

FULFILMENT OF EXPECTATIONS ON STUDENTS PERCEIVED QUALITY IN THE CATALAN HIGHER EDUCATION SYSTEM

Abstract:

This study provides an innovative approach to the analysis of the antecedents of satisfaction. A discussion about different types of expectations and their configurations is presented, providing a new classification of services according to two temporal dimensions that affect expectations: (i) how the length of the service lead time has an impact on the assessment of fulfilment of expectations and (ii) how the repetitive purchasing over time updates expectations. We focus the analysis on the study of those cases where expectations cannot be directly assessed.

The empirical application considers the case of higher education services. Using a survey of 2,557 undergraduate students who finished their degrees in 2013 at universities located in the Catalonia (Spain), we test a model where fulfilment of expectations is proposed as an antecedent of students' satisfaction, alongside with perceived quality. The methodological approach uses structural equation modeling (SEM) technique. Results reveal that fulfilment of expectations has a high explanatory power and that this antecedent of satisfaction is well explained by the dimensions of perceived quality, evidencing its mediation role between quality and satisfaction.

Keywords: higher education, student satisfaction, fulfilment of expectations, university governance

1. INTRODUCTION

Expectations, alongside with perceived quality, have been proven to play a significant role in the configuration of service quality. The seminal papers on this field paid special attention to this particular issue (Cronin and Taylor 1994; Parasuraman et al. 1988). Generally, these two constructs—expectations and perceived quality—are collected at the same time, once the service has been consumed. It is assumed that the customer assesses both accurately. However, it cannot be denied the fact that instead of expectations, what is really collected is the very best assumptions about prior expectations. What the customer can evaluate at this moment is the fulfilment of his/her expectations, based on his/her understanding of expectations at that moment, which might differ from the expectations before the service started. The discrepancy between original expectations and the assessment of expectations made some time later might be significant, especially when the service is provided and consumed during a long period of time. This is the case with higher education services, where the service expands for some years; consequently, the expectations captured at the beginning of university studies might differ from those expectations assessed when the service finishes. It is for these cases (services with a long lead time process) that we introduce in this study the discussion about the convenience of using the construct of “fulfilment of expectations” as an antecedent of satisfaction.

The construct of fulfilment of expectations is not new. Grönross (2006) recommends using it to better understand the entire process, that is, from firm value proposition to customers’ perception. We propose to use this construct for the analysis of service satisfaction. It will be useful for those services for which expectations cannot be evaluated before the service starts, and instead, the assessment of the expectations is set later in time. To some extent, this construct can be assimilated to the gap used by Parasuraman et al. (1988) to capture the difference between perceived quality and expectations. The conceptual difference between Parasuraman’s gap and fulfilment of expectations is that

Parasuraman's gap compares perceptions with prior expectations, while fulfilment of expectations compares perceptions with the assessment of expectations made after the service is accomplished.

In this study we assume that the relationship between the student and the university is analogous to the relationships between a regular customer and its service provider. Nevertheless, it is worth noting that other alternative approaches might also be deemed as valid, considering the specific features of the sector under analysis (Barnett 1997; Davies and Barnett 2015; Harvey and Knight 1996). Following Sultan and Wong (2013; 2014), we posit that the primary goal of education is not to satisfy students but to equip them to be effective professionals. Consequently the analysis requires a particular approach that could differ from the regular "customer-service provider" relationship. Therefore, the paper is conceived under lens of the quality service management, and particularly on the works of Parasuraman.

The objective of this study is to analyze the impact of both perceived quality and fulfilment of expectations on students' satisfaction. Although the original contribution mainly relies on how fulfilment of expectations impacts on satisfaction, the study also offers a new fresh approach to the existing relationship between quality and satisfaction. Additionally, special emphasis is made on the mediation role of fulfilment of expectations in the abovementioned relationship.

The remainder of the paper is organized as follows. The second section starts with a literature review in order to better understand what expectations are and different sorts of expectations that might exist. This section concludes with some considerations about the role of fulfilment of expectations. Next, we provide an extensive conceptualization of the constructs of "expectations" and "fulfilment of expectations". In the third section, the hypotheses and research model are presented. The fourth section provides the methodological framework. Results are reported in the fifth section. The discussion of the findings and concluding remarks are put forward in the sixth and last section.

2. CONCEPTUALIZING “EXPECTATIONS” AND “FULFILMENT OF EXPECTATIONS”

Parasuraman et al. (1988) introduced the idea of comparing expectations and real perceived value in order to assess service quality. Since then, the expectancy-disconfirmation model has been widely used to explain the customer satisfaction formation process (Tam 2011). This discrepancy is the rationale behind the Servqual scale, published in the 1980s by professor Parasuraman and his team. Soon the scale became very popular and since then, it has been extensively used by many researchers and practitioners. The work of Ladhari (2009) reviews the adaptations of the scale to different settings, sectors, countries and socioeconomic environments. Despite the rapid expansion of the scale, a vein of criticism soon arose. For instance, Cronin and Taylor (1994) stated that performance-minus-expectations provides an inappropriate basis for measurement of service quality and proposed a new model called Servperf, mainly based on perceptions. Although these authors eliminated the assessment of customer expectations, they did not conclude that this assessment was either invalid or unnecessary in the service quality field domain. The debate is not yet settled at all (Jain and Gupta 2004). More recently, Bayraktaroglu, and Atrek (2010) conducted a comparative analysis between the suitability of both models (Servqual and Servperf) in the context of the higher education setting. These researchers argued that both service measurement scales show good fit indices, and hence both can be used to assess the quality of higher education services.

In this setting, there is a second debate concerning how expectations are defined. Service expectations can be considered as “will” expectations, defined as a customer’s prediction on what an offering is going to deliver (Parasuraman et al. 1985), or as “should” or “ideal” expectations (Habel et al. 2016). Because the academic offer is not fully known by the student (s/he knows the courses included in the curriculum, but before starting attending classes s/he does not know all the elements behind the definition of the degree) we adopt the former approach.

The remaining parts of this section show, in an organized structure, different aspects and phenomena that need to be considered in order to understand what expectations and fulfilment of expectations are. Thus, from here onward, this section is split into three subsections. First, we discuss how the time dimension affects the assessment of expectations. Second, we focus on the specific case of the higher education system, and describe those factors that might shape students' expectations. Lastly, we elaborate on the role of fulfilment of expectations in the domain of service quality.

2.1. The “time dimension” affecting expectations

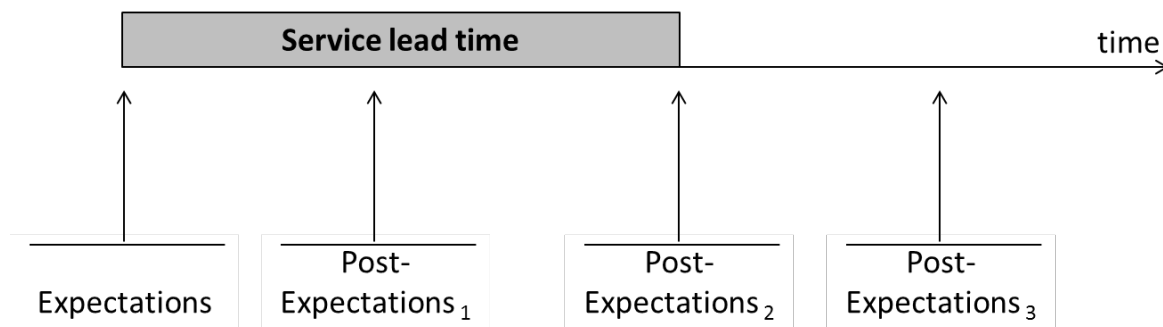
A critical point in the debate is grounded in the role of expectations, which in turn means taking into account the time dimension, since it implies looking forward, to the future, looking to the moment the customer will be served. Because expectations evolve over time, we pose that the “time effect” on expectations can be analyzed from two different perspectives: (i) how the expectations for a particular service vary according to the moment they are collected, and (ii) how the expectations differ from one purchasing to the next one due to the accumulation of experience. An extended analysis of each of these two perspectives brings some pertinent considerations about what expectations are and about different kinds of expectations. Needless to say, other factors might also influence the expectations configuration, such as the cultural orientation of the customer (Donthu and Yoo 1998). Only the two temporal dimensions aforementioned are analyzed in this paper.

To illustrate this debate, the remaining part of this subsection analyzes: (i) the evolution of the assessment of expectations according to the moment they are assessed, differentiating between expectations and post-expectations; (ii) the repetition behavior analysis, which will shed light on how to conceptualize the updating of expectations; and (iii) the types of services according the two previous considerations.

2.1.1. Expectations and post-expectations

The first approach or perspective for the analysis of expectations comes from the exploration of a particular experience. The customer’s judgment of his/her expectations for any particular purchase and/or service consumption can be made in different moments: before the service starts, but it can also be evaluated during the service lead time (during the service delivery), or even after the service finishes (Figure 1). Each time expectations are assessed, the assessment might differ although all these assessments refer to the same experience. When expectations are captured after the service has started, they will be either the best approximation of the customer’s prior expectations or the expectations s/he has at this moment without trying to recall previous expectations.

Figure 1. Chronogram of the evaluation moments for expectations and post-expectations.



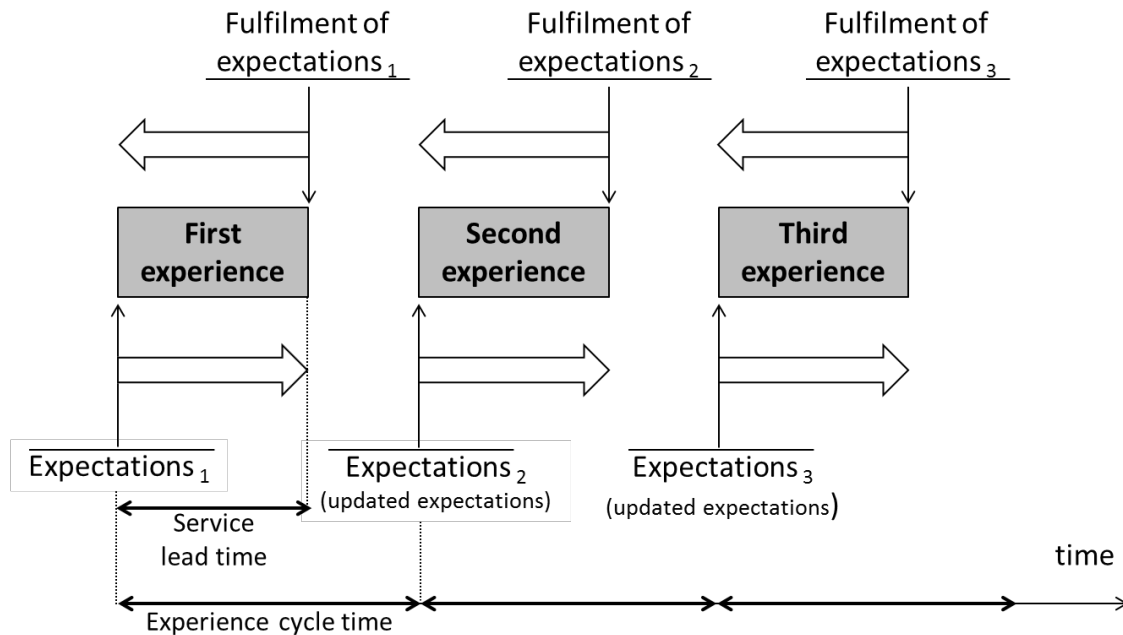
The literature around the construct of “expectations” is still in development, and a careful analysis might clarify what different authors mean when using this construct. Some authors use the terms “prior expectations” or “predictive expectations” to refer to the judgment of a particular experience established before the service starts (Yi and La 2004). To some extent, both adjectives (prior and predictive) imply temporality. Groth and Dye (1999) propose the term, *ex ante* expectations. However, any temporal adjective applied to expectations is redundant because expectations are *per se* before the service starts. Accordingly, from now on, we will simply refer to the term “expectations”, without adding any adjective. Expectations are what consumers believe should be offered to them (Rufin et al. 2012), reinforcing the idea that expectations are settled previous to the consumption.

Following and adjusting Yi and La's (2004) nomenclature, we will use the term "post-expectations" for the customer judgment about what s/he should receive, which is expressed after the service process starts. The assessment can be made while the service is being consumed, when it is fully delivered or any other moment after the conclusion of the service. The difference between expectations and post-expectations depends on many aspects that might influence the customer between the moment when the service starts and the moment when post-expectations are collected. Yi and La (2004) use the labels "post-hoc expectations" and "post-consumption expectations". Obviously, "post-consumption expectations" need to be compulsorily assessed after the service finishes.

2.1.2. Updated expectations

Another lens for understanding the impact of time on expectations comes from the repetitive purchasing behavior analysis. This perspective takes into account all the consecutive services provided to a particular customer over time (Figure 2). O'Neill et al. (1998) argue that expectations may not be stable over time and that suppliers should be particularly interested in them at the time that the next repurchase decision is made. These expectations are assessed by the customer according to his/her own (i) previous experiences, (ii) "word of mouth", (iii) personal needs, and (iv) communication with the provider (Parasuraman et al. 1985). For each repetitive purchase, expectations are reassessed. Thus, expectations are adjusted or updated through cumulative consumption experiences (Lin and Lekhawipat 2014; Rufin et al. 2012; Yi and La 2004), which in turn will guide purchase behaviour in the next purchasing act (Ha et al. 2010). We will use the term "updated expectations" to refer to these expectations. Figure 2 also shows when the fulfilment of expectations is assessed.

Figure 2. Dynamic sequence of expectations and fulfilment of expectations.



Updated expectations might improve the understanding of a customer's future purchasing behaviour. Tam (2011) suggests that they have an impact on loyalty intentions. In the same vein, Lin and Lekhawipat (2014) study the effects of on-line shopping experiences in relation to these updated expectations for reinforcing repurchase intention. Results showed that updated expectations were a crucial driver of customer satisfaction.

2.1.3. Service typology according to how time affects expectations

Table 1 summarizes different service types categorized by the length of their lead time and by their frequency of repetition. Lead time does have an impact on the assessment of post-expectations as shown in Figure 1 (first perspective), while the repurchasing phenomenon updates the expectations as illustrated in Figure 2 (second perspective). The labels proposed for the four typologies are as follows:

1. Quotidian service. The service is demanded frequently and the lead time is short (i.e., an everyday routine such as taking coffee at the cafeteria). Genuine expectations are clear when assessing the fulfilment. Only a few minutes have elapsed, and previous expectations can be accurately recalled. Expectations and post-expectations are significantly equivalent.

2. Regular service. Services are demanded frequently, but with a longer lead time. A gym service can be considered within this category. Many people have a determination to improve their health habits with the starting of the New Year. Gyms usually increase the number of customers in January, but after some weeks, this number substantially decreases. Every year this phenomenon repeats. In this case, the customer consumes the service for only a few weeks and then repeats the same pattern (and experience) each year. If comparing the expectations made on January 1 to those in late February, they probably might differ greatly.

3. Eventual service. It takes place only once in a lifetime or only a few times. The lead time is relatively short. This is the case for a wedding service, or the case of a notary service to establish last wills. Like quotidian services, expectations and post-expectations are pretty similar.

4. Special services. Those services are only demanded once or rarely, but it takes a reasonably long period to deliver/consume them. This is the case with higher education degrees. It usually takes four or more years, and it is taken only once in a lifetime (or twice, hardly ever more than that). Because of this time-lag between enrollment and completion, post-expectations will be different from expectations.

Table 1. Services typology according to the consumption frequency and the length of lead time.

		Lead time of the service	
		Short (-prior- expectations are easily recalled and hence, are close to post-expectations collected when the service has finished)	Long (-prior- expectations are hardly recalled and hence, differ from post-expectations collected when the service has finished)
Frequency of the service consumption	Very often	Quotidian service (e.g., cafeteria service)	Regular service (e.g., gymnasium)
	Only once (or rarely) in a lifetime	Eventual service (e.g., notary)	Special service (e.g., university degree)

2.2. Factors shaping students' expectations

In this paper we posit that fulfilling students' expectations has an effect in their overall satisfaction. In this context, it is important to consider that undergraduate students may have their own expectations about their experience at the university. Nevertheless, it appears that rather often students have unrealistic views of what universities really are. Given these discrepancies, it is necessary to find the appropriate mechanisms to better inform students about what the real university life is, and align university's resources to better match with students' demands (Voss et al. 2007).

Expectations are a combination of a wide range of factors. Reputation and image play an important role in buying behavior and retention decisions. For academic institutions, these two factors (image and reputation) are central. This is so given the predominantly intangible nature of the university service offer. As described by Herbig et al. (1994), reputation is the consistency of an organization's actions over time. Rindova et al. (2005) go a step forward and argue that organizational reputation consists of two dimensions that reflect (1) the extent to which stakeholders perceive an organization as being able to produce quality goods, and (2) the extent to which the organization is

prominent in the minds of stakeholders. In the specific context of universities, LeBlanc & Nguyen (1997) identified that the main factor that influences perceived quality in higher education is reputation. The reputation of the institution influences in its turn the salary for their alumni, which increases the reputation.

Expectations are also built based on the available information. Within this category we are not only referring to primary information provided by the university, but also to other students' opinions. The seminal work of Parasuraman et al. (1985) shows how these elements configure expectations (communication of the provider about the service standard and other customers' experience). What these authors did not consider was the role of social networks. With the rise of the new technologies and communications systems, students are provided with thousands of data. Also, during the admission process, students have several moments of truth with the university, which might contribute to shape their own expectations.

Understanding the process of how expectations are created is important, as false expectations might end up in a low student performance, which in turn, might impact in the overall performance of the group. In this respect, Smith and Werlieb (2005) found that students come with unrealistic social and academic expectations and that the degree of misperception impacts on academic results.

Other elements that are worth mentioning include multicultural and multinational factors (i.e. percentage of international students/staff, exchange and mobility opportunities for studying abroad), the profile of the university (public vs. private), the type of academic program (undergraduate, postgraduate, and doctorate), age and gender. Despite these factors being relevant, for the purpose of this paper we address them through a unique item, which accounts for the degree to which expectations are fulfilled.

2.3. Fulfilment of expectations

The construct of fulfilment of expectations has been intensively used in different knowledge fields. In health studies, it has been applied as an antecedent to patient experience. Pettersen et al. (2004) conducted a survey in Norway to assess the antecedents of satisfaction for hospital patients, finding that fulfilment of expectations regarding medical treatment is a strong predictor of patient experience. In the same vein, Bjertnaes et al. (2012) studied the effects of different predictors of overall patient satisfaction, including patient-reported experiences, fulfilment of patient's expectations, and socio-demographic variables. Their results showed that the most relevant antecedents for overall patient satisfaction in hospitals were patient-reported experiences and fulfilment of expectations. On the contrary and in a similar context, Himmel et al. (1997) did not notice differences in satisfaction between patients whose expectations were or were not fulfilled.

We propose to “export” the use of this construct and apply it in the context of service quality. Fulfilment of expectations, as defined here, is the judgment made by the client after the service has concluded on the fit between perceptions and post-expectations. The customer assesses the expectations that s/he has in mind at a specific moment (when s/he is asked to), and these expectations are different from those s/he had before the service started.

The elapsed time might bring different factors that “contaminate” and modify the original expectations. This is so because it is almost impossible to recall the expectations that the customer had before the service started due to the dynamic nature of expectations (Pieters and Zwick 1993, Johnson et al. 1995). These expectations are constantly evolving (Yi and La 2004), being more evident when the service is provided for a long period of time (e.g., completing a higher education degree).

Only when expectations have not changed between these two moments (prior to consumption and when the fulfilment is assessed) will the fulfilment of expectations be the same as the existing gap between perceived quality and expectations proposed by Parasuraman et al. (1988). This situation will only take place when the elapsed time between the two moments is short (i.e., quotidian and

eventual services). In these cases, the customer easily recalls the expectations s/he had before the service started. What does matter in this discussion is the fact that post-expectations are bound to be similar to expectations. Therefore, fulfilment of expectations does not add anything significant to the classical expectations construct. Nevertheless, in other situations, both measurements might differ significantly (i.e., regular and special services). This happens when the lead time is long enough to makes it difficult, or even impossible, to recall the initial expectations (Rufin et al. 2012). Hence, post-expectations might significantly vary compared to expectations. This is the case with higher education. Completing a degree usually takes four or more years, and it is almost impossible to recall the initial expectations. We argue that in such situations, the construct of fulfilment of expectations plays the role of Parasuraman's gap, as a predictor of satisfaction. Moreover, we posit that fulfilment of expectations is built up in a different way in the regular and in the special services. In the special services, a long lead time is what makes the measures different, while in regular services it is also paramount to include updating expectations due to previous experiences.

3. HYPOTHESES AND RESEARCH MODEL

Albeit it might seem obvious that customer expectations are an appropriate antecedent to satisfaction (Tam 2011), there are other factors to consider on. For instance, while higher expectations are more difficult to meet and might lead to dissatisfaction, they can simultaneously generate a conflicting effect, increasing satisfaction via customers' perceived performance by creating a placebo effect (Habel et al. 2016). Consequently, increasing service expectations can lead customers perceiving the service experience in a more favorable way.

Schneider and Bowen's (1999) provide an important finding in order to establish our first hypothesis. They analyzed the association between extreme perceived quality and fulfilment of customer needs, which might provide a clue. However, there is only a parallelism between their finding and our hypothesis. Thus, although as far as we know there is no a clear consensus on the

impact of perceptions on fulfilment of expectations, we posit that only when the perceived quality is high, the fulfilment will be high, and vice versa. We formalize it as our first hypothesis:

H1: Perceived quality positively impacts on the fulfilment of expectations.

There is no consensus regarding how expectations influence student satisfaction. According to Anderson and Sullivan (1993) and Yi (1993), it is difficult to assess the quality received in higher education institutions and how expectations will influence satisfaction. Meanwhile, other authors such as Kristensen et al. (1999) propose that the influence of expectations is fully mediated by quality perceived. There is still a third research stream that argues that some dimensions of perceived quality impact on satisfaction, whereas other dimensions do not (Marimon et al. 2017).

As aforementioned, the role of fulfilment of expectations is proposed as an antecedent of satisfaction for special services, in the same way that expectations do for quotidian and eventual services. This construct has been used in other studies from other disciplines such as health (Bjertnaes et al. 2011; Himmel et al. 1997; Pettersen et al. 2004). Accordingly, we argue that:

H2: Fulfilment of expectations positively impacts on satisfaction.

Considering the first two hypotheses simultaneously, it is possible to analyze the mediator effect of fulfilment of expectations between perceived quality and student satisfaction. The third and last hypothesis analyzes this relationship. In the service quality context, perceived quality is commonly considered as an antecedent of satisfaction (Nadiri et al. 2009; Snipes et al. 2005). However, according to Alves and Raposo (2007; 2010) previous research studies in service quality in higher education have identified different causes or antecedents to explain satisfaction. In the literature it is possible to find evidences of validated instruments to measure quality in the high education context. This is the case of the “Course Experience Questionnaire (CEQ)” that has been consistently used in Australian universities and colleges (Ramsden 1991). The instrument has been updated and the 2016 version encompasses items for quality and a single item for the overall satisfaction. As for the

potential relationship between satisfaction and quality, Wilson et al. (1997) found out positive correlation, specifically with the quality dimensions of “academic achievement” and “generic skills development”. In a more recent student Smith and Worsfold (2014) found that satisfaction has two dimensions: curriculum design and generic learning outcomes.

Among stakeholders in higher education institutions, students can be considered as one of the most important concerns in being aware of the measurement of quality (Hill 1995). The student voice is now being heard more than ever. Students are direct recipients of university teaching, becoming primary consumers of the higher education system. They have the most first-hand information concerning their instructors’ teaching quality (uz Zaman 2004); therefore, asking them directly about their perceptions of perceived quality might bring useful information. Notwithstanding, Sultan and Wong (2013, 2014) are cautious about this issue, and state that rewriting “the customer is the king” as “the student is the king” may not be appropriate, due to the fact the primary goal of education is not to delight students but to equip them to be effective professionals. This statement particularly holds for those universities managed and supported by public funding. In such cases, governments are, to some extent, influencing universities’ regulations by establishing specific incentives aimed at improving the competitiveness of the institutions. For instance, governments might interfere in the internationalization strategy of the university through regulations to achieve specific public resources (Horta 2009), or through specific mobility grants which might foster the integration of scholars in an international sphere (Horta 2013). Governments can also play a role in determining the time and effort academic staff is devoting to teaching and research duties, by regulating the promotion scheme of academics (Berbegal-Mirabent et al. 2016b; Horta 2012). All these policies will undoubtedly affect the teaching effort, which, in turn, will be perceived by the student. Taken all these considerations together, we can conclude that despite students are only one of the multiple stakeholders in the HE system. Although opinions from other key stakeholders should be listened (e.g. managers, teaching

staff, researchers, etc.), following the work of Dlačić et al. (2014), in this study, we consider students as primary customers of higher education services.

Indeed, the higher education industry needs to understand the perceived quality of their students in order to attract and maintain them in their institution. Literature suggests that perceived service quality directly impacts on customer-perceived value and logically on customer satisfaction (Dlačić et al. 2014; Sweeney and Soutar 2001). Therefore, we propose the following hypothesis:

H3: Perceived quality positively impacts on student satisfaction.

4. METHODOLOGY

This study uses secondary data. Specifically, we rely on the responses obtained in the Graduate Satisfaction Survey designed by the Catalan University Quality Assurance Agency (AQU). This survey, created in 2001, was designed based on the expertise and practical knowledge gained since the establishment of AQU. In addition, a number of external experts contributed to refine the instrument. The survey included items related to perceived quality, a specific item to assess fulfilment of the expectations and another item to evaluate their overall satisfaction (Table 2). All items were presented as statements to which respondents indicated their agreement/disagreement on a five-point Likert-type scale (from 1 = strongly disagree to 5 = strongly agree). Table 2 also shows the items of the questionnaire related to perceived service quality. It shows that *a priori* three constructs are established: (i) “Curriculum”, which refers to the quality of the learning methods and the coordination efforts throughout the whole study period; (ii) “skills development”, referring to the skills that students might acquire; and (iii) “services and facilities” of the university. These three dimensions have been established and validated by Marimon et al. (2017). The last section of the questionnaire collected the respondents’ sociodemographic information.

Table 2. Items of the questionnaire to assess fulfilment of expectations, overall satisfaction and the different dimensions of perceived quality.

Perceived quality	Curriculum	1	The structure of the syllabus has allowed a proper progression of my learning
		2	There has been good coordination in the content of the subjects to avoid overlap
		3	The volume of work has been consistent with the required number of ECTS of the subjects
		4	I am satisfied with the lecturers
		5	The teaching methodology used by the lecturers has helped my learning process
		6	The mentoring and personalized attention has been useful and has helped me improve my learning process
		7	Evaluation systems have properly reflected my learning
	Skills development	8	The training received has allowed me to improve my communication skills
		9	The training received has allowed me to improve my personal skills (confidence level, independent learning, making decisions, solving new problems, critical analysis, etc.)
		10	The training received has allowed me to improve my leadership and teamwork skills
		11	The training received has allowed me to improve my skills for a future professional career
	Services & Facilities	12	The mobility activities in which I have participated have been relevant for my learning
		13	The bachelor's thesis has allowed me to assess my level of achievement of competencies
		14	Facilities (classrooms and teaching areas) have been adapted to facilitate my learning
		15	The student support services (information, registration, academic procedures, scholarships, orientation, etc.) have offered me good advice and care
		16	I have received adequate response to my complaints and suggestions
		17	The information on the website is complete and updated
Fulfilment of expectation	18	The degree has fulfilled my expectations	
Overall satisfaction	19	I'm satisfied with the degree	

AQU distributed the survey to all Catalan universities (a link with the survey was shared). In their turn, universities invited all their recent graduates to fill in the questionnaire. Data were collected in October 2013. Only one university, out of the twelve that constitute the Catalan higher education system, refused to collaborate. AQU, processed all the information gathered, and made it available for anyone interested in exploring the results. Despite the target public was the total population (all graduates during academic course 2012-2103), 2,557 responses were finally obtained. Table 3 shows the demographic characteristics of the sample.

Table 3. Demographic characteristics of the sample (student graduates in 2012/2013).

	Number	%
Gender		
No answer	23	0.9
Female	1,594	62.3
Male	940	36.8
Total	2,557	100.0
Age		
No answer	19	0.7
Less than 21 years old	2	0.1
Between 21 and 24 years old	1,710	66.9
Between 25 and 30 years old	545	21.3
More than 30 years old	281	11.0
Total	2,557	100.0
Access to the University		
No answer	21	0.8
Official exam	1,873	73.2
Professional training	328	12.8
Other degree	170	6.6
Same degree in another university	27	1.1
Previous low-degree	53	2.1

Special examination for people older than 25 years	62	2.4
Others	23	0.9
Total	2,557	100.0

The Catalan higher education system consists of twelve universities, seven of which are public, four private and one of a mixed nature. For public universities, the average fee for one “European Credit Transfer and Accumulation System (ECTS)” was 33.5 euros for the academic year 2015-2016 (ABC 2015). Considering an average of 60 ECTS resulted in approximately 2,000 euros per year. Catalan universities offer about 1,300 university program degrees, including bachelor programs, masters and doctorates, with 26,300 lecturing staff members and more than 237,000 students (AQU 2016). According to the Catalan University Quality Assurance Agency (AQU) (WINDDAT website), 42,705 students finished their university studies in Catalonia in 2013, and 15,151 of them were undergraduates. The remaining students were master students, doctoral students, or obtained their degrees under the system prior to the agreement in the European Higher Education Area for the Bologna process. The response rate was 16.9%, which vouches for a sample error of 1.3%, under a confidence interval of 95%. The sample did not present bias in terms of gender, since the proportion of women that obtained the degree in Catalonia was 66.6%. On the other hand, two thirds of the respondents were 24 years old or less and 88.1% less than 30. There is no available information about the distribution of ages of the Catalan undergraduates, but these percentages are in the expected ranges. The total number of different degrees in the sample was 239. The vast majority of the students (73.2%) accessed the university after taking a specific exam, which is the ordinary way for accessing the university system in Spain. The remaining 12.8% of the students accessed the university system after completing professional module. All these figures provide evidence of the sample reliability and its non-response bias.

In order to assess the mediation role of fulfilment of expectations, the seminal works of Baron and Kenny (1986) and Zhao et al. (2010) inspired the analysis. Two structural equation models (SEM) were conducted using EQS software. Similar to previous studies, the mediation analysis we assessed using SEM (Bernardo et al. 2012; Pereira-Moliner et al. 2012; Petnji et al. 2011).

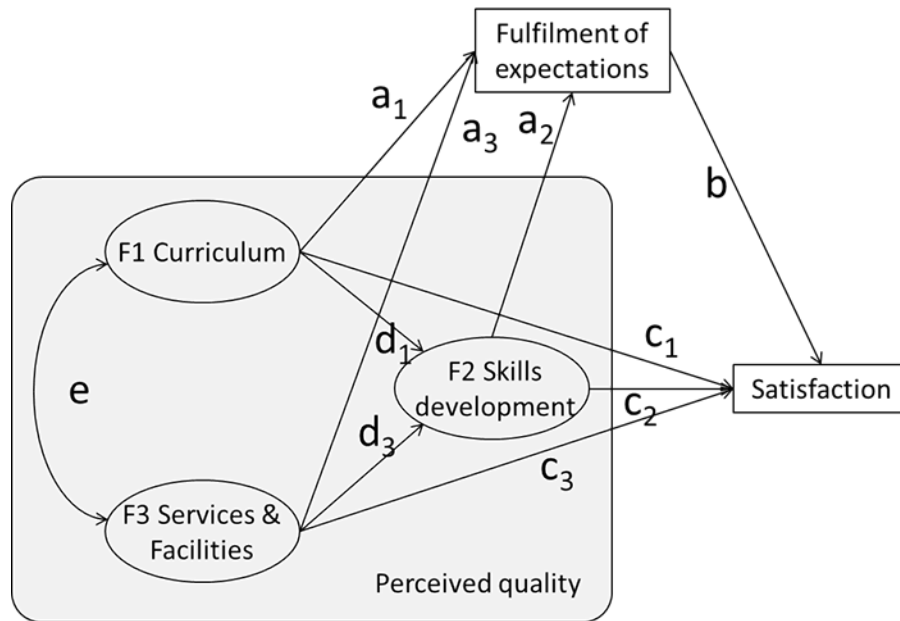
5. RESULTS

The fulfilment of expectations is tested as a mediator between each of the perceived quality dimensions (i.e., “Curriculum”, “Skills development” and “Services & Facilities”) and the overall satisfaction, which is also captured in a unique item (Figure 3). The model also shows that “Curriculum” and “Services & Facilities” are antecedents of “Skills development”. This model is based on the UNIVQUAL scale developed by Marimon et al. (2017). Table 4 provides the details of the reliability and discriminant analysis of the constructs.

Table 4. Correlation matrix of latent factors and statistics for their discriminant and reliability analyses.

	1 Curriculum	2 Skills development	3 Services & Facilities
1 Curriculum	<i>0.704</i>		
2 Skill development	0.587	<i>0.854</i>	
3 Services & Facilities	0.674	0.562	<i>0.710</i>
All correlations are significant at the 0.01 level (bilateral) Diagonal elements are the square roots of the average extracted			
Cronbach’s alpha	0.821	0.876	0.787
Composite reliability	0.872	0.915	0.855
Average variance extracted	0.496	0.730	0.504

Figure 3. Model for assessing the mediation of fulfilment of expectations between each of the perceived quality dimensions and overall satisfaction.



The model was estimated using the robust maximum likelihood method from the asymptotic variance–covariance matrix. The fit indices obtained showed acceptable fit, although they need to be taken with some caution. The χ^2 Satorra–Bentler was 634.46, with 144 degrees of freedom and a p-value of 0.000. Since the sample is quite large, it was expected a null p-value. For these cases it is therefore advisable using the coefficient between χ^2 and the number of degrees of freedom, which was 4.41. Although there is no consensus regarding an acceptable ratio for this statistic, recommendations state that it should not surpass the value of 5.0 (Hooper et al. 2008), which is accomplished in our case. The root mean-square error of approximation (RMSEA) was 0.065 and its 90% confidence interval between 0.060 and 0.071. As the maximum level recommended ranges between 0.6 and 0.8, our approach is sound (Hair et al. 2010; Kline 2011). The comparative fit index (CFI) was 0.939, clearly above the general accepted threshold (> 0.9) according to Hair et al (2010) and Hu and Bentler (1999). Finally, the standardized root mean-square residual (SRMR) was 0.047, also under the recommendable level (< 0.08) according to Hu and Bentler (1999) and Kline (2011). Therefore, we can conclude that the global fit is acceptable.

To assess the mediator effect of fulfilment of expectations, the methodology suggested by Baron and Kenny (1986) was adopted and performed in the same way as Bernardo et al. (2012), Pereira-Moliner et al. (2012), and Petnji et al. (2011) who used SEMs instead of regression analysis. Preacher and Hayes (2004) recommended the use of structural equation modeling (SEM) for assessing mediation because it offers a reasonable way to control for measurement error as well as some interesting alternative ways to explore the mediation effect.

Baron and Kenny (1986) argued that three conditions must hold in order to establish mediation: first, the independent variable (the perceived quality dimension that we are considering) significantly predicts the mediator (“Fulfilment of expectations”); second, the independent variable (the perceived quality dimension that we are considering) must be shown to predict the dependent variable (satisfaction); and third, the mediator (“Fulfilment of expectations”) must significantly predict the dependent variable (satisfaction) controlling for the independent variable (the perceived quality dimension that we are considering).

These authors assessed the mediation through a row of three regression analysis, which can be expressed in a couple of models when SEMs are used: the full model, which is showed in Figure 3, and the auxiliary model. The auxiliary model is only used to assess the direct effect of the independent variable on the dependent variable when there is no mediator in the model. In our case, this results from removing “Fulfilment of expectations” from Figure 3. The auxiliary model showed acceptable fit indices, and significant coefficients between the first two quality dimensions (“Curriculum” and “Skills development”) and satisfaction, while “Services and facilities” and satisfaction was non-significant. Calculations for the full model (assessing the mediation effect of the fulfilment of expectations) as in Figure 3 are displayed in Table 5. The fit indices are reported at the beginning of this section.

Table 5. Decomposition of the parameters of the model.

	Total effect	Partial indirect effect	Total indirect effect	Direct effect
F1. Curriculum → Overall satisfaction	0.742 (6.593)	$a_1*b = 0.263$ $d_1*c_2 = 0.131$ $d_1*a_2*b = 0.053$	0.447 (7.251)	0.295 (4.485) (c_1)
F2. Skills development → Overall satisfaction	0.337 (7.059)	$a_2*b = 0.097$	0.097 (3.778)	0.240 (6.024) (c_2)
F3. Services & Facilities → Overall satisfaction	0.014 (0.211)	$a_3*b = -0.075$ $d_3*c_2 = 0.050$ $d_3*a_2*b = 0.020$	-0.004 (- 0.093)	0.018 (0.381) (c_3)
Fulfilment of expectations → Overall satisfaction	0.397 (9.475)	-	-	0.397 (9.475) (b)
F1. Curriculum → Fulfilment of expectations	0.795 (8.488)	$d_1*a_2 = 0.133$	0.133 (3.592)	0.662 (9.483) (a_1)
F2. Skills development → Fulfilment of expectations	0.244 (4.248)	-	-	0.244 (4.248) (a_2)
F3. Services & Facilities → Fulfilment of expectations	-0.137 (- 1.900)	$d_3*a_2 = 0.051$	0.051 (2.490)	-0.188 (- 2.863) (a_3)
F1. Curriculum → F2. Skills development	0.546 (8.307)	-	-	0.546 (8.307) (d_1)
F3. Services & Facilities → F2. Skills development	0.210 (3.119)	-	-	0.210 (3.119) (d_3)
Correlation between F1 and F3	0.784 (7.839) (e)			

Standardized parameter (t-value).

The letters a_i , b , c_i , d_i and e correspond to the notation in Figure 3.

The three aforementioned conditions of Baron and Kenny (1986) are accomplished for the two first mediations. Therefore, it is confirmed that fulfilment of expectations is mediating between “Curriculum” and satisfaction and also between “Skills development” and satisfaction. However, the second condition is not accomplished for the last mediation effect, proving that no mediation exists between “Services & Facilities” and overall satisfaction. Nevertheless, Zhao et al. (2010) argue that this condition is not necessary. These authors demonstrated that there is only one requirement to establish mediation: the indirect effect $a*b$ should be significant (in this particular case a_3*b). In this

case, the critical ratio for the indirect effect is $t = -0.093$, confirming no significance of the indirect effect and hence no mediation effect.

The significance of parameters a_i provides evidence to underpin the first hypothesis, albeit some concern arises due to the sign of a_3 . The first hypothesis is confirmed. The robustness of the b parameter confirms the second hypothesis. The third and last hypothesis is partially confirmed, due to the non-significance of the c_3 parameter.

On the other hand, another important finding from Table 5 is that the fulfilment of expectations is the antecedent that greatly contributes to explain overall satisfaction. Moreover, comparing the explanatory power of both models, the second one that takes into account fulfilment of expectations shows a significantly greater r^2 . The coefficient of determination for satisfaction is 0.619 in the auxiliary model and 0.698 in the full model. However, there still remain margin to improve the power explanatory of the model including other explicative variables, such as social conditions or Professional advancement (Sojkin et al. 2012) or the institutional image (Brown and Mazzarol 2009).

Table 5 also provides the total effect and its decomposition into the indirect effects and the direct effects (standardized solutions) for all the parameters in the model. The total impact of “Curriculum” on overall satisfaction (0.742) is more than twice the total impact of “Skills development” (0.337). It is due to the fact that the model hypothesizes that “Curriculum” in its turn is an antecedent of “Skills development”. Consequently, there are two mediators between “Curriculum” and “Satisfaction”. The double mediation is through fulfilment of expectations and through “Skills development”. Additionally, there is a third mediation through the sequence of these two mediators. Hayes (2009) refers to this model type as a multiple-step mediator model. The total effect in this case is composed of four terms ($c_1 + a_1b + d_1c_2 + d_1a_2b = 0.742$).

All in all, it can be concluded that “Curriculum” is of paramount importance to achieve student satisfaction. Moreover, the total indirect effect accounts for 60.2% of the total effect of “Curriculum”

on overall satisfaction. It is also remarkable that the mediation of fulfilment of expectations is very relevant ($a_1b = 0.263$).

“Curriculum” is also the first antecedent and greatly explains the fulfilment of expectations (total effect = 0.795). The second significant antecedent is “Skills development”, and the third factor (Services & Facilities) effect is non-significant. Regarding the “Skills development” construct, it is noteworthy that its contribution to overall satisfaction is significant (both, directly and indirectly) but in a lower degree than “Curriculum”. Finally, the “Services & Facilities” dimension does not impact on satisfaction. These results are relevant for managerial purposes.

6. DISCUSSION AND CONCLUSIONS

We have contributed to enrich our research field by providing a new typology for categorizing services based on the lead time and the frequency consumed (repurchasing behavior). These are the two temporal dimensions that have been shown to influence post-expectations, and as a result, the fulfilment of expectations.

Four main conclusions are drawn out from the analysis performed and highlighted below. Implications for practitioners are also outlined. First, the main antecedent for satisfaction is fulfilment of expectations. For a service such as the one analyzed (completing a university degree), the main contributor to getting full satisfaction is fully fulfilling expectations. Note that the original or initial expectations are rarely known, since these expectations are hardly ever collected when the student is admitted to the university. It is therefore a key finding that fulfilment of expectations is the antecedent that better explains student satisfaction. The best way to assess overall satisfaction is assessing the fulfilment of expectations, which can be monitored through surveys at different times during the stay of the student at the university. This is particularly interesting for university managers because it is extremely easy to assess. A simple question is required, and therefore, it is easy to collect. However, using a unique item versus a multiple-item measure has its advantages in terms of cost, but on the

other hand its reliability deterioration must also be taken into account (Drolet and Morrison 2001). Moreover, trends on this unique key performance indicator (fulfilment of expectations) provide valuable information about overall satisfaction, although they do not reveal anything about what is right and what is wrong. Further information and analysis are required in order to find weakness and favorable points in order to implement strategies.

Second, we have corroborated the expected relationship between perceived quality and student satisfaction. The higher the perceived quality is, the higher the satisfaction. We have also verified that both the “Curriculum” and “Skills development” constructs play a role in explaining student satisfaction, whereas the “Service & Facilities” construct does not seem to interfere with this judgement. From this analysis, we conclude that having an attractive “Curriculum” is crucial. This construct embeds issues related to how lectures are performing, the overall structure of the degree curriculum, the coordination among different content areas, the consistency of the evaluation system, etc. In terms of managerial implications, the above discussion implies that faculty staff is responsible for these factors, in the sense that it is in their hands how to design the curriculum and align professional skills with curriculum development. Analogously, university managers decide how infrastructures, services and facilities are used. It is therefore of utmost importance to deeply analyze students’ requirements and offer them a service that drives them to experience satisfaction with the institution and with what they have learnt. At this point, it is also remarkable that, because time is a limited resource, faculty members—who are expected to simultaneously excel at teaching, research and knowledge transfer activities—should have the appropriate incentives that allow them devote part of their time to listening to students’ feedback and readapt the subjects they are teaching in order to delight students.

Third, “Skill development” is another determinant of student satisfaction. Actually, this is one of the main reasons for deciding to earn a university degree. This construct captures the way in which the training offered helps students develop their abilities in order to perform professionally in the

future. Nevertheless, this construct is a consequence (result) of the other two quality constructs: “Curriculum” and “Services & Facilities”. As aforementioned, “Curriculum” design and its implementation highly depends on faculty members, while “Services & Facilities” depends on the general government of the university. The incentive system should reflect this allocation of responsibilities and their accomplishment. “Skill development” can also be fueled by other means, including coaching and personal tutoring.

Fourth, fulfilment of expectations is also a consequence (result) of perceived quality. Particularly, it is explained by “Curriculum” and “Skills development”. At a lower intensity and in an opposite direction, this construct is also explained by “Services & Facilities”. Figure 3 illustrates the strategic importance of this construct as a mediator between perceived quality and student satisfaction. As a result, it shows how imperative fulfilling expectations is in the higher education setting in order to satisfy students. As a consequence, we argue about the necessity of monitoring the evolution of this construct and use it as an important key performance indicator in the balanced scorecard that the organization uses. In this sense, from the managerial perspective, understanding students’ expectations is a prerequisite for delivering superior service, and also checking the evolution of its fulfilment in different moments.

This study opens up new lines for future research. As we foresee, this construct has true potential as an antecedent of satisfaction, particularly, in those services in which it is difficult to collect expectations. Therefore, we propose to expand the construct of fulfilment of expectations and define and validate a scale for it. It would also be worth including the fulfilment of expectations in the literature of consumer loyalty. As previous research has shown, satisfaction impacts on loyalty and on repurchasing intention (Berbegal-Mirabent et al. 2016a; Marimon et al. 2010); hence, it would be interesting to analyze the role of fulfilment of expectations in the customer value chain. Also, future studies should consider replicating the analysis in different sectors and with different socio-geographical samples in order to confirm our findings. It is also important to note that in our analysis,

students' expectations are not directly assessed. Further studies might consider expanding how this construct is measured and its impact on students' sense of fulfilment.

Lastly, future research should dive into the theoretical categorization of services proposed here. Using two temporal dimensions, the length of the lead time of the service and the frequency of repurchasing behavior, we have been able to differentiate four typologies of services. Further research efforts are needed in order to conceptualize them and extract managerial implications.

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