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## **Examining Student Satisfaction with Higher Education Services**

### **Using a New Measurement Tool**

Thorsten Gruber

The University of Manchester

Manchester Business School

Manchester, UK

Stefan Fuß

University of Education Ludwigsburg

Ludwigsburg, Germany

Roediger Voss

Hochschule für Wirtschaft Zürich (HWZ) –

HWZ University of Applied Sciences of Zurich

Center for Strategic Management

Michaela Glaeser-Zikuda

Friedrich-Schiller-University of Jena

Institute for Educational Science

Jena, Germany

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*The Authors are grateful to the University of Education Ludwigsburg for receiving a research project grant. The authors would also like to thank the participants of the 3<sup>rd</sup> International Conference on Higher Education Marketing (ICHEM), April 02-04, Jagiellonian University, Krakow, Poland for invaluable comments and suggestions on an earlier draft of this paper.*

**Abstract**

**Purpose** – The study aims to investigate how students perceive the services they are offered at a German university and how satisfied they are with them. For this purpose, an evaluation study using a new tool to measure fifteen dimensions of student satisfaction at an institutional level will be presented that covers most aspects of student life. It was decided to develop a new measurement tool as many existing surveys are poorly designed, lack standardization and give no evidence concerning reliability or validity.

**Design/Methodology/Approach** - Questionnaires were handed out in 8 lectures for the pilot study and 18 lectures for the main study. The response rate was 99%. 374 students (pilot study) and 544 students (main study) filled in the newly developed questionnaires using Likert scales.

**Findings** – The study gave a valuable insight into how students perceive the quality of the services offered at a university and how satisfied they are with these offerings.

Our results show that students' satisfaction with their university is based on a relatively stable person-environment relationship. Thus, the satisfaction of students seems to reflect quite well perceived quality differences of offered services and of the wider environment. Students were particularly satisfied with the school placements and the atmosphere among students. Students were mostly dissatisfied with the university buildings and the quality of the lecture theatres.

**Research limitations**– As the study involved only two samples of students from one university, the results cannot be generalized to the German student population as a whole.

**Originality/value** – The study was the first to successfully apply a measurement tool, which has previously not been used. The study has hopefully opened up an area of research and methodology that could provide considerable further benefits for researchers interested in this topic. It also shows how the concept of student satisfaction could be assessed in future studies.

**Keywords** Service quality, Student satisfaction, Higher education

**Paper Type** Research paper

## **Examining Student Satisfaction with Higher Education Services Using a New Measurement Tool**

### **Introduction**

Increasingly, higher education institutions are realising that higher education could be regarded as a business-like service industry and they are beginning to focus more on meeting or even exceeding the needs of their students. This development is especially true for countries with a tuition-based model (DeShields *et al.*, 2005). In January 2005, Germany's highest court overturned a federal law that had banned the introduction of fees and thereby paved the way for German universities to start charging student tuition fees for the first time. Williams and Cappuccini-Ansfield (2007) believe that the introduction of tuition fees will force universities to act as a "service provider" and be responsive to student requirements. Similarly, Rolfe (2002, p. 171) maintains that the introduction of tuition fees may change "students' approach to education from that of a recipient of a free service to that of a "consumer". Further, Watson (2003) and Narasimhan (2001) maintain that fee-paying students may expect "value for money" and behave more like consumers. As students are increasingly seen as consumers of higher education services, their satisfaction should be important to institutions that want to recruit new students (Thomas and Galambos, 2004). Similarly, Appleton-Knapp and Krentler (2006) suggest that students' satisfaction with their educational experience should be a desired outcome in addition to learning.

By 2009/2010 German universities will also have switched completely to the two-level system of higher education (bachelor-master) to achieve the objectives of the Bologna process. The aim of this process is the establishment of a European higher education area by harmonising academic degree standards and quality assurance standards throughout Europe by 2010. Therefore, all students in Germany will be able to complete a Bachelor degree at one

university and begin a master's degree at a different university. As a consequence, German universities have to treat their students more as customers in the future and try to retain them as study results indicate that the recruitment of students is several times more expansive than their retention (Joseph *et al.*, 2005). Similarly, Helgesen and Nettet (2007) stress the point that the retainment of matriculated students is now just as important as attracting and enrolling new students.

While service quality and student satisfaction studies are quite common in the UK, as universities are expected to providing its students with excellent learning environments, well-supported lecturers, and appropriate support services, most German universities have not as yet paid sufficient attention to the service quality and satisfaction concepts applied to the university setting. The new environment outlined above, however, will force German universities to compete for good students and the profits they generate in the medium-term. German universities will have to monitor the quality of the educational services they offer more closely to retain current and attract new students. Moreover, due to the introduction of tuition fees and the new two level system of educational qualification, students in Germany will probably become more selective and demanding. These developments will make it particularly important for universities to better understand how students perceive the offered services as universities will compete with each other to both keep and attract the best students (Douglas and Douglas, 2006).

This paper investigates how students perceive the services they are offered at a German university and how satisfied they are with them. For this purpose, we will present an evaluation study using a new tool to measure most aspects of student life. We begin by reviewing the literature on higher education as a service, service quality, consumer and student satisfaction, and student feedback. We then describe a study that uses the new measurement tool at a German university. The paper concludes with a summary of findings and suggestions for further research in this area.

### **Higher education as a service**

According to Oldfield and Baron (2000, p. 86), higher education can be seen as a “pure” service and for Hennig-Thurau *et al.* (2001, p. 332), educational services “fall into the field of services marketing”. The latter authors, however, also point out that educational services also differ from other professional services in several ways: Educational services play a central role in the students’ lives and students require huge amounts of motivation and intellectual skills to attain their goals.

Further, educational services have several service characteristics: They are predominately intangible, perishable, heterogeneous, and the professor’s teaching efforts are simultaneously “produced” and “consumed” with both professor and student being part of the teaching experience (Shank *et al.*, 1995). Due to these unique characteristics of services (Zeithaml *et al.*, 1985), service quality cannot be measured objectively (Patterson and Johnson, 1993).

### **Service quality and satisfaction**

In the services literature, the focus is on perceived quality, which results from the comparison of customer service expectations with their perceptions of actual performance (Zeithaml *et al.*, 1990, p. 23). Quality in higher education is a complex and multifaceted concept and a single correct definition of quality is lacking (Harvey and Green, 1993). As a consequence, consensus concerning “the best way to define and measure service quality” (Clewes, 2003, p. 71) does not exist yet. Every stakeholder in higher education (e.g. students, government, professional bodies) has its own view of quality due to particular needs. This paper is concerned with one particular stakeholder in higher education: students. As stated, due to the introduction of tuition fees and the new degree structure, students in Germany will probably be regarded more as customers of educational services in the not so distant future. Students receive and use the training offered by the university, which makes them priority customers of educational activities (Marzo-Navarro *et al.*, 2005a). Authors such as Sander *et al.* (2000),

Gremler and McCollough (2002), and Hill (1995) also regard students as primary consumers of higher education service. This view, however, does not mean that other perspectives may not be valid and important as well. In this connection, Guolla (1999) rightly points out that students could also take the role as clients, producers, and products. Based on findings in the service quality literature, O'Neill and Palmer (2004, p. 42) define service quality in higher education as “the difference between what a student expects to receive and his/her perceptions of actual delivery”.

Several satisfaction definitions exist in the (services and consumer marketing) literature and following Oliver (1997), satisfaction can be defined as pleasurable fulfilment, which means that consumers perceive that “consumption fulfils some need, desire, goal, or so forth and that this fulfilment is pleasurable. Thus, satisfaction is the consumer's sense that consumption provides outcomes against a standard of pleasure versus displeasure.” (Oliver, 1999, p. 34). The satisfaction concept has also been extended recently to the context of higher education. The still limited amount of research suggests that student satisfaction is a complex concept, consisting of several dimensions (Marzo-Navarro *et al.* 2005ab; Richardson, 2005). By referring to Oliver and DeSarbo's (1989) definition of satisfaction, Elliott and Shin, (2002, p. 198), describe student satisfaction as “the favourability of a student's subjective evaluation of the various outcomes and experiences associated with education. Student satisfaction is being shaped continually by repeated experiences in campus life”. Current research findings reveal that satisfied students may attract new students by engaging in positive word-of-mouth communication to inform acquaintances and friends, and they may return to the university to take other courses (Wiers-Jenssen *et al.*, 2002; Mavondo *et al.*, 2004; Schertzer and Schertzer, 2004; Marzo-Navarro *et al.*, 2005ab; Helgesen and Nettet, 2007). Student satisfaction has also a positive impact on fundraising and student motivation (Elliott and Shin, 2002).

Service quality and customer satisfaction are fundamentally different concepts. While quality is a general attitude, satisfaction is linked to particular transactions (Patterson and

Johnson, 1993; Rowley, 1997; Aldridge and Rowley, 1998; Robinson, 1999). There are, however, conceptual issues in the services literature concerning the sequential order of the two constructs. While authors such as Dabholkar *et al.* (2000); Cronin *et al.* (2000); and Farrell *et al.* (2001) regard perceived quality as an antecedent to satisfaction, other authors (e.g. Parasuraman *et al.*, 1988; Bitner, 1990), however, consider customer satisfaction as an antecedent to service quality. Farrell *et al.* (2001) give a good overview of this contentious conceptual issue. The majority of recent publications (e.g. Yavas *et al.* 2004; Carrillat *et al.* 2007; Zeithaml *et al.* 2008) consider service quality as an antecedent to customer satisfaction. In particular, Zeithaml *et al.* (2008), who point out that service quality and customer satisfaction are fundamentally different concepts, regard satisfaction as the broader concept with service quality being a component of satisfaction will be taken as a framework. They suppose that customer satisfaction is influenced not only by service quality perceptions but also by personal and situational factors and price. Further support can be found in the higher education literature: Browne *et al.* (1998) and Guolla (1999) show that students' perceived service quality is an antecedent to student satisfaction. Thus, this paper follows the majority of recent papers in regarding service quality as an antecedent to satisfaction.

### **The student perspective**

Winsted (2000) and Zeithaml *et al.* (1990) maintain that service providers will only be able to deliver service encounters that will satisfy customers if they know what their customers want. If universities know how their students perceive the offered services, they may be able to adapt their services to a certain degree, which should have a positive impact on students' perceived service quality and their levels of satisfaction.

Oldfield and Baron (2000, p. 86) maintain that "there is an inclination to view service quality in higher education from an organizational perspective". They suggest that institutions should better pay attention to what their students want instead of collecting "data based upon



what the institution perceives its students find important”. Similarly, Joseph *et al.* (2005) point out that research on service quality in higher education has relied too strongly on the input from academic insiders while excluding the input from the students themselves. They believe that traditional approaches leave “decisions about what constitutes quality of service (e.g. such as deciding what is ‘most important’ to students) exclusively in the hands of administrators and/or academics” (p. 67). The authors, therefore, suggest that academic administrators should focus on understanding the needs of their students, who are the specific and primary target audience. Similarly, Douglas and Douglas (2006, p. 6) suggest that the student experience and its improvement “should be at the forefront of any monitoring of higher education quality”.

### **Collecting student feedback**

Collecting student feedback plays a major role in delivering quality in higher education institutions (Leckey and Neill, 2001) and according to Harvey (2003), student feedback can be defined as the

*“expressed opinions of students about the service they receive as students. This may include perceptions about the learning and teaching, the learning support facilities (such as libraries, computing facilities), the learning environment (lecture rooms, laboratories, social space and university buildings), support facilities (refectories, student accommodation, health facilities, student services) and external aspects of being a student (such as finance, transport infrastructure)” (Harvey, 2003, p. 3).*

Universities collect student feedback mainly for the following reasons (Harvey, 2003, p.3):

- internal information to guide improvement;
- external information for potential students and other stakeholders, including accountability and compliance requirements. Student feedback helps prospective

students (and also parents) obtain information about the institution so that they can decide which programme or course unit to choose or where to study (see also Richardson, 2005; Williams and Cappuccini-Ansfield, 2007).

Collecting feedback from students using satisfaction questionnaires is a common practice in higher education (Leckey and Neill, 2001) and Harvey (2003, p. 6) further distinguishes between the following survey forms:

- institution-level satisfaction with the total student experience or a specified subset;
- faculty-level satisfaction with provision;
- programme-level satisfaction with the learning and teaching
- module-level feedback on the operations of a specific module or unit of study
- teacher appraisal by students.

On module-level, student evaluation of teaching (SET) questionnaires are quite common and Pounder (2007) gives a comprehensive review of the literature on this topic that addresses the issue of effectiveness of this widely used instrument in higher education. Further, Felton *et al.* (2008) describe current developments using web-based student evaluations of teaching such as “Ratemyprofessors.com”. This research study, however, focuses on institution-level surveys following Williams and Cappuccini-Ansfield (2007) who point out that only a very limited numbers of nationally-based surveys exist that address the total student experience. Similarly, Richardson (2005, 392) suggests that students’ evaluations of course units alone “provide little information about their experience of their programmes or institutions as a whole”. Institution-level surveys help institutions understand the complexity of the total student learning experience from the student’s perspective and can also reveal important quality development issues (Harvey, 2003).

In order to collect students' feedback regarding their satisfaction with services provided at an institutional level, it was decided not to use an already existing questionnaire but to develop a new measurement tool instead as many existing surveys are poorly designed, lack standardization and give no evidence concerning reliability or validity (Rowley, 1995; Rowley, 2003; Richardson, 2005). Following Rowley (1997, p.11), who believes that researchers should identify the quality dimensions that are the most important to students as they are "most likely to have an impact on their overall satisfaction", the idea was to develop a new measurement tool that would focus on measuring students' satisfaction with the experienced service quality (dimensions) at their institution.

## **Methodology**

Due to the described problems of existing student satisfaction surveys, we decided to develop a new measurement tool using five-point Likert scales. The following sections give details regarding data collection, describe the sample used, and explain the development of the measurement tool.

### *Data collection*

We conducted our study at a University of Education in Germany and tested our new student satisfaction instrument in two studies. The first one acted as a pilot study and was conducted in the winter term 2005/2006. The main study was then conducted a year later in the winter term 2006/2007. We decided to collect our data each time at the beginning of the semester as we assumed that students may be occupied with exams during mid term, which could have had a negative impact on their satisfaction levels. We tried not to include first semester students as they may not have had sufficient experience with all services offered. Professors teaching the main topics of pedagogy, educational psychology, philosophy, sociology, mathematics, and German were asked to hand out our questionnaire during their lectures. The

data collection process was convenient for students as they were able to fill in the questionnaires during the lectures. We decided not to collect our data online due to the typical low response rates reported ranging between 17% and just over 60% of online studies (Douglas and Douglas, 2006). The described cluster sampling technique was preferred to a true random sampling technique that would have involved sending out questionnaires by post. This approach, however, would probably have led to low response rates and a possible danger of a response bias. In this connection, Williams and Cappuccini-Ansfield (2007) already found that students who complete questionnaires have higher levels of dissatisfaction than students who decide not fill in the questionnaires.

#### *Description of sample*

In total, questionnaires were handed out in 8 lectures for the pilot study and 18 lectures for the main study. The response rate was 99%. 374 students (pilot study) and 544 students (main study) filled in the questionnaires. 76% (pilot study) and 80% (main study) of the participants were female, which resembles the gender distribution of teacher education students at this university. 88% of respondents were 25 years old or younger. The average number of semesters was 3.7 (pilot study) and 4.2 (main study).

#### *Description of measurement tool*

The instrument was designed specifically for measuring student's satisfaction with the services offered by a university. The following 15 quality dimensions, covering most aspects of student life, were developed based on an extensive literature review (e.g. Harvey, 1995, Hill, 1995; Elliott and Healy, 2001; Wiers-Jenssen *et al.*, 2002) and discussions with current students following recommendations by Harvey (2003):

- Administrative and Student Services
- Atmosphere among Students

- Attractiveness of the Surrounding City
- Computer Equipment
- Courses
- Library
- Lecturers
- Lecture Theatres
- Refectory/Cafeteria
- Relevance of Teaching to Practice
- Reputation of the University
- School Placements
- Support from Lecturers
- The Presentation of Information
- University Buildings

Additionally, the general satisfaction with the university was measured in the questionnaire.

The following 4 items, covering the cognitive, emotive, and motivational aspects of the satisfaction construct, were developed and used for all 15 quality dimensions and the general satisfaction with the university:

- The .... fulfil my expectations.
- The ... are just how I would like them to be.
- I am satisfied with the ....
- I would recommend the ... to others.

For the pilot study, each dimension was measured with six items. Factor analysis results (which will be discussed in detail in a following paper), however, led to the reduction to four items per dimension to optimize the factors. For each dimension, respondents had five response choices from “Statement does not apply to me at all” (1) to “Statement always

applies to me” (5); only for the control scale “Positive Outlook on Life” (Grob *et al.* 1991) respondents had six response choices. Table 1 shows Cronbach’s alpha values ranging between .84 and .96 for the pilot study and .89 and .96 for the main study, demonstrating the high reliability of the measurement. These values are significantly higher than the recommended minimum levels of .70 (Nunnally, 1978).

*Take in table 1*

## **Results and discussion**

### *Descriptive statistics*

*Take in table 2*

Tables 2 shows that students were particularly satisfied with the school placements (M=3.7 in pilot and M=3.5 in main study) and the atmosphere among students (M=3.4/3.4) in both pilot and main study. Students were mostly dissatisfied with the university buildings (M=1.9/1.9) and the quality of the lecture theatres (M=1.8/2.0). Standard deviation values are between SD=.60 and SD=1.13, which is normal for scales with 5 response categories (6 categories for “Positive Outlook on Life”). Interestingly, the standard deviation is relatively low for “Satisfaction with Lecturers” in both studies.

### *Comparison of means*

*Take in figure 1*

Firstly, the comparison of means shown in figure 1 reveals that only seven of the 16 quality dimensions showed significant differences ( $p < .05$ ) between the two studies. A significant difference on the highest significance level ( $p < .001$ ) was also only found for “Satisfaction with the Refectory/Cafeteria”. The difference is a quarter of a standard deviation, which can be classified as a weak to medium-strong effect. All the other significant differences between the two studies can be regarded as even weaker effects.

Secondly, the correlation of the means ( $N=16$ ) of both studies is extremely high with  $r=.966$  ( $p < .001$ ). Thus, it can be said that the higher the means of the quality dimensions in the pilot study, the higher the means in the main study.

Both results support the hypothesis that the satisfaction of students with their university is based on a relatively stable person-environment relationship even though two largely different populations took part in the study within a year. Thus, the satisfaction of students seems to reflect quite well perceived quality differences of offered services and of the wider environment.

The results for paired t-tests reveal that the means for university buildings and lecture theatres are significantly lower than the means for the other 14 quality dimensions.

### ***Correlations***

In a next step, a correlation analysis was conducted to describe the relationship between student’s general satisfaction with the university (“Satisfaction with the University“) and the 15 quality dimensions. The results illustrated in table 3 only include the sub sample ( $n=219$  for the pilot study and  $n=508$  for the main study) that was used for the multiple regression model, which will be described in the next section. The scale “Satisfaction with Administrative and Student Services” had to be omitted from the regression model as only 131 students gave information for this variable in the pilot study and a “reduced” regression

model already showed that this variable had no impact on “General Satisfaction with the University”.

*Take in table 3*

Eight dimensions showed lower correlation coefficients (the explained variance was lower than ten percent) with the general “Satisfaction with the University” in both studies:

“Atmosphere among Students” ( $r < .32$ ); “Library” ( $r < .31$ ); “Refectory/Cafeteria” ( $r < .28$ ); “Attractiveness of the Surrounding City” ( $r < .28$ ); “Number of Semesters” ( $r > -.27$  / negative effect!); “Computer Equipment” ( $r < .22$ ); “School Placement” ( $r < .21$ ) and, with especially low correlation coefficients, “Positive Outlook on Life” ( $r < .09$ ). The fact that the general “Satisfaction with the University” showed no significant correlation in the pilot study with the “Positive Outlook on Life” scale is a good indicator for the discriminant validity of the satisfaction with the university scale.

In the following, the correlations between “Satisfaction with the University” and the quality dimensions with  $r > .33$  (explained variance 10%) in both studies will be discussed.

In the pilot study, eight dimensions showed considerable correlations with the variable “Satisfaction with the University”. Both indicators “Support from Lecturers” and “Lecture Theatres” had a medium correlation of  $r=.41$ , followed by “Courses” with  $r=.40$ , “University Buildings” and “The Presentation of Information” with  $r=.39$ . Finally, also the variables “Reputation of the University” ( $r=.38$ ), “Relevance of Teaching to Practice” ( $r=.37$ ) and “Lecturers” ( $r=.33$ ) suggest a medium strong relationship with “Satisfaction with the University”. The latter finding corroborates previous findings in other studies stressing the important role of teaching staff. Hill *et al.* (2003) for example found that the quality of the lecturer belongs to the most important factors in the provision of high quality education. For Pozo-Munoz *et al.* (2000, p. 253) “teaching staff are key actors in a university’s work”.



The main study revealed the same eight dimensions as having considerable correlations with the variable “Satisfaction with the University” supporting the results of the pilot study. Interestingly, the variable “Number of Semesters” correlated negatively with student satisfaction in both studies: the higher the number of semesters, the lower the level of satisfaction. Satisfaction levels of students seem to fall during the course of their student experience.

### ***Multiple regression analysis***

Finally, we conducted a multiple regression analysis to explore how the fourteen quality dimensions predict the general “Students’ Satisfaction with the University” independently from each other. As additional independent variables we also included the number of semesters and the variable “Positive Outlook on Life” (Grob *et al.*, 1991) as students who have a positive outlook on life may also evaluate their student experience more positively.

The adjusted  $R^2$  is .44 for the pilot study and .53 for the main study, which means that the model explains approximately half of the variance of the dependent variable. Although this is a good result, we expect that one or more main impact factors are still missing. The following two tables show the standardised Beta-coefficients for both the pilot and the main study.

#### *Take in tables 4 and 5*

As expected, all significant coefficients have positive signs apart from two exceptions: “Satisfaction with School Placements” (only significant in main study) and “Number of Semesters”. In general, the linear effects of the independent variables are rather small. Only three variables explain each more than 4% of the variance of “Satisfaction with University”: “Satisfaction with the Reputation of the University” ( $b=.24$  in main study); “Satisfaction with Courses” ( $b=.23$  in main study); and “Satisfaction with Lecture Theatres” ( $b=.22$  in pilot study).

These three areas may already indicate areas for improvement of the evaluated university as these three variables also show relatively low mean values.

The role of image and reputation was already discussed by Marzo-Navarro *et al.* (2005a, p. 61) who stressed that student “satisfaction levels would be reflected in the positive comments made within their immediate surroundings, thereby generating a positive image of the offered courses and assuring the survival of the offering”.

The importance of university facilities corroborates findings by Price *et al.* (2003) who already pointed to the importance of the infrastructure by showing that facilities have an important impact on student choice of institutions. By contrast, Marzo-Navarro *et al.* (2005b) could not find an impact of infrastructures on student satisfaction levels. Their study, however, focused on summer courses with a short duration and the authors admit that students therefore value infrastructures less than traditional full-time students.

The perceived importance of course satisfaction gives support to the importance of collecting module-level feedback on the operations of a specific module or unit of study.

In addition, in the main study, the correlation of “Students’ Satisfaction” with the “Relevance of Teaching to Practice” is significant on the highest level. Previous research such as Voss *et al.* (2007) already showed that vocational aspects of studies motivate students more than academic interest. Such knowledge of student expectations should help lecturers design their teaching programs. German lecturers in particular should perhaps pay more attention to vocational aspects in their teaching as they regularly receive criticism for offering courses that are too theory-laden. Lecturers could also provide assignments that are directly relevant to work, and use interesting and thought-provoking examples and case studies from the business life. Lecturers could also stress links between theory and practice more and invite guest speakers who are willing to share valuable experiences with students. The introduction of tuition fees in Germany might strengthen this “consumerist” approach and German universities will have to offer value for money while lecturers will have to emphasize the

vocational relevance of their courses. Approaches for attracting new students such as a “student satisfaction guarantee” (McCollough and Gremler, 1999; Gremler and McCollough, 2002) might be considered. Such a guarantee could make education appear more tangible and signal the quality of the educational experience to current and new students. McCollough and Gremler (1999) already found that satisfaction guarantees have a positive impact on student confidence in lecturers and they help set clear expectations that both students and lecturers will work hard. As a pedagogical device, satisfaction guarantees set performance standards and help increase the accountability of both students and lecturers. They also influence student evaluations of lecturers and courses positively without losing rigor in the classroom (Gremler and McCollough, 2002).

The relatively small contributions indicate that important factors explaining student satisfaction are still missing from the model. Further results are that the variable “Positive Outlook on Life” has no significant impact on student satisfaction and that the number of semesters has a negative effect on students’ satisfaction with the university. The following figure sums up the results and illustrates the regression model used in this study.

*Take in figure 2*

### **Limitations and directions for further research**

The research study has several limitations. First of all, the study tested a newly developed measurement tool covering most aspects of student life. Its aim was to give a first valuable in-depth insight into how students perceive the quality of the services offered at a university and how satisfied they are with these offerings. Further research studies, however, should improve our knowledge of this topic.

As the study involved only two samples of students from one university, the results cannot be generalized to the student population in Germany as a whole. The measurement of service quality in higher education makes it also necessary to consider the perspectives of other stakeholders (e.g. the government, employers, students' families) as well (Rowley, 1997).

Further, the finding that the number of semesters has a negative impact on student satisfaction shows how important it might be for future studies that compare different universities to keep the number of semesters constant.

As discussed, the independent variables in the regression model explain approximately 50% of the variance in students' satisfaction with a university. Further research should address the missing impact factors. In this connection, focus groups of students might help indicate other dimensions of satisfaction that were not captured during the construction of the current measures. Additional findings from the services marketing literature may also help to improve the regression model. According to Hemsley-Brown and Oplatka (2006), there is a demand for more research that explores the application of services marketing concepts to the context of higher education. For example, Zeithaml *et al.* (2006) suggest that customer satisfaction is influenced not only by service quality perceptions but also by personal and situational factors and price. Thus, student satisfaction could also be influenced by these factors and future research should operationalise these determinants and include them in a new measurement tool. A personal factor could for example be "study success". Students who successfully pass exams may perceive the university more positively than students who fail classes. Further, students' class ranking after graduation could also have an impact on their satisfaction. In addition, the introduction of tuition fees ("Price" variable in the Zeithaml *et al.* 2006, p. 107 model of customer perceptions of quality and customer satisfaction), may have an impact on student satisfaction as well. Universities may have to respect more the satisfaction of their students due to the new structure. The proposed new model of student

satisfaction is illustrated in figure 3 showing both the quality dimensions investigated in this study (to the left) and the additional potential impact factors (to the right).

*Take in figure 3*

### **Concluding statement**

As German universities want their students not only to study for a bachelor but also for a master, they have to be more service oriented and treat their students more as customers and keep them satisfied as they otherwise may want to switch to another university. This new service orientation of German universities is already a consequence of the new two-cycle system (bachelor and master) as before that, students had more difficulties with switching to another university. As a consequence, German universities will have to monitor their students' satisfaction with the services they offer more closely and the measurement tool presented in this study that covers most aspects of student life can support institutions in achieving this important goal. The relative stable results of both of our studies support the assumption that students' satisfaction with their university is based on a relatively stable person-environment relationship. Thus, the satisfaction of students seems to reflect quite well perceived quality differences of offered services and of the wider environment. This paper has focused on the issue of service quality and student satisfaction in higher education and by applying a measurement tool, which has previously not been used; it has hopefully opened up an area of research and methodology that could reap considerable further benefits for researchers interested in this topic. It is also hoped that other German Universities will replicate our study and publish their results so that students are helped in their decision making process.

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**Table 1 - Reliability of Scales (Cronbach's Alpha)**

Name of Scale	Pilot Study		Main Study	
	$\alpha$ (n)	$n_i$	$\alpha$ (n)	$n_i$
<i>Satisfaction with...</i>				
the University	.88 (372)	4	.89 (544)	4
the Administrative and Student Services	.96 (129)	4	.93 (534)	4
the Refectory/Cafeteria	.93 (356)	4	.94 (549)	4
the Computer Equipment	.94 (282)	4	.94 (540)	4
the Library	.93 (337)	4	.94 (542)	4
the School Placements	.93 (326)	4	.93 (527)	4
the Lecturers	.89 (372)	4	.89 (544)	4
the University Buildings	.93 (374)	4	.94 (551)	4
the Relevance of Teaching to Practice	.94 (369)	4	.94 (536)	4
the Support from Lecturers	.93 (372)	4	.93 (546)	4
the Presentation of Information	.92 (368)	4	.92 (546)	4
the Atmosphere among Students	.95 (374)	4	.95 (546)	4
the Courses	.84 (373)	4	.91 (549)	4
the Reputation of the University	.93 (365)	4	.93 (536)	4
the Attractiveness of the Surrounding City	.96 (372)	4	.96 (544)	4
the Lecture Theatres	.93 (372)	4	.93 (548)	4
the University Life Outside the Courses	.92 (280)	4	-	-
the Additional Courses Offered	.93 (158)	4	-	-
Positive Outlook on Life (8 Items)	.92 (364)	8	.90 (544)	8
Minimum	.84		.89	
Maximum	.96		.96	

$\alpha$  = Cronbach's Alpha

(n) = Number of Respondents

$n_i$  = Number of Items

**Table 2 - Descriptive Statistics**

Study		N	Min.	Max.	Mean	Std	
1,00 Pilot Study	Satisfaction with the University	374	1,00	4,25	2,5504	,75394	
	Administrative and Student Services	131	1,00	5,00	2,2729	,89090	
	Refectory/Cafeteria	359	1,00	5,00	3,0353	1,01833	
	Computer Equipment	282	1,00	5,00	3,2110	1,01206	
	Library	340	1,00	5,00	2,9581	,91992	
	School Placements	326	1,00	5,00	3,6771	,84958	
	Lecturers	374	1,00	5,00	3,0109	,62341	
	University Buildings	374	1,00	4,00	1,9352	,76338	
	Relevance of Teaching to Practice	370	1,00	5,00	2,7917	,97679	
	Support from Lecturers	372	1,00	5,00	2,6848	,82963	
	The Presentation of Information	368	1,00	5,00	2,2976	,91374	
	Atmosphere among Students	374	1,00	5,00	3,3957	,96390	
	Courses	374	1,00	5,00	2,8117	,59704	
	Reputation of the University	368	1,00	5,00	2,5648	,84164	
	Attractiveness of the Surrounding City	372	1,00	5,00	2,7890	1,13144	
	Lecture Theatres	372	1,00	4,00	1,8414	,77358	
	Positive Outlook on Life	373	1,13	6,00	4,4406	1,04084	
	Valid N (listwise)	91					
	2,00 Main Study	Satisfaction with the University	551	1,00	5,00	2,4986	,77209
		Administrative and Student Services	541	1,00	4,50	2,4227	,82204
Refectory/Cafeteria		552	1,00	5,00	3,3033	1,02843	
Computer Equipment		545	1,00	5,00	3,0650	1,05687	
Library		549	1,00	5,00	3,1204	,91850	
School Placements		529	1,00	5,00	3,5008	,89740	
Lecturers		552	1,00	5,00	3,0008	,66925	
University Buildings		552	1,00	4,75	1,8856	,81298	
Relevance of Teaching to Practice		545	1,00	5,00	3,0023	,95554	
Support from Lecturers		550	1,00	5,00	2,7382	,79146	
The Presentation of Information		552	1,00	5,00	2,4301	,96698	
Atmosphere among Students		552	1,00	5,00	3,3949	,93586	
Courses		552	1,00	5,00	2,7107	,75059	
Reputation of the University		541	1,00	5,00	2,6091	,85898	
Attractiveness of the Surrounding City		549	1,00	5,00	2,7994	1,00089	
Lecture Theatres		552	1,00	4,50	1,9958	,79422	
Positive Outlook on Life		551	1,43	6,00	4,6920	,86763	
Valid N (listwise)		502					

**Table 3 – Pearson Correlations for Pilot and Main Study**

	Pilot Study n = 219		Main Study n = 508	
	Satisfaction with the University		Satisfaction with the University	
Support from Lecturers	.41	***	.39	***
Lecture Theatres	.41	***	.37	***
Courses	.40	***	.56	***
University Buildings	.39	***	.42	***
The Presentation of Information	.39	***	.42	***
Reputation of the University	.38	***	.52	***
Relevance of Teaching to Practice	.37	***	.42	***
Lecturers	.33	***	.46	***
Atmosphere among Students	.31	***	.31	***
Refectory/Cafeteria	.27	***	.22	***
Library	.26	***	.30	***
Number of Semesters	-.26	***	-.24	***
Attractiveness of the Surrounding City	.24	***	.27	***
Computer Equipment	.17	**	.21	***
School Placements	.10	*	.20	***
Positive Outlook on Life	.00	n.s.	.08	*
Significance Level for Pearson's r: p < .05 *, p < .01 **, p < .001 *** (two tailed)				

**Table 4 – Multiple Regression Results (Pilot Study)****Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,334	,353		,95	,346
	Refectory/Cafeteria	,033	,040	,05	,84	,402
	Computer Equipment	-,017	,038	-,03	-,46	,648
	Library	,049	,045	,06	1,08	,283
	School Placements	-,048	,045	-,06	-1,05	,293
	Lecturers	,076	,073	,06	1,04	,299
	University Buildings	,080	,060	,08	1,35	,179
	Relevance of Teaching to Practice	,100	,041	,14	2,47	,014
	Support from Lecturers	,160	,056	,18	2,84	,005
	The Presentation of Information	,114	,043	,15	2,63	,009
	Atmosphere among Students	,042	,042	,06	1,02	,309
	Courses	,168	,075	,13	2,23	,027
	Reputation of the University	,059	,054	,07	1,09	,278
	Attractiveness of the Surrounding City	,009	,035	,01	,24	,809
	Lecture Theatres	,217	,059	,22	3,70	,000
	Positive Outlook on Life	-,034	,034	-,05	-1,00	,320
	Number of Semesters	-,051	,022	-,14	-2,36	,019

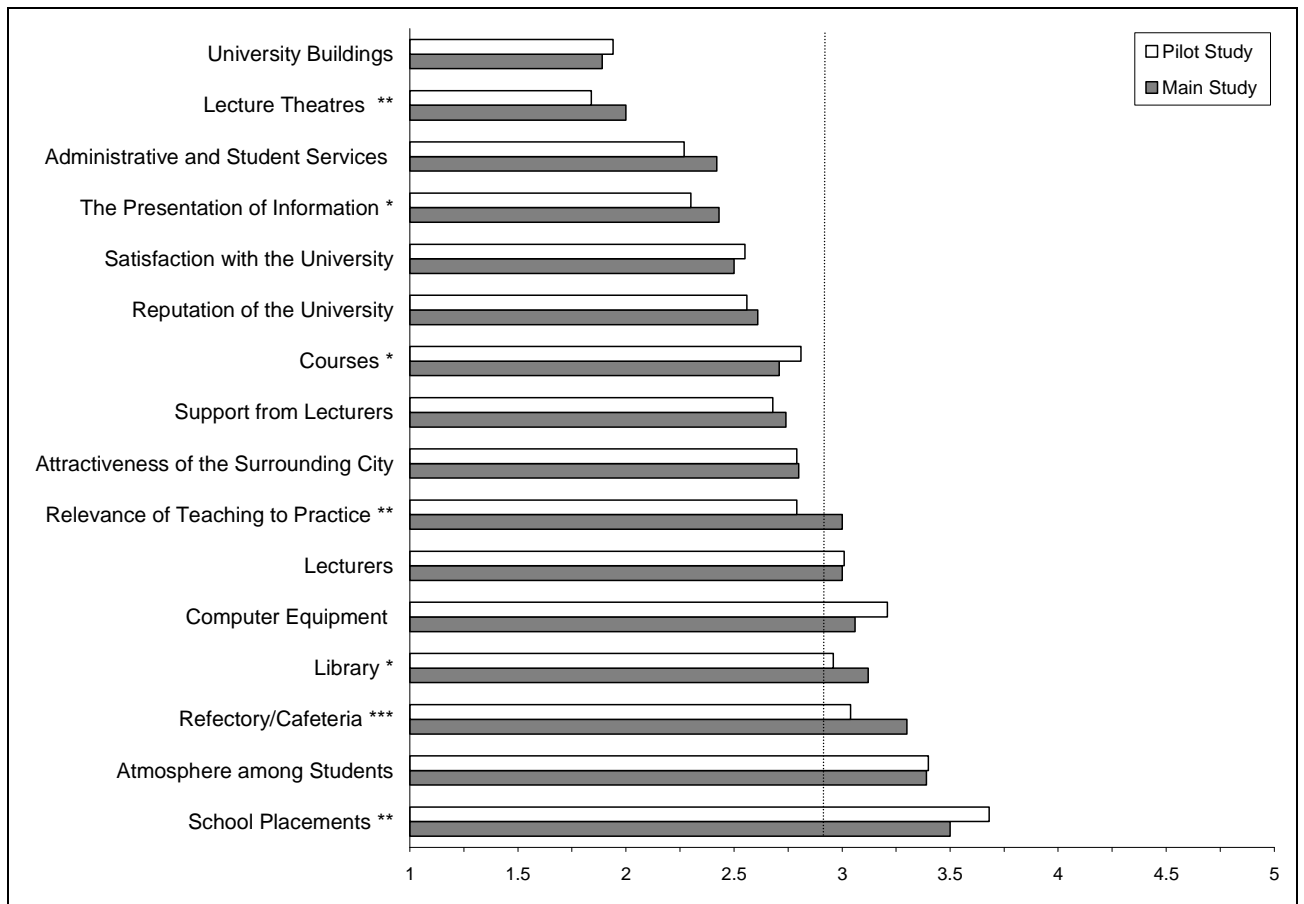
a Dependent Variable: Satisfaction with the University

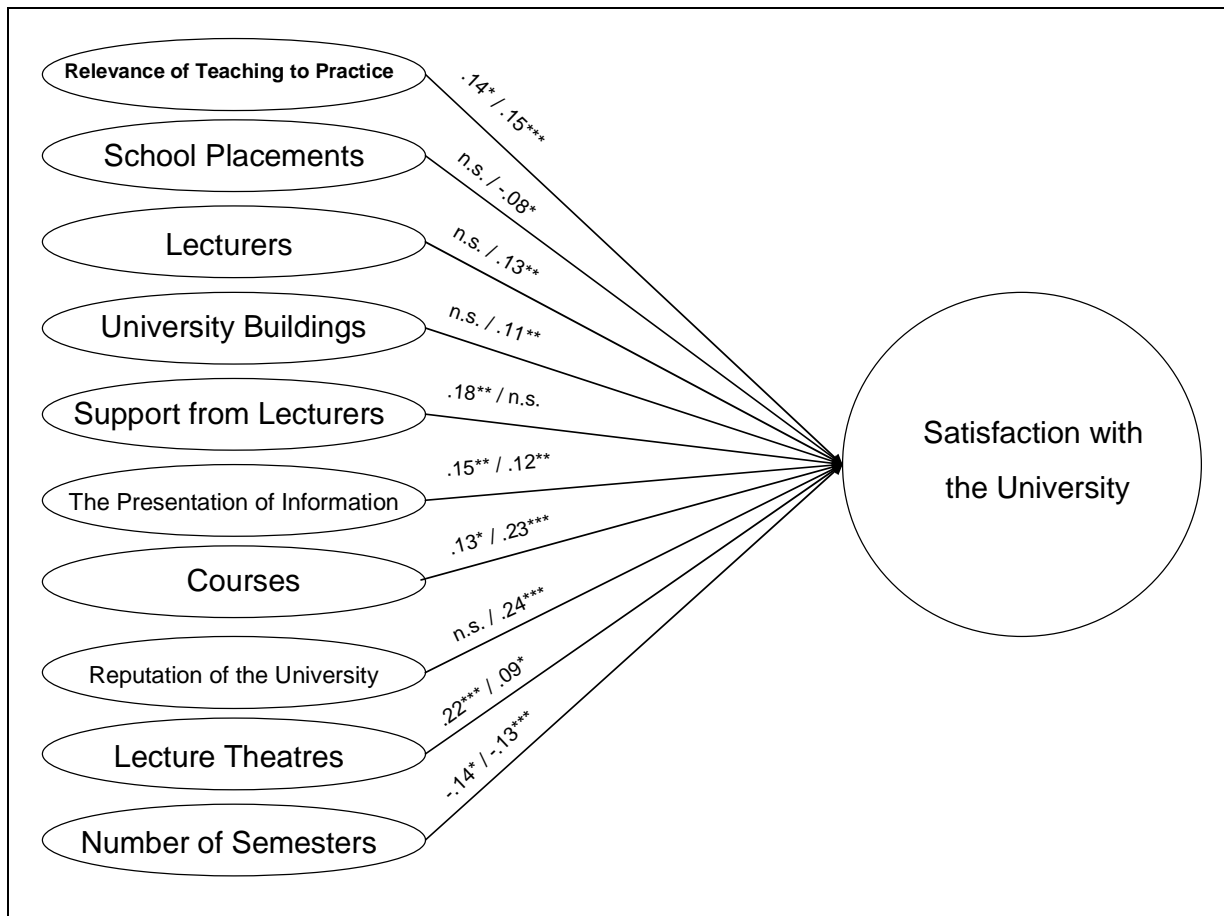


**Table 5– Multiple Regression Results (Main Study)**

Model		Coefficients <sup>a</sup>				
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,049	,202		,24	,808
	Refectory/Cafeteria	,028	,025	,04	1,13	,261
	Computer Equipment	-,012	,026	-,02	-,49	,628
	Library	,036	,030	,04	1,21	,229
	School Placements	-,069	,031	-,08	-2,24	,026
	Lecturers	,156	,049	,13	3,18	,002
	University Buildings	,108	,040	,11	2,70	,007
	Relevance of Teaching to Practice	,123	,031	,15	4,02	,000
	Support from Lecturers	-,054	,038	-,06	-1,42	,155
	The Presentation of Information	,095	,028	,12	3,33	,001
	Atmosphere among Students	,032	,029	,04	1,10	,271
	Courses	,241	,045	,23	5,36	,000
	Reputation of the University	,216	,034	,24	6,32	,000
	Attractiveness of the Surrounding City	-,002	,027	,00	-,09	,930
	Lecture Theatres	,090	,040	,09	2,28	,023
	Positive Outlook on Life	,024	,029	,03	,84	,401
	Number of Semesters	-,050	,013	-,13	-3,84	,000

a Dependent Variable: Satisfaction with the University

**Figure 1 – Comparison of Means**

**Figure 2 – Multiple Regression Model**

**Figure 3 – Suggested Framework for Further Research**