

## New insights to enhance university strategies for attracting students in a national context

Adriana Perez-Encinas\* , Alan Martinez-Vazquez , Carlos Merino-Moreno , Pablo Villarrubia 

Universidad Autónoma de Madrid (Spain)

\*Corresponding author: [adriana.perez.encinas@uam.es](mailto:adriana.perez.encinas@uam.es)

[alan.martinez9317@gmail.com](mailto:alan.martinez9317@gmail.com), [carlos.merino@uam.es](mailto:carlos.merino@uam.es), [pablo.villarrubia@uam.es](mailto:pablo.villarrubia@uam.es)

Received June, 2025

Accepted March, 2026

---

### Abstract

**Purpose:** This paper aims to provide new insights to enhance university strategies for attracting international students in Spain within a competitive global Higher Education scenario. It focuses on understanding the perspectives and satisfaction of international students within the Spanish University System (SUE) to inform strategic decision-making.

**Design/methodology/approach:** The research employs an innovative approach using mixed-methods, combining text mining of student reviews with a literature review to develop a SWOT matrix and a sentiment analysis. NLP techniques were applied with the use of software *SAS Vija* to analyze text reviews from international undergraduate students in Spanish universities, covering the period 2019-2022.

**Findings:** The study reveals an overall positive sentiment among international students regarding their experiences in Spanish higher education. Key positive aspects include good teaching and the academic environment. However, negative sentiments are primarily linked to perceptions of university offerings and institutional image. The SWOT analysis highlights Spain's attractiveness and the satisfaction of international students as strengths, and the cost of tuition and university rankings as weaknesses.

**Practical implications:** Universities should strategically combine academic offerings with the Spanish lifestyle in their promotions. Employability programs and a focus on service quality are crucial for attracting and retaining international students.

**Social Implications:** The research underscores the relationship between internationalization of Higher Education and socioeconomic progress. By improving the attractiveness of Spanish universities, the study contributes to fostering a more internationalized environment, potentially leading to enhanced global competitiveness and the development of a knowledge economy.

**Originality/value:** The paper applies advanced text mining techniques to a large dataset of international student reviews, providing a nuanced and data-driven understanding of satisfaction in the Spanish university context. This approach provides an advanced understanding of student satisfaction that goes beyond traditional surveys and contributes a student-centric perspective to the development of internationalization strategies for Spanish universities.

**Keywords:** Internationalization strategies, Higher education, International students, Text mining, Sentiment analysis

**Jel Codes:** I23; I25; M3; F5

**To cite this article:**

Perez-Encinas, A., Martínez-Vázquez, A., Merino-Moreno, C., & Villarrubia, P. (2026). New insights to enhance university strategies for attracting students in a national context. *Intangible Capital*, 22(1), 411–430. <https://doi.org/10.3926/ic.3353>

---

## 1. Introduction

The levels of well-being and socioeconomic progress worldwide are intrinsically related to international competition schemes, among which Higher Education plays a significant role. The Knowledge Economy highlights the need to articulate powerful science, technology and innovation systems in which the generation of knowledge and its actors play a key role. For this reason, enhancing the levels of internationalization of Higher Education in a territory provides a key basis for meeting the challenges of growth, development and welfare (Buenechea-Elberdin et al., 2024).

In Europe, this approach has been driven by the Bologna Process, an initiative designed to create the European Higher Education Area (EHEA). Since its inception in 1999, the Bologna Process has sought to standardize higher education systems, facilitate student and academic staff mobility, and improve the quality of education by implementing mechanisms such as the European Credit Transfer and Accumulation System (ECTS). The Bologna Process, which has evolved over time adapting to emerging challenges in higher education such as employability or digital transformation, is based on four fundamental pillars: consolidating an internationalized university system, increasing the attractiveness of European academic institutions, promoting competitiveness in the international environment, and intensifying cooperation with other regions of the world. These pillars not only facilitate the mobility of students and academic staff but also aim to improve educational quality and strengthen the capacity of European universities to face global challenges. The EHEA has become a global reference model, fostering inter-institutional cooperation and mutual recognition of degrees among member countries, thereby strengthening the global competitiveness of European universities (European Commission, 2020).

At the regional level, each member country has implemented its own strategy aligned with the objectives of the EHEA. In Spain, the new LOSU Law (Spanish acronym for the *Organic Law on the University System*) strengthens the internationalization of higher education institutions for their integration into the European Higher Education Area and closer ties with the Ibero-American Higher Education Area (LOSU, 2023). According to the latest data available from the Ministry of Science, Innovation and Universities (2023), during the 2022/2023 academic year, 83,115 students from the Ibero-American Higher Education Area were enrolled in Spanish Higher Education Institutions, in addition to 48,291 incoming mobility students from that same region. The Spanish strategy emphasizes improving supplementary services for international students, such as reception services, adaptation courses, and offering programs in foreign languages, aiming to position Spanish universities as attractive destinations for international talent.

However, Spain is not unique in facing these challenges. A recent study by Nigitsch et al., (2024) on talent attraction and retention in the EU highlights current challenges and opportunities in a European and global context providing recommendations to enhance competitiveness, including creating welcoming ecosystems and simplifying administrative procedures to better integrate international students. This broader European perspective underscores the importance of implementing multifaceted strategies that enhance not only student mobility but also the overall attractiveness of higher education institutions through improved support structures, integration policies, and international collaboration.

Understanding student satisfaction is crucial in this context, as providing high-quality services to students is a critical factor for Higher Education Institutions (Butt & Rehman, 2010; Lapina et al., 2016; McLeay et al., 2017). Student satisfaction surveys are methods employed to elicit feedback from students regarding their academic experiences, perceptions, and expectations from higher education institutions. These surveys contribute to our

understanding of students', preferences, areas of dissatisfaction, and educational experiences they consider important or in need of improvement (Kanwar et. al., 2022).

Student satisfaction is not a homogeneous construct; rather, it is shaped by context-specific institutional and environmental factors. For instance, De-Jager and Gbadamosi (2010) reported that in Africa, student satisfaction is associated with various institutional aspects such as academic reputation, accommodation and scholarships, location and logistics, sports reputation and facilities, and safety and security. Wong and Chapman (2023) discussed the potential benefits of meeting students' preferences, while also highlighting possible negative consequences for both students and institutions.

Presently, there is evidence suggesting that students' experiences should consider social anxiety as a significant influencing factor (Archbell & Coplan, 2022), which is linked to reduced communication with instructors, lower engagement, decreased satisfaction, and poorer socio-emotional functioning. Due to this variation across time and regions, it is necessary to contextualize the situation in Spain.

Consequently, our research aims to address the current key factors of student satisfaction from the perspective of international students and the sentiment that students express regarding their experiences after studying in Spanish higher education institutions. In this context, sentiment refers to the emotional tone conveyed by students in their written expressions about their academic experiences. It encompasses positive, negative, and neutral attitudes that reflect their perceptions, expectations, and levels of satisfaction with the services and environment provided by higher education institutions. To analyze these sentiments, sentiment analysis –a natural language processing technique also known as opinion mining– will be applied to detect the emotional tone underlying textual data (Shaik et al., 2023).

According to Cambria et al. (2017), sentiment analysis is the computational study of people's opinions, sentiments, evaluations, attitudes, moods, and emotions, and it remains one of the most active research areas in natural language processing, data mining, information retrieval, and web mining. Sentiment analysis enables the evaluation of texts produced by students which, unlike surveys, are unstructured, and therefore more challenging to analyze in terms of topics and satisfaction levels. As Shaik et al. (2023) states, sentiment analysis facilitates the extraction of emotional orientation –positive, negative, or neutral– from student feedback, providing valuable insights into their perceptions of educational services. Accordingly, we applied a novel methodology based on natural language processing to cluster the topics from the texts and conduct a sentiment analysis of students' experiences in Spanish higher education institutions.

## **2. Literature Review**

From the point of view of the specific strategies of each university for internationalization and their efforts to attract foreign students, it is necessary to monitor and visualize the scenario of incoming and outgoing mobility flows. However, mobility indicators alone do not explain how students evaluate their academic and institutional experience. Therefore, understanding the determinants of international student satisfaction becomes essential for designing evidence-based internationalization strategies.

Using data from the Integrated University Information System (SIIU), the number of incoming students to the Spanish university system (either through mobility programs or standard enrollment) has shown an upward trend from 2017 to 2023, except during the COVID-19 pandemic, when there was a 29% decrease in incoming students. However, the positive trend recovered quickly during the following academic year (2021-2022), with a 50% increase, highlighting the case of credit mobility programs, which saw a 175% increase compared to the previous year. In the 2022-2023 academic year (the most recent data available), there were 149,278 incoming mobility students.

Given the increase in the number of incoming students to the Spanish university system between 2017 and 2023, interrupted only by the COVID-19 pandemic, universities should prepare for the challenges that come with this sustained growth. This involves defining the student profiles they aim to attract and developing strategies to manage large inflows, drawing from the valuable lessons learned during the pandemic. Furthermore, it is essential to assess the resources needed to support this upward trend, moving beyond simply managing the system's current capacity to ensure the success of internationalization efforts. Nevertheless, the quantitative

growth of mobility does not necessarily imply qualitative satisfaction. The literature consistently shows that internationalization outcomes depend not only on volume, but on how students perceive teaching quality, institutional support, integration conditions, and overall academic value. Therefore, analyzing satisfaction components becomes a necessary complement to mobility statistics.

On the other hand, if the incoming students are classified according to the type of enrollment (taking into account the differences between mobility programs and general enrollment), the potential of the Erasmus+ program is clearly reflected: according to data from the SIIU for the 2022-2023 academic year, 60% of incoming students enrolled in mobility programs came from the European Union. When considering regular enrollment, 44% of incoming students come from Latin America and the Caribbean, with language acting as a key facilitator.

With respect to the destination region, from 2015-2016 to 2022-2023, data from the SIIU show that between 76% to 88% of annual mobilities take place between EU member states. Among other regions where Spanish students participate in mobility programs is the American continent, as historically Spain maintains ties with Latin America, which is reflected in the data, as such region takes the second position in receiving Spanish students. The next regions by volume of student reception are the USA and Canada, followed by Asia and Oceania, respectively. These figures highlight the need to evaluate whether current internationalization patterns align with strategic objectives. More importantly, they raise the question of whether institutional structures and services adequately support the incoming student population. Thus, beyond geographic diversification, attention must be directed toward the quality of the student experience and its drivers.

In Spain there is great interest in increasing the international attractiveness of universities (Rincón & Barrutia, 2017). Sending Spanish students abroad is a fundamental part of educational internationalization; however, it is not the only one necessary to generate an international environment in higher education institutions. It is equally important to offer international services to students in order to integrate them into the globalized world and facilitate the reception of students from abroad. In sum, mobility patterns must be complemented by an analysis of satisfaction drivers, particularly those related to academic quality, support services, and integration mechanisms, which directly shape students' evaluations of their experience.

## **2.1 Support Services for Internationalization in Spanish Universities**

Internationalization is closely related to the mobility of students, teachers, and researchers beyond their country of origin (De-Wit, 2019), an issue that requires significant investments, an axis that can be complemented by the aforementioned “internationalization at home” (IaH). This type of internationalization is very simply described as: “any internationalization activity that does not mean the departure from the country of residence of students or educational staff.” (Crowther, 2001). A more in-depth definition was provided by Beelen and Jones (2015), who state that internationalization at home refers to the integration of international and intercultural dimensions into the curriculum, both formally and informally, for all students within their home country.

In this sense, various instruments can be used for the internationalization of the curriculum. According to Lopez-Montero (2018), this can be achieved without leaving the country of origin, for example, inviting guest speakers from foreign universities, using international case studies, implementing digital learning, or fostering online collaboration. In fact, now more than ever access to the internet can provide access to internationalization for all students (Lopez-Montero, 2018; Scott et al., 2015).

The IaH is committed to a formula associated with the arrival of international students by facilitating that internationalization can reach all students (Scott et al., 2015). This commitment is particularly relevant when considering current mobility trends. According to the SIIU, during the 2022-2023 academic year, the largest group of foreign students enrolled in Spain came from France, with nearly 18,000 students. Not far behind is Italy, with 16,500 students. Following them, with around 10,000 students each, are the USA, Germany, and Colombia. These figures enable a more concrete analysis of internationalization, allowing for the identification of strong cases as well as those that reveal challenges or the need for alternative strategies. Building on this reflection, it becomes evident that the presence of international students alone is insufficient to achieve comprehensive internationalization. Another key aspect involves faculty, curricula, and, more broadly, the internationalization of the curriculum (Leask, 2015).

In addition to curricular, organizational strategies, mobility and service provision, HEIs pursue a broader educational mission grounded in values such as fostering critical knowledge, creativity, and self-reflection. The literature highlights that universities are expected to foster critical thinking, creativity, intercultural openness and global awareness (Saroyan, 2022; Bouckaert, 2023; Koshy et al., 2023; Lomer et al., 2023). In this sense, internationalization strategies increasingly integrate academic quality, intercultural learning, and institutional support as interconnected dimensions. Therefore, student satisfaction should be understood as a multidimensional construct that encompasses academic, institutional and developmental components, even if these dimensions are experienced through concrete elements such as teaching practices, support services and campus environment.

While students should not be regarded merely as customers, providing high-quality academic and support services is essential to fulfilling the university's mission. Well-designed services do not commercialize education; rather, they enhance access, inclusion, and student well-being, ultimately strengthening institutions' ability to attract, engage, and retain diverse learners — a conclusion supported by student-perspective research of Douwes et al. (2023), which highlights the importance of holistic and well-designed support systems in higher education. In this sense, the continuous improvement of services complements, rather than contradicts, the university's formative and humanistic role.

During the 2022-2023 academic year, according to data from the SIIU, 3.5% of academic and research staff (PDI) in Spanish universities were foreign, with a particularly high incidence in private universities, where the figure rose to 6.6%. Of these foreign staff, 60% came from the European Union. However, there is a gap when analyzed by type of university: while in public universities the gap between EU and non-EU foreign staff is wider, with 63% coming from the EU, in private universities this gap is narrower and only half of the foreign staff members comes from the EU.

Furthermore, the Arts and Humanities field has the highest proportion of foreign staff, with 6% of its PDI being international. In contrast, the Health Sciences field has the lowest percentage, with only 1% of PDI coming from outside Spain. In the remaining academic fields, the percentage remains stable at around 2.5%.

As can be seen, internationalization represents a significant dimension related to teachers, who can bring internationalization to the classroom. This should be interpreted as a strategic line of the University from the point of view of hiring policies, a complex issue but one that should not overlook this critical component. The positioning of private universities is evident in the illustration and, together with the territorial distribution, can provide inputs for more informed decision-making.

It is worth noting that, in the words of Bartell (2003, p. 4), internationalization conveys a variety of understandings, interpretations and applications, ranging from securing external funding for study abroad programs through international student exchange and conducting research internationally, to a view of internationalization as a complex, encompassing, policy-driven process, that permeates the university's life, culture, curriculum and instruction, as well as research activities.

Another aspect of great relevance as a strategy for attracting student talent concerns the support services offered by institutions and the overall student experience. Indeed, research on student satisfaction, especially regarding student services, has the potential to inform institutions on how best to address the needs and expectations of an increasingly diverse student population (Thiuri, 2010).

While it is true that the challenge in the development of student services lies in constant changes across different levels—academic, social or cultural—, it is necessary to focus on the provision of quality services to enhance the student experience and increase satisfaction with the institution. In Spain, student services have traditionally focused on providing information regarding admissions, solving academic problems, offering language support, and providing practical guidance, in addition to disseminating community resources. The management of these services is decentralized, fostering a collaborative environment and shared responsibility in the service delivery (Perez-Encinas & Ammigan, 2016). However, with the implementation of the Spanish Universities' Internationalization Strategy in recent years, more comprehensive services have been developed to support not

only the reception and stay of international students but also their reintegration upon returning to their countries of origin.

Student satisfaction has been the subject of numerous studies that explore the factors driving it, highlighting the importance of academic, social, and cultural aspects of the student experience. Research by Douglas et al. (2006) and Wilkins et al. (2012) has identified that the quality of services, including both academic and extracurricular services (e.g., advising, administrative support, and infrastructure), are key elements shaping students' perception of satisfaction. Additionally, more recent studies emphasize that both academic factors (such as teaching quality and curriculum) and social and cultural factors (such as integration into university life and social support) significantly influence student experiences (Ammigan & Jones, 2018; Gruber et al., 2010).

Research on international students has shown that they value not only academic quality but also the social and cultural support received during their stay (Perez-Encinas & Ammigan, 2016). A sense of belonging and social integration within the university environment are key determinants of satisfaction (Kwan & Ng, 1999). Additionally, adequate infrastructure, such as sports facilities, libraries, and recreational spaces, also contributes significantly to enhancing student experience (Gruber et al., 2010; Pereda et al., 2007).

In this context, student experience at universities has evolved to encompass not only the teaching-learning process but also administrative and support services (Baranova et al., 2011). This evolution is particularly relevant in the context of internationalization, where it is essential to offer services that address both the academic and social-cultural needs of an increasingly diverse student population.

Considering the preceding literature, student satisfaction emerges as a construct shaped by academic quality, institutional support services, integration conditions, and perceived reputation. However, empirical evidence regarding how these components manifest in the Spanish context, particularly from the perspective of international students, remains limited. Therefore, the present study addresses the following research questions:

*RQ1. What are the key satisfaction components of the student experience for higher education institutions (HEIs)?*

*RQ2. What is the sentiment of students in Spanish higher education institutions concerning their experiences?*

### 3. Methodology

The methodology consists of two stages, as shown in Table 1. In the first stage, an artificial intelligence algorithm was applied to classify student reviews in Spanish universities, as those performed by Perez-Encinas and Rodriguez-Pomeda (2018), Perez-Encinas et al. (2020), Baddam (2019) and Cifuentes-Faura (2021). The objective of the first stage is to identify the topics most frequently mentioned by students and the overall sentiment associated with them. The second stage involved constructing a SWOT matrix based on students' experience, incorporating insights from the literature provided by other authors.

Stage	Activity	Method
Data management	Organization of records	Quantitative
	Filter students out from Spain	Qualitative
	Remove records without text reviews	Qualitative
	Descriptive analysis of the sample	Quantitative
Phase 1. Text mining. Natural Language Processing (NLP)	1.1 Word analysis	Quantitative
	1.2 Sentiment analysis	
	1.3 Topical modelling	
	1.4 Interpretation of topical modelling	Qualitative
	1.5 Categorization. Latent Dirichlet Allocation	Quantitative
Phase 2. Elaboration of a SWOT matrix	2.1 Review of sources and literature	Qualitative
	2.2 Matrix	Qualitative
	2.3 Analysis and discussion	Qualitative

*Table 1. Stages of the methodology and type of analysis*

Text mining is a technique that involves both quantitative and qualitative methods. In its quantitative part it extracts numerical information from texts, such as word frequency and sentiment score, while the identification of themes, patterns and meanings within texts is done through qualitative evaluation. The software used for this purpose is part of *SAS Vija* text analytics. *SAS Vija* is an artificial intelligence, analytics and data management platform that operates in a scalable manner (SAS Institute Inc., 2022). The use of natural language processing (NLP) techniques is widely applied by marketing departments in companies to evaluate reviews left by consumers on websites or to analyze complaints they receive (Wang et al., 2017). The use of these methods has also been extended to evaluate and improve the experience of exchange students in Spain (Perez-Encinas et al., 2020).

The total number of students who participated in the survey was 1,552. After removing incomplete records, a total of 1,182 textual reviews were processed for analysis. The data originate from *Studyportals B.V.*, an educational organization with a platform that helps students around the world to explore study programs and make informed decisions. (Studyportals | The Global Study Choice Platform, 2017). Studyportals collects student reviews through multiple channels, including direct submissions on its platform, targeted email campaigns, and collaborations with partners such as the Erasmus Student Network. This collection process is continuous and ongoing, providing a dynamic dataset that reflects student experiences over time. The data analyzed in this research corresponds to the period from 2019 to early 2022 and included students from Spain, UK, Germany, Greece, Italy, Turkey and the USA at different academic levels, all of them enrolled in Spanish universities. The data used consist of text reviews of undergraduate students in Spanish universities.

The survey, developed and distributed by Studyportals, consisted of two main stages: the first one was a structured questionnaire, while the second part included a blank space for students to write an open-text review. Students were free to complete the survey and leave any question unanswered. The analysis of the structured questionnaire is beyond the scope of this research; it is included here only to provide contextual background for the interpretation of the open reviews. The survey included three main aspects: studies, the university and the student's experience. In the first aspect, the admission process, student-professor interaction, as well as the quality and difficulty of the studies were evaluated. As for the university, the infrastructure and the personal and professional growth opportunities it offered were evaluated. Finally, in the aspect of student experience, the quality of teaching, the management of the COVID-19 pandemic, the cost of living and the virtual classroom experience were evaluated. The evaluated aspects shown in Figure 1 are associated with a value that broadly reflects the experience, together with aspects such as Studies, University and Student experience. For this study, only the open-ended textual reviews were processed and analyzed. Incomplete, duplicated, or meaningless entries were removed prior to the analysis.

**Average, Sample Size, Standard Deviation per evaluated variable, and gender of the total sample**

Variable	Average	Sample Size	Standard Deviation	Gender	%
Overall Rating	4.16	1552	0.87	Prefer not to disclose	47.20%
Admission Process	4.2	1009	0.98		
Student-Teacher Interaction	4.06	844	1.03	Femenin	33.70%
Quality of Studies	4.05	995	0.95		
Difficulty of Studies	3.92	698	0.85		
University Infrastructure	4.18	1013	0.98	Masculin	18.69%
Personal and Professional Growth	4.01	819	1		
Quality of Students Life Experience	4.41	1008	0.82		
Covid Management	4.06	335	1.34		
Cost of Living	3.06	556	1.26	Other's	0.41%
Classroom Experience	3.42	33	1.15		

Figure 1. Description of the sample of undergraduate mobility students in Spain

The software chosen for the analysis was the *Visual Text Analytics* extension of the SAS AI platform. *SAS Vija* employs pre-trained algorithms for topic modeling, category analysis and sentiment analysis. The first step in

performing the analysis was to import the data. Then the text was processed. At this stage the considered and excluded words, their grammatical functions and their semantic roles were visualized. Following text processing, the artificial intelligence platform performed sentiment analysis, which assigns negative, positive or neutral perceptions to reviews (Nkomo & Daniel, 2021). This makes it possible to group them by general sentiment type and facilitates a global perspective of the learner's experience (including by categories).

The next analysis operation was topic modeling. This process allows researchers to quantitatively examine large numbers of words and identify relationships between them (Perez-Encinas & Rodriguez-Pomeda, 2018; Yun, 2020). Each group of words was analyzed and assigned a label based on perception. The last stage of the analysis was categorization. In this section an algorithm was applied that identified how many texts addressed each topic, to what extent and with what relevance. To carry this out, the modeling employed *Latent Dirichlet Allocation* (LDA), which is designed to identify a topic by extracting a group of words that are used with high probability and high frequency in a document (Blei et al., 2003). Finally, the topics with their corresponding sentiments were organized in a SWOT matrix. This matrix helped structure the results and transform them into a decision-making tool.

#### 4. Results

In total, nine topics emerged from the topic modelling procedure, as shown in Figure 2. First, the number of reviews associated with each topic was analyzed. The topic modelling algorithm generated a set of representative keywords for each cluster of texts. Based on the most relevant terms within each cluster, a descriptive label was subsequently assigned to each topic. Therefore, Figure 2 reflects the distribution of reviews across the identified topics, according to this classification process.

A total of 180 reviews were classified under the topic “*Instructional Quality and Applied Learning*”, making it the most frequently mentioned topic. The most representative keywords associated with this topic were “*Teaching issues*”, “*practice*”, “*knowledge*” and “*subject*”. The following topics are related to “*International Mobility Experience*”, then “*Campus Environment*”, “*Academic environment*”, “*Urban Environment*”, “*Teaching performance quality*”, “*Institutional Offer and Support Services*”, “*Perceived Academic Standards*” and “*Institutional Reputation*”. It should be noted that these are the topics with the highest number of mentions in a structured manner, and it will be discussed whether they are the most important or not, which will be done through sentiment analysis in the following section.

Clustered words	Proposed Title	Frecuency
degree, practical, practice, Knowledge, subject	Instructional Quality and Applied Learning	180
experience, great, learn good experience, great experience	International Mobility Experience	172
madrid, student, international, very, campus	Campus Environment	161
not, professor, class, too, bad	Academic Environment	157
place, city, study, campus, people	Urban Environment	155
good, really, teacher, lot, nice	Teaching Performance Quality	140
good university, good, very, good, experience, university	Institutional Offer and Support Services	123
level, high, high level, education, excellent	Perceived Academic Standards	83
best university, best, spain, recommend, university	Institutional Reputation	70

Figure 2. Horizontal bar chart of the number of reviews by topic identified and used for topic modelling

So far, only the relevance of the topics (the volume of reviews assigned to each topic) has been analyzed through the texts and not whether the perception of the topics is positive, negative, or neutral. Once the distribution of reviews by topic was established, a sentiment analysis was performed on each individual text, allowing the polarity (positive, negative or neutral) of each review to be examined within its corresponding topic.

The first thing to note in Figure 3 is that the most common sentiment is positive, representing 72.17% of the total, which means that, of the 1,182 texts, 853 were classified as positive. Neutral sentiment accounts for 19.29% (228 texts), which may indicate that some topics are perceived as indifferent by students. With respect to negative sentiment, it represents 8.54% (101 reviews). Figure 3 below presents each category with the frequency and percentage of its positive, negative and neutral reviews. All the subsets show a clear dominance of positive sentiment, with a percentage ranging from 66.9% to 75.84% of positive reviews in each case.

The category with the highest proportion of positive reviews is “*Instructional Quality and Applied Learning*”, representing 75.84% of the total subset, followed close by “*Academic Environment*”, with 75.45%. On the other hand, the category with the lowest percentage is “*International Mobility Experience*”, with only 66.90%.

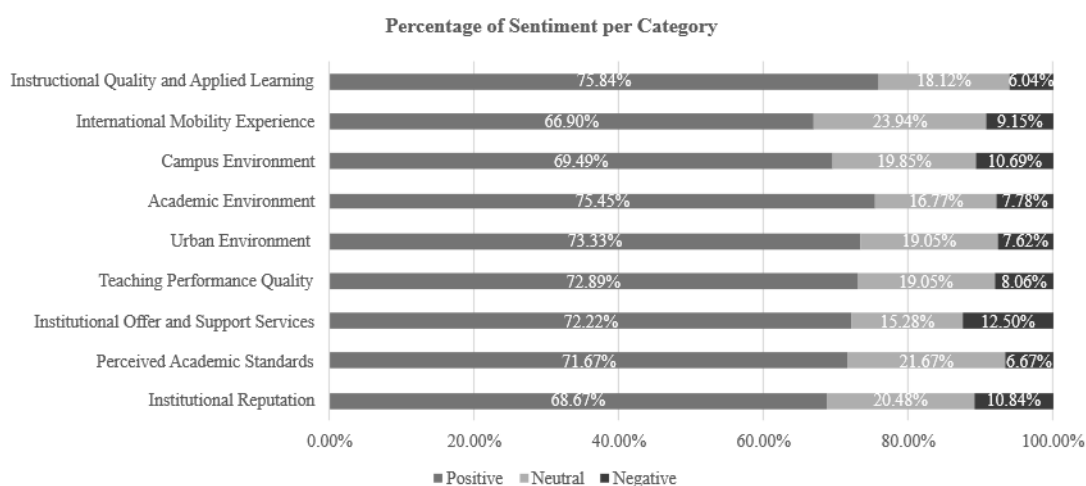


Figure 3. Stacked bar chart of reviews by sentiment in each topic

From a complementary perspective (Figure 4), the category with the highest percentage of reviews expressing negative sentiments is “*Institutional Offer and Support Services*”, with 12.5% of the total. The second and third are “*Institutional Reputation*” (10.84%) and “*Campus Environment*” (10.69%). The three categories with the highest negative index are related to students’ perception of the university, while the three categories with the lowest percentage of negative reviews are “*Instructional Quality and Applied Learning*” (6.04%), “*Perceived Academic Standards*” (6.67%) and “*Urban Environment*” (7.62%).

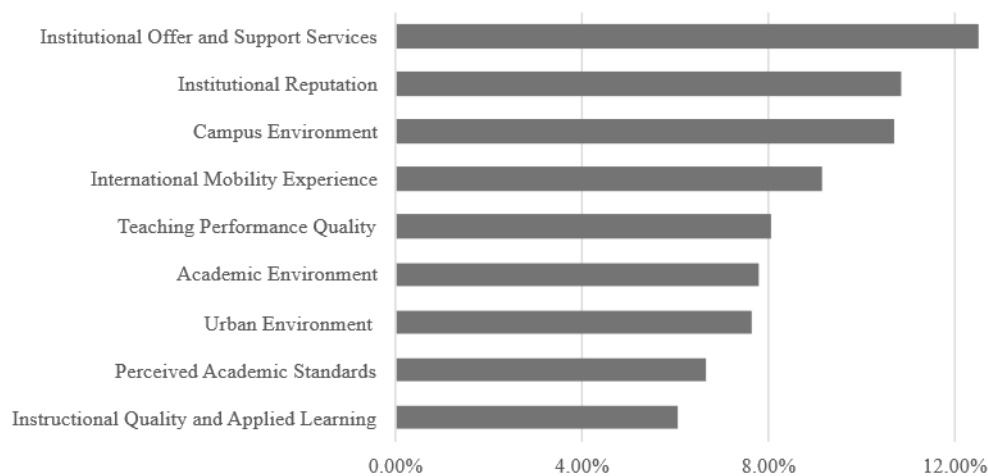


Figure 4. Stacked bar chart of categories in reviews sorted by percentage of negative sentiments

Having all this data and analysis allows us to obtain a more comprehensive understanding of the texts and to develop a better interpretation of the students' experience. The next section of this paper aims to discuss the above results, contrasting them with the existing literature on the topic of *students' experiences*.

## 5. Discussion

In the previous section, the most frequently mentioned topics in student reviews were grouped, ranked, and analyzed in terms of their associated sentiment. However, a deeper explanation in relation to the research questions is provided in this section. Importantly, the discussion that follows rather than focusing on students' pre-mobility motivations to choose Spain, it is centered on how students evaluate their lived academic and institutional experience once enrolled in Spanish universities. Therefore, each strategic implication discussed below is directly linked to the identified topics and their associated sentiment polarity.

To address Research Question 1 (**RQ1**), which examines the key satisfaction components shaping the student experience in higher education institutions, a SWOT analysis was conducted. This approach enabled a systematic evaluation of the strengths, weaknesses, opportunities, and threats identified both in literature and in this study's empirical findings.

Beyond traditional survey methods and data mining, numerous studies have already explored student experiences in Spanish universities, providing valuable insights for the development of internationalization strategies. Building upon this foundation, the present research applied a SWOT framework to assess the international student experience, drawing on insights from the literature review and the analyzed sample data. The analysis begins with the strengths of *International Student Experience*. Table 2 shows that the factor considered relevant for an international stay in Spain is the attractiveness of the country itself. Spain has reviews made by international students highlighting their openness and welcoming atmosphere for students all over the world (Maciejewska, 2016).

Strengths
- Spain is an attractive country for mobility (Maciejewska, 2016).
- Students who have had stays in Spain feel satisfied (Biernacik, 2017).
- Students perceive the quality of teaching in a positive way.
- Country open to foreigners (Jayadeva et al., 2021).
- Students perceive positively the academic level in Spain.
- Students perceive the quality of education as good.
- International diversity in universities (Integrated University Information System, 2022).
- High level of internationalization at home (Integrated University Information System, 2022).
- A governmental and regional strategy is in place to boost student mobility (Ministry of Education and Vocational Training, 2015).

Table 2. Strengths

Another factor reported in the literature that coincides with the results of this study is that students feel satisfied at the end of their mobility period (Biernacik, 2017). In our analysis, students reflect in their writings that they have the majority of positive perceptions of the quality of teaching, the academic level, and the quality of education they received during their experience in the country. This interpretation is directly supported by the results previously showed, where *“Instructional Quality and Applied Learning”* appears as the most frequently mentioned topic (180 reviews) and shows the highest proportion of positive sentiment (75.84%). Similarly, *“Academic Environment”* ranks among the highest in positive polarity (75.45%). These quantitative findings empirically confirm that teaching practices and academic context are the core strengths in the Spanish university experience.

Finally, data from the University Information System (2022) prove that there is a high level of international diversity in universities, encouraging students to be receptive to having classmates from different parts of the world. This diversity results from governmental and regional strategies for the internationalization of Spanish education (Ministry of Education and Vocational Training, 2015), a factor that is sometimes not fully reflected in students' word of mouth but is present.

In addition to strengths, the Spanish system presents several opportunities to enhance the student experience. We see that there are many factors that are considered to represent opportunities for students (Table 3). One of them is related to the cost of living, which is lower than in other Western European countries (Aslan & Jacobs, 2014). Although “cost of living” does not emerge as one of the most frequently modeled topics, its indirect presence can be observed within the positive polarity of the “*Urban Environment*” category (73% positive sentiment). This suggests that contextual living conditions (including affordability and lifestyle) positively frame students’ overall experience, even when not explicitly discussed as a dominant academic theme.

In addition, Spain’s lifestyle focused on wellbeing and quality of life, together with the attractive offerings of Spanish cities (as reported in this study) represent factors that are currently leveraged and should continue to be promoted to provide an excellent study experience. This interpretation is consistent with the empirical finding that city-related dimensions receive higher satisfaction levels than some institutional categories, reinforcing the idea that contextual experience enhances, but does not replace, academic evaluation.

<b>Opportunities</b>
- The Spanish experience has a lower cost of living (Aslan & Jacobs, 2014).
- Lifestyle focused on social welfare.
- Attractive offers from Spanish cities.
- It is a way to learn Spanish (Aslan & Jacobs, 2014).
- Labor market in need of qualified international personnel.
- Students perceive that teaching constraints are positively addressed.

Table 3. Opportunities

In addition to the above, having an international experience in Spain is an opportunity to learn or improve proficiency in the Spanish language (Aslan & Jacobs, 2014). A factor that may become relevant is the potential opportunity to obtain employment at the end of the stay; Spain has an international labor market that requires professionals with solid training and the ability to speak languages other than Spanish. Finally, another opportunity is that, despite certain teaching limitations, the way they are managed leaves a positive impression on students, according to their reviews.

Spain presents many strengths and opportunities to host international students; however, it also has areas that could be improved. Looking at Table 4, one of the weaknesses identified were the tuition costs, which, although lower than those paid in countries such as England or Ireland, are higher than in other nations with universities better positioned in international rankings (Jayadeva et al., 2021). In addition, “*Institutional Offer and Support Services*” is the topic with the highest proportion of negative sentiment (12.5%), making it the most critical institutional vulnerability identified through the empirical analysis. This suggests that weaknesses are not rooted in academic quality, but in institutional organization and service perception.

<b>Weaknesses</b>
- High tuition costs compared to countries of higher perceived educational quality (Jayadeva et al., 2021).
- University offering has high level of negative sentiment in reviews.
- Spanish universities are not among the top 100 in the world (QS World University Rankings, 2022).
- University ratings have high levels of negative sentiment in reviews.
- Public spending on education has been declining.

Table 4. Weaknesses

Other factors identified as weaknesses were the position of Spanish universities in international rankings and the negative sentiment detected in this study regarding their evaluation. This interpretation aligns with the relatively elevated negative sentiment observed in the “*Institutional Reputation*” category (10.84%), indicating that perceived global positioning and institutional branding affect how students evaluate the university beyond classroom

experience. Not being positioned among the top-ranked universities generates a less favorable image, partly due to the reluctance to apply marketing principles to education because of ethical or moral concerns (Feenstra & Lopez-Cortazar, 2021). This situation limits the country's academic projection and prevents it from reaching its full potential.

One weakness not directly experienced by mobility students in Spain is the decline in public spending on education by the Spanish regional governments. The weaknesses of the internationalization experience discussed here are those more likely to impact students; however, they are far from being the root causes of the challenges of internationalization in Spain, which are multifactorial and also involve threats that have yet to be discussed. Overall, the weaknesses identified correspond closely with the categories that concentrate comparatively higher negative sentiment in the results section. This coherence between SWOT interpretation and topic-based sentiment distribution reinforces the robustness of the findings and ensures that strategic recommendations remain empirically grounded.

In the context of Table 5, the firstly mentioned threat is that students are not perceived as customers, particularly that they do not receive the benefits typically associated with that status. This contrasts with the Western European context, where such a perception was adopted years ago (Jayadeva et al., 2021). In some cases, international students are used to being treated as customers in their home countries and this contrasts with their position in Spain, where they are considered users of a service of which they are also participants, not merely consumers.

Threats
- The student is not perceived to have the benefits of a client (Jayadeva et al., 2021).
- The mobility experience has a relatively low level of positive feelings.
- Health emergencies have slowed the flow of international students (Cifuentes-Faura et al., 2021).

Table 5. Threats

In this study we found that the topic identified as “*International Mobility Experience*” shows acceptable, but relatively low levels of satisfaction. It is important to analyze the underlying causes in greater depth to determine how the experience could be improved. Unfortunately, this study cannot determine these causes, as the levels of positive sentiment in “*International Mobility Experience*” were not higher. The last threat identified is the impact of health emergencies, which have reduced student mobility and forced changes in teaching methodologies for which educational systems were not fully prepared (Cifuentes-Faura et al., 2021).

The bibliographic review, together with the analysis of the responses, has allowed us to interpret the students' perspective, identify the strengths and opportunities of the system, and determine the areas where further efforts are needed to achieve even more satisfactory experiences.

Turning now to Research Question 2 (RQ2), regarding the sentiment toward students' experience in Spanish higher education institutions, the first thing to note is that, in most cases, the students' experience reviews in Spain show positive sentiment, with 72% of the texts having positive aspects and only 8.5% negative,

Based on the results obtained, we can affirm that the most frequently mentioned topics in the reviews written by the students were “*Teaching performance quality*” and “*Academic Environment*”. These results are in line with Weerakkody and Jerez, (2018), who similarly found that academic support, teaching quality, and learning environments are central to international student satisfaction and retention. The feelings of those who wrote about them were positive in 72% and 75% of the cases, respectively. This indicates that in most cases students provide positive feedback related to teaching and academic performance. This is positive considering that Spanish universities operate in a competitive environment where only 5 Spanish universities are among the top 100 in Europe (Ranking Web of Universities, 2022) and only one is among the 200 in the world (QS World University Rankings, 2022). According to Times Higher Education (2022), the reasons to study in Spain includes its international experience within Europe, its relative low cost of living, and the opportunity to learn Spanish, which is one of the most widely spoken in the world as shown in the report Best Universities in Spain.

Two other topics related to academic performance were “*Instructional quality and applied learning*” and “*Perceived Academic Standards*”. Regarding teaching limitations, this topic shows 75% of the reviews with positive sentiment, which ranks among the highest percentages. Although students have provided positive feedback about how the teaching limitations are addressed, the lexical analysis also shows that they expect a greater balance between theory and practice in academic activities. Increasing practical components could further enhance students’ experience. In the case of service-focused programs, *service-learning* can be implemented for mobility students, as it has been reported to have positive effects on Spanish students, provided that participation is voluntary and has a direct impact on the social environment (Folgueiras et al., 2020).

With respect to “*Perceived Academic Standards*”, it was the eighth topic in frequency of mentions, with 72% of positive sentiments. In addition, among the reviews expressing negative sentiment, it represents 6% of the total, one of the lowest rates. In this area, most students show positive feelings. The category “*International Mobility Experience*” ranked third in frequency and relevance of mentions. In general, students expressed positive feelings about it, however, this topic had the lowest percentage of positive reviews (66.9%). When contrasted with negative sentiment (9%), it lies within the middle range of our sample.

Previous studies, such as Ammigan and Jones (2018) and Moslehpour et al. (2020), have shown that non-academic services, living environment, reputation, ease of adaptation, and administrative support can moderate satisfaction. Therefore, students may be academically satisfied, but city life, support, and services shape the overall experience. That’s why our results also emphasize items related to the city. “*Campus Environment*” and “*Urban Environment*” are topics that have a contextual relationship, both mentioned similarly in the reviews, however, they differ in the emotions they generate. “*Urban Environment*” has 73% of positive reviews, while “*Campus Environment*” has 69%. In addition, in terms of negative sentiment, “*Urban Environment*” accounts for 7.6% of reviews, compared to 10.7% for “*Campus Environment*”. This indicates that students are more satisfied with city offer than with the combined city-university offer. When reviewing blogs of Erasmus students (which are sources of information often consulted before deciding on a mobility destination) it can be observed that the main motivations of students to come to Spain are lifestyle, friendliness of the people, meeting other international students, language and the climate. However, when they refer to universities, comments are positive but brief and lack detail (Maciejewska, 2016). Furthermore, the research by Aslan and Jacobs (2014) showed that the main motivations for international mobility are learning a language and experiencing a different culture, while academic factors, gaining international experience, and improving one’s curriculum are also important but secondary motivations.

The last two topics discussed by students were “*Institutional Offer and Support Services*” and “*Institutional Reputation*”. “*Institutional Offer and Support Services*” received 72% positive reviews, while “*Institutional Reputation*” obtained 68% positive reviews. Both show an overall favorable balance. However, this category also registers the highest percentage of negative sentiment (12.5%), making it the most polarized dimension in the dataset. This indicates that while services are generally valued, they represent a structural vulnerability to student experience. Unlike teaching quality—where positive sentiment clearly dominates—service provision and institutional offer show greater variability in satisfaction levels. Strategically, this suggests that improving consistency and visibility of support services may yield a disproportionately positive impact on overall institutional perception.

Overall, the results reveal a clear experiential pattern: academic dimensions (teaching quality, applied learning, academic standards) concentrate the highest satisfaction levels, whereas institutional-level factors (support services, reputation, mobility experience management) accumulate comparatively higher proportions of negative sentiment. Therefore, the Spanish higher education system does not face a generalized satisfaction deficit; rather, it shows a structural imbalance between strong academic performance and comparatively weaker institutional signaling and service perception. This interpretation remains strictly grounded in the empirical distribution of topics and sentiment scores obtained in the analysis.

## 6. Conclusion

The empirical findings of this study, based on the analysis of 1,182 student reviews through topic modeling and sentiment analysis, provide concrete evidence about how international students evaluate their academic and institutional experience within Spanish universities. The recommendations presented below derive directly from the identified satisfaction components and their associated sentiment distribution. In this sense, the aspects most

mentioned in the reviews were “*Teaching performance quality*”, “*Academic environment*” and “*Instructional quality and applied learning*”. All three have a predominantly positive sentiment. In particular, “*Instructional Quality and Applied Learning*” not only emerged as the most frequently mentioned topic but also exhibited the highest positive sentiment rate (75.84%), confirming that academic performance constitutes the strongest pillar of perceived quality in the Spanish system.

The topics concentrating higher relative levels of negative sentiment are directly related to institutional dimensions: “*Institutional Offer and Support Services*” (12.5% negative), “*Institutional Reputation*” (10.84%) and “*Campus Environment*” (10.69%). This pattern indicates that dissatisfaction is not primarily academic but organizational and reputational in nature.

The strengths and opportunities identified outweighed the negatives and threats. In addition, students reflect having had mostly positive feeling experiences, with the lowest level of positive sentiment at 66%. Thus, it is suggested to encourage the publication of reviews about the mobility experience in Spain on blogs and student forums, as well as to strongly highlight in public and institutional media the satisfaction of students in their mobilities and the perception of teaching quality and academic level, since students may have prejudices about university quality derived from the position of Spanish universities in international rankings.

Efforts should be made at the governmental level to maintain access rates to higher education and to provide students with quality services. Another possible action is to encourage academic tourism through conferences and student summits in different cities with respective integration activities. It should be noted that one of the greatest opportunities is to support programs that facilitate the learning of the Spanish language during students’ stay, scholarships for language courses, or by promoting *service learning* in Arts and Education faculties to provide Spanish classes to foreign students. In other words, it is recommended to implement study programs where students of Spanish origin with advanced proficiency in the language, or teaching skills, can provide Spanish language training to international students.

To minimize the negative aspects, tuition costs should be addressed. While the cost of living is one of the greatest strengths of a stay in Spain, tuition fees are high compared to some European educational systems. Another key point is to improve the students’ perception of what Spanish universities have to offer. It is recommended that targeted surveys be conducted to ask what they consider to be negative about SUE in order to generate strategies for improvement. However, there are reasonable doubts about the validity of these surveys, as there may be time constraints or students may be unaware of the consequences of the evaluation system (Clayson, 2009; Hornstein, 2017; Slade & McConville, 2006; Stein et al., 2021). For this reason, the research community is increasingly using complementary sources to gain better insights into student experience, such as topic modeling and sentiment analysis (Lazrig & Humpherys, 2022; Nkomo & Daniel, 2021; Baddam et al., 2019). Additionally, text mining tools provide insights that are not captured in surveys (Alhija & Fresko, 2009). These methodological instruments offer a foundation accessible to university directors and managers, allowing incorporation into strategic planning and monitoring of internationalization strategies (Arasaratnam-Smith et al., 2021).

In addition, a critical point is related to the perception of students’ service users versus customers. It is pertinent to discuss this issue within educational institutions; ideally, students should feel that they are provided not only with the obligations of a service user, but also with the rights of a customer capable of being heard and of evaluating the performance of the services and classes received (Jayadeva et al., 2021). However, the ultimate goal of higher education extends beyond service delivery: universities are communities of learning where knowledge is created, questioned and shared. Their mission involves fostering critical inquiry, ethical awareness, and self-knowledge —values that give meaning to students’ experiences beyond immediate satisfaction metrics. As Golden (2023) argues, fostering critical thinking in higher education requires intentional pedagogical design that supports relational learning, values-based engagement, and opportunities for reflective dialogue, elements that transcend transactional models of education.

Therefore, student well-being, quality of teaching, and the emotional tone of their experiences should be interpreted not merely as indicators of consumer satisfaction, but as reflections of how effectively universities nurture intellectual curiosity, creativity, and the capacity for independent and critical thought, ultimately contributing to the holistic formation of students as reflective, ethical and capable global citizens.

In sum, the Spanish university system demonstrates strong experiential performance in core academic delivery but faces perceptual and organizational challenges in institutional communication, service consistency and reputation management. These conclusions do not stem from assumed motivations to study in Spain, but from the structured analysis of students' post-enrollment evaluations. Therefore, enhancing Spain's attractiveness as an academic destination should begin with consolidating its strongest empirical asset, teaching quality, while strategically addressing the specific institutional dimensions that accumulate higher dissatisfaction rates.

With respect to the use of text mining and other analytical tools, as stated previously, these tools save resources such as time, computer equipment and personnel needed to evaluate the quality of the student's experience, allowing authorities to focus their resources on improvement activities. The method presents limitations related to the accuracy of the interpretation performed by the software; however, this is minimized when the sample size is large. It is recommended to have samples greater than 1,150 reviews, the larger the sample, the more reliable the results. In addition, this approach allows the interpretation of reviews whose volume makes manual review impractical. Furthermore, it is suggested that the analysis be conducted in conjunction with quantitative surveys such as those already implemented by specialized institutions. It is to remark that due to the qualitative character of the text interpretation it is not yet possible to state something as meeting expectations for the whole population or sample, nonetheless satisfaction indicators can be well interpreted. Future work should cross-check information extracted from reviews with statistical parameters evaluating specific topics on a Likert scale. The writing of reviews can also be limited; for example, students can be asked to write reviews related to the specific aspects found in this work to contrast the results and organize data entry.

## 7. Implications

Building on the previous findings, this study highlights several strategic areas in which Spanish universities can further enhance the international student experience while maintaining the core mission of higher education. Spain offers a compelling combination of academic rigor, research opportunities and vibrant cultural and social experiences. Universities can leverage this holistic environment to ensure that international students engage deeply with both the intellectual and broader developmental aspects of their studies.

While accessibility in terms of living costs is a strength, the challenging labor market context may affect students' academic and professional trajectories. This underscores the importance of strengthening employability initiatives, entrepreneurship programs, and experiential learning opportunities that complement formal academic training. These initiatives not only enhance institutional attractiveness but also align with students' expectations of career readiness.

Moreover, internationalization should be approached as a comprehensive and integrated process that benefits students, faculty, and society alike. Programs must combine international experiences both abroad and at home, supported by capable academic and administrative staff. However, the boundaries and potential of internationalization are not yet fully understood or leveraged. A real enabling program is needed to build competencies among university managers and administrators to effectively coordinate this dual approach.

Institutional reputation also plays a critical role. Despite strong human capital indicators such as teaching quality, Spanish universities face challenges in relational capital—particularly in institutional branding and perceived value. Universities must improve the quality and visibility of student reviews, complemented by intelligent strategic actions in communication and corporate image, to enhance their positioning in international rankings. While rankings are not the sole measure of quality, they remain influential in shaping perceptions and attracting talent.

Finally, the orientation toward service quality —beyond teaching excellence— should become a key pillar of internationalization strategies. Adopting a student-centered approach to service design, informed by feedback and reflective reviews, fosters intellectual growth and personal development rather than merely influencing external metrics. This approach aligns with modern relational capital management, emphasizing stakeholder engagement and value co-creation.

In sum, the pursuit of quality in higher education should encompass not only instruction but also the creation of supportive and enriching environments. Ensuring that students' academic, personal, and intercultural

development is nurtured throughout their studies will strengthen Spain's position as a destination of choice for international talent.

### Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

### Authors' contributions

Adriana Perez-Encinas: conceptualization, design of research approach, discussion and acquisition of funds.

Alan Martinez-Vazquez: conceptualization, design of research approach, organisation of data, data processing, visualization, and formal analysis.

Carlos Merino-Moreno: discussion and conclusions.

Pablo Villarrubia: literature review and review process and visualization.

### Data availability

Data subject to third-party restrictions

### Use of Artificial Intelligence

Artificial intelligence tools were used solely for language editing and proofreading of the manuscript.

### References

- Alhija, F. N. A., & Fresko, B. (2009). Student evaluation of instruction: What can be learned from students' written comments? *Studies in Educational Evaluation*, 35(1), 37–44. <https://doi.org/10.1016/j.stueduc.2009.01.002>
- Ammigan, R., & Jones, E. (2018). Improving the student experience: Learning from a comparative study of international student satisfaction. *Journal of Studies in International Education*, 22(4), 283–301. <https://doi.org/10.1177/1028315318773137>
- Arasaratnam-Smith, L., Coetzee, N., & Hodson, C. (2021). The double-edged sword of 'best aspects' and 'needs improvement' in student experiences: A qualitative analysis. *Journal of University Teaching & Learning Practice*, 18(3), 66–82. <https://doi.org/10.53761/1.18.3.6>
- Archbell, K. A., & Coplan, R. J. (2022). Too Anxious to Talk: Social Anxiety, Academic Communication, and Students' Experiences in Higher Education. *Journal of Emotional and Behavioral Disorders*, 30(4), 273–286. <https://doi.org/10.1177/10634266211060079>
- Aslan, B., & Jacobs, D. B. (2014). Erasmus student mobility: some good practices according to views of Ankara university exchange students. *Journal of Education and Future*, 1(5), 57–72.
- Baddam, S., Bingi, P., & Shuva, S. (2019). Student Evaluation of Teaching in Business Education: Discovering Student Sentiments Using Text Mining Techniques. *E-Journal of Business Education & Scholarship of Teaching*, 13(3), 1–13. <https://search.proquest.com/docview/2350114111>
- Baranova, P., Morrison, S., & Mutton, J. (2011). Enhancing the student experience through service design: the University of Derby approach. *Perspectives*, 15(4), 122–128. <https://doi.org/10.1080/13603108.2011.599883>
- Bartell, M. (2003). Internationalization of universities: A university culture-based framework. *Higher Education*, 45, 43–70. <https://doi.org/10.1023/A:1021225514599>
- Beelen, J., & Jones, E. (2015). Redefining internationalization at home. In A. Curaj, L. Matei, R. Pricopie, J. Salmi, & P. Scott, P. (Eds.), *The European higher education area* (pp. S. 59–72). Springer International Publishing. [https://doi.org/10.1007/978-3-319-20877-0\\_5](https://doi.org/10.1007/978-3-319-20877-0_5)

- Biernacik, A. (2017). *ERASMUS Students Holistic Learning Experiences. The Case of High Education Institutions at the Iberian Peninsula*.
- Blei, D. M., Ng, A. Y., & Jordan, M. I. (2003). Latent Dirichlet Allocation. *Journal of Machine Learning Research*, 3, 993–1022.
- Bouckaert, M. (2023). The assessment of students' creative and critical thinking skills in higher education across OECD countries: A review of policies and related practices. *OECD Education Working Papers*, 293, 1–46.
- Buenechea-Elberdin, M., Sáenz, J., & Kianto, A. (2024). Intellectual capital-driven innovation: the influence of servitization degree. *R&D Management*, 54(4), 818–832. <https://doi.org/10.1111/radm.12576>
- Butt, B., & Rehman, K. (2010). A study examining the students satisfaction in higher education. *Procedia – Social and Behavioral Sciences*, 2(2), 5446–5450. <https://doi.org/10.1016/j.sbspro.2010.03.888>
- Cambria, E., Das, D., Bandyopadhyay, S., & Feraco, A. (Eds.) (2017). *A practical guide to sentiment analysis* (Vol. 5). Springer International Publishing.
- Cifuentes-Faura, J., Obor, D. O., To, L., & Al-Naabi, I. (2021). Cross-cultural impacts of COVID-19 on higher education learning and teaching practices in Spain, Oman, Nigeria and Cambodia: A cross-cultural study. *Journal of University Teaching & Learning Practice*, 18(5), 135–151. <https://doi.org/10.53761/1.18.5.8>
- Clayson, D. E. (2009). Student evaluations of teaching: Are they related to what students learn? A meta-analysis of the review and literature. *Journal of Marketing Education*, 31(1), 16–30. <https://doi.org/10.1177/0273475308324086>
- Crowther, E. M. (2001). British Association Discussions. *Nature*, 142(3598), 701–702. <https://doi.org/10.1038/142701a0>
- De-Jager, J. W., & Gbadamosi, G. (2010). Specific remedy for specific problem: Measuring service quality in South African higher education. *Higher Education*, 60(3), 251–267. <https://doi.org/10.1007/s10734-009-9298-6>
- De-Wit, H. (2019). Internationalization in higher education, a critical review. *SFU Educational Review*, 12(3), 9–17. <https://doi.org/10.21810/sfuer.v12i3.1036>
- Douglas, J., Douglas, A., McClelland, R., & Davies, J. (2006). Understanding student satisfaction and dissatisfaction: An interpretive study in the UK higher education context. *Studies in Higher Education*, 31(7), 737–754.
- Douwes, R., Metselaar, J., Pijnenborg, G. H. M., & Boonstra, N. (2023). Well-being of students in higher education: The importance of a student perspective. *Cogent Education*, 10(1), 2190697. <https://doi.org/10.1080/2331186X.2023.2190697>
- European Commission, Education, Audiovisual and Culture Executive Agency (EACEA), & Eurydice. (2020). *The European Higher Education Area in 2020: Bologna Process Implementation Report*. Luxembourg: Publications Office of the European Union.
- Feenstra, R. A., & Lopez-Cortazar, E. D. (2021). Philosophers' perceptions of pay to publish and openaccess in Spain: Books versus journals, more than a financial dilemma. *Learned Publishing*, 35, 118-129. <https://doi.org/10.1002/leap.1426>
- Folgueiras, P., Aramburuzabala, P., Opazo, H., Mugarra, A., & Ruiz, A. (2020). Service-learning: A survey of experiences in Spain. *Education, Citizenship and Social Justice*, 15(2), 162–180. <https://doi.org/10.1177/1746197918803857>
- Golden, B. (2023). Enabling critical thinking development in higher education through the use of a structured planning tool. *Irish Educational Studies*, 42(4), 949–969. <https://doi.org/10.1080/03323315.2023.2258497>
- Gruber, T., Fuß, S., Voss, R., & Gläser-Zikuda, M. (2010). Examining student satisfaction with higher education services using a new measurement tool. *International Journal of Public Sector Management*, 23(2), 105–123. <https://doi.org/10.1108/09513551011022474>

- Hornstein, H. A. (2017). Student evaluations of teaching are an inadequate assessment tool for evaluating faculty performance. *Cogent Education*, 4(1). <https://doi.org/10.1080/2331186X.2017.1304016>
- Integrated University Information System (2022). *Facts and figures of the Spanish University System*. Publication 2021-2022.
- Jayadeva, S., Brooks, R., Gupta, A., Abrahams, J., Lažetič, P., & Lainio, A. (2021). Are Spanish Students Customers? Paradoxical Perceptions of the Impact of Marketisation on Higher Education in Spain. *Sociological Research Online*, 26(1), 185–204. <https://doi.org/10.1177/1360780420968577>
- Kanwar, A., Sanjeeva, M. (2022). Student satisfaction survey: a key for quality improvement in the higher education institution. *Journal of Innovation and Entrepreneurship (JIAE)*, 11, 27. <https://doi.org/10.1186/s13731-022-00196-6>
- Koshy, P., Cabalu, H., & Valencia, V. (2023). Higher education and the importance of values: Evidence from the World Values Survey. *Higher Education*, 85(6), 1401–1426. <https://doi.org/10.1007/s10734-022-00896-8>
- Kwan, P. Y. K., & Ng, P. W. (1999). Quality indicators in higher education—Comparing Hong Kong and China's students. *Managerial Auditing Journal*, 14(1/2), 20–27. <https://doi.org/10.1108/02686909910245964>
- Lapina, I., Roga, R., & Müürsepp, P. (2016). Quality of higher education: International students' satisfaction and learning experience. *International Journal of Quality and Service Sciences*, 8(3), 263–278. <https://doi.org/10.1108/IJQSS-04-2016-0029>
- Lazrig, I., & Humpherys, S. L. (2022). Using Machine Learning Sentiment Analysis to Evaluate Learning Impact. *Information Systems Education Journal (ISEDJ)*, 20(1), 13–21.
- Leask, B. (2015). *Internationalizing the Curriculum* (1st ed.). Routledge. <https://doi.org/10.4324/9781315716954>
- Lomer, S., Mittelmeier, J., & Courtney, S. (2023). Typologising internationalisation in UK university strategies: Reputation, mission and attitude. *Higher Education Research & Development*, 42(5), 1042–1056. <https://doi.org/10.1080/07294360.2023.2193729>
- Lopez-Montero, R. (2018). Internationalization proposal from university didactic strategies. *Alteridad*, 13(2), 239–250. <https://doi.org/10.17163/alt.v13n2.2018.07>
- LOSU (2023). Organic Law 2/2023, of March 22nd, on the University System. *BOE*, 70. <https://www.boe.es/eli/es/lo/2023/03/22/2/con>
- Maciejewska, I. (2016). *Facts and myths about Erasmus exchange in Spain*. Erasmusu. <https://erasmusu.com/en/erasmus-uhu-universidad-de-huelva/erasmus-blog/facts-and-myths-about-erasmus-exchange-in-spain-461437>
- McLeay, F., Robson, A., & Yusoff, M. (2017). New applications for importance-performance analysis (IPA) in higher education. *Journal of Management Development*, 36(6), 780–800. <https://doi.org/10.1108/JMD-10-2016-0187>
- Ministry of Education and Vocational Training (2015). *Strategy for the Internationalization of Spanish Universities* (1st ed.). Ministry of Education, Culture and Sport.
- Ministry of Education and Vocational Training (2022). *Convocatorias trabajo y formación en el extranjero*. Ministry of Education, Culture and Sport. <https://www.educacionyfp.gob.es/contenidos/profesorado/profesorado-en-el-extranjero/convocatorias-para-espanoles.html>
- Ministry of Science, Innovation and Universities (2023). *Statistics on University Internationalization. Academic Year 2022/2023*. <https://estadisticas.universidades.gob.es>
- Moslehpour, M., Chau, K. Y., Zheng, J., Hanjani, A. N., & Hoang, M. (2020). The mediating role of international student satisfaction in the influence of higher education service quality on institutional reputation in Taiwan. *International Journal of Engineering Business Management*, 12, 1847979020971955.
- Nigitsch, P., Weigle, M., & Frongia, F. (2024). *Cultivating talent: Exploring effective talent attraction and retention practices in and beyond the EU*. Migration Partnership Facility.

- Nkomo, L. M., & Daniel, B. K. (2021). Sentiment Analysis of Student Engagement with Lecture Recording. *TechTrends*, 65(2), 213–224. <https://doi.org/10.1007/s11528-020-00563-8>
- Pereda, M., Airey, D., & Bennett, M. (2007). Service quality in higher education: The experience of overseas students. *Journal of Hospitality, Leisure, Sport & Tourism Education*, 6(2), 55–67. <https://doi.org/10.3794/johlste.62.160>
- Perez-Encinas, A., & Ammigan, R. (2016). Support Services at Spanish and U.S. Institutions: A Driver for International Student Satisfaction. *Journal of International Students*, 6(4), 984–998. <https://doi.org/10.32674/jis.v6i4.330>
- Perez-Encinas, A., & Rodriguez-Pomeda, J. (2018). A Probabilistic Approach to Studies in Higher Education. In *Theory and Method in Higher Education Research* (pp. 19–30). Emerald Publishing Limited. <https://doi.org/10.1108/S2056-375220180000004003>
- Perez-Encinas, A., Rodriguez-Pomeda, J., & De-Wit, H. (2020). *Factors influencing student mobility: A comparative European study*. Informa UK Limited. <https://doi.org/10.1080/03075079.2020.1725873>
- QS World University Rankings (2022). *QS World University Rankings 2022*. Top Universities. <https://www.topuniversities.com/university-rankings/world-university-rankings/2022>
- Ranking Web of Universities (2022). *Ranking web of universities, Europe*. Webometrics. <https://www.webometrics.info/en/Europe>
- Rincón, V., & Barrutia, J. (2017). International demand for Spanish university education: an analysis in the context of the European higher education area. *European Journal of Education*, 52(1), 104–117. <https://doi.org/10.1111/ejed.12198>
- Saroyan, A. (2022). Fostering creativity and critical thinking in university teaching and learning: Considerations for academics and their professional learning. *OECD Education Working Papers*, 280. OECD Publishing. <https://doi.org/10.1787/09b1cb3b-en>
- SAS Institute Inc (2022). *SAS Viya – Visual Text Analytics*. SAS. [https://www.sas.com/es\\_es/software/visual-text-analytics.html](https://www.sas.com/es_es/software/visual-text-analytics.html)
- Scott, P., Salmi, J., Pricopie, R., Matei, L., & Curaj, A. (2015). *The European Higher Education Area Between Critical Reflections and Future Policies* (1st ed.). Springer International Publishing. <https://doi.org/10.1007/978-3-319-20877-0>
- Shaik, T., Tao, X., Dann, C., Xie, H., Li, Y., & Galligan, L. (2023). Sentiment analysis and opinion mining on educational data: A survey. *Natural Language Processing Journal*, 2, 100003. <https://doi.org/10.1016/j.nlp.2022.100003>
- Slade, P., & McConville, C. (2006). The validity of student evaluations of teaching. *International Journal for Educational Integrity*, 2(2), 140–155. <https://doi.org/10.2307/420225>
- Stein, S., Goodchild, A., Moskal, A., Terry, S., & McDonald, J. (2021). Student perceptions of student evaluations: enabling student voice and meaningful engagement. *Assessment and Evaluation in Higher Education*, 46(6), 837–851. <https://doi.org/10.1080/02602938.2020.1824266>
- Studyportals | The Global Study Choice Platform (2017). Studyportals. <https://studyportals.com/about-us/>
- Times Higher Education (2022). *Best Universities in Spain*. <https://www.timeshighereducation.com/student/best-universities/best-universities-spain>
- Thiuri, P. (2010). *International student satisfaction with student services at the rochester institute of technology* [Doctoral dissertation]. Department of Educational Administration and Higher Education, Lynch School of Education, Boston College.
- Wang, Z., Bai, G., Chowdhury, S., Xu, Q., & Seow, Z.L. (2017). *TwiInsight: Discovering Topics and Sentiments from Social Media Datasets*. Cornell University Library. <https://search.proquest.com/docview/2075703967>

- Weerakkody, U., & Jerez, E. (2018). International student success: A multilevel perspective on factors that contribute to the success and quality of the experience abroad. *International Journal of Chinese Education*, 7(1), 22–41. <https://doi.org/10.1163/22125868-12340088>
- Wilkins, S., Balakrishnan, M. S., & Huisman, J. (2012). Student satisfaction and student perceptions of quality at international branch campuses in the United Arab Emirates. *Journal of Higher Education Policy and Management*, 34(5), 543–556. <https://doi.org/10.1080/1360080X.2012.716003>
- Wong, W.H., & Chapman, E. (2023). Student satisfaction and interaction in higher education. *Higher Education*, 85, 957–978. <https://doi.org/10.1007/s10734-022-00874-0>
- Yun, E. (2020). Review of Trends in Physics Education Research Using Topic Modeling. *Journal of Baltic Science Education*, 19(3), 388–400. <https://doi.org/10.33225/jbse/20.19.388>

Intangible Capital, 2026 ([www.intangiblecapital.org](http://www.intangiblecapital.org))



Article's contents are provided on an Attribution-Non Commercial 4.0 Creative commons International License. Readers are allowed to copy, distribute and communicate article's contents, provided the author's and Intangible Capital's names are included. It must not be used for commercial purposes. To see the complete license contents, please visit <https://creativecommons.org/licenses/by-nc/4.0/>.