



Instituto Politécnico  
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**ASSOCIAÇÃO DE POLITÉCNICOS DO NORTE (APNOR)  
INSTITUTO POLITÉCNICO DE BRAGANÇA**

**“Measuring student satisfaction at Higher education:  
IPB case study”**

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Final Dissertation submitted to *Instituto Politécnico de Bragança*

To obtain the Master Degree in Management, Specialisation in Business  
Management

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**Bragança, December, 2022.**





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## **Abstract**

Consumer satisfaction and service quality continue to attract the attention of researchers and practitioners in various disciplines. It also affected the educational system. Students' opinions about all aspects of academic life are now sought by educational institutions worldwide, generally in the form of a satisfaction feedback questionnaire.

The image of a school strongly impacts the retention of current students and the attraction of potential students. Poor retention rates may have adverse funding consequences for institutions (Douglas & Douglas, 2006). However, there is not enough research that shows how intricately linked student satisfaction, retention, and recruitment are.

The study's main goals were to determine the factors influencing students' satisfaction in HE and measure the students' satisfaction with the IPB. Since the measurement of students' satisfaction is a requirement for obtaining a quality guarantee, this process should be useful for making decisions that contribute to the effective improvement of the quality of service and, through it, customer satisfaction. Analysis of differences in the quality perception of students and examining whether the perceived quality affects the loyalty, retention, and recruitment of students as the main customers is one of the main necessities of the service quality process. Likewise, the positive influence between perceived quality and students' loyalty must be verified.

The current research work follows the quantitative analysis with the main objectives of analyzing the overall student satisfaction in HE at IPB and determining strong and weak indicators characterizing the learning process at the university. It has made it possible to carry out evaluations and draw conclusions on whether there really a highly relevant relationship between the client and perceived service quality in the higher education sector is.

**Keywords:** Service, satisfaction, higher education institutions, students' satisfaction.

## Resumo

A satisfação dos consumidores e a qualidade do serviço continuam a captar a atenção de investigadores e profissionais de diversas disciplinas, com impacto, nomeadamente, no sistema educativo. As opiniões dos alunos a respeito de todos os aspectos da vida académica são agora procuradas por estabelecimentos de ensino em todo o mundo, geralmente sob a forma de um questionário de feedback de satisfação.

A imagem de uma escola tem um forte impacto na retenção de alunos matriculados e na captação de potenciais alunos. Taxas de retenção baixas podem ter consequências adversas para os estabelecimentos (Douglas & Douglas, 2006). Contudo, não existe investigação suficiente que demonstre quão intrinsecamente ligados estão a satisfação, a retenção e o recrutamento dos alunos.

Os principais objectivos do presente estudo consistem em determinar os factores que influenciam a satisfação dos alunos do ensino superior e medir a satisfação dos alunos com o IPB. Uma vez que a medição da satisfação dos alunos é um requisito para obter uma garantia de qualidade, este processo deve ser útil para a tomada de decisões que contribuam para a melhoria real da qualidade do serviço prestado e, nessa medida, para a satisfação do cliente. A análise das diferenças na percepção da qualidade por parte dos alunos e a medida em que a percepção da qualidade afecta a lealdade, retenção e recrutamento dos alunos na qualidade de principais clientes é uma das principais necessidades do processo de asseguramento da qualidade do serviço. Da mesma forma, é necessário proceder a uma verificação da influência positiva entre a percepção da qualidade e a lealdade dos alunos.

O presente trabalho de investigação segue a análise quantitativa, tendo por principais objectivos analisar a satisfação geral dos alunos no IPB e determinar indicadores fortes e fracos que caracterizam o processo de aprendizagem na universidade. O presente trabalho permitiu realizar avaliações e tirar conclusões a respeito da existência de umnexo relevante entre o cliente e a qualidade percebida do serviço no sector do ensino superior.

**Palavras-chave:** Serviço, satisfação, estabelecimentos de ensino superior, satisfação dos alunos.

## **Abbreviations and Acronyms**

B2B – Business-to-business Marketing

B2C – Business-to-consumer Marketing

ECTS – European Credit Transfer System

HE – Higher Education

HedPERF – Higher Education Performance Model

HEI – Higher Educational Institution

INDSERV – Industrial Service Quality Scale

IPB – Instituto Politécnico de Bragança

SERQUAL – Service Quality scale

SERVPERF – Service Performance Scale

SM – Service Marketing

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## Introduction

Higher education (HE) is critical for people today because it is one measure of success and a guarantee of career success. It is the reason why the education sector has been expanding very rapidly in recent years. An increase in the number of higher education institutions and programs has led to intense competition. Moreover, with the development of technology, students can easily get information about a university. In this competitive environment, only institutions that provide qualified education and a constructive environment for their students can survive, since these factors can influence their choice of admission.

The higher education sector in Portugal has been going through a transformation during the last decade. Many new institutions have been set up, and enrolments are also on the higher side. In 2005, in order to implement the Bologna Process, Portugal started a reformation of the Basic Law of the Educational System with the introduction of the European Credit Transfer System (ECTS) in study cycles, mobility mechanisms, and diploma supplements, among others. Numerous incentives were provided with these reforms to both students and faculty with the collaboration of local and international institutions. These education reforms have already led to remarkable growth and competition in the higher education sector of Portugal.

The topic of Students' satisfaction in HE has been thoroughly explored in the past 30 years. Numerous scientists highlight a connection between student satisfaction in HE and students' perception of the quality of education.

Yousapronpaiboon (2014) states that student satisfaction can be determined by the level of trust in higher education. Especially in the field of academic services, trust is needed to enhance student satisfaction.

Aldridge and Rowley (1998) articulate that, according to students' point of view, good quality education provides better learning opportunities and suggests that the levels of satisfaction or dissatisfaction strongly affect the student's success or failure in learning.

There are two of the most common approaches to assessing education quality in terms of educational quality evaluation: mechanistic and humanistic. Experts and agencies conduct the mechanistic approach during exercises such as the Research Assessment Exercise and the Quality Assurance Assessment. The humanistic approach focuses on the views of students. Most of the research in the educational quality area is based on the SERVQUAL framework. The construct is based on the disconfirmation of consumers' expectations (Athiyaman, 1997).

According to multiple studies, one of the most popular methods used to measure service quality is the SERVQUAL model, created by Parasuraman, Berry, and Zeithaml. Based on SERVQUAL model,

Firdaus Abdullah (2005) developed a new measuring instrument of service quality for the higher education sector and called it HEdPERF.

In this work, a mix of SERVQUAL and HEdPERF models was used in order to obtain a complete and multifaceted analysis of student satisfaction in HE. The practical part of the research consists of the case study made on the basis of the Polytechnic Institute of Bragança (IPB). The survey was conducted among bachelor and master students, measure student satisfaction and define the missing point in the institute. A survey was conducted by carrying out questionnaires online and offline to achieve the objective.

This research work is structured into five sections after the introduction. The first section was a literature review where information was written about service marketing, service quality, and students' satisfaction evaluation, the higher education system in Portugal, and how these areas are connected to each other. In the second section, the research methodology was described, which includes the objectives of the study, a description of data collection and a description of data analysis. The third part presents and analyzes the results. It includes the profiles of the respondents as well as a descriptive analysis. The fourth part of the work consists of some recommendations, and finally, the fifth section includes conclusions, limitations, and future research.

# **1. Literature review**

## **1.1. Service Marketing**

### **1.1.1 Definition and Theory of Service Marketing**

Research in service marketing is becoming increasingly important due to the growing relevance of services. Service marketing (SM) emerged as a subfield of the marketing discipline in the late 1970s.

In 1974, the first comprehensive SM theory or frame of reference was published by Rathmell. He used traditional concepts and models of consumer marketing theory in service marketing. Since that time, there has been an on-going development of SM. Rathmell (1974) concluded that definitions, classifications, data, and concepts are lacking, noncomparable, or unreal from a marketing perspective. Moreover, as one attempts to integrate marketing terms, concepts, and practices with firms, institutions, and professions having their own traditions, customs, and practices that are quite foreign to conventional marketing, the linkage appears awkward and improper.

According to Bonoma and Mills (1979), the services offered by service companies must be changed more product-like, so that existing marketing theories can be applied.

Bessom, Eiglier, and Langeard (1975) noticed that services are different in comparison with physical products and held that marketing concepts and models must be developed in a more service-like direction.

Grönroos (2007), based on empirical research in northern Europe, claims that although there are similarities between services and physical products, services have some basic characteristics that make them fundamentally different from a marketing point of view. It seems inappropriate to try to change the services—for example, to make them more tangible and more impersonal—just to be able to apply conventional marketing knowledge.

Services marketing typically refers to both business-to-consumer (B2C) and business-to-business (B2B) services and includes the marketing and selling of intangible products (non-physical products) such as telecommunications services, financial services, all types of hospitality, tourism leisure and entertainment services, car rental services, health care services, educational services, professional services, and trade services.

The American Marketing Association defines services marketing as an organizational function and a set of processes for identifying or creating, communicating, and delivering value to customers and managing

customer relationship to benefit the organization and stakeholders (Lovelock & Wirtz, 2011). The most cited characteristics of services are presented on the Table 1.

**Table 1.** Characteristics of services.

<b>Characteristic of services</b>	<b>Description</b>
<b>Intangibility</b>	Services lack physical form; they do not interact with any of our senses in a conventional way, they cannot be touched or held
<b>Inseparability</b>	Production and consumption cannot be separated (compared with goods where production and consumption are entirely discrete processes)
<b>Perishability</b>	Service performances are ephemeral; unlike physical goods, services cannot be stored or inventoried.
<b>Variability (also known as heterogeneity)</b>	services involve processes delivered by service personnel and subject to human variation, customers often seek highly customized solutions, services are inherently variable in quality and substance.

Source: Zeithaml, Parasuraman, and Berry (1985, p.23).

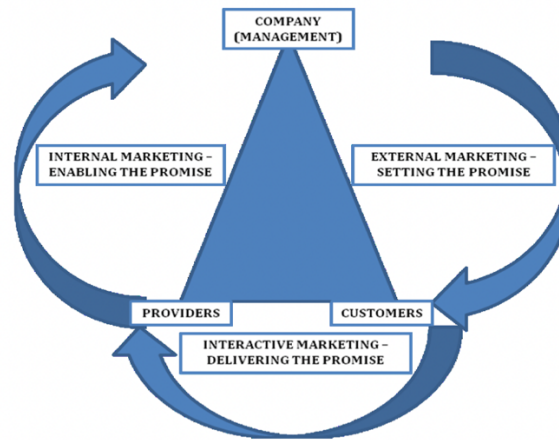
The relationships between the service, the service provider, and the consumer of the service are presented in the service marketing triangle. The SM triangle involves 3 types of marketing:

External marketing is used to increase their sales and brand awareness. It involves such activities as sales promotion, personal selling, direct sales, offers, and direct marketing, which fall into the category of external marketing.

Internal marketing is used for companies and organizations that motivate their employees. They stoke up employees by organizing team-building exercises to keep them satisfied. When workers are satisfied, they can provide better service to customers.

Interactive marketing involves interaction between the employees and clients of a company in places where they get in contact with one another. Interaction marketing influences the decision-making of buyers and increases the conversion rate.

The customer's experience of the service, satisfaction, feelings and perceptions influence attracting new customers and retaining existing customers. The customer experiences the service through the marketing mix, as described by Booms, Bernard, and Bitner (1982). The critical elements of the services marketing mix that influence customer expectations in service are product, price, place, promotion, physical evidence, participants, and process.



**Figure 1.** Service marketing triangle.

Source: Dabhade and Yadav (2013, p. 81).

Due to the intangibility of service products, the firm may find it difficult to understand how consumers perceive their services (Zeithaml, Parasuraman, & Berry, 1985). To develop good customer service, the service marketer should create a strong organizational image and stress tangible cues (Booms & Bitner 1982). This can be done by informing customers about the service's special features.

Price becomes a crucial quality indicator of service quality due to the intangible nature of the service. It is an important factor because a customer can make a final choice based on price among several competing service organizations.

Place where a service is offered is another basis for the customer to make a final choice. If the service is located in an inconvenient area, regardless of the other advantages of the service, customers would not be motivated to use the service. Also, it is often relevant to use several locations to make the service more accessible to the users.

Constant promotion of a service is essential to develop or maintain customers' expectations of the service. A strong promotional strategy in a competitive market helps attract potential customers and retain existing ones.

As the nature of service is intangible, physical evidence such as business cards, signage, clean atmosphere, environmental design and decoration help establish the business' image and make the experience of the customers better.

The participants in the service environment also define the service of an organization. Personnel trainings, motivation and satisfaction of employees, visual attraction of dress are major factors influencing the provision of quality service. Satisfied employees can perform better.

The way of a service delivery is extremely important. The functional quality, or the 'how' of service delivery is especially important to service industries, as it is difficult to differentiate the technical quality, or the 'what' of service delivery (Gronroos, 1978). It is a factor that can highlight a business from competitors and retain clients as well as scare away customers in case of poor service quality. Employees actions and behavior influence the customer's opinions of the organization and the actual service provided, so it is essential to constantly train them and check the quality of performed service.

The customer's experience of the service, his satisfaction, and his feelings and perceptions have an influence on attracting new customers and retaining existing customers. The customer experiences the service through the marketing mix, as described by Booms, Bernard, and Bitner (1982). The critical elements of the services marketing mix that influence customer expectations in service are product, price, place, promotion, physical evidence, participants, and process.

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Constant service promotion is essential to develop or maintain customers' expectations of the service. In a competitive market, a strong promotional strategy helps to attract potential customers and retain existing ones.

As we know, the nature of service is intangible, and physical evidence such as business cards, signage, clean atmosphere, environmental design, and decoration helps establish the business's image and make the customers' experience better.

The participants in the service environment also define the service of an organization. Personnel training, motivation and satisfaction of employees, and the visual appeal of their dress are major factors influencing the provision of quality service. Satisfied employees can perform better.

The method of service delivery is extremely important. The functional quality, or the 'how' of service delivery, is especially important to service industries, as it is difficult to differentiate the technical quality, or the 'what' of service delivery (Gronroos, 1978). It is a factor that can distinguish a business from competitors, retain clients, and scare away customers in the case of poor service quality. Employees' actions and behavior influence the customer's opinions of the organization and the service provided, so it is essential to constantly train them and check the quality of the service.

We can conclude that the customer's judgement is the crucial factor of service evaluation. However, service marketers can influence these perceptions by controlling the SM mix variables.

### **1.1.2 Students' Satisfaction in HE as a service marketing concept**

Student satisfaction is a result of the perception of service quality delivered by the colleges. It is an important marketing concept for higher education institutions (Van Deuren & Lhaden, 2017).

The concept of students' satisfaction in HE has been thoroughly explored in the past 30 years and has been employed for different goals.

Numerous scientists highlight a connection between student satisfaction in HE and students' perception of the quality of education. Douglas et al. (2008) suggest that student satisfaction is related to the perceived quality of education, although the two are not equivalent.

Fraser and Treagust (1986) validated a tool to capture assessments of the physical environment of an institution of higher education. Griffith (1996) analyzed parental satisfaction with a higher educational institution; Casidy and Wymer (2015) investigated the influence of satisfaction on the formation of a brand.

There are a variety of multi-dimensional factors forming students' satisfaction. In order to investigate how the perceived quality dimensions affect student satisfaction, there is a need to review the literature that has studied potential conditions of student satisfaction.

Alves and Raposo (2007) tested a conceptual model to evaluate students' satisfaction in higher education. Two main influencing factors were found: the image and the perceived value (consisting of customer expectations and technical and functional quality perception). It was also noticeable that the main consequence of satisfaction was student loyalty, caused by word of mouth from student to student.

Therefore, students become university brand advocates or detractors. Paradoxically, Athiyaman (1997) did not observe a significant correlation between satisfaction and the intention to recommend in higher education institutions.

More recently, Gruber, Fuß, Voss, and Gla ser-Zikuda (2010 ) used a new tool to measure 15 dimensions of student satisfaction at an institutional level that covers most aspects of student life: (i) administrative and student services; (ii) atmosphere among students; (iii) attractiveness of the surrounding city; (iv) computer equipment; (v) courses; (vi) library; (vii) lecturers; (viii) lecture theatres; (ix) refectory/cafeteria; (x) relevance of teaching to practice; (xi) reputation of the university; (xii) school placements; (xiii) support from lecturers; (xiv) the presentation of information; and (xv) university buildings. As a result, a valuable insight was gained that students' satisfaction with their university is based on a relatively stable person-environment relationship. Students value the atmosphere among students as well as university buildings and the quality of the lecture theatres.

Mai (2010) has found that the 'overall impression of the school' and the 'overall impression of the quality of education' are two significant predictors of the 'overall satisfaction of the education'. Other more specific service dimensions that also have an effect on students' satisfaction are lecturers' expertise and interest in their subject, the quality and accessibility of IT facilities, and the prospects of the degree furthering students' careers.

Jereb, Jerebic, and Urh (2018) conducted a Friedman test using an independent samples t-test to assess which satisfaction factors are students' priority.

It was revealed that the main factors influencing student satisfaction were teaching staff, followed by administrative support, program issues, physical environment, location of the institution, social life, and support facilities. Moreover, it was found that program issues and administrative support are more important to women than to men. It was also found that the higher the level of the class, the lower the importance of the satisfaction factors.

Marimon, Mas-Machuca, Berbegal-Mirabent, and Llach (2019) validated the UnivQual scale to assess the quality of universities. Authors analyzed the role of the aforementioned dimensions: (i) "curriculum"; (ii) "skills development"; and (iii) "services and facilities" and their impact on student satisfaction. According to the results obtained, the "curriculum" dimension is the main antecedent of student satisfaction, whereas "services and facilities" do not play a significant role, although they are necessary to provide good service.

## **1.2 Service quality**

### **1.2.1. Definition and model of Service Quality**

The topic of service quality has been a subject of debate in businesses since the late 1970s. Understanding and vision of the definition of "service quality" is important in service organizations. It is crucial to define "service quality" from a customer perspective before doing quality improvement.

Before giving a meaning to the concept "service quality", we have to understand what "quality" is.

Different people understand the term "quality" in their own way. The term is an elusive and abstract concept with many meanings and interpretations (Seawright, & Young, 1996). Definitions vary depending on whose perspective is taken and within which context they are considered. The word "quality" is derived from the Latin "qualis", meaning "what kind of" (Glare, 1983).

According to Japanese philosophy, quality is "zero defects—doing it right the first time" Crosby (1979) defines quality as "conformance to requirements." Garvin (1983, p. 68) measures quality by counting the incidence of "internal" failures (those observed before a product leaves the factory) and "external" failures (those incurred in the field after a unit has been installed).

The Merriam-Webster Dictionary (2010) defines quality as the degree of excellence; the superiority of kind; and a distinguishing attribute.

These definitions, however, are more relevant when we talk about goods quality and less sufficient to describe service quality. In the 1980s, a first wave of researchers defined the frontiers of service quality. Parasuraman, Zeithaml, and Berry (1988), developed the constructed service quality SERVQUAL rating scale to measure a consumer's perception of service quality. Christian Grönroos of Finland established a research agenda for service quality measurement.

Feigenbaum (1991) indicated that service quality is customers' decision based on their realistic experience with the product or service, measured by customer requests.

Lynn Shostack argued successfully that managing services was very different from managing products (Rust & Oliver, 1993).

According to Edvardsson (1994) service quality is defined as the relationship between the user's expectations of a service and the perception of the service after it has been received.

Yang, Cai, Zhou, and Zhou (2005) designed and validated an instrument that measured a customer's perceived service quality of information presented on web portals.

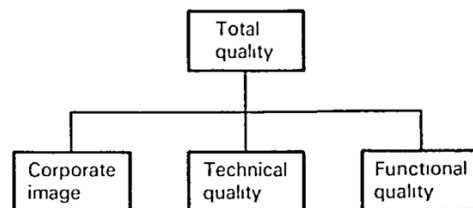
Olorunniwo, Hsu, and Udo (2006) identified the following service characteristics as essential for a complete understanding of service quality: accessibility, knowledge, tangibility, reliability, and responsiveness. These requests were perceived or aware of, totally subjective or professional, and always represented changing targets in a competitive market.

Further, Wu, Tao and Yang (2012) conducted an empirical study to derive the first robust and comprehensive measure of e-banking service quality in Taiwanese. Wang, Tsai, Chen, and Chang (2012) investigate the effects of emotions displayed and personal selling on customer purchase amount and re-patronage intention in convenience-goods retail service settings.

Albugami, Salim, Albugami, and Akhtar (2019) proved the positive impact of good E-service on customers' satisfaction; however, it does not override unsatisfactory performance in other areas.

The term "service quality" is difficult to define as a vision of service quality is based on the requirements of each individual customer. After studying the sources, I can conclude that service quality is, by nature, a subjective concept. It can be defined as the result of a comparison of consumer expectations with actual service performance.

The quality of service is complicated in nature, because while forming a customer's opinion of the service, he will evaluate different resources and activities in connection with the production resources and the production process. Figure 2 illustrates a model of service quality. According to this model, the total quality of service is a function of three different components: corporate image, technical quality, and functional quality.



**Figure 2.** Service Quality Model.

Source: Grönroos (2007, p.33).

First, it is important to the consumer that the service is technically acceptable. This means that university studies, restaurant dinners, massages, and other activities must result in the desired outcome: a high-quality education, a tasty meal, and a relaxing or healing massage. On the other hand, it is also important how the technical quality is transferred to the customer. The service must have functional quality. How the education is rendered, what happens during a meal at the restaurant, how and in what milieu the massage is done can be as important to the consumer's opinion as the more technical quality; in many cases the functional quality may be the more important one.

Because the nature of services is intangible, corporate image is also important to the service firm. If the image is unattractive, the customers may not even be interested in using the service. A bad image may also lead to a definite and negative reaction to minor problems with the technical quality or with the functional quality.

While planning the buyer-seller interaction, it is important to recognize all quality components.

### **1.2.2. Service Quality evaluation methods**

Many methods have been developed to evaluate the quality of service. Most used methods differ conceptually and methodologically from each other:

- 1) Critical incidents technique
- 2) SERQUAL Model
- 3) SERVPERF Model
- 4) INDSERV Model
- 5) Kano's Model
- 6) HEdPERF method

#### **1.2.2.1 Critical incidents technique**

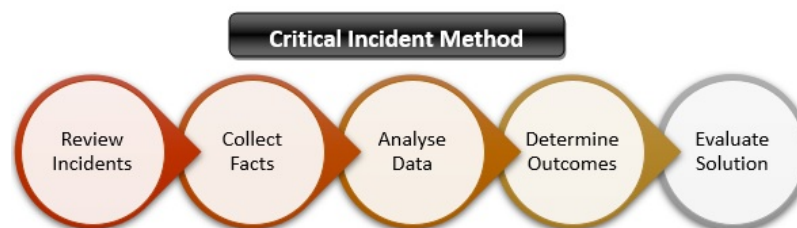
The critical incidents technique is based on an empirical study of interactions between a consumer and a service provider's representative (an employee of a service firm). J.C. Flanagan proposed this method in 1954 as a psychological method designed to analyze the behavior of different respondents in different situations.

Critical incidents technique is a qualitative method and a very flexible tool for collecting data without a formalized approach to drawing conclusions from them.

Bitner, Booms, and Tetreault (1990) conducted extensive research to assess the method's applicability in marketing. They focused on considering as a critical case the fact of "service interaction" - mutual contact between the consumer and the employee of the service provider - and the degree of customer satisfaction/dissatisfaction with this interaction (from the consumer's point of view). The basis for research was that most find an interaction with a service provider as proof of providing a service, and all auxiliary actions as preparatory work, resources and funds used are not taken into consideration (at least from the beginning). Satisfaction or dissatisfaction with the quality of service or with the fact of interaction, as well as the degree of this feeling, can cause the further broader assessment of factors other than the fact of interaction.

Figure 3 illustrates the steps of the method. There are following criteria for classifying service interactions as critical cases:

- interaction between a consumer and a service provider.
- the significance of the case from a consumer's point of view (a very high degree of satisfaction / dissatisfaction);
- the fact of interaction is a particular episode of service.
- the fact of interaction should be described in detail within the framework of those questions that are asked to the consumer.



**Figure 3.** Steps of critical incident method.

Source: Author's own elaboration based on Bitner, Booms, and Tetreault (1990, p.80)

The drawback of the method appears in practical usage. It is necessity of a long-term collection and analysis of critical cases from consumers, which includes their description and assessment.

In order to collect data, the following questions can be asked (Bitner, Booms, & Mary Stanfield, 1990):

- Think of a time when, as a customer, you had a particularly satisfying (dissatisfying) interaction with an employee of an airline, hotel, or restaurant.
- When did the incident happen?
- What specific circumstances led up to this situation?
- Exactly what did the employee say or do?
- What resulted that made you feel the interaction was satisfying (dissatisfying)?

The processing of data received from consumers-respondents consists in the classification of critical cases into three categories:

- critical cases associated with system failures in the process of providing service.
- critical cases associated with the implementation of consumer expectations and requests to adapt the service to their specific needs.
- critical cases associated with the manifestation of initiative or unexpected actions of the personnel of the service provider.

After that, an analysis is carried out to determine the points of contact of a service provider with consumers, which cause dissatisfaction and satisfaction. The result of the analysis serves as a source for making management decisions in order to improve the quality of service and build a personnel motivation system.

#### **1.2.2.2 SERVQUAL Method**

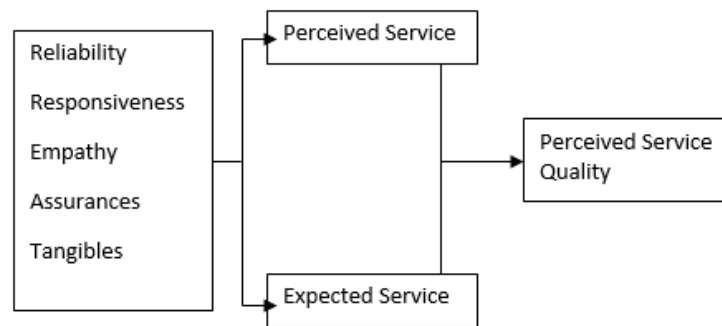
The need to create more formalized methods for assessing the quality of service in comparison with the methods of critical cases predetermined the emergence of the SERVQUAL method.

The method was designed by Parasuraman, Zeithaml, and Berry (1988) in the 80s of the 20th century. SERVQUAL measures the difference between what is expected from a service encounter and

the perception of the actual service encounter (Parasuraman et al., 1988). The authors named this the disconfirmation paradigm, and operationalized it as:

$$\text{Service Quality } (Q) = \text{Perception } (P) - \text{Expectation } (E) \quad [1]$$

The SERVQUAL instrument is a survey containing 44 items, each measuring the perception and expectation of a particular service attribute. SERVQUAL is widely used as an off-the-shelf instrument in many service settings. In education, it has been significantly adapted to form LibQUAL, which is used to measure academic library service quality.



**Figure 4.** The SERVQUAL Model.

Source: Author's own elaboration based on Parasuraman, Zeithaml, and Berry (1988, p.44).

According to Parasuraman, Zeitham, and Berry (1985), customers' perceptions of service quality are influenced by five "gaps":

Gap 1 represents the difference between customer expectations and management perceptions of customer expectations.

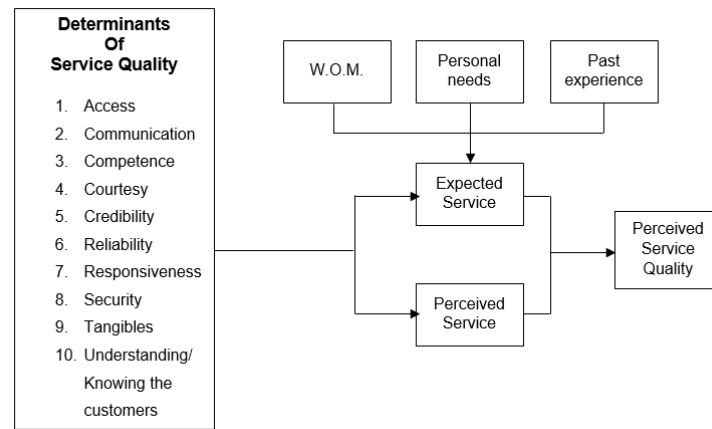
Gap 2 is the difference between management perceptions of consumer expectations and the translation of these perceptions into service-quality specifications.

Gap 3 is the difference between the service actually delivered by frontline service personnel on a day-to-day basis and the specifications set by management.

Gap 4 represents the difference between service delivery and what is promised in external communications to consumers.

Finally, Gap 5 is the difference between customer expectations and perceptions (that is, perceived service quality, as described above).

Gap 5 is influenced by Gaps 1-4, which are all within the control of an organization and therefore need to be analyzed to identify any changes that should be implemented to reduce or eliminate Gap 5. Authors argued that such “gap analyses” are critical for identification of discrepancies between the provider’s perceptions of service-quality dimensions and the consumers’ perceptions of those dimensions. Such gap analyses focus managers’ attention on possible causes for each gap and on developing strategies to close each gap”.



**Figure 5.** Determinants of Perceived Service Quality.

Source: Author’s own elaboration based on Parasuraman et al. (1985, p.14).

The SERVQUAL instrument is based on Gap 5. Based on information from 12 focus-group interviews with consumers, Parasuraman et al. (1985) concluded that consumers evaluated service quality by comparing expectations with perceptions on ten dimensions:

- 1) access,
- 2) communication,
- 3) competence,
- 4) courtesy,
- 5) credibility,
- 6) reliability,
- 7) responsiveness,

- 8) security,
- 9) tangibles,
- 10) understanding/knowing customers.

These ten dimensions were collapsed into five generic service-quality dimensions:

- (1) tangibles (measured by four items): the appearance of physical facilities, equipment, and personnel.
- (2) reliability (five items): the ability to perform the promised service dependably and accurately.
- (3) responsiveness (four items): the willingness to help customers and provide prompt service.
- (4) assurance (four items): the knowledge and courtesy of employees and their ability to inspire trust and confidence; and
- (5) empathy (five items): the level of caring and individualized attention the firm provides to its customers.

A seven-point Likert-type scale is used for the assessment ranging from “strongly disagree” (1) to “strongly agree” (7). The data are converted into “perception-minus-expectation” scores for each statement, which results in a difference score ranging from -6 to +6.

The gap score (G) is calculated on an item-by-item basis as the difference between the raw perception-of-performance score (P) and the raw expectation score (E) for matching items; therefore:

$$G = P - E \quad [2]$$

Following this calculation, the greater the perception-minus-expectation score, the greater is the perceived service quality.

The SERVQUAL method has become widespread due to its simplicity and clarity. However, the use of differences between consumer expectations and their perception in assessing the quality of service reduces the reliability of the data obtained due to the psychometric properties of the measurement (the mutual influence of successively measured indicators). This led to the development of other methods.

### **1.2.2.3 SERVPERF Method**

The SERVPERF method is developed based on the SERVQUAL method. Cronin and Taylor (1992) in their empirical work, controverted the framework of Parasuraman, Zeithaml and Berry (1985, 1988) with respect to conceptualization and measurement of service quality and propounded a performance-based

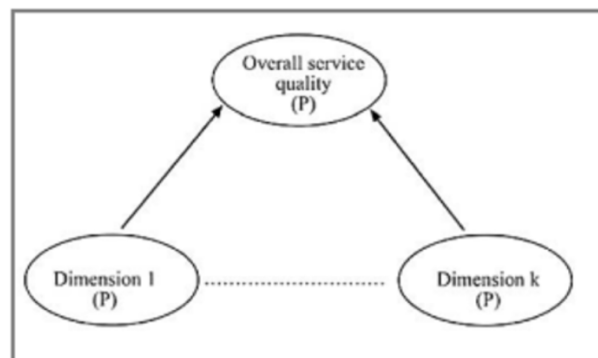
measure of service quality called 'SERVPERF' illustrating that service quality is a form of consumer attitude (Adil, Ghaswyneh, & Albkour, 2013).

They argued that SERVPERF was an enhanced means of measuring the service quality construct. The SERVPERF measures quality as an attitude, not satisfaction. However, it uses the idea of perceived service quality leading to satisfaction. But it goes further and connects satisfaction with further purchase intentions.

Levelling maximum criticism against SERVQUAL scale, Cronin and Taylor (1992) provided empirical evidence across four industries viz. fast food, pest control, dry cleaning and banking to support the superiority of their 'performance only' scale over SERVQUAL scale retaining the same items as had been proposed by the Parasuraman, Zeithaml and Berry (1988).

The SERVPERF is a modification of SERVQUAL, and thus uses the same categories to assess service quality (RATER model): Tangibles; Reliability; Responsiveness; Assurance; Empathy.

In each category, some statements are evaluated on a 7 points of Likert scale. The SERVQUAL proposed 44 statements (expectations and performance related), while SERVPERF only 22 (performance related).



**Figure 6.** Performance only model (SERVPERF)

Source: Martinez and Martinez (2010, p. 69)

SERVPERF model defends that service quality would be measured by only measuring the service performance (Gür, 2019). Performance is powerful and effective in revealing the customer satisfaction. Consumption experience/culture is fed from the sales target performances of the business. In order to determine the satisfaction, utilizing from the performance seems more practical and like the fundamental of human learning process. The customer takes the experience lived into consideration to decide on the satisfaction (Yuksel & Rimmington, 1998).

As the SERVQUAL method, it is possible to calculate both the usual integral quality indicator (index) and the weighted one using the SERVPERF method, if the survey includes ranking service attributes by importance.

#### 1.2.2.4 INDSERV Method

Attempts to use the SERVQUAL and SERVPERF methods for assessing the quality of service in the corporate sector have shown that these methods are arranged in such a way that consider mainly the personal perception of service quality and are not appreciated by the consumer companies. In order to solve this problem S.Gounarisom has developed INDSERV method. The method is based on two approaches to the study of the quality of service perceived by the consumer:

- consideration of the perceived quality of service as a final and independent indicator. This approach involves obtaining a direct assessment of the consumers' perceived quality by the survey.
- consideration of the perceived quality of service as a multi-level (hierarchical) indicator. As previously outlined methods generally considered attitude of the staff to the customers.

INDSERV Method as the SERVQUAL method is based on a consumer survey, but has different characteristics of the quality of service used: potential quality; hard process quality; soft process quality; outcome quality.

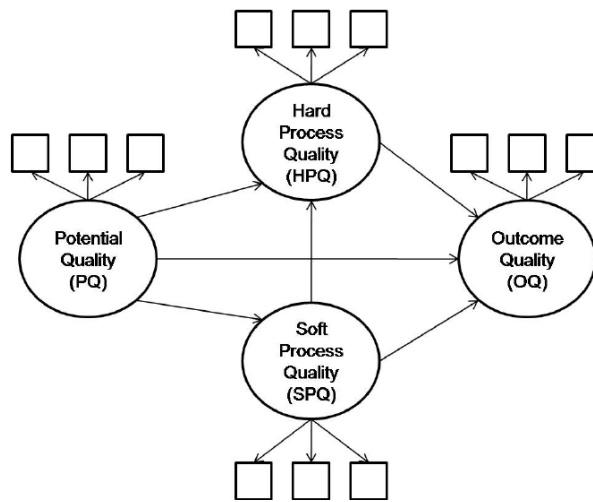


Figure 7. INDSERV structural model.

Source: Author's own elaboration based on Gounaris (2005, p.425).

The essence of these characteristics are as follows:

- potential quality is associated with the characteristics of the service provider used by consumers to assess its capabilities to provide service before the start of cooperation.
- hard process quality refers to what is performed in the process of providing a service, while soft process quality defines how service is rendered in the process of servicing. Both measurements determine the accuracy of service delivery in terms of prescribed procedures at the service provider.
- Soft process quality refers to issues which are oriented on people, communication and relational quality, such as an individual approach to a client, listening and understanding of the client needs.
- -outcome quality is an indicator of how successful the provider is in its attempt to solve the consumer's problem and what is the effect received by the consumer as a result of implementing the solution proposed by the provider.

More detailed presentation of the items and descriptive statistics are offered in Table 2.

**Table 2.** The INDSERV items.

<b>Potential quality</b>	Offers full service Has required personnel Has required facilities Has required management philosophy Has a lower personnel turnover Uses network of partners/associates
<b>Hard process quality</b>	Keeps time schedules Honors financial agreement/stays in budgets Meet deadlines Looks at details Understands our needs
<b>Soft process quality</b>	Accepted enthusiastically Listen to our problems Open to suggestions/ideas Pleasant personality Argue if necessary Look after our interests
<b>Output quality</b>	Reaches objectives Has a notable effect Contributes to our sales/image Is creative in terms of its offering Is consistent with our strategy

Source: Gounaris (2005, p. 427).

The INDSERV method allows calculating the service quality index (simple and weighted), subjecting to the inclusion in the questionnaire of the need for the consumer to rank the indicators in order of importance.

As a result of a comparison of the SERVQUAL and IINDSERV methods carried out by (Gounaris, 2005) S.Gounarisom to assess their applicability for studies of service quality in the corporate sector, it was determined that the INDSERV method has a more suitable measurement structure for such studies, as well as discriminant validity of measurements.

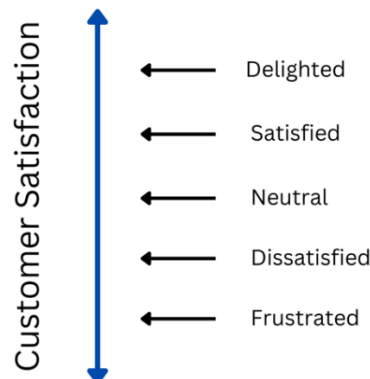
### 1.2.2.5 Kano's Method

The Kano's Method was proposed by Japanese scientists from Tokyo Rika University under the guidance of Professor (Kano, Seraku, Takahaski, & Tsuji, 1984). The application of the method is based on conducting a survey, but in contradistinction to the methods discussed above, the set of service quality characteristics is not predetermined, but is formed in the process of the survey itself.

The method developers have determined that:

- Unclear needs of the client can be clearly clarified.
- For some of the client's needs, his satisfaction with the service is proportional to the functionality of the product.
- Some customer needs cannot be measured using a 2D plane in the "Satisfied - Unsatisfied" and "Fully Functional Product - Completely Non-functional Product" coordinates.

Kano proposes a dimension that goes from total satisfaction (also called Delight and Excitement) to total dissatisfaction (or Frustration).



**Figure 8.** The Satisfaction Dimension.

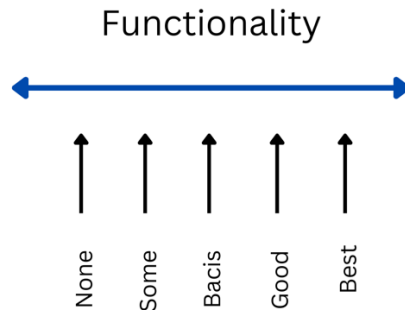
Source: Author's own elaboration based on Kano, Seraku, Takahaski, and Tsuji (1984, p.43).

Figure 8 illustrates that the dimension is annotated with different satisfaction levels. It's important to note that this is not always a linear scale.

Functionality represents how much of a given feature the customer gets, how well a service provider implemented it, or how much a service provider invested in its development.

This dimension goes from no functionality to the best possible implementation. The term Investment is also very good for this concept as a clear reminding of the cost of doing something.

These two dimensions put together are the basis of the Kano Model and determine how our customers feel about our product's features.



**Figure 9.** The Functionality Dimension.

Source: Author's own elaboration based on Kano, Seraku, Takahaski, and Tsuji (1984, p.43).

Considering these provisions, as well as the fact that the needs of the client can be classified by developing a questionnaire, Kano proposed to classify all the characteristics of any service (product, service) into one of 4 categories:

- 1) Must-be Quality or Basic Expectations - If the product doesn't have these features, it will be considered incomplete or just plain bad
- 2) One-dimensional Quality- These attributes result in satisfaction when fulfilled and dissatisfaction when not fulfilled. These are attributes that are spoken and the ones in which companies compete.

- 3) Attractive Quality – attributes that provide satisfaction when achieved fully, but do not cause dissatisfaction when not fulfilled.
- 4) Indifferent - presence (or absence) of these features does not effect on consumer’s reaction to the product
- 5) Reverse Quality – feathers that refer to a high degree of achievement resulting in dissatisfaction and to the fact that not all customers are alike

The Kano questionnaire is used to uncover customers' perceptions of product attributes. It consists of a pair of questions for each feature that is needed to be evaluated:

- 1) Functional form question that evaluates how customers feel if they have the feature,
- 2) Dysfunctional form that determines how they feel if they did not have the feature.

The possible answers are: I like it; I expect it; I am neutral; I can tolerate it; I dislike it.

After receiving the respondents' answers, the researcher uses an evaluation table (Figure) that combines the functional and dysfunctional answers in its rows and columns (respectively), to get to one of the previously described categories. Each answer pair leads to one of those categories and a couple more that come from using this question format.

		Dysfunctional (feature absent)				
		Like it	Expect it	Don't Care	Live With	Dislike
Functional (feature present)	Like it	Q	A	A	A	P
	Expect it	R	I	I	I	M
	Don't Care	R	I	I	I	M
	Live With	R	I	I	I	M
	Dislike	R	R	R	R	Q

**Figure 10.** The Kano evaluation table.

Source: Author's own elaboration based on Kano, Seraku, Takahaski, and Tsuji (1984, p.44).

Illogical answers (e.g., "I like it" for both the functional and dysfunctional questions) are usually neglected or put in a special category "Questionable". The most common approaches for the aggregation of categories across multiple participants are the "Discrete analysis" and "Continuous analysis".

### 1.2.2.6 HEdPERF Method

In 2005 F. Abdullah proposed a new measurement scale HEdPERF (Higher Education PERFORMANCE) in Malaysia that was created based on Cronin and Taylor (1992)'s SERVPERF model, using higher-education specific factors. The purpose of this scale is to measure service quality specifically in the higher education sector, as, according to the author, the generic scales presented previously may not be adequate for this purpose. Considering this, HEdPERF scale could be used by HEIs in order to understand the students' point of view and conduct initiatives to improve the service delivered.

The HEdPERF questionnaire includes 41 items, 13 of them are adapted from the SERVPERF scale and are grouped into six dimensions: Academic aspects, Non-academic aspects, Reputation, Access, Programs issues, Understanding. The description of each dimension in the original HEdPERF is shown in Table 3.

**Table 3.** Description of the original HEdPERF scale dimensions

<b>Dimension</b>	<b>Description</b>
<b>Academic aspects</b>	Items the teaching staff is completely responsible for
<b>Non-academic aspects</b>	Items that are significant for allowing students to fulfill their study requirements. It regards to the tasks performed by a clerical staff
<b>Reputation</b>	Items that suggest the importance of HE institutions in projecting a professional image
<b>Access</b>	Items related to accessibility, ease of contact, availability and convenience
<b>Programs issues</b>	Items that emphasize the importance of providing a wide range of programs that are reputable and have flexible structures and study plans
<b>Understanding</b>	Items regarding the understanding of specific student needs in terms of counseling and health

Source: Soares-Silva (2017, p.418).

The items that make up the scale are presented in Table 2. The research is based on the analyses of the results obtained using the HEdPERF questionnaire. The method was empirically tested using exploratory factor analysis and confirmatory factor analysis.

In the same way as the remaining scales mentioned for measuring service quality, all HEdPERF items are evaluated in a 5-point Likert scale, in which 1 corresponds to "Strongly disagree" and 5, to "Strongly agree".

Brochado (2009) claimed that the HEDPERF is more reliable instrument presented higher levels of internal consistency and concluded that both SERVPERF and HEDPERF have the best measurement capability and it is difficult to identify the best between the two instruments.

According to Firdaus (2006), the HEDPERF scale is more specific and useful when evaluating service quality in the higher education sector as the dimensions are modified to: non-academic aspects, academic aspects, reputation, access and program issues. He noticed that using the HEDPERF scale in measuring service quality gives more reliable estimation, greater criterion and content validity, and better fit than the other generic instruments. However, according to researchers, it lacked popularity (Ginns, Prosser, & Barrie, 2007), because this instrument is based only on HE sector, not standardized and too restrictive (Brunson, 2010).

### **1.2.3. Service Quality in higher education**

Higher education as a service is an intangible product and cannot physically be touched. The quality of education service depends on the service process, customer and service provider interactions. It also depends on the values and expectations of service users. One customer might consider a certain class, curriculum, or university a high-quality educational experience, while another might find the same experience mediocre.

There is a substantial body of scientific literature devoted to higher education. Universities were a subject for investigation from many different angles. However, there was little research when considering higher education institutions as service industries, and how these institutions ensure and deliver quality to their different customers. For this reason, (Rowley, 1997) advised considering all stakeholder perspectives, from students to legislators, while measuring the quality of HEIs.

Recent research on this topic mainly concentrates on examining customer satisfaction (students) concerning specific services offered at HEIs, such as the library, the cafeteria, the scholarship program, or internships, among others, since the student experience involves much more than teaching and learning (Petruzzellis & Romanazzi, 2010).

Karapetrovic and Willborn (1997) determined the term "quality of education" as 'the ability of a student's knowledge to satisfy stated requirements that are set by employers, accrediting bodies, professional societies, etc. However, the diverse product/service mix that a university provides to internal and external "customers" requires a broader definition.

Lenskaya (2008) suggests that the role of a teacher in higher education has been changing. There is a need to build the aesthetic culture of the teacher in order to increase the quality of education. An aesthetically developed teacher is a teacher that understands the essence of aesthetic education, its importance in harmonious personal development, a person that has knowledge in various fields of art, uses modern methods of education, and takes part in creative activities.

According to Litvinov (2010), the quality of education in a university is defined by achievements in a variety of areas, including: the level of training of its graduates; the level of scientific works; the development of training programs and manuals; the availability of a high-quality teaching staff; interaction with the labor market and participation of the university in employment and continuing education of graduates; the development of the university's infrastructure.

Bespalko (2019) suggests that one of the main indicators of the quality of HE is the effectiveness of usage of a student's time.

There are two of the most common approaches to assessing education quality in terms of educational quality evaluation: mechanistic and humanistic. Experts and agencies conduct the mechanistic approach during exercises such as the Research Assessment Exercise and the Quality Assurance Assessment. The humanistic approach focuses on the views of students. Most of the research in the education quality area is based on the SERVQUAL framework. The construct is based on the disconfirmation of consumers' expectations (Athiyaman, 1997).

The results suggest that the consumer's perception of service quality results from comparing expectations prior to receiving the service with their experience of the service (Grönroos, 1982). Many believe service quality leads to satisfaction (Cronin & Taylor, 1992).

Yousapronpaiboon (2014) states that student satisfaction can be determined by the level of trust in higher education. Especially in the field of academic services, trust is needed to enhance student satisfaction.

According to multiple studies, one of the most popular methods used to measure service quality is the SERVQUAL model, created by Parasuraman, Berry, and Zeithaml.

There are a number of variations on this scale. For example, Mazzarol (2009) adapted the SERVQUAL scale in terms of the specific context of HE and found that one of the most important antecedents of perceived value was the image of these institutions, whereas the perceived quality of people and processes, and the infrastructure and tangibles of the service had weak and vague impacts.

Other researchers as Dib and Alnazer (2013) and Nadiri, Jay, and Hussain (2009) adapted the SERVQUAL scale in works dedicated to HEIs. In 2012, Sultan and Wong (2012) conducted a comprehensive review of studies that, for the past 14 years, have adopted the SERVQUAL instrument in various contexts, yielding several dimensions.

At the same time, several studies compared the results or authors' SERVQUAL method with other scales. In 2006, Abdullah (Abdullah, 2006) tested and compared remarkably the relative efficacy of three

measuring instruments of service quality: SERVPERF (SERVice PERFormance), HEdPERF (Higher Education PERFormance), and the moderating scale of HEdPERF-SERVPERF.

Later, Brochado (2009) compared the following scales: SERVPERF, HEdPERF, and SERVQUAL (considering only the perceptions of service quality). He concluded that SERVPERF and HEdPERF present the best measurement capability, and it is not possible to identify which one is the best.

Researchers agree that students' satisfaction significantly impacts consequent behaviors that are important for the long-term profitability of an institution, such as attitude toward the higher education institution, intention to recommend, involvement, loyalty, trust, and word-of-mouth.

## **1.3 Higher education**

### **1.3.1 Definition and brief history of Higher education**

Higher education is tertiary education leading to the award of an academic degree, diploma, or certificate of higher studies. Higher educational institutions besides universities and colleges include a variety of professional schools that provide education in such fields as law, theology, medicine, business, music, art, etc. Higher education is an optional final stage of formal learning that occurs after the completion of secondary education.

Higher education also includes teacher-training schools, junior colleges, and institutes of technology. The basic entrance requirement for most HEI is the completion of secondary education, and the usual entrance age is about 18 years.

The highest education level was allocated in the Ancient East for more than a thousand years BC. There, people studied philosophy, poetry, as well as the laws of nature. Later, between the V and III centuries BC in Alexandria, higher-level schools were created. Philosophy, philology, medicine, and mathematics were studied separately in connection with the differentiation of science.

Ancient Greece paid much attention to education, and a higher level of education started to be provided in the IV-III centuries BC. One of the ideologues of the highest level of education was Plato.

The system of higher education had its origins in Europe in the Middle Ages, when the first universities were established. The University of Bologna is the world's oldest university, founded in 1088.

The oldest university in Portugal is the University of Coimbra, which was founded in 1290. The university is among the oldest universities in the world and has played an influential role in the development of higher education in the Portuguese-speaking world.

After the Second World War, many countries have increased the participation of the age group who mostly studies higher education from the elite rate, of up to 15 per cent, to the mass rate of 16 to 50 per cent.

In modern times, the nature of higher education around the world has been largely determined by the models established in influential countries such as France, Germany, Great Britain, and the United States.

In recent years, due to the development of technology and the internet, online education has become accessible and widespread. The COVID-19 pandemic influenced the education system and showed that certain aspects of the traditional higher education system were out of date. Universities around the world were forced to shift to distance learning, integrate some form of online education into their coursework, and move all programs online. Lots of them were not prepared for a new reality. Some big universities already had strong online systems, while smaller ones struggled under the weight of the demand.

## **1.3.2 System of higher education in Portugal**

### **1.3.2.1. Structure of higher education in Portugal**

Portuguese higher education is organized in a binary system that includes university education and polytechnic education. The university system has a strong theoretical basis and is highly research-oriented, while the polytechnical system provides more practical training and is more profession-oriented.

Public and private university institutions offer university education, while polytechnic education is offered by public and private non-university institutions. Private higher education institutions must be subject to the previous recognition of the Ministry of Education and Science. The higher education system also comprises a concordatory institution. University education includes universities, university institutes, and other university teaching institutions. Polytechnic education comprises polytechnic institutes and other polytechnic teaching institutions.

Degrees in medicine, pharmaceutical sciences, veterinary medicine, psychology, law, economics, or natural sciences can be taught only in university institutions.

Management, engineering, education, technology, sports, agriculture, and humanities courses are available at both university and polytechnic institutions. Specifically, vocationally oriented degrees such as accounting technician, preschool and primary school teaching, nursing, and health care technician are only taught by polytechnic institutions.

Public or private higher education institutions or courses are not accredited if they are not recognized by the Ministry of Science, Technology and Higher Education of Portugal. The two systems of higher education—university and polytechnic—are linked, and it is possible to transfer from one to the other through extraordinary effort. It is also possible to transfer from a private institution to a public one (or vice versa) on the same basis.

In 2005, in order to implement the Bologna Process, Portugal started a reformation of the Basic Law of the Educational System with the introduction of the European Credit Transfer System (ECTS) in study cycles, mobility mechanisms, and diploma supplements, among others.

Since that time, higher education has started to have a new structure of three cycles of studies, leading to licentiate, master's, and doctoral academic degrees. A doctoral degree is granted only by university institutions.

The new structure was introduced in 2006 and fully implemented in Portugal from the 2009/2010 school year. Generic qualification descriptors were defined for each of the cycles of studies, based on acquired competences, as well as the structure for the first and second cycles of studies in terms of typical ECTS intervals.

A professional higher technical course was created in 2014 as a non-academic higher education cycle, which corresponds to the short cycle of studies linked to the 1st cycle provided for in the Qualifications Framework of the European Higher Education Area.

Higher education institutions have pedagogical, scientific, disciplinary, and cultural autonomy.

Scientific autonomy encompasses the ability to define programs and execute research and other scientific activities.

Pedagogical autonomy consists of the ability to draw up curricula, define teaching methods, define curricular units, and choose knowledge evaluation processes.

Cultural autonomy enjoys the ability to define the training program and cultural initiatives.

Disciplinary autonomy means the power to punish, in terms of the law and the statutes, disciplinary infractions committed by students, teachers, researchers, and other employees.

These autonomies include subjects such as the specific conditions of entry into study cycles, the conditions of study cycles, study plans, precedence and evaluation schemes, the prescription regime, curricular transitional norms, deadlines for issuing academic documents, changes in schedules and operating regimes, or deadlines for responding to requirements.

### **1.3.2.2. Higher Education Degrees Overview**

After adhering to the Bologna process, there are the following degrees maintained in Portugal: Bachelor's (Licenciado); Master's (Mestre); PhD degrees (Doutor).

Both universities and polytechnic institutions confer the bachelor's degree (licentiate). In polytechnic institutions, the cycle of studies that leads to the bachelor's degree has 180 credits, with a length of six curricular semesters of students' study. In special cases, namely those covered by internal legislation or by European legislation, the cycle of studies can have up to 240 credits with a length of up to seven or eight curricular semesters.

At universities, the cycle of studies that leads to the bachelor's degree has 180–240 credits, with a length of between six and eight curricular semesters. In the first cycle of studies, the degree of licentiate is conferred by universities or polytechnic institutions to students that have concluded all the curricular units integrated into the course study programs and obtained the established number of credits.

Universities and polytechnic institutions confer the master's degree. In order to reach the master's degree, a student needs to get from 90 to 120 credits, and the course usually lasts from three to four curricular semesters, or in exceptional circumstances, 60 credits with a duration of two semesters.

In polytechnic institutions, students obtain a professional specialization in order to reach a Master's degree, while in universities, students acquire an academic specialization through research, innovation, or expansion of professional competences. In university education, the Mestre degree may also be conferred after an integrated cycle of studies, with 300 to 360 credits and a length of 10 to 12 curricular semesters of students' work, in cases for which the access to the practice of a certain professional activity depends on that length of time established by legal EU standards or resulting from a stable practice consolidated in the European Union.

The master's degree is conferred to candidates who, after completing all the curricular units that integrate the study program, have obtained the established number of credits and successfully presented their dissertation, project work, or internship report.

Doctorate or Ph.D programs in Portugal can be obtained at universities and university institutes. Like master's students, doctoral students are required to publicly defend their thesis at the end of their degree.

## **2. Research Methodology**

### **2.1. Objective of the study and Description of Data Collection**

This section explains the main goals of the study, how the study was managed and methodologies that were used to collect the data. Finally, it provides a significant part of data analysis.

The current research work follows the quantitative analysis with the main objectives of analyzing the overall student satisfaction in HE at IPB and determining strong and weak indicators characterizing the learning process at the university.

The study is survey based. The population of the study was the current students of IPB Institution both Master and Bachelor attendants. The questionnaire consists of the questions about students' satisfaction in education at the IPB and about factors that they value in educational process. The questionnaire contains two parts: questions about personal data and second part is collection of information on studying process in IPB. Second part of the questionnaire consists of 63 questions. A half of questions from the second part are based on Likert Scale, where 1 - Strongly disagree; 2 – Disagree; 3 - Neither agree or disagree; 4 – Agree and 5 - Strongly agree, while another half is based a five-point scale, where 1 - Very Unimportant; 2 – Unimportant; 3 – Neutral; 4 – Important; 5 - Very Important.

Questions in the first part gather information about age, gender, origin, degree of studies, and school of education to have the general profile of each participant.

The head of IPB's Management Programme sent the questionnaire to all students as well as the usage of the social network Facebook and Instagram. It was used the Google Forms that was conducted during October 2022. In total, 114 questionnaires were received.

For examination of the theoretical information and data, concerning SQ were used:

- Open internet sources, related with service quality, service marketing, students' satisfaction in HE.
- Open Internet Libraries, IPB library.
- Different scientific and regular journals.

Questionnaire based survey was conducted for collection of primary information by asking students questions from the survey directly. The survey was concrete and well structured. Questions for the survey were derived from the article named "Initial assessment of two questionnaires for measuring service quality in the Hong Kong post-secondary education context" written by Law (2013).

## 2.2. Description of Data Analysis

Data analysis is a process of inspecting, cleansing, transforming, and modelling data with the goal of discovering useful information, informing conclusions, and supporting decision-making ( Brown, 2014).

To determine the quality of education and satisfaction of students at the Polytechnic Institute of Bragança, we used the basics of the methodology of the SERVQUAL model, which has been widely used in the analysis of consumer satisfaction with products or services on the market. In the general case, the basic algorithm that reveals the "degree of quality of the service of education in the university", reflecting the concept of "SERVQUAL" can be reflected by the following equation:

$$SQ_i = \sum W_j (P_{ij} - E_{ij}) \quad [3]$$

where

$SQ_i$  - perceived service quality of individual "I",

k - number of attributes/items,

$W_j$  - is the weighted factor if attributes have different weights,

P - perception of individual "I" with respect to performance of a service firm on attribute "j",

$E_{ij}$  - represents service quality expectation for attribute j that is the relevant norm for stimulus i.

As this technique was developed to assess the quality of goods and their properties on the market, when using it as a tool for our study, some fragments of the basic method were changed, adapted and tested, i.e., the SERVQUAL model was included partly in the research methodology.

It should be noted that the parameter of satisfaction with the quality of education is ambiguous, and, in our case, it consisted of various constituent factors and groups of factors (for the convenience and compactness of the subsequent presentation, we conditionally assigned numbers to each factor i and groups of factors j). The factors are presented on the Appendix 1. All 63 factors were divided into ten groups according to intuitive and formalized features.

The aim of the first stage of the research was to identify the most important factors for respondents when assessing the quality of education at the Polytechnic Institute of Bragança (importance index). Each of the respondents had to evaluate the indicated indicators on a five-point scale:

- 1 - Very Unimportant,
- 2 - Unimportant,
- 3 - Neutral,
- 4 - Important,
- 5 - Very Important.

This stage was necessary in order to compile a generalized portrait of the object under study offering the service. Based on such a portrait, one can get an idea of the ideal process of learning at a university.

After a survey, in which 114 students of various faculties and courses of study took part, and preliminary processing of its results, an array of data was obtained, fragmentarily presented in table (1) of the appendix. In this case, the evaluation criteria were:

- average values of a factor or group of factors,
- significance index of a factor or group of factors.

The significance index is a generalized indicator formed from the initial (in this case, ratings from 1 to 5) through mathematical operations. The score (index) of significance is the difference between the number who rated the criterion as important, rather important, and those who rated it as not very important or not important. However, it was necessary to calculate not the absolute but the relative difference (the share of the difference in the total number of respondents). It should be noted that a single gradation (1, 2, 3, 4 or 5) makes a different contribution, a different share in the value of the index.

Thus, the index was calculated using the following formula:

$$I = (n_5 + 0,5n_4 - 0,5n_2 - n_1)/(n_5 + n_4 + n_3 + n_2 + n_1), \quad [4]$$

where  $n_5, n_4, n_2, n_1$  – the number of ratings of 5, 4, 2, and 1, respectively.

At the second part of the study, a survey was conducted according to the same criteria in terms of satisfaction with the quality of services provided by the Polytechnic Institute of Braganza. The same respondents were asked to evaluate the same indicators on a five-point Likert scale:

- 1 - Strongly disagree,

2 – Disagree,

3 - Neither agree or disagree,

4 – Agree,

5 - Strongly agree.

The average values and indices of factors and groups of factors calculated according to the above method, as well as their ranking, considering the sufficiency (satisfaction) index, are given in the next chapter.

The analysis is based on survey, that was distributed through e-mail and other social networks. Students were asked questions regarding their satisfaction in IPB and regarding factors that are important for student's satisfaction. Questions for the survey were derived from the article named "Initial assessment of two questionnaires for measuring service quality in the Hong Kong post-secondary education context" written by Law (2013). The questions can be found in the Appendix 2.

The rest of the methodology is described in the next chapter, along with calculations for a more correct perception of information.

### 3. Presentation and Analysis of Results

#### 3.1. Student's Profile

Current research work's study was based on the questionnaire which applied to IPB students. The survey was distributed through e-mail and other social networks. Furthermore, students were interviewed in Polytechnic Institute of Bragança (IPB) and number of sample was 114. In the table presented below (table 4) is a profile of the respondents belonging to the sample.

**Table 4.** Profile of respondents.

<b>Variables</b>	<b>n</b>	<b>%</b>
<b>Age</b>		
Under 18	1	1%
18-25	72	63%
26-35	41	36%
<b>Total</b>	<b>114</b>	<b>100%</b>
<b>Gender</b>		
Male	62	54%
Female	52	46%
<b>Total</b>	<b>114</b>	<b>100%</b>
<b>School in IPB</b>		
School of Agriculture	6	5%
School of Education	28	25%
School of Health	2	1.6%
School of Public Management, Communication and Tourism	3	2.4%
School of Technology and Management	75	66%
<b>Total</b>	<b>114</b>	<b>100%</b>
<b>Degree of Studies</b>		
Bachelor	44	38.5%
Master	70	61.5%
<b>Total</b>	<b>114</b>	<b>100%</b>

Source: Author's elaboration based on Students' Survey 2022.

According to the results presented in Table 4, it is easy to determine that the majority of the students that participated in the survey were aged 18–25, meaning 72 people, or 63% of all students participated. The smaller number of people were from the age group of under 18, where only 1 person made up 1% of all students. In general, it is normally distributed as a demographic variable. Almost the same proportion of males and females participated, 62 (54%) and 52 (45%) accordingly. Students from different countries were surveyed, with a diverse percentage. The countries from which the students came are: Portugal, Brazil, Poland, Russia, Italy, Ukraine, Czech Republic, France. Most of the students were from the School of Technology and Management ,75 (66%), the least amount from the School of

Health, 2 (1.6%) students. Talking about degrees, the majority of students were from master degree 70 (61.5%) and the rest had bachelor degree.

### 3.2. Descriptive Analysis

Based on the methodology outlined in 2nd section, it was conducted an analysis and obtained the following results.

Table 5 shows the average values and indices of factors and groups of factors calculated according to the method described above and their rankings, taking into account the significance index.

**Table 5.** Average values and indices of groups of factors that determine the importance of an indicator.

# group of factors	Name of a group of factors	Index	Index rank	Average score	Standard deviation	Average score rank
7	<b>Academic aspects</b>	0,68	1	4,37	0,77	1
8	<b>Reputation</b>	0,63	2	4,26	0,84	2
2	<b>Reliability</b>	0,61	3-5	4,22	0,74	3-4
4	<b>Assurance</b>	0,61	3-5	4,22	0,60	3-4
6	<b>Non-academic aspects</b>	0,61	3-5	4,21	0,81	5
9	<b>Access</b>	0,60	6	4,20	0,80	6
1	<b>Tangibles</b>	0,57	7	4,15	0,73	7
10	<b>Programme issues</b>	0,56	8	4,13	0,87	8
5	<b>Empathy</b>	0,37	9	3,75	0,93	9
3	<b>Responsiveness</b>	0,34	10	3,68	0,73	10
	<b>Average score</b>	<b>0,56</b>	<b>-</b>	<b>4,12</b>	<b>0,77</b>	<b>-</b>

Source: Author's elaboration based on Students' Survey 2022.

It is important note that in most cases the average values and ranks coincide. Some criteria have the same ranks, which indicates their equal importance for the respondents.

An analysis of the Table 1 showed that the respondents rated rather highly the degree of importance of the services provided by the IPB both for each group of factors considered and for the average value: the average score was 4.12 points and the importance index was 0.56.

Factor #7 (Academic Aspects) ranked first in both the significance index and the average score. This is a very positive moment, showing the primacy of the interest of the learning process i.e. of all the factors, students consider the professionalism of the teaching staff to be the most important.

In second place is factor #1 (Reputation). It means that the reputation of the university, its appearance and the quotation of graduates in the labor market are important for students. This proves how important it is for the university to monitor its image, because this is an important factor that effects on students' satisfaction.

The 3-5 places are shared by factors Reliability (2), Assurance (4), and Non-academic aspects (6). This means that students want to feel safe at the university and trust its employees. It is important for them to know that their personal information is safe, and that if problems arise, they will be resolved promptly, and that they can trust university staff.

The Factor #9 (Access) comes in sixth place. The ability to easily contact staff for advice, standardized and simple service delivery procedures play an important but not a crucial role for students.

In 7th place are Tangibles (1). This means that the appearance of the university and staff, the provision of modern equipment, do not play such an important role. Students are more focused on the learning process than on material factors.

In 8th place is The Factor Programme issues (10). This means that a wide choice of study programs with different specializations and flexible schedules have a lesser effect on student satisfaction with higher education.

In 9th and 10th place are empathy (5) and responsiveness (3), respectively. From this, we can conclude that the individual approach and the operational work of the administrative staff are the least important for students. It can be assumed that these factors are not so important for students, since they do not often turn to administrative staff, but more often interact with academic staff.

The average values and indices of factors and groups of factors calculated according to the above methodology, as well as their ranking, considering the sufficiency (satisfaction) index, are shown in Table 6.

**Table 6.** Average values and indices of groups of factors that determine the sufficiency (satisfaction) of factors.

# group of factors	Name of a group of factors	Index	Index rank	Average score	Standard deviation	Average score rank
10	<b>Programme issues</b>	0,66	1	4,32	0,76	1
8	<b>Reputation</b>	0,63	2	4,22	0,79	2
7	<b>Academic aspects</b>	0,53	3	4,01	0,96	3
9	<b>Access</b>	0,43	4	3,87	1,03	5
4	<b>Assurance</b>	0,42	5	3,91	0,85	4
1	<b>Tangibles</b>	0,40	6	3,79	0,75	6
2	<b>Reliability</b>	0,34	7	3,72	0,88	7
6	<b>Non-academic aspects</b>	0,30	8	3,60	1,07	8
5	<b>Empathy</b>	0,02	9	3,04	1,03	9
3	<b>Responsiveness</b>	-0,15	10	2,69	1,24	10
	<b>Average score</b>	<b>0,36</b>	-	<b>3,72</b>	<b>0,76</b>	-

Source: Author's elaboration based on Students' Survey 2022.

The analysis of Table 6 showed that if the average level of satisfaction is at a low but still acceptable level (3.72 points), then the satisfaction index is only 0.36 units, which is a rather low indicator.

In terms of importance and average score, factor 10 (Programme issues) came out on top with 4.32 points and 0.66 respectively. It means that students are mostly satisfied with the range of programs and various specializations.

As well as in the first part of the analysis, reputation is in the second place with an average score of 4,32. It is a positive aspect because students value the reputation and appearance of the HE institution a lot.

Academic aspects (7) are in the 3rd place with an index of 0,53 and an average score of 4,01. It means that students are satisfied with the quality of education and academic stuff, however, it can be improved as it is the most important factor that affects student satisfaction in HE.

Access (9), Assurance (4) and Tangibles (1) have almost equal indexes of satisfaction as well as an average score. It is above average, but there is a potential to improve these factors because they are important for students.

Non-academic aspects (6) could also be improved as this factor was evaluated below average (0.30). It means that now the students are not satisfied with the non-academic stuff.

According to the results of the survey, Empathy (5) and Responsiveness (3) are the weak points of IPB. However, these factors are less important for students in terms of satisfaction in HE. Nevertheless, these factors should be improved as they still have an effect on students' satisfaction.

In order to continue the further analysis and clarity of research, we considered it appropriate to combine Tables 1 and 2 into Table 3, giving priority to the importance index when ranking.

While analyzing Table 7, we should admit high satisfaction scores for the two most important groups of factors - Academic aspects (7) and Reputation (8) - 0.68 and 0.63, respectively, which is a positive sign. However, low scores for the next two factors – Reliability (2) and Non-Academic Aspects (6), which students rated as quite important, cause concern.

Indices of the importance of satisfaction for each group are formed from the assessments of each factor included in the group. One of the objectives of our research is to identify factors that have a low score and worsen the score of the whole group. Therefore, it becomes necessary to conduct a structural analysis of the satisfaction index of the groups of interest to us #2 and #6.

**Table 7.** Indexes of groups of factors that determine the importance and satisfaction of factors.

# group of factors	Name of a group of factors	Significance index	Significance index rank	Satisfaction index	Satisfaction index rank
7	<b>Academic aspects</b>	0,68	1	0,53	3
8	<b>Reputation</b>	0,63	2	0,63	2
2	<b>Reliability</b>	0,61	3-5	0,34	7
4	<b>Assurance</b>	0,61	3-5	0,42	5
6	<b>Non-academic aspects</b>	0,61	3-5	0,30	8
9	<b>Access</b>	0,60	6	0,43	4
1	<b>Tangibles</b>	0,57	7	0,40	6
10	<b>Programme issues</b>	0,56	8	0,66	1
5	<b>Empathy</b>	0,37	9	0,02	9
3	<b>Responsiveness</b>	0,34	10	-0,15	10
	<b>Average score</b>	<b>0,56</b>	<b>-</b>	<b>0,36</b>	<b>-</b>

Source: Author's elaboration based on Students' Survey 2022.

The results of the analysis of the group of factors # 2 (Reliability) are presented in Table 8.

An analysis of Table 8 showed that the students were mostly satisfied with factor #2.5 (IPB keeps its records carefully), which, ironically, is considered the least important among all factors in the group.

**Table 8.** Indexes of factors of group #2 (Reliability) that determine the Significance and Satisfaction indexes.

# of factors	Name of a factor	Satisfaction index	Satisfaction index rank	Significance index	Significance index rank
2.5	The IPB keeps its records accurately.	0,46	1	4,04	5
2.2	When you have problems, the IPB is sympathetic and reassuring	0,44	2	4,39	1-2
2.3	The IPB is dependable	0,41	3	4,39	1-2
2.1	When the IPB promises to do something by certain time, it does so	0,21	4	4,15	3
2.4	The IPB provides its services at the time it promises to do so	0,19	5	4,14	4

Source: Author's elaboration based on Students' Survey 2022.

Factors 2.1 (If IPB promises to do something at a certain time, he will do it) and 2.4 (IPB provides his services at the time he promised to do it) have very low satisfaction (0.21 and 0.19, respectively) and have a high potential to improve the satisfaction index of the group.

The results of the analysis of Non-academic aspects (6) are presented in Table 9.

While analyzing Table 5, it was noticed, that almost all factors with the significance index rank from 1 to 6 are in the upper part of the table. It means that they have a relatively high satisfaction rate. At the bottom part of the table (with a low level of satisfaction) are located factors mainly with a low index of

significance (except for factors 6.1 and 6.2). Factors 6.2 and 6.7 have a negative index of satisfaction, which is a very undesirable result and requires immediate adjustment of the educational process.

**Table 9** Indices of factors of group #6 (Non-academic aspects) that determine the Significance and Satisfaction indexes.

# of factors	Name of a factor	Satisfaction index	Satisfaction index rank	Significance index	Significance index rank
6.8	Administrative staff show positive work attitude towards students	0,64	1	0,64	3-6
6.9	Administrative staff communicate well with students	0,51	2	0,67	2
6.10	Administrative staff have good knowledge of the systems/procedures	0,44	3	0,64	3-6
6.11	I feel secure and confident in my dealings with this IPB	0,41	4	0,69	1
6.5	Administration offices keep accurate and retrievable records	0,38	5	0,64	3-6
6.6	When the staff promise to do something by a certain time, they do so	0,35	6	0,57	11
6.1	When I have a problem, administrative staff show a sincere interest in solving it	0,33	7	0,64	3-6
6.12	The IPB provides services within reasonable/expected time frame	0,29	8	0,62	8
6.4	Administrative staff are never too busy to respond to a request for assistance	0,18	9	0,58	10
6.3	Inquiries/complaints are dealt with efficiently and promptly	0,14	10	0,60	9
6.2	Administrative staff provide caring and individual attention	-0,01	11	0,63	7
6.7	The opening hours of administrative offices are personally convenient for me	-0,03	12	0,42	12

Source: Author's elaboration based on Students' Survey 2022.

In order to have a complete picture of the study, it is presented and analyzed five best and worst values of the significance and satisfaction factors that characterize the quality of the educational process (Tables 10 and 11).

From Table 10, we can see that factor 7.1, that academic staff have the knowledge to answer my questions relating to the course content, is a crucial factor in education for students. It is easy to explain because the main goal for students is to get a qualified education.

After academic professionalism, a factor such as a positive attitude toward students is important. As students spend most of their time communicating with teachers, it is important for them to be treated with kindness and respect.

**Table 10.** Ratings of best and worst estimates of factors in terms of importance.

# of factors	Name of a factor	Significance index	Average score	Standard deviation
The best				
7.1	Academic staff have the knowledge to answer my questions relating to the course content	0,85	4,69	0,53
7.5	Academic staff show positive attitude towards students	0,74	4,47	0,67
8.3	Academic facilities are adequate and necessary	0,72	4,45	0,63
1.1	The IPB has up-to-date equipment	0,71	4,45	0,61
2.2	When you have problems, the IPB is sympathetic and reassuring	0,7	4,39	0,65
The worst				
5.4	The IPB does not have your best interests at heart	0,10	3,21	0,85
3.4	Employees of the IPB are not too busy to respond to student requests promptly	0,24	3,48	0,64
5.2	Employees of the IPB give you personal attention	0,25	3,48	0,78
3.2	You receive prompt service from the IPB employees	0,25	3,51	0,60
1.3	The IPB employees are well dressed and appear neat	0,39	3,78	0,44

Source: Author's elaboration based on Students' Survey 2022.

In third place is factor 8.3. (Academic facilities are adequate and necessary. Students value not only the teachers but the environment where they study at. The academic environment also goes with up-to-date equipment at the university (1.1).

**Table 11.** Ratings of the best and the worst factors in terms of satisfaction.

# of factors	Name of a factor	Satisfaction index	Average score	Standard deviation
The best				
7.1	Academic staff have the knowledge to answer my questions relating to the course content	0,79	4,56	0,62
9.2	Students are given fair amount of freedom	0,78	4,56	0,62
7.9	Academic staff are highly educated and experienced in their respective field	0,78	4,56	0,63
8.8	The IPB offers highly reputable programs	0,78	4,56	0,69
8.4	The IPB runs excellent quality programs	0,74	4,48	0,57
The worst				
3,3	Employees of the IPB are always willing to help students	-0,31	2,34	1,30
3.2	You receive prompt service from the IPB employees	-0,16	2,63	1,20
3.4	Employees of the IPB are not too busy to respond to student requests promptly	-0,13	2,75	1,22
5.4	The IPB have your best interests at heart	-0,05	2,90	0,97
6.7	The opening hours of administrative offices are personally convenient for me	-0,03	2,94	0,99

Source: Author's elaboration based on Students' Survey 2022.

Fifth the most important factor is 2.2. (When you have problems, the IPB is sympathetic and reassuring). Students want to feel safe at the institution and be sure that, in case of problems, they will be solved.

From Table 11 we noticed that students are very satisfied with factor 71.1 (academic staff have the knowledge to answer my questions relating to the course content). This is a very good indicator because this factor is also the most significant one. They are also happy with the education and experience of the academic staff (7.9).

Students also satisfy factors related to academic programs (8.8 and 8.4). Overall, we can see that students are satisfied with factors directly related to studying.

However, students are not satisfied with factors related to the administrative work. These factors have a negative index. These aspects should be improved even though they are not at the top of the factors that affect students' satisfaction in HE.

**Table 12.** Summary of factors characterizing the quality of the educational process at the IPB.

<b>Name of a factor</b>	<b>index</b>	<b>Average score</b>	<b>Standard deviation</b>
<b>Significance index</b>	0,58	4,16	0,81
<b>Satisfaction index</b>	0,37	3,75	1,05

Source: Author's elaboration based on Students' Survey 2022.

In conclusion of the study, we present the summary of indicators characterizing the quality of the educational process at the Polytechnic Institute of Bragança (Table 12).

Based on Table 12, it can be noted that the students consider studying at the IPB important. However, the overall level of satisfaction is at an average level, which means that there are factors that need to be improved; we determined these factors in the previous stages of the analysis. These factors are difficult to analyze based on one institution. In further studies, it is necessary to analyze similar educational universities in other countries or in other regions of Portugal. In this case, it is possible to determine the place of the IBE among other universities in terms of students' satisfaction.

## **Conclusions, Recommendations, Limitations and Future Research Lines**

The higher education sector has been growing very rapidly in recent years. In conditions of high market competition, it is important for universities to monitor student satisfaction with education in order to fit their needs and provide a qualified education in a convenient environment. By improving students' satisfaction, universities' can attract new students and retain old ones as well as increase the level of their loyalty.

The study's main goals were to determine the factors influencing students' satisfaction in HE and measure the students' satisfaction with the IPB. The survey was chosen to collect the data for the analysis. Overall, 114 students were enrolled in the survey questionnaire. There were nearly equal numbers of males and females, and there were more Master's students than Bachelor's students.

The following activities have been conducted in order to complete the current research work successfully:

- review of literature relevant to the topic;
- the survey that allowed us to collect the required data;
- descriptive and factor analysis of the collected data;
- development of recommendations according to the results of the analysis.

During the factor analysis, it was concluded that teachers' experience, positive attitude towards students, academic facilities, and learning environment enhance the students' satisfaction in higher education.

According to the results, the high quality of academic staff is the most influential factor on the students' satisfaction. Moreover, courses' learning environment and attitude towards students are the next important factors, and employee appearance and factors related to non-academic staff are the least important factors among all the variables.

The results also provide university management with an improved understanding of the effects that service quality, academic staff, image of the institution, and attitude towards students have on satisfaction and favorable future behavioral intentions.

It can be considered that the students in general are satisfied with the IPB, especially with the factors they value the most, such as the quality of academic staff and the environment of the university. Non-academic factors, on the other hand, have a negative impact on overall student satisfaction. Despite these factors are not the crucial factors that affect students' satisfaction, improving the situation with non-academic aspects such as individual approach, convenient working hours, and willingness to help will enhance students' satisfaction in higher education.

According to the findings, we believe the institution should pay special attention to retaining, inducting, training, and retaining qualified and expert teachers in order to maintain quality education. Also, students

should be provided with a comfortable and favorable learning environment, and classroom facilities should be upgraded using modern technology.

Healthy and interactive communication should be established between students and teachers/administration to provide all the necessary information to them regarding curriculum, offerings, and opportunities. Students should be able to easily contact the institution's staff in case of a problem and at convenient times. A low sample size can be considered a limitation of the conducted work. Some significant connections are missing, so a larger number of students involved in the survey would be a good suggestion. Future study lines include similar surveys for students from similar educational universities in other regions of Portugal or in other countries. It will help to compare the opinions of students from different schools and cultures and determine the place of the IPB among other universities in terms of students' satisfaction.

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# Appendix

## Appendix 1

**Table A.1.** Factors of satisfaction with the quality of education

# group of factors	Name of a group of factors	Name of a factor
1	<b>Tangibles</b>	1.1. Level of up-to-date equipment 1.2. The visual appeal of physical facilities 1.3. The visual appeal of employees 1.4. Whether the appearance of IPB's physical facilities corresponds to the type of service provided
2	<b>Reliability</b>	2.1 When IPB promises to do something by certain time, it does so 2.2 When you have problems, IPB is sympathetic and reassuring 2.3 IPB is dependable 2.4 IPB provides its services at the time it promises to do so 2.5 IPB keeps its records accurately.
3	<b>Responsiveness</b>	3.1 IPB does tells its students exactly when services will be performed 3.2 Receiving prompt service from IPB's employees 3.3 Willing to help students of IPB's employees 3.4 Whether employees of IPB are too busy to respond to student requests promptly
4	<b>Assurance</b>	4.1 Students can trust employees of IPB 4.2 Students feel safe in your transaction with IPB's employees 4.3 Employees of the IPB are polite 4.4 Employees get adequate support from IPB to do their jobs well
5	<b>Empathy</b>	5.1 IPB gives individual attention 5.2 Employees of IPB give personal attention 5.3 Employees of the IPB know students' needs 5.4 The IPB does have students' best interests at heart 5.5 The IPB have operating hours convenient to all their customers
6	<b>Non-academic aspects</b>	6.1 Administrative staff show a sincere interest in solving problems 6.2 Administrative staff provide caring and individual attention 6.3 Inquiries/complaints are dealt with efficiently and promptly 6.4 Administrative staff are never too busy to respond to a request for assistance 6.5 Administration offices keep accurate and retrievable records 6.6 When the staff promise to do something by a certain time, they do so 6.7 The opening hours of administrative offices are personally convenient 6.8 Administrative staff show positive work attitude towards students

		6.9 Administrative staff communicate well with students
		6.10 Administrative staff have good knowledge of the systems/procedures
		6.11 I feel secure and confident in my dealings with this IPB
		6.12 The IPB provides services within reasonable/expected time frame
7	<b>Academic aspects</b>	7.1 Academic staff have the knowledge to answer questions relating to the course content
		7.2 Academic staff deal with students in a caring and courteous manner
		7.3 Academic staff are never too busy to respond to my request for assistance
		7.4 When I have a problem, academic staff show a sincere interest in solving it
		7.5 Academic staff show positive attitude towards students
		7.6 Academic staff communicate well in the classroom
		7.7 Academic staff provide feedback about my progress
		7.8 Academic staff allocate sufficient and convenient time for consultation
		7.9 Academic staff are highly educated and experience in their respective field
		8
8.2 The hostel facilities and equipment are adequate and necessary		
8.3 Academic facilities are adequate and necessary		
8.4 IPB runs excellent quality programs		
8.5 Recreational facilities are adequate and necessary		
8.6 Class sizes are kept to minimum to allow personal attention		
8.7 IPB has an ideal location with excellent campus layout and appearance		
8.8 IPB offers highly reputable programs		
8.9 IPB graduates are easily employable		
9	<b>Access</b>	9.1 Students are treated equally and with respect by the staff
		9.2 Students are given fair amount of freedom
		9.3 The staff respect my confidentiality when I disclosed information to them
		9.4 The staff ensure that they are easily contacted by telephone
		9.5 The IPB operates an excellent counseling service
		9.6 Health services are adequate and necessary
		9.7 The IPB encourages and promotes the setting up of students' union
		9.8 The IPB values feedback from students to improve service performance
		9.9 The IPB has a standardized and simple service delivery procedures
10	<b>Programme issues</b>	10.1 The IPB offers a wide range of programs with various specialization
		10.2 The IPB offers programs with flexible syllabus and structure

## **Appendix 2**

### **Questionnaire Booklet**

Dear respondent,

This survey is conducted as part of the Master Degree in Management, Specialisation in Business Management, of the Polytechnic Institute of Bragança. The questionnaire aims to collect information that will allow to characterise and analyse the overall satisfaction in higher education. The data will be used for scientific purposes only, are anonymous and confidential.

Please answer the following questions, choosing answers from the list. The time taken to complete this questionnaire is approximately 10 minutes. Your participation is very important.

Thank you for your collaboration!

#### **Part 1: Profile of respondent**

1. Age:

*Mark only one option.*

2. Under 18.

Between 18 and 25.

Between 26 and 35.

Between 36 and 40.

Over 40.

3. Gender:

*Mark only one option.*

Female.

Male.

4. School in which you are studying in IPB:

School of Agriculture

School of Education

School of Health

School of Public Management, Communication and Tourism

School of Technology and Management

5. Degree of studies, name of the graduation course and course year:

CTeSP

Undergraduate degree

Master degree

Post-graduation

Other. Which one?

6. Course year you are attending

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7. Professional status:

Mark only one option.

Student

Student Worker.

8. Are you from Portugal?

Yes

No

9. If you are not from Portugal. Where are you from?

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## **Part 2: Data of overall satisfaction in higher education**

Please evaluate how each of the following statements about the service quality provided influence your satisfaction in higher education.

5 – Very Unimportant,

6 – Unimportant,

7 – Neutral,

- 8 – Important,
- 9 – Very Important.
- 10 – Very important

- Q1. The institution has up-to-date equipment.
- Q2. The institution's physical facilities are visually appealing.
- Q3. The institution's employees are well dressed and appear neat.
- Q4. The appearance of the physical facilities of the institution is in line with the type of service provided.
- Q5. When the institution promises to do something by certain time, it does so.
- Q6. When you have problems, the institution is sympathetic and reassuring.
- Q7. The institution is dependable.
- Q8. The institution provides its services at the time it promises to do so.
- Q9. The institution keeps its records accurately.
- Q10. The institution does not tell its students exactly when services will be performed.
- Q11. You do not receive prompt service from the institution's employees.
- Q12. Employees of the institution are not always willing to help students.
- Q13. Employees of the institution are too busy to respond to student requests promptly.
- Q14. You can trust employees of the institution.
- Q15. You can feel safe in your transaction with institution's employees.
- Q16. Employees of the institution are polite.
- Q17. Employees get adequate support from the institution to do their jobs well .
- Q18. The institution does not give you individual attention.
- Q19. Employees of the institution do not give you personal attention.
- Q20. Employees of the institution do not know what your needs are.
- Q21. The institution does not have your best interests at heart.
- Q22. The institution does not have operating hours convenient to all their customers.
- Q23. Academic staff have the knowledge to answer my questions relating to the course content
- Q24. Academic staff deal with me in a caring and courteous manner.

- Q24. Academic staff are never too busy to respond to my request for assistance.
- Q25. When I have a problem, academic staff show a sincere interest in solving it.
- Q26. Academic staff show positive attitude towards students.
- Q27. Academic staff communicate well in the classroom.
- Q28. Academic staff provide feedback about my progress.
- Q29. Academic staff allocate sufficient and convenient time for consultation.
- Q30. The institution has a professional appearance/image.
- Q31. The hostel facilities and equipment are adequate and necessary.
- Q32. Academic facilities are adequate and necessary.
- Q33. The institution runs excellent quality programmes.
- Q34. Recreational facilities are adequate and necessary
- Q35. Class sizes are kept to minimum to allow personal attention.
- Q36. The institution offers a wide range of programmes with various specialisations.
- Q37. The institution offers programmes with flexible syllabus and structure.
- Q 38. The institution has an ideal location with excellent campus layout and appearance.
- Q39. The institution offers highly reputable programmes.
- Q40. Academic staff are highly educated and experience in their respective field.
- Q41. The institution's graduates are easily employable.
- Q42. When I have a problem, administrative staff show a sincere interest in solving it.
- Q43. Administrative staff provide caring and individual Attention.
- Q44. Inquiries/complaints are dealt with efficiently and Promptly.
- Q45. Administrative staff are never too busy to respond to a request for assistance.
- Q46. Administration offices keep accurate and retrievable Records.
- Q47. When the staff promise to do something by a certain time, they do so.
- Q48. The opening hours of administrative offices are personally convenient for me.
- Q49. Administrative staff show positive work attitude towards students.
- Q50. Administrative staff communicate well with students.
- Q51. Administrative staff have good knowledge of the systems/procedures.

- Q52. I feel secure and confident in my dealings with this institution.
- Q53. The institution provides services within reasonable/expected time frame.
- Q54. Students are treated equally and with respect by the staff.
- Q55. Students are given fair amount of freedom.
- Q56. The staff respect my confidentiality when I disclosed information to them.
- Q57. The staff ensure that they are easily contacted by telephone.
- Q58. The institution operates an excellent counselling services.
- Q59. Health services are adequate and necessary.
- Q60. The institution encourages and promotes the setting up of student's union.
- Q61. The institution values feedback from students to improve service performance.
- Q62. The institution has a standardized and simple service delivery procedures.

**Part 3: Data of factors that influence satisfaction in higher education related to IPB**

Please indicate your level of agreement on each of the following statements about the service quality provided at Polytechnic Institute of Bragança.

- 1 – Strongly disagree,
- 2 – Disagree,
- 3 – Neither agree or disagree,
- 4 – Agree,
- 5 – Strongly agree.

Students were asked the same questions as presented in the 2<sup>nd</sup> part.

**Thank you for your collaboration!**