantizar la obtención del título profesional.	8.11	1.86	7.43	2.08	-0.68	2.24
G5. Las instalaciones universitarias cumplen con las normas de seguridad.	8.24	3.71	7.35	2.09	-0.90	3.96
E1. En clases, el profesor se esfuerza para que los temas del curso queden claros a cada alumno.	8.33	1.76	8.16	1.78	-0.18	2.00
E2. Los directivos (rector, directores de facultad, director de servicios al estudiante, etc.) se esfuerzan por conocer las necesidades del alumno.	7.67	2.34	6.13	2.59	-1.56	2.84
E3. El profesor se esfuerza por conocer las necesidades de cada alumno.	7.72	2.09	6.98	2.21	-0.73	2.38
E4. En la universidad los alumnos son lo más importante (el alumno es primero).	7.70	2.26	6.65	2.41	-1.07	2.75
E5. Los horarios de los servicios universitarios, incluidos los cursos, se adaptan a las necesidades del alumno.	7.80	2.15	6.75	3.60	-1.07	3.70
E6. El personal de servicios al estudiante (becas, servicio social, movilidad, tutorías, psicología, prácticas profesionales) se esfuerza por resolver los problemas del alumno.	7.66	2.20	6.69	2.46	-0.98	2.59
E7. Los tutores y gestores de carrera se preocupan por resolver los problemas del alumno.	7.99	2.16	7.56	2.40	-0.45	2.47

Fuente: Elaboración propia

The gaps with negative values close to zero arose in aspects such as the presentation or clothing of the teacher, the teacher covers all the topics of the course program, generates confidence in the student and strives to make the course topics clear to the student. The study also reflects a good role of tutors and career managers and their commitment to solving student problems.

Factorial analysis

Tabla 5. Matriz de componentes rotados para expectativa, percepción y brechas

Ítem	Componentes expectativas		Componentes percepción					Componentes brechas			
	1	2	1	2	3	4	5	1	2	3	4
T1						.630				.537	
T2						.646				.509	
T3		.699		.706						.587	
T4		.754		.721						.653	
T5		.754		.557						.677	
T6		.655			.652				.522		
F1		.703	.612						.627		
F2		.645	.529						.504		
F3		.695		.636						.652	
F4		.647		.530							
F5		.635	.561						.528		
C1							.869				.839
C2			.665						.564		
C3	.670		.678					.557	.527		
C4	.662		.781					.501	.583		
C5	.662		.726						.560		
G1	.655										
G2	.639			.519	.597					.637	
G3	.696		.501					.535			
G4	.653			.533				.527			
G5			.527						.556		
E1	.722			.565	.510			.633		.522	
E2	.788			.627				.753			
E3	.789			.719				.791			
E4	.820			.663				.748			
E5	.824							.606			
E6	.825		.605					.665			
E7	.779			.653				.657			

Fuente: Elaboración propia

Método de extracción: Análisis de componentes principales.

Método de rotación: Varimax con normalización Kaiser.

The factor analysis shows that the student's expectations depend on the physical state of the facilities, furniture, equipment and personalized attention towards the student. The perception is not well defined, since five components were generated in which the five dimensions of the original SERVQUAL model are distributed (Table 5). The factor analysis for the gaps generated four components. Among these, the factors that determined the quality of UNACAR services were the physical condition of the facilities, the empathy of the workers towards the student, the efficiency of the services the student receives and the availability of teachers to advise the student. The above factors show a strong interaction between the resources, the government and the pedagogical culture of the institution.

Factors that determine the perception and expectations of the student

Tabla 6. Descripción de la muestra

	Descripción	Registro	
		N	%
Género	Masculino	219	43.0
	Femenino	290	57.0
Edad	17 años	1	0.2
	18 años	32	6.3
	19 años	99	19.5
	20 años	143	28.1
	21 años	105	20.7
	22 años	56	11.0
	> 23 años	72	14.2
Tiempo	1 año	112	22.7
	2 años	171	34.6
	3 años	110	22.3
	4 años	58	11.7
	> 5 años	43	8.7
Ingreso	< 1 SM	36	9.8
	1.1 a 2 SM	92	25.1
	2.1 a 3 SM	68	18.5
	> 3.1 SM	171	46.6

Fuente: Elaboración propia

Table 6 describes the characteristics of gender, income, time to attend university and the age of the students interviewed. In the statistical results of the regression models, it is observed that the student's age, gender, length of stay in university and family income determine 95.6% of their expectations (average $R2 = 0.956$). In an individual analysis, the estimators of income and gender are not reliable; therefore, student expectations are determined by age and length of stay at university (table 7).

Likewise, age, gender, length of stay at university and family income determine 95.6% of their perception (average $R2 = 0.956$). The estimators for age, time and income are reliable with the exception of the income estimator for the tangibility dimension. There is no relationship between perception and student gender because the estimators obtained are not reliable. Students perceive a better quality in university services the older they are. The time that the student has been in the university has a negative effect on their perception of the quality of the services (table 7).

The gaps are calculated by the difference between perception and expectations and determine if the student is satisfied with the service. On average, the analyzed factors determine 18.3% of student satisfaction. When analyzing the coefficients for the gaps, it is observed that the income presents reliable estimators, with errors of 6% or less; therefore, student satisfaction with UNACAR services is determined by income. The error levels of the estimators for age, length of university stay and gender do not indicate that these variables influence the gaps (Table 7).

Tabla 7. Coeficientes obtenidos para expectativa, percepción y brechas por cada dimensión

Ecuación/dimensión	Edad	Género	Tiempo	Ingreso	R^2	$Pr > F$
Expectativa						
Tangibilidad	0.42017	0.0689	-0.3783	0.0000043	0.956	< 0.0001
	< 0.0001	*0.7122*	*< 0.0001*	*0.6443*		
Fiabilidad	0.4272	0.0569	-0.3852	0.0000023	0.958	< 0.0001
	< 0.0001	*0.7612*	*< 0.0001*	*0.8000*		
Capacidad de respuesta	0.4157	0.1152	-0.4558	-0.0000014	0.9406	< 0.0001
	< 0.0001	*0.5887*	*< 0.0001*	*0.8893*		
Garantía	0.4196	0.0129	-0.3146	-0.0000077	0.941	< 0.0001
	< 0.0001	*0.9532*	*0.0003*	*0.4721*		
Empatía	0.4175	-0.0068	-0.439	-0.0000061	0.934	< 0.0001
	< 0.0001	*0.9763*	*< 0.0001*	*0.5777*		
Promedio expectativa	0.42	0.04964	-0.3946	-0.0000017	0.956	< 0.0001
	< 0.0001	*0.7897*	*< 0.0001*	*0.8486*		
Percepción						
Tangibilidad	0.4192	-0.279	-0.4172	-0.0000015	0.9466	< 0.0001
	< 0.0001	*0.1567*	*< 0.0001*	*0.1102*		
Fiabilidad	0.4215	0.0295	-0.5216	-0.00001	0.9574	< 0.0001
	< 0.0001	*0.8656*	*< 0.0001*	*0.068*		
Capacidad de respuesta	0.3969	0.1213	-0.5668	-0.00029	0.9352	< 0.0001
	< 0.0001	*0.5397*	*< 0.0001*	*0.0029*		
Garantía	0.4016	0.0161	-0.4427	-0.000091	0.9463	< 0.0001
	< 0.0001	*0.9309*	*< 0.0001*	*0.0005*		
Empatía	0.3916	-0.0576	-0.4887	-0.000023	0.9221	< 0.0001
	< 0.0001	*0.7923*	*< 0.0001*	*0.0303*		
Promedio percepción	0.4061	-0.0339	-0.4874	-0.000023	0.9559	< 0.0001
	< 0.0001	*0.841*	*< 0.0001*	*0.0056*		
Brecha						
Tangibilidad	-0.00099	-0.3489	-0.0388	-0.00002	0.0744	< 0.0001
	0.9319	*0.1071*	*0.6436*	*0.0634*		
Fiabilidad	-0.0058	-0.0273	-0.1364	-0.000018	0.1397	< 0.0001
	0.55	*0.8792*	*0.0518*	*0.0424*		
Capacidad de respuesta	-0.0188	0.0061	-0.1111	-0.000028	0.1846	< 0.0001
	0.1158	*0.9782*	*0.1971*	*0.0115*		
Garantía	-0.018	0.00324	-0.1281	-0.00024	0.175	< 0.0001
	0.1377	*0.9885*	*0.143*	*0.0279*		
Empatía	-0.0258	-0.051	-0.0496	-0.000017	0.1516	< 0.0001

	0.0331	0.8204	0.5691	0.1189		
Promedio brechas	-0.0139	-0.0836	-0.0928	-0.000021	0.1837	< 0.0001
	0.1586	0.6471	0.1911	0.0175		

Fuente: Elaboración propia

Discussion

The results show that the quality of UNACAR services is determined by the state of the facilities, the attention the student receives from the workers, the efficiency of the services and the empathy and capacity of the teacher. The administration of the universities, especially private ones, is interested in finding new methods to improve the quality of their services (Fabela-Cárdenas and García-Treviño, 2014), so it is necessary that public universities enter the same dynamic due to that the resources received depend on your enrollment.

According to Moreno (2017), various public policies have strengthened the organization of universities, some of which have taken advantage of resources to modernize. However, it is worth noting that in other cases these resources have not flowed constantly, which has been a limiting factor for certain public universities to replace equipment and offer adequate maintenance to their facilities, a case that has also manifested itself at UNACAR. This is a variable that impacts the student's perception of the facilities.

On the other hand, the service provided by the teachers was evaluated through its appearance, experience, ability to teach courses and generate confidence, responsibility to cover the course topics and effort to meet the needs of the students. In these aspects, the gaps obtained were negative and close to zero; therefore, the student's perception at UNACAR is less than their expectation. This behavior agrees with what was mentioned by Hortigüela, Ausín, Delgado and Abella (2017), who point out that students wait for a teacher who is capable of motivating in their subject and whose assessment strategies favor the learning process. In educational institutions, in a nutshell, teaching quality is estimated based on their ability to relate to students (Jerez et al., 2016) and the student's choices and preferences for a university depend on the performance and abilities of the student. teacher (Naidu and Shudada, 2016).

The expectations of students upon entering UNACAR agree with students from other universities, who generally expect the teacher to demonstrate good preparation (Jerez, Orsini and Hasbún, 2016). Teacher preparation should focus on disciplinary and pedagogical aspects to develop the potential of the students (Singh, Pai, Sinha, Kaur, Soe and Barua, 2013). Therefore, the teacher must constantly design and implement teaching and assessment strategies

(Yarmohammadian, Mozaffary and Esfahani, 2011). The negative gaps obtained in the study oblige UNACAR to focus its efforts on optimizing the pedagogical and disciplinary training of teachers.

The highest negative gaps in the study were registered in the services that the university provides to the student (outside the teaching activity), that is, the departments of tutoring, scholarships, academic exchange, social service, medical insurance, selection and discharge system. of courses, among others. The poor quality of these services is a problem because sometimes the aspects related to the service are considered more important than those related to teaching (Hill, 1995). The university, therefore, must work to improve student care and focus its attention on the efficiency of its administrative staff to improve the quality of its services (Giannini, 2015). Improving the administration of human and material resources and optimizing the pedagogical culture of the university can raise the quality and enrollment (MacCowan, 2018; Rodríguez-Ponce, Pedraja-Rejas, Delgado-Almonte and Ganga-Contreras, 2017).

Rodríguez, Ariza and Ramos (2014) found a weak explanatory power of the socioeconomic level on academic performance. Despite the differences that may exist in the level of income of students, the way in which students construct their perceptions about the quality of institutions is similar in both a public and private university (Alvarado, Morales and Aguayo, 2016) .

Students' expectations are determined by the information they have, their previous experiences and previous studies. These expectations vary over time and change according to the student's experience within the institution (Rubinsztejn et al., 2015). Li and Kaye (1999) also found that perceptions of service quality tend to decrease during the service consumption period. The results found also indicate an inverse relationship between family income and student perception. This means that the higher the income, the demands for the service rise. Rubinsztejn et al., (2015) explain that the student's perception of the quality of services they receive is determined by the experience acquired as they advance in their career.

In the present study, an analysis of very general areas within the university was carried out. Within these areas, there may be a lot of difference in the quality of service of the departments that comprise it, although in the investigation they could not be detected. Even so, the methodology used will allow adaptations to the study of specific departments and contribute to the implementation of specific policies in educational institutions.

The expectations and perceptions of the student in general show the quality of the services offered. The greatest contribution of the research has to do with the incorporation of factors that determine these perceptions and their quantification. In Mexico, universities have been created in

various regions of the country, which face different demands. By studying the factors that determine consumer perceptions, universities can detect the needs of students and generate internal policies that lead to increased enrollment and terminal efficiency.

Conclusions

Students perceive that the quality of UNACAR services is lower than what they expect upon entering the institution. Services related to teaching functions are better evaluated, while services related to enrollment systems and student services receive low marks, reflecting the low attention that students receive from staff working in these areas.

The expectations of UNACAR students are determined by their ages and their experiences within the university, while their perceptions are linked to their ages, experiences within the institution and income levels. When obtaining the difference between expectation and perception, it is observed that the determining factor in the quality of university services is determined by the level of income. Older students have a higher demand for the quality of university services, and the longer they stay within the institution they tend to perceive a lower quality of services. The economic dynamism of the city, product of the oil activity, is an important factor in the student's evaluation of the university. Educational institutions immersed in a similar economic environment must focus their policy on the continuous improvement of the quality of the services offered to the student.

In short, the university must focus on constantly training its professors and staff who are directly related to the student. In an environment of strong competition with private institutions, the staff and services that facilitate the student's training process are essential to achieve student satisfaction.

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