

# Images, Satisfaction and Antecedents: Drivers of Student Loyalty? A Case Study of a Norwegian University College

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## ABSTRACT

*Even if images and allied constructs, especially identity and reputation, have received considerable attention in recent years, research efforts have mainly focused on those allied constructs and not on their interplay with related constructs. This study examines two models to explore the relationships among service quality, facilities, student satisfaction, image of the university college, and image of the study program, with student loyalty as the ultimate dependent variable. The students perceive the image of the university college and the image of the study program as two distinct concepts. The study's preferred model only indirectly relates the image of the study program to student loyalty (via the image of the university college) while student satisfaction and the image of the university college are directly related to student loyalty. Student satisfaction has the highest degree of association with student loyalty, representing a total effect about three times the effect of the image of the university college. Service quality only loads on student satisfaction, while the variable representing facilities loads on student satisfaction, the image of the university college and the image of the study program. The predictor variables included can explain a considerable amount of the variance of student loyalty.*

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**KEYWORDS:** *image of university college; image of study program; reputation; student satisfaction; student loyalty; structural equation modelling*

## INTRODUCTION

Images and allied constructs, especially identity and reputation, have received considerable attention in recent years (Fombrun, 1996; Dowling, 2001; Fombrun and van Riel, 1997, 2003). The constructs are defined and linked together in various ways (Chun, 2005; Brown *et al.*, 2006). In this study, corporate image is referring to outside stakeholders' perceptions of an organization, corporate identity to internal stakeholders' perceptions, whereas corporate reputation includes views of both internal and external stakeholders (Chun, 2005). Thus corporate reputation is perceived as being an umbrella construct, referring to the cumulative impressions of internal and external stakeholders, especially the impressions of employees and customers. Image building is perceived as being strategically important for many organizations, especially for professional service providers (Zabala *et al.*, 2005).

Images can be formed for many different entities, such as products, brands and organizations (Lemmink *et al.*, 2003), and even countries (Passow *et al.*, 2005).

Helm (2005: 106) believes that the understanding of the reputation construct 'has been dominated by research focused on the construct itself; inclusion of reputation in structural equation modelling in order to examine its interplay with other constructs has remained scarce'. Chun (2005: 104) states that 'links between customer satisfaction and the image of an organization have been under-researched'. The main purpose of this paper is to study the relationships between various images and related constructs, with the goal of gaining insight into the interplay between these concepts. The context is higher education, specifically a Norwegian university college. The study focuses on the following variables: service quality, facilities (of the university college), student satisfaction, image of the university college, image of the study program and student loyalty. The latter is used as the ultimate dependent variable for the model. The two first variables are factors (exogenous variables), while the other four are the main concepts (endogenous variables) in the model. The study addresses these main research questions: (1) Are students' perceived image of the university college and their perceived image of their specific study program different concepts? (2) Are student satisfaction, image of the university college and image of the study program all drivers of student loyalty, and if so, which one has the highest degree of association with student loyalty?

Student loyalty is becoming increasingly important for institutions offering higher education. The reasons are manifold as discussed below. It should be underscored, however, that students are not the only constituencies that may be categorized as customers of higher educational institutions. Employers, families and the society may also

be looked upon as customers (Marzo-Navarro *et al.*, 2005a). Thus stakeholders other than students could also be included in studies regarding loyalty of educational institutions. In this paper, the focus is on students as customers.

Researchers have perceived and defined the concept of loyalty in a number of different ways. Loyalty is assumed to be positively related to the ability of an institution to both attract new students and retain existing ones (see, eg, Dick and Basu, 1994; Oliver, 1997; Henning-Thurau *et al.*, 2001). Increased global competition among institutions offering higher education means that retaining matriculated students is just as important as attracting and enrolling them (Kotler and Fox, 1995; Elliott and Healy, 2001).

In recent years, governments have changed the way that they finance institutions of higher education, with financial support more strongly linked to the results that educational institutions produce (Arnaboldi and Azzone, 2005; DeShields *et al.*, 2005). To a great extent, the current financing system is based on the production of student credits and professional degrees. Thus the defection of one student can mean that a university or another degree-granting institution may see an associated drop in future funding. In Norway, the performance-based funding on average represents about £3,000 on a yearly basis for each student in public-owned institutions. Thus students constitute an important source of financing not only for private higher educational institutions, but also for public ones.

Student loyalty is influenced by increased student mobility, which gives the process of attracting students a new dimension. Regarding student mobility, the Bologna Process is becoming increasingly influential for higher educational institutions of the Bologna Process Area. The Bologna Process was established in June 1999, when 29 European higher education ministers met in Bologna<sup>1</sup>



to lay the groundwork to establish a European Higher Education Area by 2010, and to promote the European system of higher education worldwide. Follow-up summits<sup>2</sup> have been held every second year. The Bologna Process currently has 45 member countries, and focuses on ten topics such as the adoption of a system of easily readable and comparable degrees, establishment of a common system of credits (ECTS),<sup>3</sup> and promotion of mobility. One of the main objectives has been to enhance and facilitate student and teacher mobility by removing obstacles and improving the international recognition of degrees and academic qualifications. Thus, students are encouraged to spend at least one semester abroad. Various means or programs<sup>4</sup> have been introduced to promote the various aims of the Bologna Process such as Erasmus,<sup>5</sup> Sokrates and Leonardo da Vinci. Regarding students the Norwegian financial system implies that an educational institution receiving students from abroad is credited for all the ECTS obtained by the foreign students as well as an extra remuneration (about £500 for each semester). This extra remuneration is also received for Norwegian students studying abroad. Some countries in the Bologna Process Area have found it a great challenge to attract students from abroad in order to compensate for their 'own' students leaving to pursue their studies abroad. These institutions also would like their outgoing students to return to the home institution to complete their degrees.

Norwegian higher education reform legislation from 2003 (Quality Reform in Norwegian Higher Education) made student loyalty an increasingly important issue for Norwegian institutions. The reforms were designed to create a new degree structure in keeping with the Bologna Process and its new flexible, modular study programs. Lawmakers also created a Quality Assurance Agency (NOKUT),<sup>6</sup> revised the system of financial support for students, and promoted

new approaches to teaching and assessment at the higher educational level. The reforms also resulted in the standardization of many study programs. Thus students can leave one institution and continue their studies at another educational institution without major difficulties. Students in Norway also have a legal right to switch to other educational institutions as long as they meet all of the new institution's requirements, particularly regarding the study program. Either the 'first' educational institution has to agree to approve the student's study program and take responsibility for the student's degree, or the 'second' educational institution has to approve courses that have been completed earlier, and thus accept responsibility for the student's degree. These combined factors have torn down barriers to student mobility both in Norway and in the 45 Bologna Process participant countries.

Once students have completed their degrees, they can still continue to maintain a relationship with their educational institution, by participating in conferences and other arrangements, or by acting as the institute's advocates. A growing number of former students are also returning to higher educational institutions to continue education courses (Marzo-Navarro *et al.*, 2005b). Additionally, student loyalty is positively related to teaching quality as reflected in students' active participation and committed behavior (Rodie and Kleine, 2000). Consequently, institutions of higher education should find insight regarding student loyalty and the drivers or variables influencing student loyalty of great strategic importance (Marzo-Navarro *et al.*, 2005b; Schertzer and Schertzer, 2004).

This paper is organized as follows. The next section discusses conceptual models and hypotheses. Then, the context, data and research methodology are briefly discussed, followed by a presentation of the results. The paper then presents a discussion of findings and their implications for managers. The

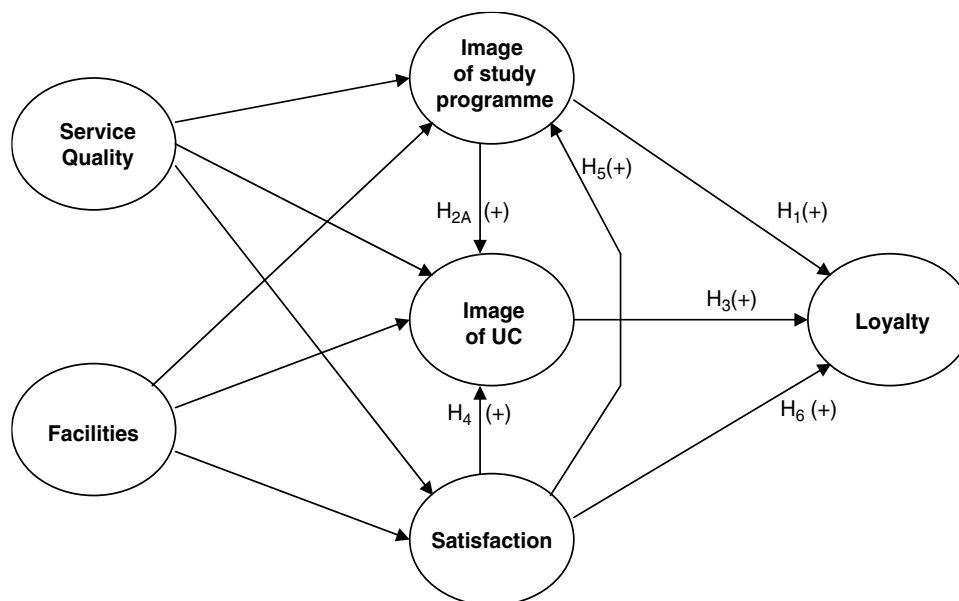
paper ends with a presentation of limitations, suggestions for further research and a conclusion.

## CONCEPTUAL MODELS AND HYPOTHESES

The main concepts underlying this study are drawn from various theoretical and conceptual frameworks and models. The concepts form the cornerstone of various National Customer Barometers (Fornell, 1992; Fornell *et al.*, 1996; Chan *et al.*, 2003). Most often, measures of these concepts are included in goal hierarchies of balanced scorecard approaches and/or of business models (Kaplan and Norton, 1996, 2001, 2004). For years they have been included in quality models and related quality awards for business excellence (Heaphy and Gruska, 1995; Oakland, 1995). Even more important, they form the central concepts in most of the various service quality approaches (Seth *et al.*, 2004). Relationships between images and loyalty, however, are not receiving the same research attention as relationships between satisfaction and loyalty (including antecedents and consequences).

Figure 1 presents the preferred theoretical structural model of the study and the hypothesized relationships. Customer loyalty is supposed to have a positive impact on the performance of business units both at an aggregate level and at the individual customer level (Anderson *et al.*, 1994; Yeung and Ennew, 2000; Helgesen, 2006). Thus, a business unit with focus on the concepts illustrated in Figure 1 should implicitly have as its main objective long-term profitability, which implies that the prevailing philosophy of the business unit is based on the marketing concept (eg Drucker, 1954; Felton, 1959; Grönroos, 1989).

The variables *Student Satisfaction*, *Image of University College* and *Image of Study Program* are assumed to be drivers of *Student Loyalty*, as will be subsequently discussed. The model also includes two antecedents. Arguments can, however, be put forward for turning the arrow from *Image of Study Program* to *Image of University College* the other way around, that is, assuming the opposite causal order. In fact, the common notion in the general literature on image is to allow corporate (brand) image to have a spillover effect on



**Figure 1:** The preferred theoretical structural model



their product brand image. Considering the particular context of the study, this paper will, however, argue for the chosen causal order, and the next sections elaborate on this matter. An alternative model supposing an opposite causal order between *Image of University College* and *Image of Study Program* is also, however, analyzed and discussed.

### Student Loyalty

Oliver (1997: 392) has defined customer loyalty as 'a deeply held commitment to rebuy or repatronize a preferred product or service consistently in the future, despite situational influences and marketing efforts having the potential to cause switching behavior', while Lam *et al.* (2004: 294) see it as 'a buyer's overall attachment or deep commitment to a product, service, brand, or organization'. These are but two of numerous definitions of this concept (eg Reynolds *et al.*, 1974–75; Reichheld, 1996; Mägi, 1999). Oliver (1997, 1999) relates customer loyalty to a four-stage model: cognitive loyalty, affective loyalty, conative loyalty and action loyalty. Dick and Basu (1994) perceive loyalty as being based on two interrelated components: relative attitude and repeat patronage, where the former is related to cognitive, affective and conative antecedents. Thus, customer loyalty can be looked upon as a concept containing a tripartite attitudinal component (cognitive, affective and conative) and a closely related behavioral component (repeat patronage–customer retention) (eg Johnson and Gustafsson, 2000; Lam *et al.*, 2004).

Paralleling the related concept of customer loyalty, student loyalty also contains an attitudinal component and a behavioral component (Henning-Thurau *et al.*, 2001; Marzo-Navarro *et al.*, 2005a). The attitudinal component can be defined as tripartite, consisting of cognitive, affective and conative elements. The behavioral component can be perceived as being related to decisions that students make regarding their mobility

options. Student loyalty, however, is not restricted to the period during which students are formally registered as students. The loyalty of former students can also be highly important for an educational institution. Therefore, student loyalty can be related both to the period when a student is formally enrolled as well the period after the student has completed his or her formal education at the institution. An institution offering higher education naturally has as one of its primary goals to have students who are committed to the institution despite situational influences (action loyalty). This paper bases measurements of student loyalty on the attitudinal component of the concept, that is, the students' behavioral intentions (eg Zeithaml *et al.*, 1996; Jones *et al.*, 2000; Henning-Thurau *et al.*, 2001).

### Images and Allied Constructs

Images and allied constructs (identity, reputation, etc) are defined and linked together in various ways (Chun, 2005; Brown *et al.*, 2006). In this study, corporate images are referring to external stakeholders' perceptions of an organization, corporate identity to internal stakeholders' perceptions, whereas corporate reputation includes views of both internal and external stakeholders (Chun, 2005). Thus corporate reputation is interpreted as the overall perception of a company, what it stands for, what it is associated with and what individuals may expect when buying the products or using the company's services (Fombrun and Shanley, 1990; MacMillan *et al.*, 2005), and defined as 'the overall estimation in which a company is held by its constituents' (Fombrun, 1996: 37). Corporate reputation is formed in all instances when the company is in interaction with its stakeholders (Theus, 1993; Schuler, 2004) and reflects the history of its past actions (Yoon *et al.*, 1993).

Corporate identity (desired identity) may be perceived as 'the firm's visual statement to the world of who and what the company

is – of how the company views itself’ (Selame and Selame, 1988), or as ‘the tangible manifestation of the personality of a company’ (Olins, 1999). Corporate images are formed by various groups of external stakeholders and can be defined as their ‘summary of the impressions or perceptions of a company’ (Chun, 2005: 95).

Image building is looked upon as being essential for attracting and retaining students, that is, important drivers of student loyalty (Sevier, 1994; Bush *et al.*, 1998; Standifird, 2005). Various constituencies may form images about a variety of entities such as products, brands, organizations or institutions (Fombrun, 1996; Lemmink *et al.*, 2003), and even countries (Passow *et al.*, 2005). Consequently, students may form images of both their university college and their specific study program. Loyalty is supposed to be positively affected by favorably perceived images (Selnes, 1993; Rindovea and Fombrun, 1999; Johnson *et al.*, 2001; MacMillan *et al.*, 2005). Thus, both the image of a university college and the image of a study program of a university college are assumed to have positive effects on student loyalty. An organization has several images and the various images can be assumed to be positively related (Dowling, 1988; Lemmink *et al.*, 2003). The common notion is that corporate brand image has a spillover effect on their product brand image (see eg Kinnear *et al.*, 1995; Kotler *et al.*, 2002), which in this study implies a spillover effect from the image of the university college to the image of the study programs. The linkages between the various concepts, however, are not straightforward (Dowling, 1986; Markwick and Fill, 1997; Lemmink *et al.*, 2003). Additionally, contextual aspects may be of importance regarding these linkages. Thus this study suggests that the image of the university college is influenced by the various study programs, due to the fact that the university college is new, the product of a merger of three former educational institutions. These

arguments suggest the following hypotheses:

- H<sub>1</sub>:** *Student perception of the image of the study program has a positive impact on student loyalty.*
- H<sub>2A</sub>:** *Student perception of the image of the study program has a positive impact on student perception of the image of the university college.*
- H<sub>3</sub>:** *Student perception of the image of the university college has a positive impact on student loyalty.*

The proposed hypotheses are based on the preferred theoretical structural model of the study. An alternative model assuming a spillover effect from the image of the university college to the image of the study programs is also analyzed and discussed below. In employing this alternative model, all other hypotheses can remain unchanged, so that only one alternative hypothesis is offered:

- H<sub>2B</sub>:** *Student perception of the image of the university college has a positive impact on student perception of the image of the study program.*

### **Student Satisfaction**

Customer satisfaction may be perceived as a summary psychological state or a subjective summary judgment based on the customer’s experiences compared with expectations. The concept has been defined in various ways, for example, as ‘an overall feeling, or attitude, a person has about a product after it has been purchased’ (Solomon, 1994: 346), or as a ‘summary, affective and variable intensity response centered on specific aspects of acquisition and/or consumption, and which takes place at the precise moment when the individual evaluates the object’



(Giese and Cote, 2000: 3). Student satisfaction is perceived as a parallel concept that can be defined in various ways (Browne *et al.*, 1998; Elliot and Healy, 2001; Elliott and Shin, 2002; DeShields *et al.*, 2005; Marzo-Navarro *et al.*, 2005a), for example as 'a short-term attitude resulting from an evaluation of a student's educational experience' (Elliott and Healy, 2001: 2), or as 'a student's subjective evaluation of the various outcomes and experiences with education and campus life' (Elliott and Shin, 2002: 198).

Customer loyalty is often perceived as the main consequence of customer satisfaction (eg Fornell, 1992; Fornell *et al.*, 1996; Chan *et al.*, 2003). Researchers have also found student satisfaction to be positively related to student loyalty (eg Athiyaman, 1997; Marzo-Navarro *et al.*, 2005b; Schertzer and Schertzer, 2004).

Customer satisfaction is not only positively related to customer loyalty, but also to corporate image, corporate reputation and brand reputation (Selnes, 1993; Anderson *et al.*, 1994; Johnson and Gustafsson, 2000; Johnson *et al.*, 2001; Oliver, 1980). Johnson *et al.* (2001) have studied various national customer satisfaction index models and have offered advice regarding these models, for example, that the 'corporate image should be modeled as an outcome rather than a driver of satisfaction. The effect of satisfaction on corporate image reflects both the degree to which customers' purchase and consumption experiences enhance a product's or service provider's corporate image and the consistency of customers' experiences over time' (Johnson *et al.*, 2001: 231–232). Students have experiences related to both their study program and the university college. Thus, student satisfaction is assumed to have a positive impact both on the students' image of the university college and on the students' image of the specific study program. These arguments suggest the following hypotheses:

**H<sub>4</sub>:** *Student satisfaction has a positive impact on student perception of the image of the university college.*

**H<sub>5</sub>:** *Student satisfaction has a positive impact on student perception of the image of the study program.*

**H<sub>6</sub>:** *Student satisfaction has a positive impact on student loyalty.*

### **Antecedents of Satisfaction and Images**

Researchers have introduced and studied a number of models and variables (antecedents or drivers) to explain variations in satisfaction, images and loyalty (eg Johnson *et al.*, 2001; Seth *et al.*, 2004; Williams *et al.*, 2005). Evaluation standards such as SERVQUAL (Parasuraman *et al.*, 1988, 1994) and SERVPERF (Cronin and Taylor, 1992) have been developed to function independent of any particular service context. While these scales might help identify a set of drivers or antecedents that have some general relevance, researchers have also been advised to consider additional dimensions that are derived from industry-specific contexts (Athiyaman, 1997; Athanassopoulos, 2000; Abdullah, 2005). The literature on higher education offers numerous context-specific dimensions or items to be included in questionnaires (Aldridge and Rowley, 1998; Elliott and Shin, 2002; Marzo-Navarro *et al.*, 2005b). A number of variables may influence student satisfaction or the students' perceptions of the image of a university college and the image of a study program. The main purpose is to select antecedents that are believed to be important and that can precisely indicate what should be done in order to obtain increased value for money (Zeithaml, 2000; McNair *et al.*, 2001; Guilding and McManus, 2002).

Students' perceptions of an educational institution's facilities and the quality of service provided are among the antecedents most

often used. Thus this study includes items measuring those two dimensions. These two variables are considered not concepts but factors (exogenous variables).

## CONTEXT, DATA AND RESEARCH METHODOLOGY

Aalesund University College (AAUC) was founded in 1994 as a result of a reorganization of higher education in Norway. Three former colleges in Aalesund, the College of Marine Studies, the College of Engineering and Aalesund College of Nursing were merged into one institution. The college has an enrolment of approximately 1,900 students (1,300 full-time) with 140 academic and administrative staff members. AAUC offers the following undergraduate study programs: *Engineering studies* (Civil Engineering, Mechanical Engineering and Naval Product Development and Design, Computer Engineering, Automation, Geographical Information Systems, Nautical Studies), *Business/Marketing studies* (Business Administration, Export Marketing, International Logistics, Innovation Management and Entrepreneurship), *Health Care studies* (Nursing, Biomedical Laboratory Science) and *Fisheries and Aquaculture studies* (Marine Biology and Seafood Processing). The diversity of study programs reflects AAUC's genesis as a merger of three quite different colleges. Three of the study areas, that is, business/marketing studies, nautical/marine/ maritime engineering studies, and fisheries and aquaculture studies, have been developed in close cooperation with the regional industrial environment (the marine and maritime industrial cluster).

Students in the study sample are recruited from different years in all of AAUC's bachelor study programs. The total sample consists of 454 respondents (204 male and 250 female students) representing about 35 per cent of the full-time students. The mean age of the respondents is 24.8 years. A comparison of the sample with the population (AAUC

students), suggests that the sample is not non-representative of the population.

### Main Concept Measurement

The main concepts in this study are student loyalty, image of the university college, image of the study program and student satisfaction, as shown in Figure 1. Researchers have reached no consensus concerning the measurements of these concepts (eg Fornell, 1992; Oliver, 1997; Davies *et al.*, 2004; Lam *et al.*, 2004; Chun, 2005). Many researchers, however, have offered valuable advice, which has been taken into account in developing the measurement model.

Twenty-five items (indicators) are used to measure study concepts and factors, 13 of which measure the four main concepts and 12 of which measure the two factors (antecedents). All indicators are measured on a seven-point Likert scale where '1' indicates the least favorable response alternative (very unsatisfied) and '7' the most favorable response alternative (very satisfied). Appendix A presents the statistical metrics of the 25 items and Appendix B the correlation matrix. All correlation coefficients higher than approximately 0.16 are significant at the 0.001 level, those higher than 0.12 at the 0.01 level, and those higher than 0.10 at the 0.05 level.

Accordingly, *Student Loyalty* is measured by asking about behavioral intentions (three items): the probability of recommending the university college to friends/acquaintances, the probability of attending the same university college if starting anew, and the probability of attending new courses/further education at the university college, cf. Appendices A and B.

Based on the preceding discussion and definitions (eg Fombrun, 1996; Chun, 2005), the *Image of University College* is measured with three items: the students' perception of the university college among her/his circle of acquaintances, the students' perception of the university college among the general





public and the students' perception of the university college among employers. *Image of Study Program* is measured in an analogous way. This assumes that the students' perceptions of the two kinds of images are developed by their perceptions of the external prestige of the AAUC in general and the specific study program in particular. The questioning approach selected is commonly called a third-party technique or projective questioning (see eg Wilson, 2003). Answers to these types of questions usually reflect the opinions of the respondents, here regarding various constituencies, thus increasing the reliability and validity of the measurements.

Ryan *et al.* (1995) assert that satisfaction may be measured by asking questions related to three aspects: summary judgement, comparison with expectations and comparison with an ideal situation. This is also the approach selected for this study. In addition an initial question concerning the students' spontaneous judgments of their satisfaction with the university college is included.

### Measures of the Antecedents

The survey originally included 21 antecedents (items). Because the main purpose of this paper is to analyze the relationships between two images and related constructs (satisfaction and loyalty), an exploratory factor analysis of the antecedents (principle components with varimax rotation) has been elaborated prior to a confirmative analysis. During this data reduction process, nine items were excluded (due to low factor loadings and communalities). Finally, 12 items related to two factors were extracted. Appendix A shows the statistical metrics of the 12 indicators, while Table 1 shows the factor loadings according to the confirmatory analysis. The first factor is called *Facilities* and the second *Service Quality*.

### Data analysis Approach

The data analysis approach follows the two-step confirmative modelling strategy pro-

posed by Hair *et al.* (2006). First a statistical congruent (and congeneric) measurement model of the latent variables is developed. In step two, these variables are used in a structural equation analysis setting, where the six hypotheses are tested (cf. Figure 1). The analysis is based on a covariance structure approach by using LISREL 8.50 (Jöreskog and Sörbom, 1996; Jöreskog *et al.*, 2001).

## RESULTS

### The Measurement Model

Appendices A and B present statistical metrics of the observed items and the correlation coefficients between them, respectively. It should be noted that *Student Loyalty* was initially measured with three items. In the process of validating the measurement model however, one item was excluded ( $Y_{13}$ : Probability of attending new courses/further education at the university).

Table 1 presents the standardized coefficients (loadings) of the six latent variables and two measures of convergent validity for each latent variable. All the four main concepts (*Student Satisfaction*, *Image of University College*, *Image of Study Program* and *Student Loyalty*) have statistically significant loadings (ranging from 0.71 to 0.93). Both Cronbach's alpha (CA) and construct reliability (CR) exceed the minimum recommended level (0.70) for all main constructs. Another measure of convergent validity is the variance extracted (VE), reported along the diagonal of Table 2. All the main concepts have a VE well above the minimum recommended value of 0.50.

The picture is mixed regarding the two factors reflected by the 12 antecedents. The *Facilities* factor consists of seven statistically significant loadings. Both CA (0.78) and CR (0.78) are acceptable, but VE (0.34) is below the recommended level. In the *Service Quality* factor all loadings (5) are significant. CA (0.72) and CR (0.73) are acceptable, whereas

**Table 1: Measurement Model Results: Completely Standardized Coefficients and Convergent Validity Measures**

	<i>Facilities</i>	<i>Service quality</i>	<i>Satisfaction</i>	<i>Image UC</i>	<i>Image study</i>	<i>Loyalty</i>
Satisfaction with the reading room	0.69					
Satisfaction with the library	0.69					
Satisfaction with the locations of lectures	0.59					
Satisfaction with the group rooms	0.56					
Satisfaction with the cleaning	0.55					
Satisfaction with the indoor temperature	0.49					
Satisfaction with the canteen	0.50					
Satisfaction with the pedagogical quality of lectures		0.75				
Satisfaction with the feedback from lecturers		0.60				
Satisfaction with the professional quality of lectures		0.69				
Satisfaction with the students' mid-term evaluations regarding their study		0.48				
Satisfaction with the quality of study materials		0.41				
Satisfaction with the university college (spontaneous judgment)			0.87			
Satisfaction with the university college in general			0.90			
Satisfaction with the university college compared with expectations			0.81			
Satisfaction with the university college compared with an ideal one			0.79			
Perception of the university college among your circle of acquaintances				0.82		
Perception of the university college among the general public				0.86		
Perception of the university college among employers				0.71		
Perception of the study among your circle of acquaintances					0.85	
Perception of the study among the general public					0.86	
Perception of the study among employers					0.71	
Probability of recommending the university college to friends/acquaintances						0.93
Probability of attending the same university college if starting anew						0.75
Probability of attending new courses/further education at the university						—
Convergent Validity:						
Cronbach's alpha (CA)	0.78	0.72	0.91	0.83	0.85	0.82
Construct reliability (CR) <sup>a</sup>	0.78	0.73	0.91	0.84	0.85	0.83

<sup>a</sup>Construct reliability:  $(\sum_i^n \lambda_i)^2 / (\sum_i^n \lambda_i)^2 + (\sum_i^n \delta_i)$ , where  $\lambda$  is standardized loading,  $n$  is number of loadings and  $\delta$  is the error variance

VE (0.36) is below the recommended level. The main concern is, however, connected to the hypothesized relationships between the four main concepts. All of these concepts are measured with items sharing a large proportion of variance in common.

Discriminant validity is examined by comparing the VE for each of the constructs

with the square of the correlation coefficients between the construct considered and each of the other constructs of the model. In order to have a construct that is truly distinct from another construct, their respective VEs should be larger than the square of their correlation coefficient. Table 2 contains the information necessary to explore this.

**Table 2: Measurement Model Results: VE<sup>a</sup> and Squared Construct Correlations**

	<i>Facilities</i>	<i>Service quality</i>	<i>Satisfaction</i>	<i>Image UC</i>	<i>Image study</i>	<i>Loyalty</i>
Facilities	<b>0.34</b>					
Quality	0.04	<b>0.36</b>				
Satisfaction	0.28	0.35	<b>0.71</b>			
Image UC	0.24	0.22	0.49	<b>0.64</b>		
Image study	0.12	0.12	0.25	0.38	<b>0.66</b>	
Loyalty	0.21	0.28	0.76	0.58	0.29	<b>0.71</b>

<sup>a</sup>Variance extracted (diagonal):  $(\sum_i \lambda_i^2)/n$ , where  $\lambda$  is standardized loading and  $n$  is number of loadings

Discriminant validity is plagued by only one problem, which concerns the relationship between *Student Loyalty* and *Student Satisfaction*. Measuring *Student Loyalty* with the three original items instead of the two reported does not improve the discriminant validity test level. On the contrary, it is even worsened. The CA-, CR- and VE-values (convergent validity) of the variable are also smaller when using three items instead of two. A less restrictive test of discriminant validity fixes the correlation value between the two concepts to 1.0, and compares the  $\chi^2$  of the restricted (total) measurement model with the  $\chi^2$  of the unrestricted (total) measurement model. If  $\Delta\chi^2$  is positive and significant (ie the restricted model exhibits significantly poorer overall fit), the two concepts can be claimed to be distinct, which is what is found ( $\Delta\chi^2$  is 17.63, with  $df=1$ ). Another indication of discriminant validity of the various concepts of the model is the fact that the overall fit of the measurement model is quite satisfying taken into account that there are no cross-loadings and no covariances between or within construct error variances (ie a congeneric measurement model). Table 3 shows two absolute goodness-of-fit measures ( $\chi^2$  and root mean square error of approx. (RMSEA)), one incremental goodness-of-fit measure (comparative fit index (CFI)) and one badness-of-fit measure (stand. root mean square residual (SRMR)). The RMSEA has a value of 0.063, CFI has a value of 0.92 and SRMR has a value of

0.049. All indices are satisfactory according to common guidelines offered in the literature (Byrne, 1998; Hair *et al.*, 2006).

Inspection of the squared correlations between the measured variables (Table 2) indicates that the estimated measurement model makes sense (ie assuring nomological validity). The correlations are all in accordance with the proposed hypotheses and the preferred theoretical structural model illustrated in Figure 1.

### The Preferred Estimated Structural Model

As shown in Table 4 the overall fit of the preferred estimated structural model is good (RMSEA = 0.063, CFI = 0.92, SRMR = 0.050). In the estimated alternative structural model, the path between the two types of images goes in the opposite direction, that is, from *Image of University College* to *Image of Study Program* (cf. Hypothesis **2B**). As both models have the same number of parameters to be estimated, there is no difference in model fit. Table 5 shows the standardized coefficients of the hypothesized paths and the standardized coefficients of the paths from the two factors of antecedents to the main constructs for both model versions. The main difference between them is the significance of the path from *Student Satisfaction* to *Image of Study Program*. This path is significant in the preferred model but insignificant in the alternative model. Both models, however, assign a positive and significant

**Table 3: Measurement Model Results: Summary Statistics of Model Fit**

$\chi^2$ (Minimum fit chi-square)	643.03
$\chi^2/df$	2.71
RMSEA <sup>a</sup> (root mean square error of approx.)	0.063
CFI <sup>b</sup> (comparative fit index)	0.92
SRMR <sup>c</sup> (stand. root mean square residual)	0.049

<sup>a</sup>RMSEA values below 0.08 indicate adequate fit

<sup>b</sup>CFI values close to 1 indicate a good fit

<sup>c</sup>SRMR values below 0.07 indicate adequate fit

path from *Student Satisfaction* to *Image of University College*. An important implication of the arguments put forward in the discussion of the theoretical framework of this study is that *Student Satisfaction* should positively influence both types of images, that is, both *Image of University College* and *Image of Study Program*. As *Student Satisfaction* is not significantly related to *Image of Study Program* in the alternative model, the other model version is preferred. In other contexts, however, the proposed hypotheses of the alternative model may be supported. This is further discussed below.

In the preferred model version, all the hypotheses except Hypothesis 1 (*Student perception of the image of the study program has a positive impact on student loyalty*) are supported, with standardized coefficients significant at the 0.01 level. The paths from *Service Quality* to *Image of University College* and *Service Quality* to *Image of Study Program* are insignificant, while the rest of the paths from the factors of antecedents to the main concepts are significant.

Figure 2 shows the results from the preferred estimated structural model, where all the insignificant paths are excluded. The direct effect from *Student Satisfaction* to *Student Loyalty* is 0.66. There are in addition two indirect (mediated) effects via *Image of University College* and *Image of Study Program* (0.11 and 0.03, respectively), giving a total

**Table 4: Structural Model Results: Summary Statistics of Model Fit**

$\chi^2$ (Minimum fit chi-square)	645.55
$\chi^2/df$	2.69
RMSEA <sup>a</sup> (root mean square error of approx.)	0.063
CFI <sup>b</sup> (comparative fit index)	0.92
SRMR <sup>c</sup> (stand. root mean square residual)	0.050

<sup>a</sup>RMSEA values below 0.08 indicate adequate fit

<sup>b</sup>CFI values close to 1 indicate a good fit

<sup>c</sup>SRMR values below 0.07 indicate adequate fit

effect from *Student Satisfaction* to *Student Loyalty* of 0.80. *Image of Study Program* has an indirect effect on *Student Loyalty* via *Image of University College* of 0.09, while *Image of University College* has a direct effect on *Student Loyalty* of 0.27. Changes in *Image of University College* and *Student Satisfaction* explains 80 per cent of the variance in *Student Loyalty* in the structural equation of *Student Loyalty* and 44 per cent of the variance in *Student Loyalty* in the reduced form equation of *Student Loyalty*.

## DISCUSSION AND MANAGERIAL IMPLICATIONS

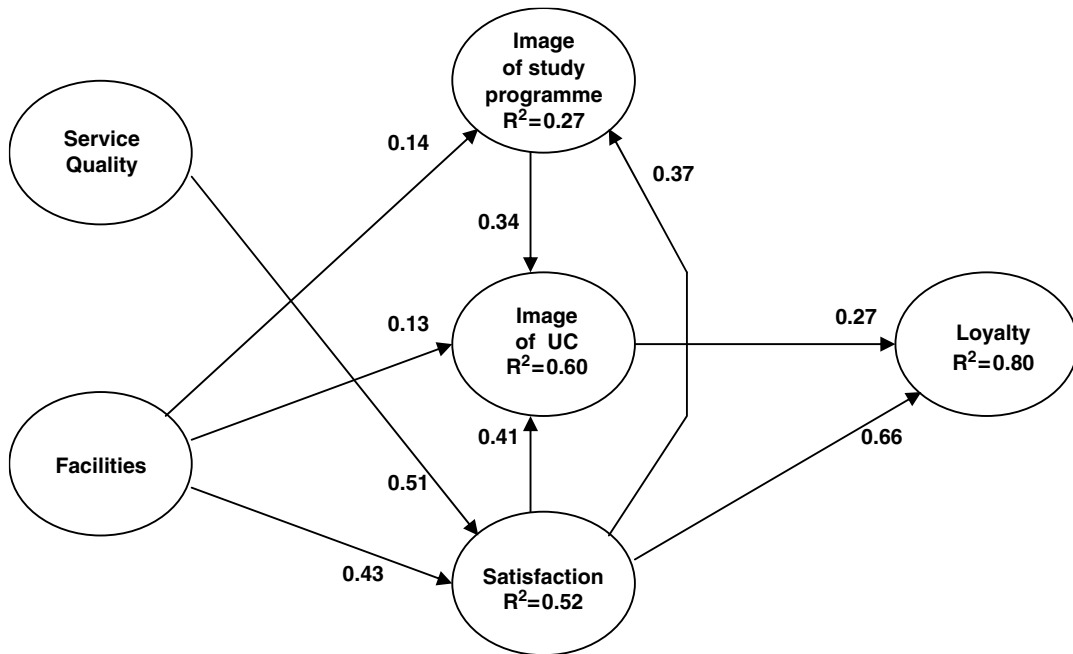
The main research questions addressed in this study are as follows: (1) Are the students' perceived image of the university college and their perceived image of their specific study program different concepts? (2) Are student satisfaction, image of the university college and image of the study program all drivers of student loyalty, and if so, which one has the highest degree of association with student loyalty? The results regarding the relationships between variables are summarized in Figure 2. (Insignificant paths are excluded.)

The findings indicate that students perceive the image of the university college and the image of the study program as two distinct concepts. Each of the two concepts is measured with three items. CA and CR exceed the minimum recommended level of



**Table 5: Structural Model Results: Standardized Coefficients (t-values in Parentheses)**

Path	Hypothesis	LISREL notation	Preferred model	Alternative model
			Stand. coeff. (t-value)	Stand. coeff. (t-value)
Image UC→Loyalty	<b>H<sub>3</sub></b>	BE(1,2)	0.27 (4.88**)	0.27 (4.88**)
Image study→Loyalty	<b>H<sub>1</sub></b>	BE(1,4)	0.04 (0.97)	0.04 (0.97)
Satisfaction→Loyalty	<b>H<sub>6</sub></b>	BE(1,3)	0.66 (13.42**)	0.66 (13.42**)
Satisfaction→Image UC	<b>H<sub>4</sub></b>	BE(2,3)	0.41 (6.00**)	0.53 (7.47**)
Image study→Image UC	<b>H<sub>2A</sub></b>	BE(2,4)	0.34 (6.75**)	
Image UC→Image Study	<b>H<sub>2B</sub></b>	BE(4,2)		0.51 (6.68**)
Satisfaction→Image study	<b>H<sub>5</sub></b>	BE(4,3)	0.37 (4.61**)	0.09 (1.12)
Service quality→Image UC		GA(2,1)	0.08 (1.45)	0.12 (1.97)
Service quality→Image study		GA(4,1)	0.11 (1.55)	0.05 (0.71)
Service quality→Satisfaction		GA(3,1)	0.51 (10.55**)	0.51 (10.55**)
Facility→Image UC		GA(2,2)	0.13 (2.44*)	0.18 (3.15**)
Facility→Image study		GA(4,2)	0.14 (2.18*)	0.05 (0.80)
Facility→Satisfaction		GA(3,2)	0.43 (9.12**)	0.43 (9.12**)
Service quality↔Facility		PHI(1,2)	0.19 (3.32**)	0.19 (3.32**)



**Figure 2: The preferred estimated structural model**

0.70 (eg Hair *et al.*, 2006) for both concepts (*Image of University College*: CA=0.83 and CR = 0.84; *Image of Study Program*: CA = 0.85

and CR = 0.85). The VE is also well above the minimum recommended value of 0.50 (*Image of University College*: VE = 0.64; *Image*

of *Study Program*:  $VE = 0.66$ ). Thus, both concepts can be said to have convergent validity. The square of the correlation coefficient between the two variables has a value of 0.38, which is far below the VEs for each of the two concepts, implying that discriminant validity may be claimed. Additionally, the associations between each of the two image variables and related variables (*Student Satisfaction* and *Student Loyalty*) are significant, and in accordance with expectations. Thus the results also appear to have nomological validity. The findings suggest that the first research question may be answered affirmatively, or that students perceive the two constructs as truly distinct.

The four main concepts of the research model (*Image of Study Program*, *Image of University College*, *Student Satisfaction* and *Student Loyalty*) are linked by six paths that are all hypothesized to be positive, cf. Hypothesis 1–Hypothesis 6 above. The findings support all hypotheses except for one: ‘*Student perception of the image of the study program has a positive impact on student loyalty*’ (Hypothesis 1). The other five hypotheses are all significant at the 0.01 level. This suggests that ‘*Student perception of the image of the study program has a positive impact on student perception of the image of the university college*’ (Hypothesis 2A); ‘*Student perception of the image of the university college has a positive impact on student loyalty*’ (Hypothesis 3); ‘*Student satisfaction has a positive impact on student perception of the image of the university college*’ (Hypothesis 4); ‘*Student satisfaction has a positive impact on student perception of the image of the study program*’ (Hypothesis 5); ‘*Student satisfaction has a positive impact on student loyalty*’ (Hypothesis 6). This further suggests that the second research question may only partly be answered affirmatively. Both *Student Satisfaction* and *Image of University College* are (direct) drivers of *Student Loyalty*, while *Image of Study Program* is not. The *Image of Study Program*, however, is indirectly and positively related to *Student Loyalty*.

The direct effect from *Student Satisfaction* to *Student Loyalty* is 0.66, cf. Figure 2. Taking into consideration the indirect effects (via *Image of University College* and *Image of Study Program*), the total effect from *Student Satisfaction* to *Student Loyalty* is 0.80. *Image of Study Program* has an indirect effect on *Student Loyalty* via *Image of University College* of 0.09, while *Image of University College* has a direct effect on *Student Loyalty* of 0.27. This suggests that *Student Satisfaction* has the highest degree of association with *Student Loyalty* both directly and totally, that is including the indirect effects. Still, *Image of University College* has a significant direct effect and *Image of Study Program* a significant indirect effect on *Student Loyalty*. Additionally, it should be noted that variations of *Student Satisfaction* and *Image of University College* explain 80 per cent of the variance of *Student Loyalty* in the structural equation of *Student Loyalty*, which can be characterized as a rather high proportion.

In the reduced form equation of *Student Loyalty* the variance explained by the included variables (*Service Quality* and *Facilities*) represents about 44 per cent of the variance of *Student Loyalty*. Besides, *Service Quality* only loads significantly on *Student Satisfaction* (0.51) while *Facilities* loads significantly on all the three intermediary concepts of the model, that is, on *Student Satisfaction* (0.43), *Image of University College* (0.13) and *Image of Study Program* (0.14). *Service Quality* may be looked upon as representing ‘intrinsic cues’ while *Facilities* is representing ‘extrinsic cues’ (Bauer, 1960; Selnes, 1993; Andreassen and Lindestad, 1998). According to this way of thinking, the drivers of satisfaction and the drivers of images may differ, supposing that the main drivers of satisfaction are belonging to ‘intrinsic attributes (cues)’ and the main drivers of images are belonging to ‘extrinsic attributes (cues)’.

Considering that only two factors (two groups of antecedents) are included in this research model, the proportion of variance



explained in the reduced form equation of *Student Loyalty* is high. Nevertheless, the number of antecedents should be augmented in order to identify other variables important for students (Aldridge and Rowley, 1998; Elliott and Shin, 2002) and in order to indicate what should be done to obtain increased student value in a cost-effective way (McNair *et al.*, 2001; Guilding and McManus, 2002).

### LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

Aalesund University College was founded in 1994 as a merger of three former educational institutions, thus being a rather new institution. Besides, it is a small institution offering about 15 undergraduate study programs. None of these programs are perceived as clearly having an 'outstanding' image. Thus, it may be enlightening to explore issues of student loyalty at an educational institution that has long-standing study programs that are widely perceived as prestigious. In this circumstance, a positive and significant path may be found between *Image of Study Program* and *Student Loyalty*.

As *Student Loyalty* of Aalesund University College to a large extent is driven by *Student Satisfaction*, the institution can be said to be satisfaction-driven. Other higher educational institutions, however, may be image-driven, which would mean that the sum of the direct and indirect path coefficients from *Image of University College* and from *Image of Study Program* to *Student Loyalty* would be higher than the sum of the direct and indirect path coefficients from *Student Satisfaction* to *Student Loyalty*. A comparison of satisfaction-driven and image-driven higher educational institutions can provide useful information for decision-making. Are there for instance any differences between institutions concerning prosperity? What are the differences with respect to the composition and the importance of the drivers of satisfac-

tion and images? Considering that universities and other institutions of higher education have only limited resources, insight into these problem areas can help managers when making strategic decisions concerning the allocation of resources to service quality activities, image building or other activities.

Ideally studies including both *Image of University College* and *Image of Study Program* should be conducted for each study program. Unfortunately, AAUC has too few students to allow this kind of research. With respect to the homogeneousness of respondents a lot of aspects have to be considered, for example, the number of options open to students regarding subjects of a study program.

The loyalty concept is one of the variables in this study that most merits further development. As has been discussed, loyalty can be perceived as consisting of two interrelated components: one tripartite attitudinal component (cognitive, affective and conative) and another closely related behavioral component (repeat patronage). According to this approach, *Student Loyalty* can be measured by using various measures, such as *Student Loyalty: Recommend* and *Student Loyalty: Patronage* (Dick and Basu, 1994; Lam *et al.*, 2004). Perhaps the two loyalty components are related differently to the other concepts. May be *Student Loyalty: Recommend* is closer related to images than that to satisfaction, while *Student Loyalty: Patronage* is closer related to satisfaction than that to images? Additionally, introducing a new approach for the measurement of student loyalty may also have a positive effect on the measurement model, particularly regarding the problems discussed with respect to *Student Loyalty*.

Even if the variance explained in *Student Loyalty* is rather high (80 per cent), other concepts such as switching costs, commitment, trust and emotions should be taken into consideration (eg Morgan and Hunt, 1994; Gounaris, 2005; Laros and Steenkamp, 2005; Johnson and Grayson, 2005). This will probably enrich the explanation of the variance

of *Student Loyalty* and provide further insight. Besides, other contexts should also be studied. Should the research model be adjusted to the context, not only regarding the antecedents but also regarding the main concepts included in the model? Should the linkages between the main concepts discussed in this study be different for a image-driven institution offering higher education than is supposed here?

## CONCLUSIONS

The main purpose of this paper is to look at the interplay between images and related constructs; more precisely the relationships between *Student Satisfaction*, *Image of University College*, *Image of Study Program* and *Student Loyalty*. The latter is perceived as being the ultimate dependent variable of the research model. In addition, two factors (exogenous variables) are included in the model, that is, *Service Quality* and *Facilities*.

The students perceive *Image of University College* and *Image of Study Program* as being distinct concepts. *Image of Study Program* is only indirectly related to *Student Loyalty* (via *Image of University College*) while *Student Satisfaction* and *Image of University College* are directly related to *Student Loyalty*. Taking into consideration the significance levels of the path coefficients and the variance explained of *Student Loyalty*, it seems reasonable to include all the four concepts in student surveys. Nevertheless, *Student Satisfaction* has the highest degree of association with *Student Loyalty* both directly and totally, representing a total effect about three times higher than the effect of *Image of University College*. *Service Quality* ('intrinsic cues') is only loading on *Student Satisfaction*, while *Facilities* ('extrinsic cues') is loading on all the three intermediary concepts (*Student Satisfaction*, *Image of University College* and *Image of Study Program*), implying that the drivers may differ. Managers of higher educational institutions are very interested in knowing the drivers having most to say with respect to student attraction and student retention.

Such insight can help managers when making decisions concerning the allocation of scarce resources. The context here is a small university college. Therefore, more studies are highly recommended both from higher education and from other industries.

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## NOTES

- 1 This summit was itself a follow-up on a summit at the Sorbonne University in Paris in May 1998 where the higher education ministers from France, Italy, the United Kingdom and Germany signed the Sorbonne Declaration on the 'harmonization of the architecture of the European Higher Education System' (<http://www.dfes.gov.uk/bologna/>).
- 2 In 2001 the meeting was in Prague, in 2003 in Berlin, in 2005 in Bergen, Norway and in 2007 the summit will be in London (<http://www.bologna-bergen2005.no/EN/BASIC/Pros-descr.HTM>).
- 3 More information regarding ECTS (student credits) can be found at the following internet address: ([http://ec.europa.eu/education/programmes/socrates/ects/index\\_en.html#2](http://ec.europa.eu/education/programmes/socrates/ects/index_en.html#2)).
- 4 In addition to the EU-based programs, regional programs have been established, for example, Nordplus for the Nordic countries (<http://siu.no/nordplus/>). Besides, bilateral agreements often are established between countries, especially when one of the countries is situated outside Europe.
- 5 A lot of information regarding Erasmus, Sokrates and Leonardi da Vinci is available, for example, <http://www.esn.org/>; <http://www.erasmus.ac.uk/>; [http://ec.europa.eu/education/programmes/socrates/socrates\\_en.html](http://ec.europa.eu/education/programmes/socrates/socrates_en.html); [http://ec.europa.eu/education/programmes/leonardo/leonardo\\_en.html](http://ec.europa.eu/education/programmes/leonardo/leonardo_en.html)
- 6 This abbreviation is based on the Norwegian name of the organization.

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**Appendix A**

Presents the statistical metrics of the 25 items (see Table 1A).

**Table 1A: Statistical Metrics of the 25 Items (Indicators) (n=454)**

<i>Variables (items/factors/concepts)</i>	<i>Symbol</i>	<i>Mean</i>	<i>S.D.</i>	<i>Skewness</i>	<i>Kurtosis</i>
Satisfaction with the reading room	X <sub>1</sub>	3.57	1.79	0.09	-1.05
Satisfaction with the library	X <sub>2</sub>	4.74	1.26	-0.43	0.22
Satisfaction with the locations of lectures	X <sub>3</sub>	4.57	1.31	-0.18	-0.37
Satisfaction with the group rooms	X <sub>4</sub>	3.37	1.65	0.23	-0.84
Satisfaction with the cleaning	X <sub>5</sub>	5.29	1.27	-0.66	0.16
Satisfaction with the temperature indoor	X <sub>6</sub>	3.43	1.75	0.34	-0.93
Satisfaction with the canteen	X <sub>7</sub>	4.80	1.50	-0.54	-0.47
Facilities (X <sub>1</sub> -X <sub>7</sub> )	ξ <sub>1</sub>				
Satisfaction with the pedagogical quality of lectures	X <sub>8</sub>	3.81	1.09	-0.22	-0.04
Satisfaction with the feedback from lecturers	X <sub>9</sub>	3.59	1.29	-0.04	-0.35
Satisfaction with the professional quality of lectures	X <sub>10</sub>	4.46	1.10	-0.31	0.02
Satisfaction with the students' mid-term evaluations regarding their study	X <sub>11</sub>	3.70	1.23	-0.14	-0.08
Satisfaction with the quality of study materials	X <sub>12</sub>	4.50	1.08	-0.29	0.27
Service Quality of studies (X <sub>8</sub> -X <sub>12</sub> )	ξ <sub>2</sub>				
Satisfaction with the university college (spontaneous judgement)	Y <sub>1</sub>	4.25	1.10	-0.41	0.21
Satisfaction with the university college in general	Y <sub>2</sub>	4.17	1.07	-0.44	0.17
Satisfaction with the university college compared with expectations	Y <sub>3</sub>	3.95	1.29	-0.20	-0.38
Satisfaction with the university college compared with an ideal one	Y <sub>4</sub>	3.50	1.26	-0.05	-0.49
Student satisfaction (Y <sub>1</sub> -Y <sub>4</sub> )	η <sub>1</sub>				
Perception of the university college among the general public	Y <sub>6</sub>	4.17	1.14	-0.13	0.31
Perception of the university college among employers	Y <sub>7</sub>	4.41	1.13	-0.28	0.50
Image of the university college (Y <sub>5</sub> -Y <sub>7</sub> )	η <sub>2</sub>				
Perception of the study among your circle of acquaintances	Y <sub>8</sub>	4.29	1.33	-0.33	0.07
Perception of the study among the general public	Y <sub>9</sub>	4.53	1.21	-0.11	0.15
Perception of the study among employers	Y <sub>10</sub>	4.75	1.22	-0.19	-0.12
Image of the study programme (Y <sub>8</sub> -Y <sub>10</sub> )	η <sub>3</sub>				
Probability of recommending the university college to friends/acquaintances	Y <sub>11</sub>	4.13	1.57	-0.19	-0.67
Probability of attending the same university college if starting anew	Y <sub>12</sub>	4.10	1.90	-0.16	-1.05
Probability of attending new courses/further education at the university college	Y <sub>13</sub>	4.14	1.81	-0.18	-0.95
Student loyalty: 2 items (Y <sub>11</sub> and Y <sub>12</sub> )	η <sub>4</sub>				



**Appendix B**

Presents the correlation matrix (see Tables 2A and 2B).

**Table 2A: Correlation Matrix of the 25 Items (Indicators) – Part 1 (n=454)**

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12
X <sub>1</sub>	1.00											
X <sub>2</sub>	0.52	1.00										
X <sub>3</sub>	0.34	0.45	1.00									
X <sub>4</sub>	0.40	0.32	0.37	1.00								
X <sub>5</sub>	0.37	0.43	0.33	0.29	1.00							
X <sub>6</sub>	0.37	0.26	0.33	0.33	0.28	1.00						
X <sub>7</sub>	0.37	0.33	0.24	0.33	0.26	0.20	1.00					
X <sub>8</sub>	0.08	0.16	0.02	0.05	0.07	-0.06	-0.02	1.00				
X <sub>9</sub>	0.04	0.13	0.01	-0.02	0.09	-0.04	0.03	0.45	1.00			
X <sub>10</sub>	0.18	0.23	0.10	0.05	0.12	0.06	0.09	0.56	0.35	1.00		
X <sub>11</sub>	0.04	0.08	-0.08	0.01	0.02	-0.11	0.05	0.36	0.40	0.21	1.00	
X <sub>12</sub>	0.08	0.17	0.13	0.06	0.17	0.05	0.13	0.29	0.24	0.28	0.25	1.00
Y <sub>1</sub>	0.29	0.33	0.32	0.26	0.19	0.18	0.29	0.30	0.27	0.39	0.21	0.23
Y <sub>2</sub>	0.34	0.39	0.33	0.30	0.26	0.25	0.29	0.35	0.31	0.42	0.22	0.24
Y <sub>3</sub>	0.24	0.30	0.25	0.21	0.23	0.16	0.27	0.32	0.28	0.41	0.24	0.15
Y <sub>4</sub>	0.24	0.30	0.17	0.16	0.20	0.10	0.23	0.39	0.34	0.39	0.36	0.28
Y <sub>5</sub>	0.27	0.30	0.28	0.23	0.17	0.18	0.22	0.23	0.21	0.30	0.21	0.13
Y <sub>6</sub>	0.30	0.31	0.23	0.19	0.19	0.21	0.19	0.23	0.27	0.33	0.18	0.15
Y <sub>7</sub>	0.31	0.25	0.18	0.13	0.21	0.20	0.21	0.25	0.26	0.36	0.17	0.18
Y <sub>8</sub>	0.19	0.17	0.21	0.18	0.11	0.14	0.19	0.22	0.25	0.32	0.20	0.18
Y <sub>9</sub>	0.17	0.21	0.19	0.12	0.14	0.21	0.19	0.12	0.18	0.22	0.12	0.15
Y <sub>10</sub>	0.21	0.22	0.22	0.13	0.17	0.25	0.13	0.10	0.11	0.17	0.07	0.16
Y <sub>11</sub>	0.29	0.32	0.24	0.23	0.25	0.19	0.25	0.29	0.28	0.42	0.30	0.23
Y <sub>12</sub>	0.23	0.25	0.17	0.14	0.20	0.11	0.18	0.26	0.23	0.35	0.23	0.18
Y <sub>13</sub>	0.14	0.17	0.07	-0.01	0.15	0.01	0.08	0.20	0.26	0.26	0.24	0.20

**Table 2B: Correlation Matrix of the 25 Items (Indicators) – Part 2 (n=454)**

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13
X <sub>1</sub>													
X <sub>2</sub>													
X <sub>3</sub>													
X <sub>4</sub>													
X <sub>5</sub>													
X <sub>6</sub>													
X <sub>7</sub>													
X <sub>8</sub>													
X <sub>9</sub>													
X <sub>10</sub>													
X <sub>11</sub>													

**Table 2B: Continued**

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13
X <sub>12</sub>													
Y <sub>1</sub>	1.00												
Y <sub>2</sub>	0.85	1.00											
Y <sub>3</sub>	0.68	0.70	1.00										
Y <sub>4</sub>	0.64	0.67	0.69	1.00									
Y <sub>5</sub>	0.51	0.55	0.50	0.50	1.00								
Y <sub>6</sub>	0.49	0.53	0.49	0.49	0.71	1.00							
Y <sub>7</sub>	0.41	0.41	0.36	0.39	0.55	0.62	1.00						
Y <sub>8</sub>	0.46	0.44	0.43	0.36	0.46	0.47	0.45	1.00					
Y <sub>9</sub>	0.32	0.34	0.35	0.26	0.37	0.41	0.35	0.74	1.00				
Y <sub>10</sub>	0.29	0.31	0.28	0.22	0.36	0.41	0.51	0.56	0.64	1.00			
Y <sub>11</sub>	0.67	0.71	0.72	0.72	0.61	0.59	0.51	0.50	0.37	0.37	1.00		
Y <sub>12</sub>	0.54	0.56	0.59	0.61	0.46	0.46	0.46	0.39	0.31	0.33	0.70	1.00	
Y <sub>13</sub>	0.35	0.40	0.38	0.42	0.42	0.34	0.33	0.27	0.21	0.21	0.50	0.62	1.00