Student's cocreation, learning outcomes, satisfaction and dropout intentions

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Student satisfaction has become an increasingly important component of institutional reports as a means of accountability to educational stakeholders. The measures and models for this vary across higher education institutions. Some models try to understand how different perceptions of quality areas impact student satisfaction, while others use more complex relationships that integrate factors such as student learning outcomes and student persistence intentions. This research tries to disentangle the relationship between student satisfaction, cocreation and learning outcomes drawing in Tinto's dropout intentions model (1975), Bean's socialization model (1985), Astin's involvement theory (1999), and the service marketing literature. This article presents a conceptual framework and findings of four studies testing fragments of the framework. Data sets come from three different countries (Spain, U.S. and Colombia) and various undergraduate programs (Business and Economics, Geography and Nursing). The methodological approach consists of a base questionnaire adapted to the specific contexts and undergraduate programs. The four models are empirically tested using structural equation modeling based on the Partial Least Squares algorithm. Findings suggest that student cocreation can be as important as perceived service quality on explaining student's cognitive learning outcomes, which in turn explains a high percentage of satisfaction and affective learning outcomes. The studies also shed light on the roles of variables such as burnout emotional exhaustion and dropout intentions.

Keywords: subjective measures, satisfaction, learning outcomes, involvement, dropout intentions.

1. Introduction

Reporting on performance indicators of higher education has become a normal practice of institutions nowadays, which responds to academic accountability to communities and governments, regional or professional accreditation, as well as internal practices for institutional performance evaluation and improvement (Nichols, 1995; Peterson & Einarson, 2001; Terenzini, 1989). There are numerous assessment tools that might be employed, and they usually complement one another. While the traditional assignment of course grades is one of them, and tracking the performance of alumni in the labor market is another, there are also subjective approaches that evaluate students' feelings and perceptions. Subjective measures have been proved to be good predictors of performance and behavioral intentions (Lizzio, Wilson & Simons, 2002) highlighting the importance of their study in the educational context.

The aim of this research is to integrate a framework reporting 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 and theories have given insight to different areas of knowledge and we propose that together they can enlighten the role of different factors on students' perceptions, intentions and feelings of their overall educational experience.
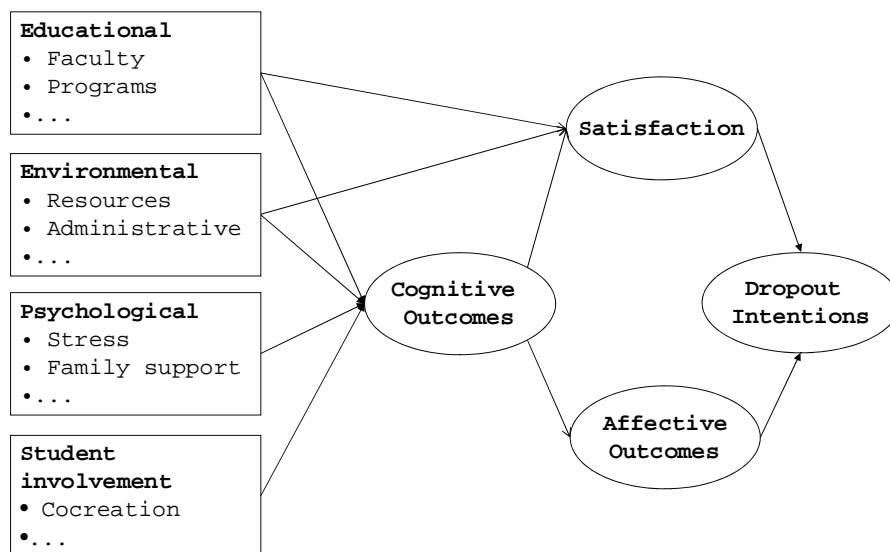
We first introduce the general framework and post specific hypotheses to be tested. Then, four different studies are presented and empirically tested with different data sets. We conclude by summarizing the results of the studies and the implications of this approach.

2. Integrative framework

Learning outcomes and dropout intentions have been central concepts studied in the higher education literature. However, few studies approach them in a simultaneous way. Building on Tinto's conceptual schema for dropout from college (1975), Bean (1985) posts 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 students' dropout syndrome, which is a result of a low integration both academic and social. More recent studies coming from service marketing literature suggest that

perceptions of quality of higher education have an impact on students' satisfaction and behavioral intentions (Douglas, Douglas & Barnes 2006; Eagle & Brennan, 2007; Helgesen & Nesset, 2007; Petruzzelis, D'Uggento & Romanazzi 2006), and a new perspective in marketing highlights the active participation of the student as cocreator of service value (Dann, 2008; Gummesson, 2008; Vargo & Lusch, 2004), which goes in line with higher education theories. Thus, integrating these streams of literature together with both cognitive and affective learning outcomes (Terenzini, 1989) may prove a more general approach, from the student point of view, to better understand their experience at university. Figure 1 presents the integrative framework.

Figure 1: Integrative framework of students' learning outcomes, satisfaction and dropout intentions

3. Conceptual model for empirical testing

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 is a cumulative approach, which is preferred over the specific transaction one since we are interested in assessing the complete student experience, thus overall student satisfaction will be based on the students' general experience within the university.

Perceived 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), and has a functional and a technical dimension (Grönroos, 1984). For higher education the corresponding two dimensions would be *educational quality* and *administrative quality* (supporting resources for

higher education). The former covers teaching and program quality perceptions whereas the latter evaluates the quality of necessary resources for learning, including the functioning of administrative offices. As perceived quality has been found to affect consumer satisfaction in both the services marketing and the higher education literatures, we also expect that educational quality and the administrative quality will influence student satisfaction.

Assessment has been conceived as an extension of quality (Koslowski, 2006) and is aimed at evaluating student learning and gains as a way to improve the quality of higher education (Palomba & Banta, 1999). There are various classifications of learning outcomes. A general definition is provided by Frye (1999): *cognitive learning outcomes* cover the student acquisition of specific knowledge and skills, whereas the *affective learning outcomes* reflect how the college/university experience has impacted the student's values, goals, attitudes, self-concepts, worldview and behavior. 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 learnt is expected to impact their satisfaction level. Therefore we expect:

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

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

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

Terenzini (1989) notes that doing an assessment requires a reconsideration of the essential purposes and expected academic, and also non-academic, outcomes of college education. The *cognitive learning outcomes* can be measured in terms of specific academic achievements (e.g., the learning objectives set by the department or institution) and as an extension of quality they are expected to be influenced by the two *quality dimensions (educational* and *administrative).*

Acquiring knowledge (cognitive outcomes) not only depends on the perceptions of educational and administrative quality. As Eagle & Brennan (2007), we believe 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) that has as a premise that the consumer is an actor who cocreates the service by interacting with other actors (in this case, faculty, classmates, administrative personnel, etc), thus giving entrance to a balanced-centricity view of value creation (Gummesson, 2008) as opposed to a customer-centricity view of the student with a passive role in this experience.

Student involvement is a concept recognized in the college engagement literature (Kuh et al, 2005; Braxton, 2000) and Astin (1999) posits that students who put more effort and energy into

their academic experience will obtain better learning and personal development. This contribution can be seen as energy devoted to studies, time spent on campus, active participation in student organizations and interaction with faculty members and other students. Thus, that proactive role of the student: *cocreation* (Dann, 2008; Kotzé & Plessis, 2003) is expected to influence students' cognitive learning outcomes.

From the psychological factors we want to study *emotional exhaustion*, which is one of the three components of the *Burnout syndrome*, accompanied by cynicism and professional efficacy (Schaufeli et al, 2002). Emotional exhaustion represents feelings of fatigue, frustration, burnout and discontent with studies (Neumann et al, 1990, Schaufeli et al, 2002), which we expect will influence, negatively, the acquisition of knowledge and skills (cognitive outcomes). Therefore we expect:

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

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

H2c: Student *cocreation* will positively influence perceived cognitive learning outcomes

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

There is more to education than learning facts and skills (cognitive outcomes). Education also importantly involves *affective learning* --understanding how the world works and developing a world view that guides behavior and shapes the way in which people acquire and use knowledge (Duque & Weeks, 2010). The expected academic outcomes represent the more concrete cognitive goals, whereas the nonacademic outcomes relate to more general results (affective outcomes) of the whole student educational experience (values, goals, attitudes, self-concepts, worldview and behavior). Therefore we expect that part the perception of affective outcomes be partly influenced by the perceptions of cognitive learning:

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

Dropout intention is the proneness, conscious and discussed, to leave the university or the studies (Bean, 1985). We expect the two more general evaluations of the university experience (*student satisfaction* and *affective outcomes*) to influence in a direct way this intention; thus, the

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

H4a: Student *satisfaction* will negatively influence the student dropout intention.

H4b: Perceptions of *affective learning outcomes* will negatively influence the student dropout intention.

4. Methodology

We develop 4 different studies that test fragments of the framework. *Study1* presents a basic model that includes overall service quality, overall learning outcomes, student cocreation and satisfaction, and is tested with a sample of 235 Spanish students of Economics. *Study2* considers the same variables but instead of overall service quality, quality is modeled at the dimension level (educational and administrative). This model is tested with 191 Colombian students of Business Administration. *Study3* considers the same variables in study2 but instead of overall learning outcomes, those are modeled as cognitive and affective outcomes. This more complete model is tested with 79 American students of Geography. Finally, *Study4* considers the same variables as in study3 and adds two new variables: a psychological factor of emotional exhaustion (Burnout) and dropout intentions as the ultimate dependent variable in the model. *Study4_bus* is tested with 284 Spanish students of Business Administration and *Study4_nur* is tested with 192 Spanish students of Nursing. Annexes 1 and 2 present, visually, the summary of the studies.

The methodological approach consists of a base questionnaire adapted to the specific contexts and undergraduate programs. Traditional scales (set of measures) used in the literatures are included in the questionnaire, and the PLS-Graph software (Chin, 2001) is used for estimation of the models.

5. Analyses and results

Structural equations based on the Partial Least Squares (PLS) algorithm tests the model. This consists of an iterative process that maximizes the predictive and explanatory power of the model, which is assessed in terms of the R^2 value of the dependent variables. These values are very high for all models given the complexity of the models (see Table 3, section "R^2 Dependent variables").

Tables 1 and 2 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 3, section "Average communality"). It is important to note that cocreation is modeled as formative: we checked measures quality using the Diamantopoulos and Winklhofer´s (2001) criteria.

Table 1: Discriminant validity between constructs Studies 1 and 2

Study1		ServQuality	Cocreation	Outcomes	Satisfaction
ServQuality		**0,84**			
Cocreation		0,24	**0,65**		
Outcomes		0,72	0,45	**0,81**	
Satisfaction		0,80	0,37	0,77	**0,82**
Study2	*EducQual*	*AdminQual*	Cocreation	Outcomes	Satisfaction
EducQual	**0,76**				
AdminQual	0,61	**0,81**			
Cocreation	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 gives the square root of AVE

Table 2: Discriminant validity between constructs Studies 3 and 4

Study3	EducQual	AdminQual	Cocreation	*CogniOut*	Satisfaction	*AffectOut*		
EducQual	**0,85**							
AdminQual	0,64	**0,87**						
Cocreation	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**		
Study4 bus.	EducQual	AdminQual	Cocreation	CogniOut	Satisfaction	AffectOut	*Burnout*	*DropoutInt*
EducQual	**0,79**							
AdminQual	0,52	**0,81**						
Cocreation	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**
Study4 nur.	EducQual	AdminQual	Cocreation	CogniOut	Satisfaction	AffectOut	*Burnout*	*DropoutInt*
EducQual	**0,79**							
AdminQual	0,49	**0,77**						
Cocreation	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 gives the square root of AVE

Based on the reported psychometric properties we conclude that the models reasonably fit the data sets. Table 3 reports the standardized coefficients for the models estimation (t values come from bootstrap simulations), the average communality of the measures in each construct and the R^2 for the dependent variables in the models.

Table 3: Model estimation summary

	Study1	Study2	Study3	Study4 business	Study4 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 *			
Cocreation > 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 Cocreation > 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)

Looking at Table 3 we can confirm that in overall all the posted hypotheses are supported. The proposed relationships are significant in at least one of the studies, suggesting that the conceptual model helps to explain the perceived learning outcomes formation, the student 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 cognitive learning outcomes (H1c). Cognitive outcomes are driven by various factors: both types of quality perceptions (H2a and H2b), student cocreation (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 driven by perceived affective outcomes (H4b). The results from studies 1 and 2 (including overall quality and overall outcomes) also give support to the hypothesized relationships.

6. Discussion

This research contributes to the higher education assessment literature by integrating the marketing services perspective along with other theories to allow for a better understanding of the educational experience from the student point of view. In essence, results of applying the integrative framework suggest that students learning outcomes (knowledge and skills acquisition) depend not only on perceptions of quality, but also on student cocreation (efforts and the effective interactions with other educational actors) and psychological states related to their studies. At the same time, these perceptions of learning outcomes have a very strong effect on overall satisfaction with the experience at the university and the more general perception of affective learning outcomes (values, goals, attitudes, self-concepts, worldview and behavior). Ultimately, our findings confirm that the more satisfied and the higher the perception of those affective outcomes, the lower students' intention to leave the university. Implications for university managers and teachers reside on finding out ways for engaging students in university life so they become more affiliated and proactive, which in turn will result in greater effort and stronger motivation for their studies (Tam, 2007). Kotzé & Plessis (2003) suggest that engagement may be achieved by making students realize the importance of capitalizing the opportunity for their own personal growth.

The model estimations present subtle 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 or can either respond to values and culture: Americans have a higher reference for

technology and resources compared to Spaniards. The effect of burnout exhaustion has a negative influence on cognitive outcomes for Nursing students, but not for Business students. This difference can be related to the more vocational aspect or higher work load related to the Nursing program as compared to Business.

In sum, all the posited relationships were supported by at least one of the model estimations, suggesting that the model is helpful in understanding the different factors that determine students' perceptions about their learning outcomes, satisfaction level and dropout intentions. This framework and conceptual model can be useful for other institutions that could adapt the questionnaire used, which presents 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 student perceptions. This can be done by comparing indices for each construct over time.
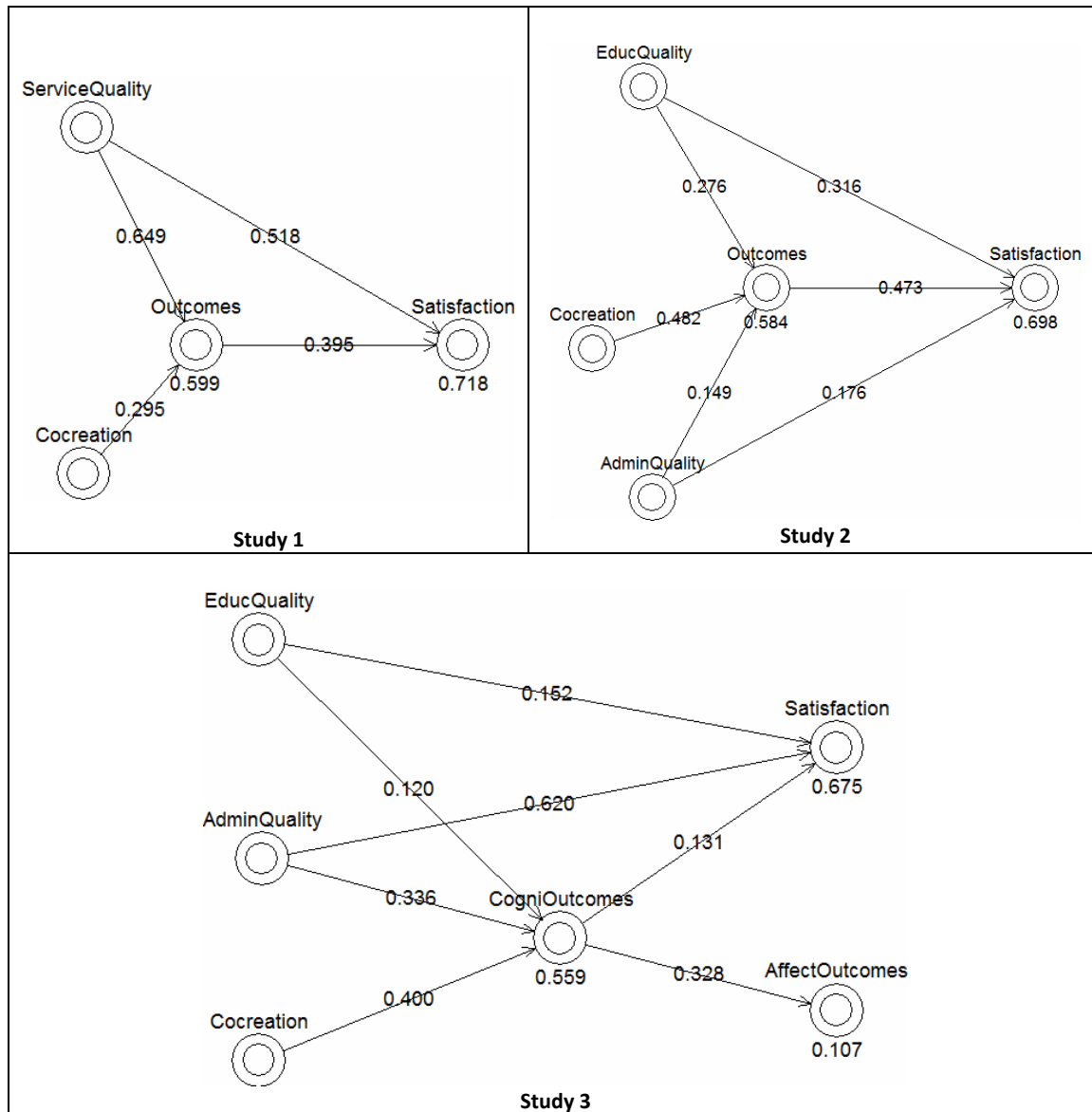
As outlined in the introduction, this approach is based on students' perceptions, thus subjectivity must be complemented with objective performance measures. An interesting future study will be to replicate the model but modeling cocreation as two different factors, one accounting for the academic integration and the other for social integration. The model could also be extended to cover other behavioral intentions such as recommendations, loyalty and attitudes in order to gain more insight about the overall student experience at university.

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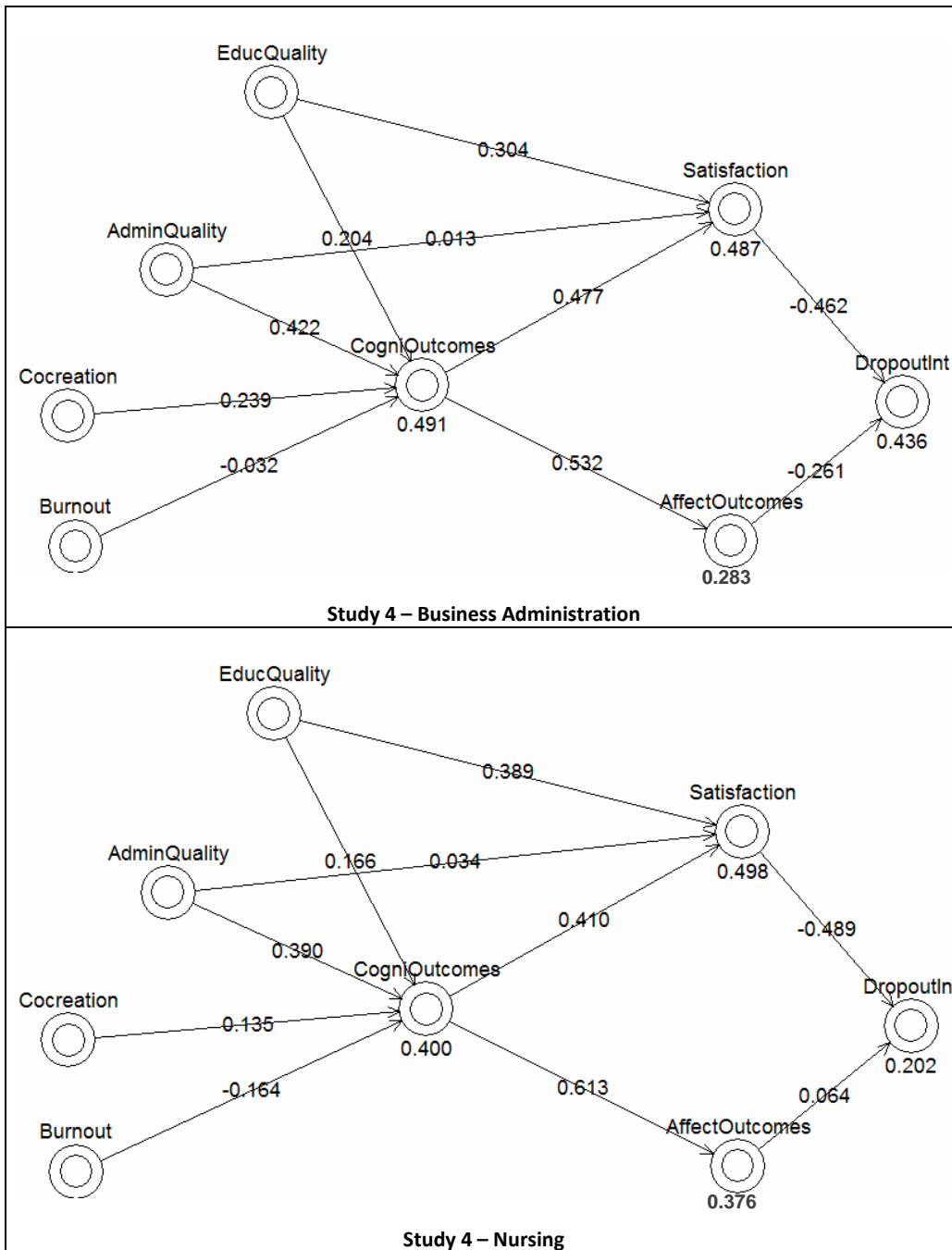
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Annex 1: Path diagram for Studies 1, 2 and 3

Note: values on lines are the standardized coefficients;
    values below circles present the R^2 of the dependant variables in the model

Annex 2: Path diagram for Study 4

Study 4 – Business Administration

Study 4 – Nursing

Note: values on lines are the standardized coefficients;
values below circles present the R^2 of the dependant variables in the model