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A framework for analyzing performance in higher education*

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Abstract

Drawing on Tinto's dropout intentions model (1975), Bean's socialization model (1985), Astin's involvement theory (1999), and the service marketing literature, this research presents a conceptual framework for analyzing students' satisfaction, perceived learning outcomes, and dropout intentions. This framework allows for a better understanding of how students assess the university experience and how these perceptions affect future intentions. This article presents four studies testing fragments of the framework using data sets come from three countries and various undergraduate programs (business, economics, geography, and nursing). The models are tested using structural equation modeling with data collected using a questionnaire adapted to the specific contexts. The models have the ability to explain the studies' dependent variables and offer practical utility for decision making. Applicability of the conceptual framework is evaluated in various contexts and with different student populations. One important finding is that student co-creation can be as important as perceived service quality in explaining students' cognitive learning outcomes, which in turn explain a high percentage of satisfaction and affective learning outcomes. The studies also shed light on the roles of variables such as emotional exhaustion and dropout intentions.

***Keywords**:* subjective measures, satisfaction, perceived quality, performance, higher education

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Introduction

Reporting on performance indicators of higher education has become a normal practice of institutions nowadays; such reporting responds to demands for academic accountability to communities and governments, requirements for regional or professional accreditation, competition for resources and students, as well as implementing internal practices for institutional performance evaluation and improvement (Nichols, 1995; Peterson & Einarson, 2001; Quinn *et al.*, 2009; Terenzini, 1989). Establishing standard criteria of performance indicators is difficult given the multiple objectives of higher education institutions and the variety of stakeholders involved (García-Aracil & Palomares-Montero, 2010); however, it is necessary to develop models that can assist policymakers in evaluating institutions' performance, allowing for comparison between institutions and for comparison of performance over time.

Numerous assessment tools might be employed; they usually complement one another. While the traditional ones involve comparison of inputs-outputs in terms of teaching, research, and third-mission activities (García-Aracil & Palomares-Montero, 2010), there are also approaches that evaluate stakeholders' perceptions and satisfaction. These subjective measures (i) have been proven to be good predictors of students' performance and behavioral intentions (Lizzio *et al.*, 2002), and (ii) allow for making comparisons, which highlights their usefulness in the educational context.

In line with subjective approaches (based on perceptions), there are simple models trying to understand how different perceptions of quality areas affect student satisfaction, while other models use more complex relationships involving factors such as student learning outcomes and student persistence intentions. Table 1 presents examples of studies

relating dimensions of perceived quality in higher education with student satisfaction, and some other variables as determinants (e.g. perceived value, institution image, and commitment) and consequences of student satisfaction (e.g. loyalty, trust in management and support, reputation and perceptions of learning).

The aim of this research is to present a framework that reports on higher education indicators (students' learning outcomes, satisfaction, and dropout intentions) based on the students' perceptions of various factors (educational, environmental, psychological, and their own involvement) to better understand the students' complete experience at university. This framework builds on Tinto's dropout intentions model (1975), Bean's socialization model (1985), Astin's involvement theory (1999), and the service marketing literature. These models, the theory, and the literature have given insight into different areas of knowledge, and we propose that a framework that incorporates insights from all of them can better explain the role of different factors on students' perceptions, intentions, and feelings of their overall educational experience.

We first introduce the general framework and put forward specific hypotheses to be tested. Then, four studies are presented and empirically tested with different data sets. We conclude by summarizing the results of the studies and the implications of this approach.

Table 1 about here

Conceptual framework

Learning outcomes and dropout intentions have been central concepts studied in the higher education literature. However, few studies approach them simultaneously. Building on Tinto's conceptual schema for dropout from college (1975), Bean (1985) proposes a

socialization model in which academic/educational, environmental, and social/ psychological factors predict students' dropout intentions. Astin (1999) proposes the involvement theory (effort and dedication) as a mechanism to explain the dropout syndrome. Astin argues that dropout results from students' low integration both academically and socially. More recent studies coming from service marketing literature suggest that quality perceptions of higher education have an influence on students' satisfaction and behavioral intentions (Douglas *et al*., 2006; Eagle & Brennan, 2007; Helgesen & Nesset, 2007; Petruzzelis *et al*., 2006), and a new perspective in marketing highlights the student's active participation as co-creator of service value (Dann, 2008; Gummesson, 2008; Vargo & Lusch, 2004), which is in line with higher education theories. Thus, integrating these streams of literature and both cognitive and affective learning outcomes (Terenzini, 1989) into a single framework may prove a more general and comprehensive approach, and one which better describes the students' viewpoint on their university experience. Figure 1 presents the integrative framework.

Figure 1 about here

Hypotheses development

Determinants of student satisfaction

Overall satisfaction is the consumer's general dis/satisfaction with the organization based on all encounters and experiences with that particular organization (Bitner & Hubbert, 1994). This definition represents a cumulative approach, which is preferred over the specific-transaction one because it assesses the complete student experience; thus, overall student satisfaction is based on the students' general experience of the university.

Perceived service quality can be measured at the overall level, by dimensions or by service attributes. *Overall service quality* is defined as the consumer's overall impression of the relative inferiority/superiority of the organization and its services (Bitner & Hubbert, 1994). In higher education, many classifications and factors have been used, and typologies vary depending on the conception of education quality, the expected achievements as result of education quality and the methods of analysis (De Jager & Gbadamosi, 2010). Table 1 shows a variety of dimensions used to capture perceptions of quality in higher education. Stodnick and Rogers (2008) found that the most important dimensions of quality that impact satisfaction with the course are reliability on the instructor's way of lecturing, assurance about the instructor's competence and knowledge, and empathy of the instructor. Mai (2005) found that lecturers' expertise, lecturers' interest in their subject, quality and accessibility of IT facilities, and prospects of the degree furthering students' career are correlated with the overall perception of education quality. Sojkin, Bartkowiak, and Skuza (2012) found that the most important factor determining satisfaction from studying a business major is "social conditions", which includes aspects such as university coffee bars, good sport facilities, subsidized accommodation and parking spaces. Yeo and Li (2012) propose that the overall learning experience in higher education is enhanced by support services provided; thus, better facilities, systems and processes that support learning will increase student satisfaction. Douglas, McClelland and Davies (2008) classify various service quality aspects as satisfiers (its presence leads to satisfaction, and absence does not lead to dissatisfaction), dissatisfiers (lack of it leads to dissatisfaction, but presence does not cause satisfaction), criticals (they are both satisfiers and dissatisfiers), and neutrals (aspects whose presence does not lead to satisfaction and absence does not cause dissatisfation).

In services marketing a general classification of perceived service quality consists of a functional and a technical dimension (Grönroos, 1984), which would correspond to *educational quality* and *administrative quality* in the higher education context. *Educational quality* concerns teaching and program quality perceptions (professors well prepared academically who make the courses to be interesting, program and course contents clear and with a coherent structure, and appropriate social environment), which relates to the core objective of studying. *Administrative quality* concerns the quality perceptions of necessary resources for learning (classrooms and course schedules appropriate for learning, library services, laboratories, sport facilities, cafeteria, etc), including the functioning of administrative offices. The use of two overall dimensions (tangible and intangible) for measuring student perceptions of service quality in higher education has also been supported by Nadiri, Kandampully and Hussain (2009), who found that these dimensions are good predictors of student satisfaction. Because perceived service quality has been found to affect consumer satisfaction in both the services marketing and the higher education literatures, we expect that educational quality and administrative quality influence student satisfaction.

H1a: Perceptions of *educational quality* will influence student satisfaction positively.

H1b: Perceptions of *administrative quality* will influence student satisfaction positively.

Performance assessment has been regarded as a component of quality (Koslowski, 2006). In the higher education context, performance assessment evaluates student learning and gains as a way to improve the quality of higher education (Palomba & Banta, 1999). The European Foundation for Quality Management (EFQM, 1995) points out that institutions need to know whether they are being successful in achieving learning outcomes in terms of

students' value added to knowledge, skills and personal development. There are various classifications of learning outcomes. A general definition is provided by Frye (1999): *cognitive learning outcomes* concern the student's acquisition of specific knowledge and skills, whereas the *affective learning outcomes* concern how the higher education experience has influenced the student's values, goals, attitudes, self-concepts, worldview, and behavior. DeShields, Kara and Kaynak (2005) found that student partial college experience determines satisfaction for business student; this partial college experience is composed by cognitive development (personal learning such as problem solving ability), career progress (the extent to which students believe the program help them to get ahead in their career plans), and business skills development. Sojkin, Bartkowiak, and Skuza (2012) found that the second most important factor determining satisfaction from studying is "professional advancement", which includes aspects such as development of professional skills, and opportunity of intellectual and personal development. Thus, students acquire knowledge (cognitive outcomes) during their learning process, which is the main objective of the time spent at university, so their perception of knowledge and skills learned is expected to influence their satisfaction with the university experience. Therefore, we expect:

H1c: Perceptions of *cognitive learning outcomes* will influence student satisfaction positively.

Determinants of cognitive learning outcomes

Terenzini (1989) notes that doing an assessment requires reconsidering the essential purposes and expected academic and non-academic outcomes of higher education. The

cognitive learning outcomes can be measured in terms of specific academic achievements set by the career program or the institution. For instance, Besterfield-Sacre et al (2000), define the specific learning outcomes for engineering: (a) ability to apply knowledge of mathematics, science and engineering, (b) ability to design and conduct experiments, as well as to analyze and interpret data, (c) ability to design a system, component, or process to meet desired needs, (d) ability to function on multi-disciplinary teams, (e) ability to identify, formulate and solve engineering problems, (f) an understanding of professional and ethical responsibility, (g) ability to communicate effectively, and (h) acquiring a broad education necessary to understand the impact of engineering solutions in a global and societal context. A department of Geography has set the following as cognitive outcomes for its majors: (a) interpret maps and other geographical interpretations, (b), analyze the spatial organization of people, places and environments on the earth's surface, (c) comprehend relations between global and local processes, (d) analyze the characteristics, distribution and mobility patterns of human population on the earth's surface, (e) apprehend the complex relations between nature and culture/society, (f) demonstrate knowledge of geospatial analysis methods and techniques (qualitative and quantitative), (g) present opposing viewpoints and alternative hypotheses on spatial issues (Duque & Weeks, 2010). Cabrera, Colbeck and Terenzini (2001) factor-analyze a list of gains reported by engineering students and found three main learning outcomes: group skills, problem solving skills and occupational awareness. Thus, cognitive outcomes can be measured at a more specific or general level. Lizzio, Wilson and Simons (2002) study them as generic skills developed: problem-solving, analysis, team work, confidence tackling unfamiliar problems, written communications and planning own work; and they found that the learning environment (good teaching and appropriate workload) are associated with these

self-reported generic skills. Because development of skills and acquisition of knowledge are dependent on a variety of quality aspects of the university, they are expected to be influenced by the students' perception of *educational quality* (professor competence, courses, program structure, social environment) and *administrative quality* (classrooms, administration, laboratories, library, sport facilities, etc.).

H2a: Perceptions of *educational quality* will influence perceived cognitive learning outcomes positively.

H2b: Perceptions of *administrative quality* will influence perceived cognitive learning outcomes positively.

Acquiring knowledge (cognitive outcomes) depends on not only the perceptions of educational and administrative quality. Eagle & Brennan (2007) note that students should take an active role in their academic experience. This view is coherent with a recent theory in marketing (The Service Dominant Logic – Vargo & Lusch, 2004), which posits that the consumer is an actor who co-creates the service by interacting with other actors (in this case, faculty, classmates, administrative personnel, etc.). Accordingly, one would have a balanced-centricity view of value creation (Gummesson, 2008) as opposed to a customer-centricity view whereby students would take a passive role in their educational experience.

Student involvement is a concept recognized in the college engagement literature (Kuh *et al*., 2005; Braxton, 2000); and student engagement has been found to be positively related to student learning outcomes (Pike, Smart & Ethington, 2012). Astin (1999) posits that students who put more effort and energy into their academic experience obtain better learning and better personal development. Such involvement would include energy devoted to studies, time spent on campus, active participation in student organizations, and

interaction with faculty members and other students. Thus, in line with other authors (Dann, 2008; Kotzé & Plessis, 2003) we expect that student involvement (*co-creation)* influences students' cognitive learning outcomes.

H2c: Student *co-creation* will influence perceived cognitive learning outcomes positively.

From the psychological factors, we study *emotional exhaustion* that is one of the two components of the *burnout syndrome*, the other being cynicism (Schaufeli & Taris, 2005). Emotional exhaustion reflects feelings of fatigue, frustration, burnout, and discontent with studies (Neumann *et al*., 1990; Schaufeli *et al*., 2002). This is, a psychological state where students have negative thoughts and anxiety regarding their capabilities, which can further lower perceptions and generate more anxiety, thus reinforcing the probability of inadequate performance (Bresó, Schaufeli, & Salanova, 2011). Bandura (1982) proposes the social cognitive theory that relates the student's well-being (low burnout and high engagement) with self-efficacy, which then affects academic tasks' performance and the efficient use of the acquired knowledge and skills (Bresó, Schaufeli, & Salanova, 2011). Thus, we expect that emotional exhaustion influences negatively the acquisition of knowledge and skills (cognitive outcomes):

H2d: Student feelings of *burnout (emotional exhaustion)* will influence perceived cognitive learning outcomes negatively.

Determinants of affective learning outcomes

Education involves more than learning facts and skills (cognitive outcomes). Education also importantly involves *affective learning* – understanding how the world

works and developing a worldview that guides behavior and shapes how people acquire and use knowledge (Duque & Weeks, 2010). The expected academic outcomes represent the more concrete cognitive goals, whereas the nonacademic outcomes represent more general results (affective outcomes) of the students' whole educational experience (values, goals, attitudes, self-concepts, worldview, and behavior). Therefore, we expect that if students feel well prepared academically, this will make them to be more confident about their achievements, self-concepts and future performance:

H3: Perceptions of *cognitive learning outcomes* will influence perceptions of affective learning outcomes positively.

Determinants of student dropout intentions

Dropout intention is the inclination, conscious and discussed, to leave the university or to end one's studies (Bean, 1985). Suhre, Jansen, and Harskamp (2007) note that few dropout studies consider student satisfaction as a key variable, and claim that this is a very likely factor influencing students' persistence at university. These authors found that degree-program satisfaction has a strong negative effect on students' dropout intention. Their study also showed that satisfaction plays a role in students' motivation, which affects study habits, tutorial attendance and performance. De Jager and Gbadamosi (2010) also found a significant and negative relationship between overall satisfaction with the university and the intention to leave it. Metzner (1989) found that satisfaction is negatively related to intent to leave, which has a direct impact on real dropout from college. We thus expect that *student satisfaction* together with the more general evaluation of the university experience learning (*affective outcomes*) directly influence dropout intention: the more

satisfied and the higher the perception of affective learning outcomes, the lower the intention to leave the university. Therefore, we expect:

H4a: Student *satisfaction* will influence students' dropout intention negatively.

H4b: Perceptions of *affective learning outcomes* will influence students' dropout intention negatively.

Methodology

The conceptual model includes variables coming from different streams of research; variables which we propose will affect the students' perception of their experience at university. We examine the model's applicability to various contexts, with different student populations and at different levels (departmental and program level), to assess if the model is appropriate for use, if it has the ability to explain the dependent variables in the model across institutions, and if it can offer practical utility for decision making.

We develop four studies that test fragments of the framework. *Study 1* presents a basic model that includes overall service quality, overall learning outcomes, student co-creation, and student satisfaction, and is tested using a sample of 235 Spanish students of economics. *Study 2* considers the same variables, but overall quality is separated at the dimension level (educational and administrative). This model is tested using 191 Colombian students of business administration. *Study 3* considers the same variables as those considered in Study 2, but instead of overall learning outcomes, they are separated in cognitive and affective outcomes. This more complete model is tested using 79 American students of geography, and cognitive outcomes are measured in a very geography-specific way. Finally, *Study 4* considers the same variables as those considered in Study 3, and adds

two variables: a psychological factor of emotional exhaustion (burnout), and dropout intention as the final dependent variable in the model. In this study, to validate the more complete questionnaire, cognitive outcomes are measured in a general way to fit two programs: *Study 4_bus* is tested using 284 Spanish students of business administration, and *Study 4_nur* is tested using 192 Spanish students of nursing. Figures 2 and 3 present the paths summarizing these studies. The sample sizes of these studies are not representative of the students' population of each university or country; thus, estimation results are not comparable. The studies will show the applicability of the framework to different programs and to different university levels (departmental and program level). Table 2 shows the descriptive of the studies' data sets.

Table 2 about here

The methodological approach consists of a base questionnaire adapted/extended to the specific contexts and undergraduate programs. Traditional measures from the literatures are included in the questionnaire or are adapted for this specific context: *service quality* (Dabholkar et al., 2000; Hennig-Thurau et al., 2001; Martensen et al., 2000), *co-creation* (Neumann et al., 1990; Kotzé & Plessis, 2003; and designed items to cover diverse facets from Astin, 1999), *exhaustion-burnout* (Neumann et al., 1990; Schaufeli et al., 2002), *learning outcomes* (Lizzio et al., 2002; Lundberg, 2003; Bean, 1985; Zhao, et al., 2005), *student satisfaction* (Selnes, 1993; Martensen et al., 2000), and *dropout intentions* (Bean, 1985; Metzner, 1989; Hardre & Reeve, 2003; De Jager & Gbadamosi, 2010). Appendix 1 presents the specific measures used in each study.

We assume that the items/questions are manifestations of underlying constructs; therefore we use reflective construct measurement, except for student co-creation that is

modeled as formative (the construct is a combination of different facets in which students may contribute to and co-create their educational development). Items are rated on Likert scales and the negatively worded items were reversely coded. We use the PLS-Graph software (Chin, 2001) for estimating the models.

Analyses and results

Structural equations based on the Partial Least Squares (PLS) algorithm test the models. This approach consists of an iterative process that maximizes the predictive and explanatory powers of the models, which are assessed in terms of the R^2 values of the dependent variables. These values are very high for all models given their complexity (see Table 5, section "R^2 dependent variables").

Tables 3 and 4 present the validity analysis of the measures and constructs for the studies. Discriminant validity is tested by comparing the average variance extracted (AVE) of each construct with the shared variance between constructs (Fornell & Lacker, 1981): for each construct, the AVE's squared root exceeds its shared variance with other constructs, confirming that the constructs are independent from each other. Average communalities of the measures by construct are close to 0.70, implying good consistency (see Table 5, section "Average communality"). It is important to note that co-creation is modeled as formative, so the above tests do not apply, thus we checked measures' quality using the Diamantopoulos and Winklhofer (2001) criteria.

Tables 3 and 4 about here

Based on the reported psychometric properties, we conclude that the models reasonably fit the data sets. Table 5 reports the standardized coefficients for the models' estimation (*t* values come from bootstrap simulations), the average communality of the measures in each construct (see Appendix 1 for the specific item loadings by constructs), and the R^2 for the dependent variables in the models. Figures 1 and 2 present the path models and relationships considered in the different studies.

Table 5 about here

Figures 2 and 3 about here

In summary, Table 5 shows that the posited hypotheses are supported. The proposed relationships are significant in at least one of the studies, suggesting that the conceptual framework and models help to explain the formation of the perceived learning outcomes, the students' satisfaction judgments, and their dropout intentions. Student satisfaction is driven by both perceptions of quality, educational (H1a) and administrative (H1b), and by the perception of acquired cognitive learning outcomes (H1c). Cognitive outcomes are driven by various factors: by both types of quality perceptions (H2a and H2b), by student co-creation (H2c), and negatively by emotional exhaustion or burnout (H2d). This last relationship is significant for nursing students. Affective outcomes are strongly driven by cognitive learning (H3). Finally, dropout intentions are driven, negatively and strongly, by student satisfaction (H4a), and in the case of business students, are driven by perceived affective outcomes (H4b). The results from Studies 1 and 2 (including measures of overall quality and overall outcomes) also give support to the hypothesized relationships.

Discussion

Contributions. Integrating the services marketing perspective into higher education assessment theories allows for a better understanding of how students perceive the university experience. In essence, the results from applying the framework suggest that students' learning outcomes (knowledge and skills acquisition) depend not only on perceptions of higher education quality, but also on student co-creation (efforts and the effective interactions with other educational actors) and on psychological states related to their studies. Moreover, these perceptions of learning outcomes have a very strong effect on overall satisfaction with the higher education experience and on the more general perception of affective learning outcomes (values, goals, attitudes, self-concepts, worldview, and behavior). Ultimately, our findings confirm that the more satisfied the students are and the higher their perceptions of those affective outcomes, the lower the students' intention to leave their studies.

Theoretically, this comprehensive view of the student experience at university helps to better understand how perceptions and psychological states affect students' future intentions, such as dropout their studies. Integrating the services marketing perspective into higher education assessment theories allows for an approach to measure those key factors, the relationships between them and also sheds light for decision making. A benefit of considering these perspectives together, particularly the new service dominant logic, is the view of students as active actors of the higher education service; students who must contribute to the better achievement of service outcomes. Thus, this view clarifies the roles of perceived cognitive learning outcomes and student satisfaction: service value is created through interactions between actors who put their competencies to work aligned towards

the desired outcomes; and this process takes into account what is given, what is received and what is created, to be summarized then in a general judgment of satisfaction, which will directly affect student's consequent behavior.

Our framework potentially represents a tool that fits within the "high organizational learning-high institutional quality" profile of higher education institutions (Avdjieva & Wilson, 2002). In these institutions quality becomes part of the institution's developmental culture, and our framework considers various elements that are critical for these institutions: (i) the involvement and commitment of all constituencies; our framework measures students' co-creation, (ii) learning needs of students and staff, both academic and non-academic, are an important purpose; our framework measures students' academic (cognitive) and non-academic (affective) learning outcomes, (iii) satisfaction surveys are key as a source of learning; our framework also measures student satisfaction, and (iv) feedback mechanisms based on continuous assessment are critical for learning and improvement; our framework and related questionnaire is designed to track changes in all the measured variables. In this same line, the framework could fit within the EFQM Excellence Model for higher education institutions (Calvo-Mora, Leal & Roldán, 2005), and other higher education quality techniques (Quinn *et al*., 2009) shedding light for service improvement from the students' perspective. Thus, our framework can provide constituencies with valuable information for decision-making, and could also be extended and complemented with other methods to include more elements, both at the individual and the organizational level.

Implications. Implications for higher education managers and teachers reside in finding ways for engaging students in university life so they become more involved and

proactive, which will in turn motivate them to study harder (Tam, 2007). Kotzé and Plessis (2003) suggest that engagement may be achieved by making students realize the importance of capitalizing on the opportunity for their own personal growth. Hossler and Bean (1990) suggest an enrolment management program to attract and retain students by activities such as: facilitating the transition to university through orientation programs, doing research and intervention for students who lack skills or who need guidance (social support, information on social and academic issues, tutoring), helping with job placement, and implementing diverse campus activities, among others. Another interesting implication, in line with the strong effect of administrative quality in cognitive outcomes and in some cases for satisfaction, is the importance of flexible spaces and facilities that allow for different styles of learning. McLaughlin and Faulkner (2012) found in a qualitative study that students need multi-use spaces that facilitate intense work and diverse learning opportunities since: (a) learning occur in formal in informal spaces, (b) collaborative work can take place away from the classroom and may rely on technology available throughout the university, and (c) learning spaces should adapt to individual and collaborative work, allowing also for social learning and interactions. Yeo and Li (2012) propose that for getting students involved, the instructors/teachers must work in a truly service-oriented way: being empathic with students to help influence their learning desire, being genuinely involved in their overall educational process, and giving them innovative tools to better connect theory and practice.

Although estimations are not comparable, we can highlight some general differences. In Study 3 (for geography), the effect of educational quality on satisfaction was not significant, which may be due to the fact that this program relies heavily on laboratory-

based infrastructure (administrative quality) as a base of student learning, and can respond to either values or culture: Americans have a higher preference for technology and resources than do Spaniards. The second difference is that the effect of burnout exhaustion has a negative influence on cognitive outcomes for nursing students, but does not have a significant effect for business students. This difference can be related to the fact that the nursing program has a more vocational aspect and a higher workload than does the business program. Deary *et al.* (2003) note that stress is likely to contribute to attrition in nursing students. These two differences could be also due to the sample composition in terms of gender: 70% of males in geography and 90% of women in nursing, which is related to their values and preferences. However, these percentages are representative of the programs' population.

Limitations and Future research. As outlined in the introduction, this approach is based on students' perceptions; thus, subjectivity must be complemented with objective performance measures. Interesting future studies will cover the replication of models including more specific service quality dimensions of higher education (i.e. Yildiz, 2012), and modeling co-creation as two factors, one accounting for academic integration and the other for social integration. The models could also be extended to cover other (i) behavioral intentions such as recommendations and loyalty (Alves & Raposo, 2007; Hennig-Thurau et al., 2001; Mazzarol, 2009), and giving to university as alumni (Sung & Yang, 2009); and also (ii) psychological variables such as self-confidence, and belongingness or fit with the university to gain more insight about the overall student experience at university.

As convenience and quota sampling were used, results are not directly comparable. For results to be comparable or to draw generalizable conclusions from estimations, a

random sample should be used: one in which any individual has equal chance to be surveyed, minimizing selection bias and making estimations more accurate. Thus, a future study could apply the questionnaire in a random fashion to make comparisons among programs and to track changes in students' perceptions/intentions over time.

The framework implicitly considers that cognitive learning outcomes fully mediates the relationship between two student factors (co-creation and burnout) and student satisfaction; and also considers that cognitive learning outcomes influence dropout intentions through (full mediation) students' satisfaction and perceived gains related to affective outcomes. These mediations should be further tested for validation. Likewise, other variables would possibly moderate the posted relationships in the framework; for instance *own commitment* (Helgesen & Nesset, 2007; Neumann, Neumann & Reichel 1990) and *learning style*: deep, surface, strategic or apathetic approaches (Cassidy 2006; Lizzio, Wilson & Simons, 2002) may moderate the relationship between co-creation and burnout with cognitive learning outcomes. Environment type and personal characteristics (Lizzio & Wilson 2004; Pike, Smart & Ethington, 2012) may also play a moderating effect in various relationships in the framework.

Conclusion. In sum, all the posited relationships were supported by at least one of the studies, suggesting that the framework, which combines two different streams of research, is helpful in understanding the different factors that determine students' perceptions about their learning outcomes, satisfaction level, and dropout intentions. This framework can be useful for other institutions if they adapt the questionnaire used, because it has good reliability and consistency in the different studies. The analysis of this questionnaire can provide departments and institutions with useful information for understanding the

students' overall educational experience, as well as for tracking changes in students' perceptions. This can be done by comparing the indices for each construct over time (Anderson & Fornell, 2000). Considering both the indices and the effects between variables helps to identify critical variables to focus efforts on. The rule of thumb is to work on improving the perception of factors with low indices and that have the highest effects on perceived learning outcomes, satisfaction, and dropout intention.

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Table 1

Studies relating perceived quality dimensions in higher education with student satisfaction

Study	Quality or Performance dimensions	Correlation or Consequences
De Jager & Gbadamosi, 2010	**Dimensions of Service Quality** • Internationalization • Marketing and support • Access and approachableness of services • International Students and Staff • Academic reputation • Student focused • Academic quality • Variety and reach • Location and Logistics • Accommodation and Scholarship • Sports reputation and facilities • Safety and Security • Parking	• Satisfaction • Intention to leave university • Trust in management and support
Stodnick & Rogers, 2008	**SERVQUAL dimensions in HE** • Assurance • Empathy • Responsiveness • Tangibles • Reliability	• Satisfaction with course • Satisfaction with instructor • Perceptions of learning
Sojkin et al, 2012	**Determinant of satisfaction** • Social conditions • Professional advancement • Pragmatism of knowledge • Educational facilities • Courses offered • Faculty's educational and research achievements	• Satisfaction
Navarro et al, 2005	**Perceived Performance dimensions** • Teaching methods • Administration • Teaching staff • Enrolment process • Infrastructures	• Satisfaction → • Loyalty
Nadiri et al, 2009	**Service Quality dimensions** • Intangibles (e.g. prompt service, courtesy, sincere interest in solving problems, individual attention) • Tangibles (e.g. modern equipment and facilities, neat appearance of employees)	• Satisfaction
Mai, 2005	**Students' perceptions of** • Overall impression of the school • Overall impression of quality of education • Teaching aspects	• Overall satisfaction of education
Douglas et al, 2008	**Determinants of Service Quality in HE classified as** • Critical factors (e.g. Responsiveness, Communications, Access, Socializing) • Satisfiers • Dissatisfiers • Neutral factors	• Satisfaction/Dissatisfaction → • Loyalty/Disloyalty → • Performance
Brown &	**Service Quality dimensions**	• Evaluative Satisfaction

Mazzarol, 2009	• "Humanware" (reliability, responsiveness) • "Humanware" (assurance, empathy) • "Hardware" (tangibles) **Image** (environment, practicality, conservativeness) **Perceived Value** (emotional, social, price-value, quality-performance)	• Emotional Satisfaction → • Loyalty
Helgesen & Nesset, 2007	**Service Quality** **Satisfaction with** • Informational aspects • Social aspects • Facilities **Own commitment**	• Satisfaction → • Reputation • Loyalty

Table 2

Descriptive of the studies' samples

Studies	Program & country	Gender	Age	Work & Study	Notes
Study 1 n = 235	*Economics* 1 public university SPAIN	Men 57% Women 43%	<23: 76% >24: 24%	Study only: 70% Also work: 30%	Students who filled the questionnaire were in the last two years of the program.
Study 2 n = 191	*Business* 1 public university COLOMBIA	Men 51% Women 49%	<23: 57% >24: 43%	Study only: 60% Also work: 40%	Students who filled the questionnaire were in the last two years of the program.
Study 3 n = 79	*Geography* 1 state university UNITED STATES	Men 70% Women 30%	<23: 35% >24: 65%	Study only: 25% Also work: 75%	Students were in the last year of the program, and filled the questionnaire during a capstone course were they analyze acquired learning outcomes.
Study 4bus. n = 284	*Business* 4 universities SPANISH REGION	Men 38% Women 62%	<23: 78% >24: 22%	Study only: 50% Also work: 50%	Students from all years of the program filled the questionnaire. Public, private and distance universities were covered in the sample.
Study 4nur. n = 192	*Nursing* 3 universities SPANISH REGION	Men 10% Women 90%	<23: 75% >24: 25%	Study only: 55% Also work: 45%	Students from all years of the program filled the questionnaire. Public and private universities were covered in the sample.

Table 3

Discriminant validity between constructs Studies 1 and 2

Study 1		ServQuality	Co-creation	Outcomes	Satisfaction
ServQuality		**0,84**			
Co-creation		0,24	**0,65**		
Outcomes		0,72	0,45	**0,81**	
Satisfaction		0,80	0,37	0,77	**0,82**
Study 2	*EducQual*	*AdminQual*	Co-creation	Outcomes	Satisfaction
EducQual	**0,76**				
AdminQual	0,61	**0,81**			
Co-creation	0,53	0,43	**0,75**		
Outcomes	0,62	0,53	0,69	**0,88**	
Satisfaction	0,72	0,62	0,59	0,76	**0,81**

Note: The diagonal in bold font gives the square root of AVE.

Table 4

Discriminant validity between constructs Studies 3 and 4

Study 3	EducQual	AdminQual	Co-creation	*CogniOut*	Satisfaction	*AffectOut*		
EducQual	**0,85**							
AdminQual	0,64	**0,87**						
Co-creation	0,47	0,65	**0,83**					
CogniOut	0,52	0,67	0,67	**0,86**				
Satisfaction	0,62	0,81	0,78	0,63	**1,00**			
AffectOut	0,16	0,29	0,44	0,33	0,29	**0,92**		
Study 4_bus.	EducQual	AdminQual	Co-creation	CogniOut	Satisfaction	AffectOut	*Burnout*	*DropoutInt*
EducQual	**0,79**							
AdminQual	0,52	**0,81**						
Co-creation	0,41	0,35	**0,62**					
CogniOut	0,53	0,62	0,48	**0,87**				
Satisfaction	0,56	0,47	0,49	0,65	**0,85**			
AffectOut	0,41	0,41	0,46	0,53	0,64	**0,82**		
Burnout	-0,29	-0,18	-0,33	-0,24	-0,35	-0,28	**0,83**	
DropoutInt	-0,46	-0,33	-0,39	-0,43	-0,63	-0,56	0,31	**0,86**
Study 4_nur.	EducQual	AdminQual	Co-creation	CogniOut	Satisfaction	AffectOut	*Burnout*	*DropoutInt*
EducQual	**0,79**							
AdminQual	0,49	**0,77**						
Co-creation	0,50	0,40	**0,65**					
CogniOut	0,47	0,55	0,41	**0,87**				
Satisfaction	0,60	0,45	0,45	0,61	**0,82**			
AffectOut	0,48	0,31	0,45	0,61	0,65	**0,85**		
Burnout	-0,29	-0,17	-0,24	-0,31	-0,40	-0,29	**0,81**	
DropoutInt	-0,22	-0,14	-0,11	-0,15	-0,45	-0,26	0,23	**0,85**

Note: The diagonal in bold font gives the square root of AVE.

Table 5

Model estimation summary

	Study 1	Study 2	Study 3	Study 4 business	Study 4 nursing
Relationships in the models	(n = 235)	(n = 191)	(n = 79)	(n = 284)	(n = 192)
Quality > Outcomes	0,65 **				
EducQual > Outcomes		0,28 **			
AdminQual > Outcomes		0,15 *			
Co-creation > Outcomes	0,30 **	0,48 **			
Quality > Satisfaction	0,52 **				
Outcomes > Satisfaction	0,40 **	0,47 **			
H1a EducQual > Satisfaction		0,32 **	0,15 *	0,30 **	0,39 **
H1b AdminQual > Satisfaction		0,18 **	0,62 **	0,01	0,03
H1c CongniOut > Satisfaction			0,13	0,48 **	0,41 **
H2a EducQual > CogniOut			0,12	0,20 **	0,17 **
H2b AdminQual > CogniOut			0,34 **	0,42 **	0,39 **
H2c Co-creation > CogniOut			0,40 **	0,24 **	0,14 *
H2d Burnout > CogniOut				-0,03	-0,16 **
H3 CongniOut > AffectOut			0,33 **	0,53 **	0,61 **
H4a Satisfaction > Dropoutint				-0,46 **	-0,49 **
H4b AffectOut > Dropoutint				-0,26 **	0,06
Average communality					
Quality	0,71				
Outcomes	0,66	0,78			
Satisfaction	0,67	0,66	1,00	0,73	0,67
EducQual		0,58	0,72	0,63	0,63
AdminQual		0,65	0,76	0,66	0,60
CogniOut			0,74	0,76	0,76
AffectOut			0,85	0,67	0,72
Burnout				0,69	0,65
Dropoutint				0,74	0,72
R^2 Dependent variables					
Outcomes	60%	58%			
Satisfaction	72%	70%	68%	49%	50%
CogniOut			56%	49%	40%
AffectOut			11%	28%	38%
Dropoutint				44%	20%

Note: ** significant at 5% level (t > 1.96); * significant at 10% level (t > 1.64).

Appendix 1: Item loadings of constructs in the model by study

Construct /item	*Study 1*	*Study 2*	*Study 3*	*Study 4a*	*Study 4b*
overall service quality					
overall quality based on experience	0,65				
comparison of service quality with other institutions	0,65				
high standards of service quality	0,81				
educational quality					
Professors are well prepared academically.		0,53	0,69	0,58	0,57
Professors make the course interesting.		0,64		0,61	0,66
Program and courses seem to have a coherent structure.		0,55	0,72	0,69	0,67
Program and course contents were clearly explained.		0,69	0,76		
appropriate social and cultural environment		0,51			
administrative quality					
Administrative offices work efficiently.		0,59	0,79	0,59	0,54
preparation to initiate a career (internships, etc.)		0,68	0,83	0,72	0,65
library service		0,62			
Classrooms are appropriate for learning.		0,66			
other services (laboratories, sports, cafeteria, etc.)		0,70			
Course schedules are convenient.			0,66		
co-creation					
positive attitudes towards courses, professors, institution	0,71	0,77	0,87	0,60	0,87
efforts to integrate in cultural-social life	0,14	0,22		0,32	0,29
interest in learning more	0,26	0,65	0,49	0,47	0,34
efficient use of the opportunity to study this program	0,69	0,59	0,70	0,47	0,47
doing and extending assignments proposed in class	0,29	0,58			
overall outcomes					
contribution in terms of problem solving	0,62	0,81			
planning and organizational abilities	0,60	0,76			
self-confidence, independency and personal initiative	0,51	0,73			
theoretical knowledge and practical skills	0,73	0,76			
overall positive learning outcomes	0,83	0,85			
cognitive outcomes (Geography-specific)					
interpret maps and other geographical representations			0,65		
knowledge of geospatial methods and techniques			0,81		
present opposing viewpoints on spatial issues			0,78		
cognitive outcomes (general)					
I have obtained a good deal of practical knowledge.				0,68	0,74
concepts, methodologies and tools useful for my career				0,82	0,80
When finished, I will have enough knowledge for work.				0,78	0,74
affective outcomes					

skills to communicate effectively				0,62	0,75
planning and organizational abilities (skills for a career)				0,73	0,66
general positive outcomes of my educational experience				0,71	0,73
worldviews and the way I interact with people			0,85	0,64	0,73
my personal views and ethics			0,86		
student satisfaction					
overall satisfaction after performance assessment	0,77	0,76	1,00	0,72	0,74
overall satisfaction before performance assessment	0,78	0,76		0,78	0,64
comparison with an ideal institution	0,60	0,53		0,68	0,63
comparison with prior expectations	0,61	0,76			
perception of family's satisfaction	0,58	0,51			
burnout/exhaustion					
I feel emotionally drained by my studies.				0,69	0,73
Studying or attending a class is really a strain for me.				0,54	0,48
I feel burned out from my studies.				0,85	0,75
dropout intentions (persistence intention)					
I expect to graduate from this university (*r).*				0,62	0,57
I will recommend a close friend to study at this university (*r).*				0,86	0,87

Figure 1

Integrative framework of students' learning outcomes, satisfaction, and dropout intentions

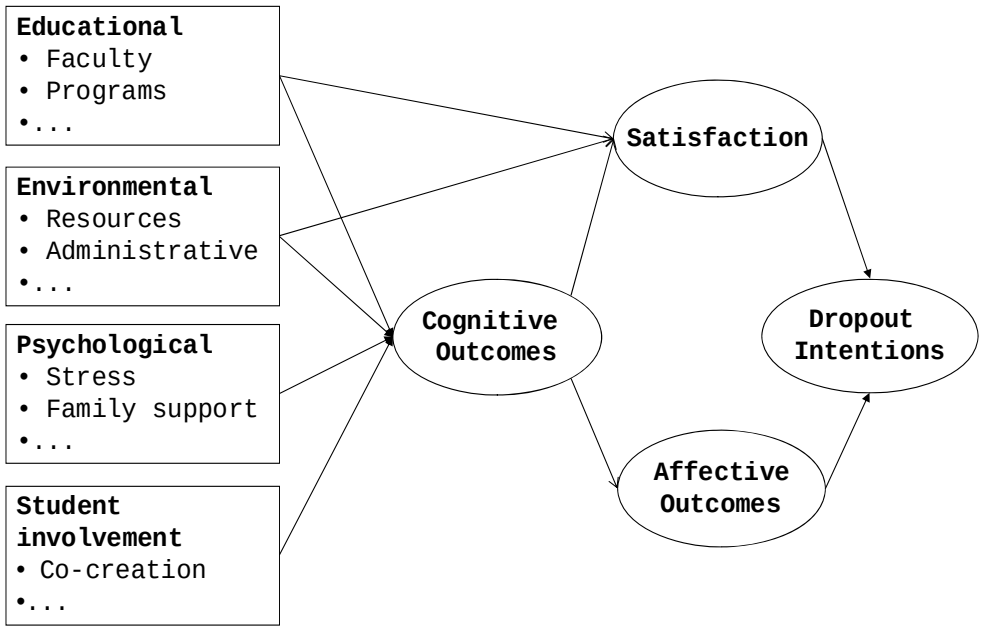
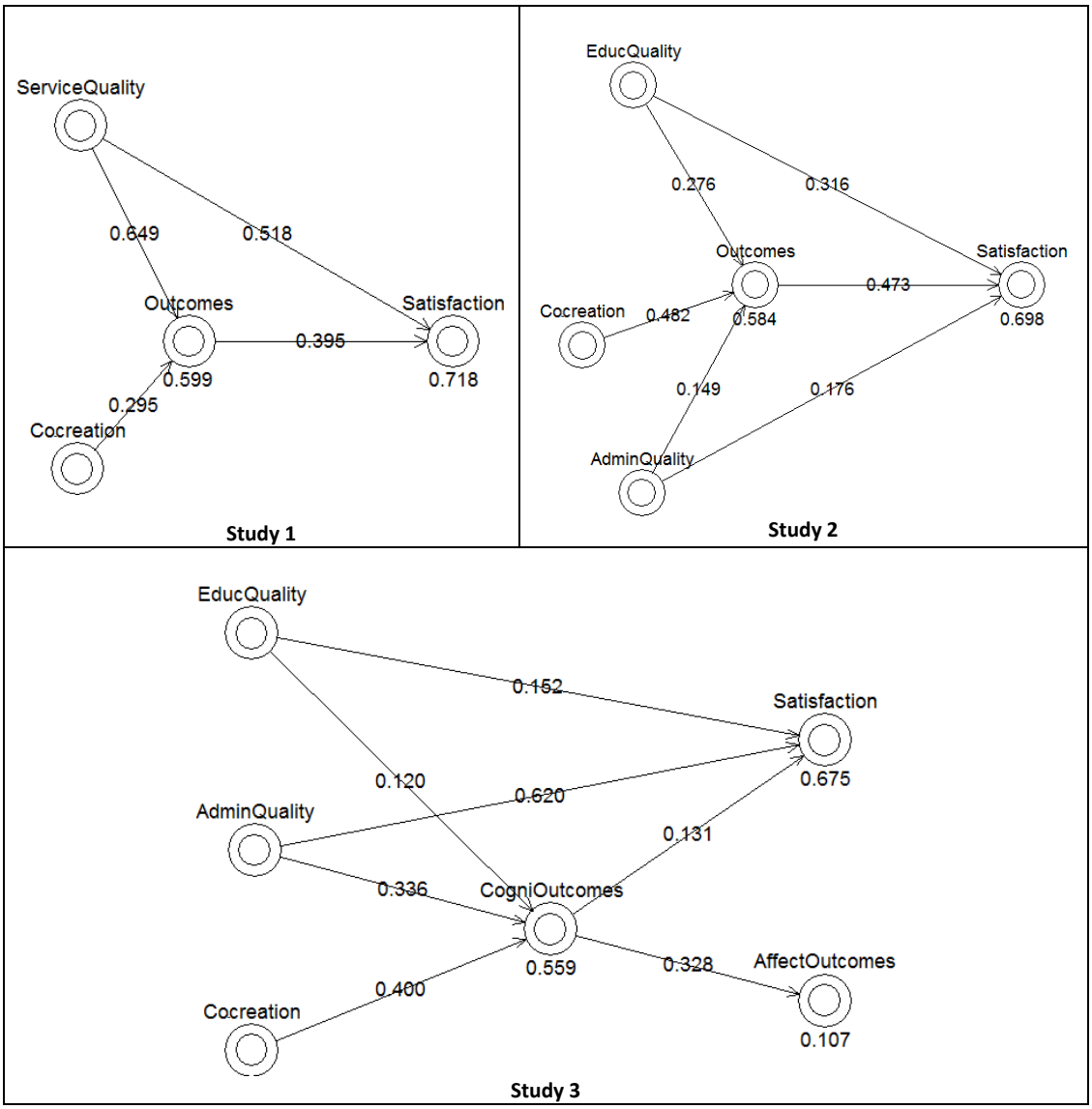


Figure 2

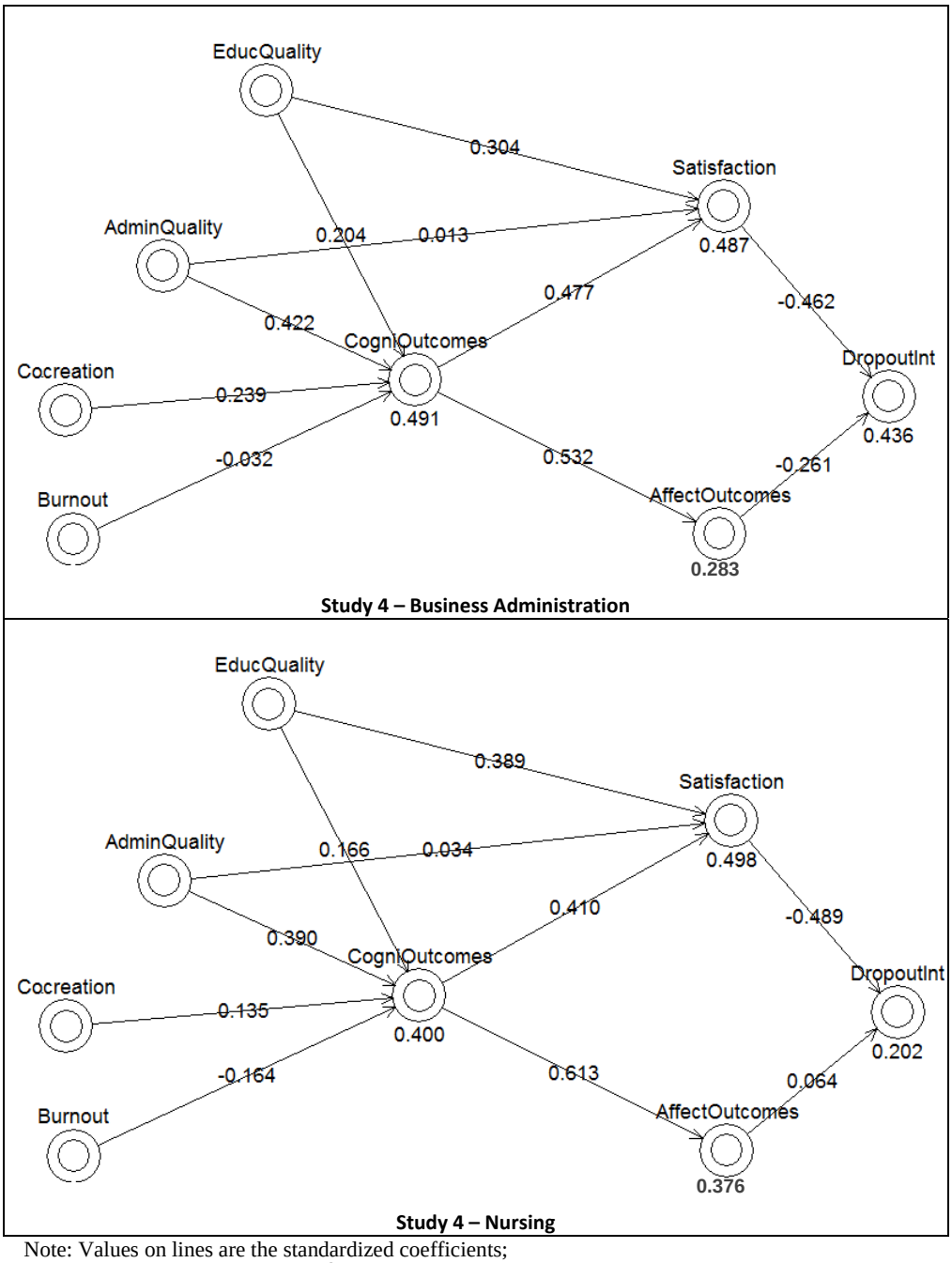
Path diagram for Studies 1, 2, and 3



Note: Values on lines are the standardized coefficients;
values below circles present the R^2 of the dependent variables in the models.

Figure 3

Path diagram for Study 4



Note: Values on lines are the standardized coefficients;
values below circles present the R^2 of the dependent variables in the models.