UNIVERSITY OF TWENTE.

Performance Measurement in the University of Twente

– Student Perspective –

Master Thesis by:
Weilei Weng
Business Administration – Financial Management
Faculty of Management and Governance
University of Twente

Supervisors:
Dr. Ben Jongbloed
Senior Research Associate
Center for Higher Education Policy Studies
University of Twente

Prof. dr. Nico P. Mol
Head of the Department of Finance and Accounting
Faculty of Management and Governance
University of Twente

16 November 2009
Enschede, The Netherlands

Preface

This report describes the results of my graduation project carried out at the Faculty of Management and Governance within the University of Twente. It signifies the final step in the completion of my Master of Science study in Business Administration with a track in Financial Management.

Writing the thesis has been a challenging but meaningful process, during which I undertook theoretical research and conducted interviews in the university. The report could not have been written without the input and thoughts of many people. Therefore, I would like to take this opportunity to acknowledge these individuals. First and foremost, I would like to express my sincere gratitude to my supervisors, Dr. Ben Jongbloed and Prof. dr. Nico P. Mol, who have guided me through the whole project and have provided me with valuable comments and academic insights. I have learned not only to think and write more critically, but also to look at the bigger picture. Second, I would like to thank all the interviewees from the UT: Mrs. Bertyl Lankhaar, Ms. Hanna Lange, Mr. Walter Nijhuis, and Mrs. Rita de Wilde, for taking the time to participate in this study and their willingness to offer me practical information for my research.

Next, I would like to express my thankfulness to my dear parents in Shanghai – my father Xinyuan Weng and my mother Huijun Wu, for their love, endless support and encouragement throughout my study. I am truly grateful! Special thanks go to my loving boyfriend, William Tang, who is always there showing his love and understanding. I appreciate his patience in helping me translate the Dutch documents which saved me pretty much time on capturing the right information. His love and inspiration give me the strength to persist and to complete this thesis. Finally, I would thank all of my friends, old and new, for their constant support.

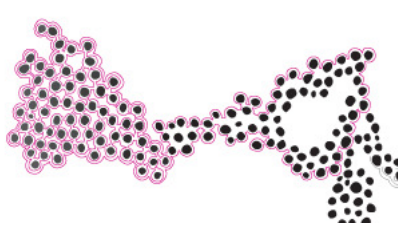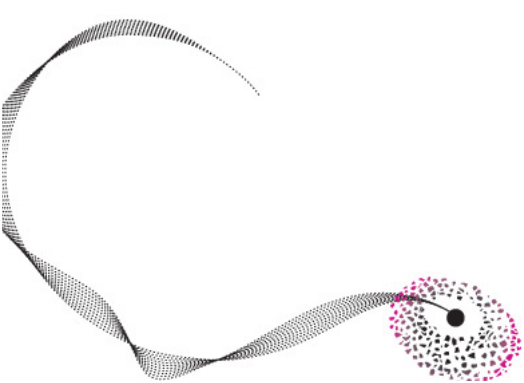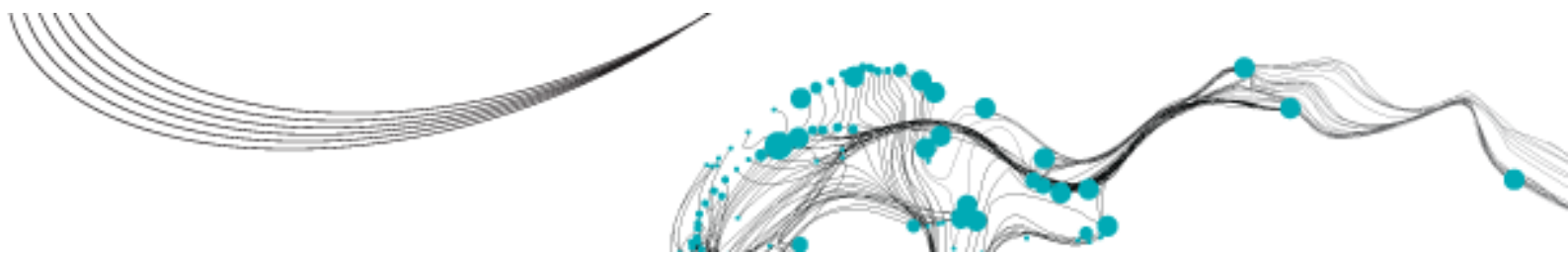Weilei Weng
Enschede, 20 October 2009

Table of Contents

List of Abbreviations

ARWU	- Academic Ranking of World Universities
BIT	- Business and Information Technology
CBS	- Statistics Netherlands
CHE	- Center for Higher Education Development
EU	- European Union
HBO	- Higher Professional Education in The Netherlands
HEI	- Higher Education Institution
ICT	- Information and Communication Technologies
IELTS	- International English Language Testing System
MBA	- Master of Business Administration
NFP	- Netherlands Fellowship Program
NGO	- Non-Governmental Organization
NUFFIC	- Netherlands Organization for International Cooperation in Higher Education
NVAO	- Accreditation Organization of The Netherlands and Flanders
OECD	- Organization for Economic Co-operation and Development
PDCA	- Planning, Do, Check, and Act
QA	- Quality Assurance
RQ	- Research Question
THES	- Times Higher Education Supplement
UMT	- University Management Team
UT	- University of Twente
UTS	- University of Twente Scholarship
VSNU	- Association of Universities in The Netherlands
WO	- University Education in The Netherlands

Executive Summary

This thesis is focused on the examination of the information sources and information types that influence a student's college choice in The Netherlands, and exploration of the ways in which the University of Twente can take this into account to become more attractive to prospective (inter-)national students. Therefore, the central research question is formulated as:

Which sources and types of information affect a student's college choice behavior, and in what ways can the University of Twente (UT) take this into account to improve its attractiveness to prospective students?

Based upon the theoretical study on student college choice, we find that the decision to enroll at a particular university is a complicated and lengthy process, during which prospective undergraduates and graduates are influenced by different factors. In comparison, graduate students are more concerned about the academic environment of the institution, the content of the program, and future career prospects. Generally there are three categories of information sources that students use in the college search process: direct sources, media sources and social sources. These information sources contain different types of information which may be used by students. At the central university level, there is general information about the institution, campus, admissions, and financial issues; while at the faculty level, information is more focused on the study programs and the faculty itself.

In order to communicate effectively with potential students, it is important to take into account the specific needs of different student populations. Dutch students are attracted by universities with more diverse course offerings and the quality of student life; German students choose on the basis of their personal interest in a specific subject and the increased employment opportunities; Chinese students who are strongly driven by investment motives expect a high quality of education and a successful career in the future. Since higher education rankings play an informative role in students' college choice, many Chinese and German students turn to the rankings to make more informed decisions.

The empirical research on the UT's communication strategy is done through interviews with the communication department and the institutional research office, as well as a review of the internal documents of the university. Assessing the differences between the current and desired strategy enables us to identify room for improvement. We recommend that the UT make use of some additional information sources (e.g. an English-version alumni magazine) and integrate more valuable information into its communication strategy. Education performance information, in particular, can be used which gives potential students a better picture of the education quality of the university and assists them in making better decisions. Moreover, the UT can improve its strategy toward international students by communicating the university's strengths to students, providing more career advising and counselling services, and creating a more international atmosphere on the campus. Hopefully these efforts would help the UT satisfy the needs of different student populations and increase its attractiveness to prospective (inter-)national students, leading to increased student applications and enrolments, and increased revenue of the university.

Part A

Introduction and Research Framework

Chapter 1: Introduction

Over the last few decades there has been a growing demand for higher education in the world, as many people recognize that being equipped with more advanced knowledge and skills is the key to future employment and success. According to OECD, the Organization for Economic Co-operation and Development, in all countries with comparative data, university graduates receive more earnings and find jobs more easily than those who have not had a university education (Education at a glance 2007, table A8.3a and table A9.4a). While demand keeps rising, the competition among higher education institutions to attract students is becoming intense in various countries around the world.

In The Netherlands the higher education sector is organized as a binary system, which consists of 14 research universities and around 40 institutions for higher vocational education. The quality of Dutch higher education is achieved through a national system of accreditation and quality assurance (NVAO 2003). The primary objectives of the research universities are the transmission of knowledge, the conduct of research, and the provision of community services. These institutions vary in size, with enrolments ranging from 6,000 to 30,000 (Nuffic 2009). Many of them are seeking to raise the number of national and international students and are facing increased competition in the marketplace. As a result, Dutch universities have sought to develop effective marketing and communication strategies and employ various marketing techniques to 'brand' themselves as having distinctive attributes that appeal to prospective students. These marketing and communication activities allow universities to identify and promote themselves based on who they are and what they do for students pursuing higher education. In this research we will analyze the communication strategy of one particular university, and we will investigate which informational sources and types of information it uses to attract potential students. Because the student population is not homogeneous, we will attempt to identify what strategies are relevant for what types of students: regional, national, European, international, part-time and/or mature students.

1.1 Problem Statement

Founded in 1961, the University of Twente (UT) is one of the youngest universities in The Netherlands. It is known as the entrepreneurial research university and offers a broad educational curriculum and research programs ranging from business administration and public policy studies to biomedical technology and applied physics. The UT distinguishes itself from other universities in the country as having a unique residential campus that provides students with a sound living and study environment. In addition, the university is committed to developing the Business & Science Park comprising a lot of innovative spin-off companies in the surrounding area.

Over the years the university has been growing at a steady pace. There is an increasing number of international students come to the UT, mostly for the university's Master's programs that are offered in English. Moreover there is a wider choice of scholarships and grants available to international students. The table below indicates that the ratio of international students to total students at the UT is slightly above the average in the Dutch university market.

Table 1: Number of Student Enrollment by University

Aantal ingeschreven studenten per 1 oktober 2006

| | Totaal | | | Waarvan met Buitenlandse nationaliteit en vooropleiding | | | | | |
| | | | | Aantal | | | Percentage | | |
	Bachelor/ ongedeeld	Master/ leraren- opleiding	Totaal	Bachelor/ ongedeeld	Master/ leraren- opleiding	Totaal	Bachelor/ ongedeeld	Master/ leraren- opleiding	Totaal
Leiden Universiteit	14 889	2 463	17 352	372	386	758	2,5%	15,7%	4,4%
Universiteit Utrecht	23 363	5 932	29 295	570	414	984	2,4%	7,0%	3,4%
Rijksuniversiteit Groningen	20 407	3 068	23 475	537	346	883	2,6%	11,3%	3,8%
Erasmus Universiteit Rotterdam	16 093	2 927	19 020	633	363	996	3,9%	12,4%	5,2%
Universiteit Maastricht	9 778	1 594	11 372	2 957	614	3 571	30,2%	38,5%	31,4%
Universiteit van Amsterdam	21 486	4 181	25 667	626	744	1 370	2,9%	17,8%	5,3%
Vrije Universiteit	13 598	4 990	18 588	234	404	638	1,7%	8,1%	3,4%
Radboud Universiteit Nijmegen	14 424	2 828	17 252	590	138	728	4,1%	4,9%	4,2%
Universiteit van Tilburg	6 924	4 272	11 196	219	231	450	3,2%	5,4%	4,0%
Technische Universiteit Delft	9 904	3 773	13 677	471	922	1 393	4,8%	24,4%	10,2%
Technische Universiteit Eindhoven	5 887	1 302	7 189	106	201	307	1,8%	15,4%	4,3%
Universiteit Twente	5 921	1 834	7 755	375	163	538	6,3%	8,9%	6,9%
Wageningen Universiteit	2 568	1 874	4 442	150	807	957	5,8%	43,1%	21,5%
Totaal	165 242	41 038	206 280	7 840	5 733	13 573	4,7%	14,0%	6,6%

Bron: 1cHO2006. Inschrijvingen, hoofdinschrijvingen per 1 oktober 2006

Nationaliteit is gebaseerd op de paspoortnationaliteit. Bewoners van de Nederlandse Antillen vallen hierdoor in de groep met een Nederlandse nationaliteit.

Nevertheless, when compared with other universities, the total number of students enrolled at the UT is relatively small. This is due to the program design of the university, which is concentrated mostly on engineering programs while a few social science programs. The number of new applicants in 2009 that have preliminary chosen the UT for their bachelor or master study is merely 2.8% of the total market in The Netherlands, making it one of the small players in the Dutch university market. Before taking an in-depth look at the university itself and trying to understand the UT's communication strategy toward different student populations, it is of vital importance to investigate students' information sources and information channels, and the criteria they use when comparing and selecting universities.

1.2 Research Objectives

In order to give an overall analysis of the UT's attractiveness to prospective students, the main purpose of this study is to examine the types of information sources and messages that affect a student's college choice behavior, and to explore the ways in which the UT can attract more national and international students. Since the current university market in The Netherlands has three main segments when it comes to the student nationalities: Dutch students, non-Dutch EU students, and non-EU students, each segment of students place emphasis on the sorts of information differently, and their decision-making processes will be investigated separately.

In doing so, the research begins by analyzing a variety of information that students use in the search of a university/program, and the sources through which they get the required information. After clarifying the information needs of different student populations (assorted by nationalities), the study will proceed to examine the UT's communication strategy and the extent to which the UT can address the various sources and types of information to raise its attractiveness to students. We will confront what students find important with what the university communicates through its communication strategy, and will explore, in particular, what information on the UT's (educational) performance is regularly collected and is readily available to be integrated into its strategy toward

(international) students. In order to make clear what performance-related information is, we will explain a number of performance indicators that are used to measure the input and output of the university, in other words, the indicators regarding how resources are deployed (e.g. instructional resources and supporting services) and what outcomes have actually been achieved (e.g. employment rate of graduates). The assessment of the UT's communication strategy can help highlight the university's relative strengths and opportunities. Strategic recommendations are formulated with regard to the ways in which the university can improve so as to become more popular among current and future students.

During the research, we will investigate in particular the role of higher education rankings in student college choice, as rankings are a one-dimensional presentation of the relative quality of a set of higher education institutions, and they offer comparable performance information to students. There are various types of rankings – some oriented towards the research quality, others to the educational quality. The indicators used to create these rankings are a combination of input and output measures to which different weights are assigned. A well-known example is the Academic Ranking of World Universities (ARWU) published by Shanghai Jiaotong University, which ranks institutions mainly based upon their research performance. Ranking indicators include major international awards, highly cited researchers in important fields, articles published in selected top journals and/or indexed by major citation indexes (Liu & Cheng, 2005).

1.3 Research Questions

After clarifying the main research objectives, the central research question is formulated as:

Which sources and types of information affect a student's college choice behavior, and in what ways can the University of Twente (UT) take this into account to improve its attractiveness to prospective students?

On the basis of the main research question, several sub-questions are designed:
1. a) What types of information do students use in the choice of a university/program, and through which sources do they get the required information?
    b) What is the role played by higher education rankings?
    c) Do different student populations (assorted by nationalities) differ in terms of the sources and types of information that are used to inform their choices?

2. a) What sources and types of information currently feature in the UT's communication strategy – at both the central university level and the faculty level?
    b) What is the role played by information related to the students' education performance in the communication strategy?

3. a) Which performance-related information is regularly collected and is readily available in the UT to be integrated into its communication strategy toward potential students?
    b) Given what we know from the literature, in which areas can the UT's communication strategy be improved at both the central university level and the faculty level to attract more prospective (inter-)national students?

1.4 Research Methodology

The general approach of our research is a combination of theoretical study and empirical research. In order to give proper answers to the central research question, we will follow a list of sub-research questions that have been divided into three groups. The first group of questions (as illustrated in Part B of the report) lays a theoretical framework for our further case study research. The second and third groups of questions (as elaborated in Pact C of the report) lead us to the practical findings and conclusions. The research model shown in figure 1 illustrates the undertaken research in this thesis.

1.4.1 Theoretical Framework

In response to the first research question (RQ 1a): "*What types of information do students use in the choice of a university/program, and through which sources do they get the required information", w*e will start by reviewing the literature on student college choice (journals and academic articles). These previous research and empirical findings help us gain a perspective on the key factors determining undergraduate and graduate student choice. Taking an in-depth look into students' information needs, we will try to build a multi-dimensional framework which involves various sources and types of information that students use in the college search process.

Since higher education rankings are a one-dimensional presentation of the relative quality of a set of higher education institutions, and they provide students and parents with comparable performance information on the institutions, we will shed light on the role of rankings in student college choice as well as their impact on institutional decision-making, thereby answering the research question (RQ 1b): "*What is the role played by higher education rankings*".

Due to the fact that different student populations (as represented by Dutch students, German students, and Chinese students) have different ways of acquiring information and they perceive the importance of the types of information differently, we will identify their information needs separately and will highlight their most frequently used information and sources. In this way, we can answer the research question (RQ 1c): "*Do different student populations (assorted by nationalities) differ in terms of the sources and types of information that are used to inform their choices*". After responding to the first group of research questions, we will gain a clear understanding of student college choice, and it is of great value to relate these theoretical findings to insights into our case university – the University of Twente.

1.4.2 Empirical Research and Findings

The next and central part of our thesis will be focused on the empirical research in the form of a case study. Based upon the established theoretical framework, we will proceed to do secondary analysis of the data by examining the communication strategy of the university and will answer the research question (RQ 2a): "*What sources and types of information currently feature in the UT's communication strategy – at both the central university level and the faculty level*". In doing so, field research by means of interviews with people from the central/faculty communication

department of the UT will be held, and a list of interview questions (as shown in Appendix I) will be designed and be sent to the interviewees in advance. The selected interviews will keep us informed about the main information sources and the types of information that currently feature in the university's and its faculties' communication strategy.

With the purpose of knowing the general communication strategy of the UT and the specific strategies at the faculty level, we will interview Mrs. Bertyl Lankhaar, who is the head of the communication department within the faculty of Management and Governance. In addition to the listed interview questions, we would also like to have some ideas about how the central-level strategy is translated at the faculty level, and how the faculty creates its own ideas and develops its own strategy to attract students. In order to gain insights into the UT's communication strategy toward international students, we will interview Ms. Hanna Lange from the central communication department, who is responsible for the recruitment of international students and attending various education fairs around the world. The interview with Mrs. Rita de Wilde will help us understand the internal communications between the central communication department and the faculty-level department, as well as the role the UT alumni office plays in the recruitment of graduate students.

Since performance measurement is our main research subject, we will pay close attention to the performance-related information, and will examine the extent to which this kind of information can be used to aid student choices. This is reflected in the research question (RQ 2b): "*What is the role played by information related to the students' education performance in the communication strategy*". We will shed light on a number of performance indicators that are used to measure the institutional and educational performance, and will address their important roles in attracting and retaining students. We will also find out how the UT monitors and controls its education quality, and to what extent the university regards the quality issues important and highlights them in its institutional plan.

In order to answer the research question (RQ 3a): "*Which performance-related information is regularly collected and is readily available in the UT to be integrated into its communication strategy toward potential students*", we will interview Mr. Walter Nijhuis, who works in the UT institutional research office and is responsible for collecting and analyzing data/figures on the institutional and educational performance. In this way, we can find out which information related the student's education performance (student progress and achievement) is regularly collected and is readily available to be integrated into the UT's communication strategy toward prospective students. Since performance indicators are the main items in our search for background information on the UT's strengths, we will also refer to the internal documents of the UT in an effort to see what information on the university's relative strengths is regularly collected and how this information may be used for informing the communication strategy and be used by management as indicators where performance can be improved.

Finally, we will confront theory with practice, assessing/characterizing the communication strategy of the university by setting up two checklists which include all possible sources and types of information (items are derived from the theoretical study) that can be used to inform student

choices. The assessment of the current and the desired strategy will enable us to find gaps and to identify areas for improvement, so as to answer the research question (RQ 3b): "*Given what we know from the literature, in which areas can the UT's communication strategy be improved at both the central university level and the faculty level to attract more prospective (inter-)national students*". In short, these empirical findings together with the theoretical framework would help us gain insights into our main research topic and answer the research questions in a more objective way.

Figure 1: Research Model

Literature Review	Interviews	Checklists

General understanding about:
- Student college choice factors
- Student information needs
  ✧ Sources of information
  ✧ Types of information
  ✧ Different student nationalities
- Role of rankings in student choice
	Ideas about:
	- Current communication strategy
	- Regularly collected information on the university's performance
	
	Internal Document Review
	- Education quality control and performance measurement
	- Available performance info (student-oriented) in university
		- Assessment:
		  ✧ Current strategy
		  ✧ Desired strategy
		- Recommendations:
		  ✧ Additional sources
		  ✧ Valuable types of info
		  ✧ International students

Informing the communication strategy	**Examining the communication strategy**	**Improving the communication strategy**

1.4.3 Limitations of Research

There are several limitations of this study due to the inherent constraints of qualitative research. First of all, some of the findings/conclusions of the research may not be generalized over other higher education institutions, as they are specific to one particular university – the University of Twente.

Second, since the main purpose of this study is to help the UT improve its communication strategy and become more attractive to prospective (inter-)national students, we will conduct interviews with people from the central/faculty communication department of the UT in an effort to know the main sources and types of information that currently feature in the university's communication strategy. Also we will interview people from the institutional research office who collect and analyze data/figures on the institutional performance. Although all the research questions will have been answered to our satisfaction, there could still be other sources that provide further information about the educational performance of the university, for instance, people who are responsible for the internal control of the UT's education quality, and people who work in the unit that develops (education) performance indicators.

Third, due to time limitations, the identification of student information needs is mainly based on the literature review and it is not possible to conduct a country-wide survey among students in terms of their favorable information sources and the types of information they perceive important in selecting a Dutch university. In addition, this study is mainly focused on undergraduate and graduate students, whose decision-make processes are somewhat different from those of more mature and/or part-time students. PhD students, for example, may be more interested in the research performance information offered by the university. Though in this research we will not provide insight into PhD students and part-time students, it is still necessary for the university to look at these student populations and develop specific communication strategies that support and satisfy their needs.

Last but not least, although suggestions will have been made, their applicability and feasibility still need to be discussed and be approved by the central/faculty communication department. Thus, it takes time for implementation and for effects to occur.

1.5 Structure of the Research

The research is divided into six main chapters, which are introduced below:

Chapter 1: INTRODUCTION
The first chapter introduces the main research topic on which this study will be focusing. A research framework is presented which involves the objectives of the research, the central and sub-research questions, and the research methodology to be used.

Chapter 2: STUDENT COLLEGE CHOICE
The second chapter identifies the key factors that influence undergraduate and graduate student college choice. Student decision making is portrayed as a four-stage process, and three conceptual models used to understand college choice are introduced.

Chapter 3: STUDENT INFORMATION NEEDS
The third chapter takes an in-depth look into students' information needs during the college search process. A variety of information sources and information types are explored, and the needs of different student populations (as represented by Dutch students, German students, and Chinese students) are identified. In addition, the role of higher education rankings in student college choice is clarified.

Chapter 4: PERFORMANCE-RELATED INFORMATION
The fourth chapter begins with the examination of the communication strategy of the university in terms of the sources and types of information that are currently used to attract students. Performance-related information is the main focus of this chapter, so that which performance indicators are used to measure the institutional and educational performance, how the university monitors and controls its education quality, and which (education) performance information is readily available to be integrated into the communication strategy are explored in detail. Furthermore, since high education rankings influence student college choice, their impact on the

institutional decision-making and behavior as well as the impact on the university itself is discussed.

Chapter 5: ASSESSMENT & IMPROVEMENT OF THE STRATEGY

The fifth chapter deals with the assessment and improvement of the communication strategy of the university. Based on the theoretical findings and the results of the interviews, two checklists are established which synthesize all possible sources and types of information that can be used to inform student choices, and, the gaps between the current and the desired strategy are investigated. Recommendations are followed which indicate areas for improvement and/or changes.

Chapter 6: CONCLUSIONS & RECOMMENDATIONS

The conclusion chapter is devoted to the answering of the central research question, and the managerial implications that this study has revealed are discussed.

Part B

Theoretical Framework

Chapter 2: Student College Choice

A body of research has evolved with respect to the relative importance of college choice factors among prospective undergraduates (Krampf and Heinlein, 1981; Hooley and Lynch, 1981; Erdmann, 1983; Lin, 1997) and graduates (Malaney, 1987; Kallio, 1994). Therefore in this chapter we will begin by identifying the key factors that influence undergraduate and graduate student choice. In order to make clear how students make decisions toward a particular university/program, we will take a look into their decision-making process and introduce some prevalent models of student college choice.

2.1 Factors in College Choice

In the first instance, we will give a general overview of the factors that impact on student college choice. Since undergraduate students and graduate students have different reasons for pursuing higher education and selecting a particular institution/program, we will discuss them separately.

2.1.1 Prospective Undergraduate Students

Based on the previous research that is relevant to student college choice, there are a variety of factors that have been identified. Krampf and Heinlein (1981) found that prospective undergraduate students who had a positive attitude toward the university rated the attractiveness of the campus, good programs in their major, closeness to home, informative campus visits, informative university catalogues, and recommendation of family highly. Hooley and Lynch (1981) examined the choice processes of prospective students and identified six attributes that determine university choice, including course suitability, university location, academic reputation, distance from home, type of university, and advice from parents and teachers. Erdmann (1983) conducted a survey among high school graduating seniors and found that the location and size of the university, academic reputation, the availability of specific programs, recommendation of parents and high school counselors were important factors influencing student choice.

More recently, Oosterbeek et al. (1992) examined student university choice and graduates' earnings in The Netherlands, and the results showed that earnings prospects were not a major driver in the choice of a specific university. Lin (1997) investigated seven universities in The Netherlands and revealed that the most significant reasons for a student's choice of a Dutch university were the quality of education, academic reputation, career and traineeship opportunities, faculty qualifications, academic standards, curriculum emphasis, the availability of modern facilities, student life, and whether there was an international student body. Since there is an increasing number of students who choose to study abroad, Mazzarol et al. (1996) indicated that the recognition of the qualifications by future employers, the institution's reputation for quality, its willingness to recognize previous qualifications, and the staff's reputation for quality and expertise were the most important considerations for international students.

Apparently, there are many different factors and attributes influencing undergraduate student college choice, such as the fixed attributes of the institution (size, type, and location), academic

reputation, program offerings, campus environment, and advice from family and high school counselors. Among these factors, the academic reputation of the institution, the quality of education, the staff's reputation for quality and expertise, and earnings prospects are relevant to the institutional and educational performance of a university; The informative campus visits, informative catalogues and brochures, and recommendations from family and high school teachers are some of the information sources on which students rely; While the rest of the factors like the availability of modern facilities and program offerings pertain to the input of the university. Students will weigh these various factors and attributes, focusing on the ones that are more significant to them and making trade-offs among them.

2.1.2 Prospective Graduate Students

Although there is a growing body of literature on the college choice decisions of undergraduate students, relatively less research has been focused on the reasons why students pursue graduate education. Malaney (1987) indicated that the common reasons for students to select a graduate school were the desire to learn more about a specialty, personal satisfaction, improved job prospects, and an advanced degree needed for progress within a chosen field. Similarly, Kallio (1994) undertook research on the relative importance of factors affecting the college choice decisions of graduate students, and found that the most influential factors included the quality and academic environment of the institution, employment opportunities, financial aid, spouse considerations, and the campus social environment.

Of course, graduate students are also influenced by some of the same factors that affect undergraduate students' decision, namely, the academic reputation of the institution, geographic location, contact with faculty, and students' individual characteristics such as their academic ability and achievement. Since graduate students are more academic-oriented, who attach more importance to the quality of the institution and of the particular faculty or program, Kallio (1994) suggested that the university could address in the informational materials and face-to-face contact with students the various aspects of the academic environment of the institution. In addition, students' perceptions of the social aspects of campus life could be enhanced by facilitating interaction between prospective students and those who are currently studying in the institution.

Conclusion:
These studies emphasize on the factors that affect undergraduate and graduate student choice. Among the various factors, some of them are under the control of the university, such as program offerings, curriculum emphasis, education facilities, informative catalogues and brochures, campus visits, which are valuable sources and types of information that can be included in the university's communication strategy toward potential students. Some factors, however, are beyond the university's control, like the geographical location of the institution, the attractiveness of the city, and the labor market.

In addition, it is worth noting that there are different student populations (Dutch students, non-Dutch EU students, and non-EU students) in The Netherlands for whom different factors might be more influential. We presume that the indicators international students perceive

important in choosing a particular university/program differ from national students, as they are operating under a different set of rules which place more constraints on their application procedures, such as the requirements of English language proficiency, tuition fees, living expenses, and the opportunities to do a part-time job during study. In the next chapter we will take an in-depth look into these student populations and examine their information needs during the college search process.

2.2 College Choice Models

Bloomer & Hodkinson (1997, p.46) characterize student decision-making as a complex process in which personal identity, habitus, life history, social and cultural contexts, actions and learning are inter-related. A number of researchers (Fuller et al., 1982; Jones, 2002; Hossler & Gallagher, 1987) attempt to set up college choice models which specify factors leading to students' enrolment decisions. Generally these models can be categorized into three types, namely, econometric models, sociological models, and combined models. In this section, we will briefly explain how students make decisions toward a higher education institution, and shed light on the prevalent models that capture students' decision-making process.

2.2.1 Students' Decision-making Process

Kotler and Armstrong (1994) describe the stages that consumers go through to reach a buying decision. Need recognition is triggered when the buyer recognizes a need or a problem. It is followed by information search, an evaluation of alternatives and a purchase decision. Buyer decision-making process is illustrated in the figure below:

Figure 2: Buyer Decision Process

Source: Kotler and Armstrong (1994)

In a similar manner, the decision to enroll at a college is a complicated and lengthy process. Followed by need recognition, college choice involves successive decisions on collecting, evaluating and acting on information about higher education institutions.
- *Need recognition*: the decision to attend a university. When students sense a difference between their current education and the desired level, and in order to have better employment prospects, they start to form concrete plans of further study, which, in turn, reflects their educational goals and aspirations. At this early stage, advice from parents and high school counselors might have great impact on students' initial thoughts to pursue higher education.
- *Information search*: the attempt to search for information. Students try to gather information about institutions on a variety of aspects, such as costs, location, programs offered, academic quality, and social life, etc. Today Internet has become one of the most frequently used sources, especially by students from abroad. As relevant information is obtained, students' awareness of, and attitudes towards the institutions and their features increase.
- *Evaluation of alternatives*: a filtering stage to narrow down all possible alternatives. The

existing information is used to develop a list of potential institutions from which to choose. Students compare and evaluate institutions according to their own preferences/certain attributes they perceive important (e.g. reputation, desired programs, tuition fees), and try to reduce the options.

- *Enrolment decisions*: the final application and enrolment. After a critical selection based upon personal judgments and various information sources, students make final decisions toward a particular institution/program, and start the enrolment process with the institution of choice.

2.2.2 Prevalent Models of College Choice

Econometric models are based on human capital theory that states that students perform a rational cost-benefit analysis to evaluate the returns to college attendance and the returns to other alternatives (Cremonini et al., 2008). The decision of whether to go to college often depends on the perceived level of opportunities that successful study opens up. It is assumed that students view higher education as an investment. When looking for a desired institution and program, they expect higher future returns on their investment in education. Therefore, students collect information on tuition fees, financial aid, living costs, and expected future earnings and employment opportunities.

Sociological models of college choice, also known as status-attainment models, relate to individuals' aspiration to attend college (Jones, 2002). These models suggest that socialization processes, family conditions, interactions with peers, and school environments strongly influence students' college choices. Compared to the econometric models, sociological models involve a more interactive process between variables defining the social context and individual student characteristics (Cremonini et al., 2008). For instance, students' educational attainment at secondary schools has something to do with their parents' education and occupations, and, there is often a relationship between socio-economic status and post-school choices.

While econometric and sociological models focus on which factors influence students' decision-making, *combined models* attempt to dissect the college choice process. One of the most well-known models is developed by Hossler and Gallagher (1987), which refers to a three-stage framework including predisposition, search and choice phases. The first, the *predisposition* (college aspirations) stage, is a student's decision to progress to higher education. It involves student background characteristics such as socio-economic status, aptitude, level of educational aspirations, and nature of the school attended. This is a phase built on experiences over a long period of time. The second, the *search* stage, occurs when the student is searching out post-school options based on variables such as career aspirations, interest in a field of study, academic achievement, access to information and contact with higher education institutions. It involves active enquiry into university characteristics like location, facilities, academic reputation, availability of courses, and provision of services. Students learn about and compare a number of institutions, and try to find the ones that are most desirable. At the third stage, *choices* to pursue specific college programs at certain institutions are made. These are based on whether admission is achieved, whether the right courses in a preferred field of study are available, and whether costs and rewards are in balance. During each phase students develop predispositions to attend college,

search for general information about the colleges, and make choices leading to enroll at a favorite institution of higher education.

Conclusion:

The three conceptual models (econometric models, sociological models, and combined models) used to explain college choice are presented which help us gain a better understanding of the factors influencing student choice as well as students' decision-making process toward a particular institution/program. In appendix II we include a detailed diagram of student choice process and its most important variables as portrayed by Cremonini et al. (2008). From the perspective of institutions, building a good knowledge base of student college choice would contribute to the creation of more effective programs for recruiting students, encouraging and attracting a large number of undergraduate and graduate students to attend the university.

Chapter 3: Student Information Needs

In this chapter we will take an in-depth look into students' information needs during the college choice process. Based on the literature review, we will explore a variety of information sources and information types that are used by prospective students, and will identify the needs of different student populations in terms of the information sources that are being frequently used and the types of information that are perceived as most important. In addition, we will explain the role of higher education rankings in student college choice.

3.1 Sources and Types of Information

Generally students rely on various sources and types of information when they compare and select among a number of institutions/programs. Some of the information sources (e.g. informative campus visits, advice from family and high school teachers) and information types (e.g. academic reputation, campus environment, program offerings) have been attributed as college choice factors in Chapter2. If universities want to communicate more effectively with potential students, it is essential to understand students' information needs, their preferred sources of information, and make relevant types of information accessible to them.

3.1.1 Students' Information Needs

Cain and McClintock (1984) found that the information needs of students could be grouped into three general categories: college characteristics, interactive characteristics and independent assessments. As shown in table 2, the **college characteristics** could be further divided into four sub-categories:

a. Intellectual characteristics consist of factors such as the institutional type, the ideology or the underlying philosophy of the institution, the program characteristics like majors, program requirements, as well as the faculty attributes including class size, instructor qualifications, academic support mechanisms, and interaction of faculty with students.

b. Social characteristics can be described in terms of demographic information such as student population, male/female ratio, ethnic diversity, and the profile of university social life and recreation.

c. Environmental characteristics are related to the university location, community size, as well as campus factors such as residential facilities, convenience and beauty of the campus.

d. Personal characteristics include the availability of student support services such as libraries, health services, book stores, counseling and placement services, athletics and other extracurricular activities.

The second category, **interactive characteristics**, refer to social attributes such as parental background, student goals and expectations after graduation, details about admission requirements, distance from home and accessibility, as well as the net cost of the education. The last category, **independent assessments**, involve attributes such as institutional and faculty reputation as defined by accreditation, ranking, and prestige; success of graduates which can be indicated by data on job market, record of graduate school placement, and success in certification; student

ratings comprising their opinions on teaching, housing, facilities, social life and atmosphere; and the preferences of significant others, such as parents, peers, and guidance counselors.

Table 2: Information Needs of Students

Category	Sub-category	Item description
University Characteristics	1. Intellectual characteristics	Institutional type
		Underlying philosophy of the institution
		Availability of specific academic program
		Variety of courses available
		Graduate programs offered by the university
		Instructor qualifications
		High school pre-requisite courses
		Availability of remedial assistance
		Student /faculty ratio
		Class size
	2. Social characteristics	Student morale
		Size of university population
		Male/female ratio
		Ethnic mix
		University social life and recreation
	3. Environmental characteristics	Location
		Campus setting
		Availability of housing
		Beauty of the campus
	4. Personal characteristics	Student support services
		Availability of career counseling
		Academic facilities
		Athletic facilities
		Extracurricular programs
Interactive Characteristics		Parental background
		Career opportunities upon graduation
		High school academic performance requirements
		Distance from home /accessibility
		Cost of attendance
		Scholarship or financial aid
Independent Assessment (Rankings)		Reputation of the university
		Reputation of faculty
		Reputation of alumni
		Parental preference
		Peer opinions
		Guidance counselor recommendations
		University student opinions

Source: Cain and McClintock (1984)

23

3.1.2 Sources of Information

An information source is a source of information for somebody, i.e. anything that might inform a person about something or provide knowledge to somebody (Wikipedia 2009). There are three types of information sources: Primary sources serve as the original or first-hand sources of information about the topic, including documents, recordings, and pictures, etc; Secondary sources often cite and comment on primary sources, like people, presentations, which involve the synthesis, interpretation, and evaluation of the original information; Tertiary sources are the selection, distillation, and compilation of primary and secondary sources, such as guides and survey articles.

The research conducted by Stewart et al. (1997) revealed that advice from current college students, friends, and high school counselors were the three frequently used information sources by American students. More recently, Brent et al. (2004) demonstrated that the important information sources for potential community college and university students included media (e.g. advertising), social normative (e.g. influence of significant others), and direct sources (e.g. university websites, publications, etc.). Other studies show that parents' encouragement and support have powerful impacts on students' decisions, especially at the predisposition and search stages (Kern, 2000; Boyd et al., 2001; Payne, 2003). When parents have previous experience of higher education, their children are more likely to consider further study and to be able to handle it well (Nguyen & Taylor, 2003). Although mass media has influence on students, information obtained through interpersonal relationships - information exchanged by students, families, friends, schools, and higher education institutions, seems to be more effective in students' decision-making process (Christie et al., 2004). In addition, some authors found that open days and campus visits, university websites and publications are the most useful sources to students. Based on a critical review of the literature on information sources used by students, we summarize and classify them in the table below.

Table 3: Three Categories of Information Sources

Direct Sources	Media Sources	Social Sources
University websites	Advertising through	Interpersonal Networks
University publications	- Radio	- Advice from parents
- Informative brochures	- Television	- Advice from other family members
- Informative catalogues	- Magazines	- Advice from friends
Study guides	- Newspapers	- Advice from high school counselors
	- Billboards	- Advice from career counselors
	Direct mail to home	- Advice from current university students
	Rankings published	Communication with Institution of Choice
	- in magazines (e.g. Elsevier)	- Open days /Campus visits
	- on the Internet	- University admissions office
	Consumer guides /CDs	- Education fairs

Source: items are derived from the theoretical study (Ch2 and Ch3.1.2)

As suggested by Brent et al. (2004), we divide a variety of information sources into three main categories, namely, direct sources, media sources, and social sources. Direct sources include university websites and printed materials that contain plenty of useful information on the institutions and programs; Media sources in the form of advertisements, study guides, and rankings of higher education institutions are used to increase students' impressions about the given institutions and to inform their choices; Social sources involve complex interpersonal networks from which students can receive valuable information and advice. Parents, families, friends, high school teachers and career counselors are usually deemed to be included in such information networks. Moreover, the purpose of open days organized by universities is to provide students with the opportunity to directly communicate with the institution of their choice, and to see how well they fit into the environment.

3.1.3 Types of Information

It is worth noting that the above listed sources contain various types of information that may or may not be used by students. Some types are more important than others, but this study is looking primarily at the types of information that are under control of the university and those that are related to the institutional and educational performance due to our main research topic/area. According to students' information needs, we create a table below which is based on the sorts of information that students use in the college search process. Most of the information we include is derived from the literature on college choice factors. Since some information is about the institution/campus itself, while some information is more specific about the study programs, we divide these types of information into two levels: the central university level and the faculty level. Their relevant sources (how the information can be obtained) are also illustrated.

Table 4: Sources and Types of Information at Two Levels

Central University Level		
Information Needs	**Types of Information**	**Sources of Information**
Institutional Characteristics		
Academic reputation	Worldwide rankings	Rankings published (magazines, Internet)
	Accreditation status	Accreditation bodies
	Library	
Academic facilities	Laboratories	
	Computer rooms	University websites;
	Classrooms	Informative brochures & catalogues;
	Restaurants and pubs	Open days;
Student support services	Sports center	University students opinions
	Medical center	
	Student counseling services	
Environmental Characteristics		
Campus atmosphere	Campus surroundings	Open days; Media
	Student life	Advice from student associations
Student accommodation	Availability of housing	Websites; Brochures & catalogues;
	Living conditions	University students opinions

Events	On-campus recruitment	University websites; Publications; Media;
	Diverse cultural events	Information from student associations
Financial Considerations		
Study expenses	Tuition fees, books	University websites;
	Living expenses	Informative brochures & catalogues;
Financial aid	Scholarships	University websites;
	Student loans and grants	Informative brochures & catalogues
Career Prospects		
Internship opportunities	Internships offered (working while studying; graduate assignments)	Internship coordinators; Internship agencies; Internet
Employment opportunities	Employment rates for graduates	Alumni magazines
	Average graduate starting salary	Internet
	Career guidance and advice	University career counselors
Pre-entry guidance & admission		
	Minimum degree requirements	University websites;
Admission requirements	Academic records	Informative brochures and catalogues;
	English language proficiency	Advice from the admission office

Faculty Level		
Information Needs	**Types of Information**	**Sources of Information**
Program Characteristics		
The availability of desired programs	Program types	University websites;
	Program content	Informative brochures & catalogues;
	Quality of the programs	Open days;
	Completion time	Presentations at high schools & other HEIs;
Course suitability	Variety of courses available	Study guides;
	Flexibility of classes (timetable)	Graduates opinions;
	Knowledge & skills to be acquired	University students opinions
International recognition	Types of degrees offered	University websites; Accreditation bodies
Faculty Attributes		
	Instructor qualifications	University websites; publications, Elsevier
Faculty reputation	Teaching quality and expertise	Graduates opinions
	Teaching styles	University students opinions
	Faculty contact hours	Advice from faculty members

Source: items are derived from the theoretical study (Ch2, Table 2 and Table 3)

Central -Level Information

Institutional Characteristics: As already mentioned, the academic reputation of an institution is one of the significant factors influencing student choices (Hooley & Lynch, 1981; Erdmann, 1983; Lin, 1997). Information regarding the university's academic reputation can be acquired from significant others by means of interpersonal communications, and it can also be obtained through higher education rankings and league tables, which are known as a one-dimensional presentation of the relative quality of a set of higher education institutions. There are various types of rankings

– some oriented towards the research quality, others reflect the educational quality of the institutions. Furthermore, students would like to be informed about the availability of educational facilities on the campus (e.g. a well-stocked library, generous computer facilities and resources) as well as other student support services (e.g. recreational facilities, student counseling services).

Environmental Characteristics: An attractive campus environment and vivid student life are found to be important factors in student college choice (Krampf & Heinlein, 1981; Lin, 1997). For instance, diverse cultural events organized by the student associations would attract students from different cultures; On-campus recruitment which offers the opportunity to meet potential employers would be appreciated by graduate students. University websites, informative brochures and catalogues are useful sources of information from which students can have a general picture of the life on campus. In addition, personal interactions with university teachers and current university students on open days send important signals to prospective students.

Financial Considerations: Since the cost of attending colleges is a key concern for students who choose to study in a foreign country, especially for those non-European Union students (Mazzarol & Soutar, 2002; O'Brien et al., 2007), information about the total cost of studying (tuition fees and living expenses) and the availability of scholarships and financial support options (student loans and grants) is essential for them in the decision-making process. International students and their parents rely on the university websites and publications in search of finance-related information.

Career Prospects: Students plan for their future career when they are selecting a particular institution and a desired field of study. They expect to know whether graduates have good prospects of getting good jobs (Malaney, 1987; Kallio, 1994; Lin, 1997), and whether there are opportunities to do internships in some well-known companies. In this way, career guidance and advice can be made available to students either in the university or in the faculties. Information in terms of the link between study and career choices, the possibilities for internships, the current labor market and the employment opportunities after graduation can be published on the university websites or be included in the printed materials. Once students receive detailed career-related information, they will assess the fit between the programs and their occupational aspirations, and make their choices.

Admission Requirements: The entry to university has been described as a courtship, in which both parties are making decisions (James, 2000). Universities rely on students' previous academic records and English language proficiency; Students rely on admission information and pre-entry guidance to assist them in the application process. University websites, publications, and admission offices are important sources of information which keep students aware of the general and specific admission requirements.

Faculty-Level Information

Program Characteristics: Factors such as the availability of specific academic programs and course suitability play important roles in students' college choice process (Hooley & Lynch, 1981; Erdmann, 1983). Students need adequate information on the programs and courses to see whether they are interested in, and are suitable for the chosen subject area (how well their capabilities fit

them for the courses), and whether there is the potential for developing a good career upon graduation. Hence, program information including the language of teaching, the actual delivery of the program (the amount of academic and practical content included), the specific courses that are on offer, the flexibility of classes (course timetables), the workload required, knowledge and skills to be acquired, and examples of the kind of work students are expected to do would give potential students a clear idea about the kind of study at the institution. Such information is usually disseminated through the university websites, publications, and open days. Moreover, students take into account the perceived quality of the programs (Kallio, 1994; Lin, 1997). Information regarding the approaches to teaching and learning, the satisfaction of students from the courses, and employment rates of graduates can also be timely delivered to students.

Faculty Attributes: Students concern the quality of teaching (Mazzarol et al., 1996; Lin, 1997) and whether there are plenty of opportunities to meet the faculty members. In this sense, universities could make relevant information more transparent to students, such as instructors' experiences and qualifications, their teaching styles, faculty contact hours, and friendly staff /student relationships.

Conclusion:
In general, there are three categories of information sources that students use in the college search process: direct sources, media sources, and social sources. These information sources contain different types of information that may be used by students. At the central university level, there is general information about the institution, the campus, financial issues, and admission criteria; while at the faculty level, information is more specific and targeted, which highlights the study programs and the faculty.

Having a thorough understanding of students' information needs, their preferred sources of information, and the types of information that they perceive important in the college choice process would help the university administrators take into account more useful information sources and integrate more valuable information into its communication strategy, facilitating a better communication between the university and prospective students. Table 4 is a synthesis of the various sources and types of information that can be used to feed students' information needs and can inform the communication strategy of the university. This theoretical framework lays the foundation for our further empirical research and findings.

3.2 Higher Education Rankings – Student Perspective

Produced by newspapers, magazines, and research centres, rankings are a one-dimensional presentation of the relative quality of a set of higher education institutions. There are various types of rankings – some oriented towards the research quality, others to the educational quality. Two well-known examples of global rankings are the Academic Ranking of World Universities (ARWU) published by Shanghai Jiaotong University, and the Times Higher Education (THE) – QS World University Ranking.

Higher education rankings compare institutions trough a selected set of indicators. The fundamental difference between the Shanghai ARWU Ranking and the Times-QS Ranking is that

the former is mainly focused on the research outcomes, which ranks institutions based upon their research performance. Ranking indicators include major international awards, highly cited researchers in important fields, articles published in selected top journals and/or indexed by major citation indexes (Liu & Cheng, 2005). However, the Times-QS Ranking measures broad higher education activity which includes student learning and graduate employability. The ranking is based on six distinctive indicators (QS Top Universities, 2009): academic peer review (a measure of international reputation of university), employer review (a measure of international reputation among recruiters), faculty-student ratio (a measure of an institution's commitment to teaching), international faculty and international students (a measure of an institution's international attractiveness), and citations per faculty (a measure of international research impact). In appendix III we will describe in detail the methodology used for creating these rankings.

Another famous ranking, the Times good university guide, focuses on the education performance of institutions. It produces a league table of the top universities by aggregating institutional scores on eight key performance areas (Times Online, 2009), including student satisfaction, entry standards, student-staff ratio, good honors degrees, graduate prospects, and completion rates, etc. Before taking an in-depth look into the role rankings play in student college choice, we first search for a proper definition of quality in higher education.

3.2.1 Quality in Higher Education

Students are more attached to a university that has a high ranking. Parents use rankings as a benchmark for judging the best university, and advise their children accordingly (Hazelkorn, 2008). In this sense, rankings are often considered as a critical means of determining institutional quality, and as indicators of future success. However, what does quality in higher education exactly mean? Astin (1985) presented four notions of excellence in American higher education, namely, reputation, resources, outcomes, and content.

a. The *reputation* perspective of excellence is whatever people define it to be. It is a set of shared beliefs about which are the best or most excellent institutions. Rankings in this instance are one approach of examining educational quality. The higher the institution's reputational ranking, the higher the perceived quality.

b. Excellence can also be defined by *resources*, such as faculty and staff, students, facilities, and finances. Based upon the data collected by an institution, it is perceived to be a more objective approach to determining quality. Higher numbers would represent a higher level of institutional quality, i.e. more high-achieving students and productive faculty members, a greater number of modern facilities and financial resources available.

c. O*utcomes* refer to some performance measures, like the retention rates and alumni achievements. This approach of excellence depends on the quality of the products, such as the quality of educational programs, rather than mere the number of resources.

d. The last notion of excellence is from the *content* perspective, which indicates what is actually taught at an institution.

However, the author concluded that none of the four notions could truly define excellence in American higher education, thereby turning to the *talent development* view of excellence. This

approach focuses on the educational impact of institution on students and faculty members. It is presumed that true excellence lies in an institution's ability to influence its students and faculty favorably, to enhance their intellectual and academic development, and to make a positive difference in their lives. Hence, the most excellent institutions are those that have the "value added" impact on students' knowledge and personal development, on faculty members' teaching and research ability and productivity. Although this interpretation is central to the educational system and reflects the goal of American higher education, it seems to be rather difficult to assess within an institution and it provides no means for comparisons of excellence among similar institutions. Apparently there is no consensus on the exact meaning of quality in higher education. This leads to the popularity of various types of college rankings in the world, as many people believe they can at least use league tables as certain quality benchmarks to compare institutions in the decision-making process.

3.2.2 The Informative Role of Rankings

What types of students use rankings?

Today rankings of higher education institutions and programs are playing an increasingly important role as information tools for prospective students. With the main purpose of helping students make informed decisions about college choice, higher education rankings, as Federkeil (2002) indicates, are most often used by high family income and/or high-achieving students who need to decide which institutions are best for them. He found that a good result for a university in the German CHE University Ranking would lead to an increase in applications to that university in the subsequent year.

In a large USA study Howard (2002) tried to determine the importance of college rankings on student choice. She investigated the ways students used institutional rankings in their decision-making and found that 56.7% of students considered ranking to be a very important or somewhat important factor. Rankings in news magazines are of particular importance to first-time, full-time freshmen attending ranked, private institutions. These students are usually from high-income families. Other students who view rankings important are more mature, live on-campus, and attend a school a significant distance from home. In addition, rankings are more important for students with higher high school grades.

The research conducted by McDonough et al. (1998) reveals that students who attend a college or university in their hometown (within a 10 mile radius) are less likely to see rankings as somewhat or very important compared to students who attend institutions farther away. In addition, students who apply at a greater number of schools see the rankings as more important in their college selection. In essence, students and families who make extra investments into a college education in terms of leaving home for school and investing the time and money required for numerous applications are more likely to take rankings into account.

How do rankings influence student college choice?

College choice is of vital importance to a student's academic and career success. Students (and their parents) need a great deal of information on institutions and programs in their

decision-making process.

"US News functions much like a guidebook for the students who read it, confirming what they already know, providing additional information and insights, and suggesting where further inquiries might be made. In some cases, students told us that US News rankings did have an effect on their application and matriculation decisions. Far more frequently, however, its role was an informational one." (Art & Science Group, 1995, p.8) In this sense, rankings play an informative role in students' college search and evaluation, which is reflected in three aspects: First, rankings keep students informed of the most prestigious institutions in the world or in the country of their choice; Second, rankings provide students with a clear and concise means to compare institutions, and such comparisons can be seen from diverse angles; Last but not least, according to the performance or quality indicators that are perceived as most important, rankings help students sort out the institutions that best fit their needs.

Exhibit the most prestigious institutions

Students expect to obtain a degree from the most prestigious institutions, as they consider the best value for their time and money invested in higher education. According to Evenson (1998), students are eager, and more than willing to pay, to attend a college with the reputation that they believe will lead to high-paying jobs or top professional institutions. Since high school students and their parents have no way to evaluate institutional quality by themselves, they tend to rely on perceived reputations and prestige in selecting colleges. Rankings are usually the starting point in the long process of finding the right college. They contain a rich source of information about numerous institutions in the world, which give students some initial guidance and direction. Annual listings included in newspapers, magazines, or published on websites present the best colleges, universities, academic programs, or departments to the general public. Typical examples include the Times Higher Education Supplement (THES) World University Rankings, the Academic Ranking of World Universities produced by the Institute of Higher Education at Shanghai Jiaotong University, and the Financial Times Ranking of the top MBA programs in the world. Students and parents can keep track of the latest information regarding the top-ranked institutions in a particular country or in a specific academic area.

Moreover, choosing a college is an intangible, expensive purchase which might be fraught with risks. The more uncertain the decision, the greater the likelihood that consumers of higher education refer to league table information in an attempt to lower their risks. Thus, theoretically, newsmagazine college rankings could help students and parents make college choices by not only providing them with reputational assessments but by emotionally bolstering their confidence in their high-stakes decisions (McDonough et al., 1998).

Provide a concise means to compare institutions

"Your investment in a college education could profoundly affect your career opportunities, financial well-being, and quality of life. In order to find the right college, you need a source of reliable and consistent data-information that lets you compare one college with another and find the differences that matter to you. That's what we do with our rankings." (US News & World Report, 2008)

Selecting a college may be one of the most difficult and challenging decisions facing prospective students, who need to access to comprehensive and relevant information before choosing where to study. There are thousands of colleges and universities in the world, somehow there has to be a way to differentiate among them. While students and parents receive a wealth of information in the form of catalogues, brochures, websites, and well established college guidebooks, these informational tools do not provide a means for quick and easy comparisons between institutions. Presented in a clear and concise manner, college rankings provide the means for reviewing and comparing information from a large number of institutions. They offer students some comparative sense of institutional quality and simplify the overwhelming complex college selection process. According to Morse and Gilbert (1995), parents and students need and are demanding a third party that can make an objective analysis, with easy-to-use statistical comparisons and carefully collected up-to-date information on the relative merits of various kinds of institutions in different educational categories.

Help sort out the best-fit institutions

"The ranking tables are a source of highly useful information about colleges that is otherwise hard to obtain and which will help you narrow your search to a small number of colleges that are a good fit" (McGrath, 2001, p.70). Rankings have become an increasingly important aspect in the college decision-making process for students and parents. They provide a means for measuring the relative quality of higher education and research. For instance, the Shanghai ARWU Ranking focuses primarily on research performance, while the Financial Times Ranking has a strong emphasis on indicators of postgraduate career success, i.e. employment, earnings, and promotions. U.S. News uses a weighted combination of seven broad categories of indicators – institutional reputation, faculty resources, financial resources, student selectivity, student retention, graduation-rate performance, and alumni-giving rate – to rank four-year colleges and universities. These indicators pertain to a mix of input and output measures that reflect different facets of institutional and educational quality.

Prospective students can use rankings to select a number of institutions that they feel interested in, compare their academic quality according to the indicators being adopted, and then determine which performance indicators are most important to them. Based on the institution's overall rank together with these specific indicators, students can further reduce the number of alternatives they are considering. Consequently, higher education rankings are one important source for students to identify institutions that best fit their needs.

Conclusion:

From the perspective of students, higher education rankings serve as important information tools which assist them in making college choice decisions. Presenting in a clear and concise manner, rankings keep students informed of the most prestigious universities in the world or in a particular country, help them compare information from a large number of institutions/programs and sort out the ones that most satisfy their needs. Since rankings compare higher education institutions through a selected set of performance indicators (focusing either on the research performance or on the education performance), they provide students and parents with comparable performance information on the institutions, such as graduate employability, research output, the international

reputation and international attractiveness of the university. Understanding the role of rankings in student college choice would allow the university administrators and admission officers to consider whether ranking information can be integrated into the communication strategy toward potential students. In the next chapter, we will further discuss the impact of rankings on higher education institutions and on the University of Twente itself.

3.3 Information Used by Different Student Populations

It is interesting to find how prospective students make decisions about higher education, the dynamics of their decision-making process, the informational sources that help them make choices, and the kinds of information that influence their decisions toward a particular institution and program. However, different groups of students might have different reasons for pursuing higher education and selecting a particular institution and that they use different means of obtaining information about the universities/programs. Moreover, they might perceive the importance of the various types of information differently. Concerning the university market in The Netherlands, there are Dutch students, non-Dutch EU students, and non-EU students. It is essential to investigate into these student populations with respect to their decision-making process involved in the selection of a Dutch university, identifying their most frequently used information sources and certain types of information based upon which choices are made.

3.3.1 Dutch Students

Sá et al. (2004) indicated that the role of student's income was less pronounced in Dutch higher education system due to the relatively low tuition fees and the rather generous system of student support. Normally Dutch full-time students are eligible for a base scholarship for the nominal duration of a higher education program. The scholarship varies depending on the students' living arrangements (living with parents or living on their own), and it is generally compatible with some part-time jobs (working a sufficient number of hours). Based on the students' own income and parental income, they can apply for an additional supplementary scholarship or a loan. As a result, students from The Netherlands would not pay special attention to the tuition fees requested by an institution. In addition, they do not carry the financial burden of travelling between cities. The availability of free public transport cards (OV-studentenkaart) allow Dutch students to travel on workdays free of charge and pay a 40% discount price during the weekend, or to use free public transport on the weekend for visiting their parents and buy discount train tickets during weekdays. Information regarding student grants, loan systems, and free public transport cards is available on the Informatie Beheer Groep (IB-Groep) website.

Sá et al. (2004)'s research also showed the relative importance of the number of available programs, implying that Dutch students were attracted by universities with more diverse course offerings. They choose institutions on the basis of personal interest in specific subjects. However, due to the relative small differences in the quality of research universities in The Netherlands, the authors found that the quality of educational programs was not playing a significant role in Dutch students' choice behaviors. Students are usually guided by consumption motives (a better climate and experience) rather than investment motives (increased future returns) in the selection of an

institution.

Since a certain number of students would choose to live independently in a city where the institution locates, they must have access to information on student accommodation, e.g. the availability of housing, average rents, living conditions, as well as information on locally supplied amenities, i.e. social and cultural diversity of the university regions. Moreover, information regarding campus environment and atmosphere, distinctive student associations, and student support facilities is deemed important to Dutch students, as many of them are not only seeking knowledge but also a sense of personal social fit. Open days or campus tours are a direct and effective way for students to get a general picture of the institution – how green is the environment and how active is the atmosphere. They will have the chance to talk with faculty members, admission officers, and student representatives of the university to acquire detailed information about programs, admissions, facilities, and on-campus life.

In addition to written information sources such as university brochures, catalogues, and study guides, a lot of Dutch students rely heavily on the Internet to search for institutional-related and program-specific information. University websites are often the most frequently used on-line sources, while other commercial websites are also welcomed by students. According to Jongbloed et al. (2004, p76), the study choice program - *Schoolweb.nl,* attracts 80.000 visitors per month, and the study choice module - Qompas.nl, has 12.000 unique visitors each month. Moreover, students can obtain local information on university regions from Statistics Netherlands (Centraal Bureau voor de Statistiek – CBS), and characteristics of the universities from the Association of Dutch Universities (Vereniging van Samenwerkende Nederlandse Universiteiten – VSNU).

Another popular study choice website, *studychoice123.nl*, is developed as "a robust information infrastructure for prospective students in higher education in The Netherlands… It aims to offer students effective support in their choice of study programs by providing reliable, independent, comparable and appropriate information about study options" (Studychoice 2009-2012 program). The website allows students to compare more than 2,500 accredited Bachelor's and Master's programs in The Netherlands on the basis of 90 criteria, ranging from student opinions about teachers, program content, gross starting salary upon graduation to average rental costs of student accommodation or the number of pubs in various university cities. In this way, students can compare information from competing institutions in different aspects, get hold of some kind of performance information like the labor market prospects of graduates, and come to a decision based on criteria that are personally relevant to them.

3.3.2 Non-Dutch EU Students

The figure below illustrates that among all international students coming to The Netherlands for higher education, those who originated from Germany make up the majority of the population, thus become the largest group and the representative of non-Dutch EU students. Here we will focus on the German students only.

Figure 3: Top 6 Countries of Origin International Students
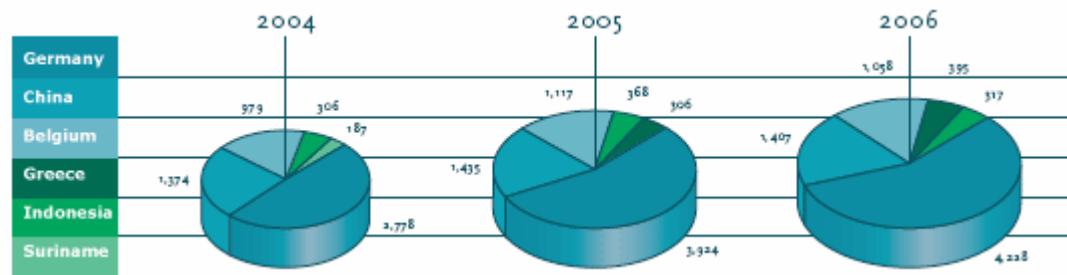
Source: VSNU - Association of Universities in The Netherlands

Based on Jongbloed's (2004, p34) study, this group of students is strongly influenced by intrinsic motives. They desire for self-improvement and select a particular area of study according to their own interest and talent. These motives are related to extrinsic motives that guide a great number of first-year students, such as increased job opportunities and the possibility to work independently. Job assurance and the chance of receiving high income are also perceived importantly by German students. They usually take the current labour market into consideration when making college choices. Unlike Dutch students, social motives are only significant for a minority of German students.

Therefore, this group of students place great emphasis on the program-specific information, such as the availability of desired programs, the special courses that are on offer, knowledge and skills to be acquired, and the kind of work they would be expected to do. Meanwhile, career-related information is equally important for German students. Career counseling services at universities usually keep students informed of the link between study and career choices, the possibilities for internships, and the employment opportunities after graduation. In addition, alumni magazines which incorporate information about the employment rates after graduation as well as success stories from graduates often help students make decisions on a particular program. Other information on housing, living expenses, and properties of the institution will also be considered by those who leave for The Netherlands for further study.

With regard to the information sources being used by German students, nine out of ten students make use of the printed materials of higher education institutions in the college choice process. Internet turns out to be a powerful information source which is used by 74% of German students (Jongbloed et al., 2004, p28). Informal contacts with parents, friends, and current university students are also a useful way for students to receive information and advice. Moreover, a certain number of German students view rankings as a practical information tool in the college search process, making it easier for them to compare and select institutions or programs. The CHE excellence ranking, for instance, identifies outstanding academic departments across Europe and presents detailed information about program offerings and academic qualities, which assists prospective graduate students in their search for the most suitable institution (CHE Ranking, 2009). The methodology being adopted for the CHE excellence ranking is illustrated in appendix III. Although these findings are specific to students studying in Germany, we can make sense of their college choice behavior in terms of the information sources that are most favored by German students.

3.3.3 Non-EU Students

In recent years a growing number of students choose to study abroad because they consider it an excellent way to get exposure to new cultures and foreign languages, and to better their understanding of the globalized world. Also it is seen as a critical element of future career opportunities and positive personal outcomes. The factors that non-EU students perceive important in choosing their institutions may differ from Dutch and other EU students, as they are operating under a different set of rules which place more constraints on their application procedures, such as the applicant's score on an English test and much higher tuition fees.

As figure 3 displays, Chinese students form the largest group of non-EU foreign students who choose The Netherlands as their study destination. A survey conducted by China's National Statistic Bureau showed that over 60% of Chinese families invest one-third of their income in their children's education (Zhang, 2001), as Chinese parents and students perceive that a good education will guarantee a better future (Duan, 1997), and a graduate with a foreign degree is classified as having better skills and being more employable in the market place of industry (Fam & Gray, 2000; Gareth, 2005). Therefore, this group of students is strongly driven by investment motives. They put more emphasis on the expected beneficial outcomes, expecting higher future returns on their investment in studying in a distant country.

Yang (2007) found that the most important factor motivating students to study outside China is the desire to have a higher quality of education and a better career in the future. According to Mazzarol (2002), there are some other factors that are important to Chinese students' choice:

a. Since the Chinese market is a brand-conscious market (Fam & Gray, 2000), rankings of Higher Education institutions have a great impact on students' choice. Students and their parents expect to know the rankings of a selected number of institutions not only in the destination country, but also in the whole world, so that they can compare and decide on the one that is most worth the investment. In addition, whether the qualifications being obtained will be internationally recognized is highly considered by Chinese students.

b. Financial issues weigh heavily on the minds of Chinese students - how much their education cost and how will they pay for it. Thus, information regarding the total cost of attending an international institution (tuition fees, living expenses, travel cost, and social cost.) as well as the availability of scholarships and financial aid plays a significant role in students' decision-making process.

c. In addition to receiving advice from parents, relatives, and friends, Chinese students often turn to the education agents (licensed agents who are authorized by the Ministry of Education in China) for detailed information about the institutions and programs, and, in particular, the admission and visa application procedures.

d. Being far away from home, students need to know the environment of the place they are heading for. This is associated with climate, lifestyle, safety, and racial discrimination. Sometimes students encounter difficulty adjusting to an environment that is culturally different to what they have been comfortable with in the home country. "Cultural shock" is common to students who have never experienced this type of atmosphere before. Thus, this group of students may need additional and different counselling in order to cope with the new

environment and challenges. Universities must support and satisfy the specific needs of these students, giving them more advice on their studies and personal issues.

Chinese students view Internet and education fairs as the main channels for information collection. According to Yang (2007), the majority of students prefer to access the official websites for first-hand information of the country and institutions. Around 75% of the respondents prefer websites in the Mandarin language so that they can have a better grasp of the meaning of information and their parents could assist them in the information-gathering process as well. Nuffic Neso China (www.nesochina.org) is a useful platform for Chinese students who are going to study and live in The Netherlands. In addition to study programs and university profiles, it offers practical information about scholarships, accreditation, health insurance, and immigration regulations, etc., which is available in both English and Chinese. During the education exhibitions, students receive brochures and catalogues of Dutch institutions from various education agents, and sometimes have the chance to talk directly with the university representatives.

Conclusion:

Based on the literature review, we find that different student populations have different motives for pursuing higher education, and that they rely on different sources and types of information when searching for a particular institution/program. We conclude our findings in the table below, which illustrates the distinctive information needs of the three major student populations in The Netherlands: Dutch students, German students, and Chinese students. Items of the last two columns are abstracted from table 4, but they are categorized based upon the study in Chapter3.3.

Table 5: Information Needs of Dutch, German, and Chinese Students

	Motives for Higher Education	Information Sources	Information Types
Dutch Students	Consumption motives (personal social fit)	University websites University publications Open days	Campus environment/facilities Student life Program/course offerings
German Students	Intrinsic motives (self-improvement)	Printed materials University websites CHE-Ranking	Program offerings Program characteristics Employment opportunities
Chinese Students	Investment motives (value for money)	University websites Study-in-Holland sites Education fairs/agents University publications Global rankings	Education Quality Tuition fees/Scholarships Employment opportunities Program characteristics Admission requirements

Source: items are derived from the theoretical study (Table 4 and Ch3.3)

Gaining an insight into students' information needs would enable the university to consider seriously the sources and types of information that are helpful to inform potential student choices, and to develop more specific and targeted strategies for recruiting Dutch, EU, and non-EU students. Since higher education rankings provide a quick and concise means to compare institutions, they are especially useful for international students who do not have the opportunity to visit prospective universities in the foreign country before making their applications.

Part C

Empirical Research and Findings

Chapter 4: Performance-related Information

The previous chapters (Ch2 and Ch3) have laid a theoretical framework for understanding student college choice, and in this chapter we turn our attention to the empirical research by way of a case study. We will start by examining the communication strategy of a university, i.e. the University of Twente in terms of the various sources and types of information that are currently used to attract prospective (inter-)national students. Since performance-related information is our main focus of the chapter, we will continue to explore which information on the UT's (education) performance is regularly collected and is readily available to be integrated into its communication strategy toward potential students.

In order to make clear what performance-related information is, and what role information related to the student's education performance plays in the communication strategy of the university, we will shed light on a number of performance indicators that are used to measure the institutional and educational performance, and will address their important roles in attracting and retaining students. We will explain how education performance is measured in universities, and will investigate, in particular, how the UT monitors and controls its education quality, and to what extent the university regards the quality issues important and highlights them in its institutional plan. In addition, as we mentioned in Chapter3.2 that higher education rankings play an informative role in student college choice, we will discuss their impact on institutional decision-making and behavior, as well as the impact on the University of Twente itself (e.g. what efforts/changes the UT makes as a result of the rankings).

4.1 The UT's Current Communication Strategy

The UT's central communication department is committed to developing strategies for recruiting and advising students all around the world. At the faculty level, the communication department strives to translate the central strategy to its own studies, and also creates own ideas and introduces them to the central communication department. Since our research is being conducted at the faculty of Management and Governance, we interviewed Mrs. Bertyl Lankhaar, who is the head of the communication department within this faculty in an effort to know the general communication strategy of the UT and the specific strategies at the faculty level. Following a list of interview questions (as shown in appendix I), we got ideas about the main information sources that the university uses to attract students and the types information that are addressed in these sources. The interview with Ms. Hanna Lange (from the central communication department) gave us more insight into the UT's communication strategy toward international students.

4.1.1 Main Information Sources

Central University Level

The University of Twente feeds several information sources to attract students. Generally the UT website is the most popular information source for students, which is available in two major languages: English and Dutch. Brochures of different study programs are also used frequently by students. The university organizes information days twice a year, normally on Friday and Saturday,

so that students and their parents can choose which day is more convenient for them. There is one special day for German students who can attend the event in Germany. Most of the time university teachers, program directors, and current students are involved. Sometimes alumni will also participate in these events, telling prospective students about their experience in the university and in the workplace - what they have learned during the study and what kind of work they are currently doing.

The UT places great emphasis on the interaction with potential students. For instance, there is an intensive information day for high school students, who will be guided whole day by one of the university students to walk around the campus and to some project groups. By means of the UT's customer relationship management system, the university invites a number of students and arranges personal meetings with them. Each time the director of studies and the selected five students sit around the table and talk intensively about the study. In addition, the university organizes guest lectures for high school students. Sometimes the professors give the thematic lectures on the campus and sometimes they directly go to the high schools. These lectures are closely related to the study subjects, like the ones given for the university students, but are translated to the level of students at high schools. The main purpose is to give them the feeling about what they can expect from the university and the study program in particular.

Moreover, there are some other special projects targeted at high school students. One project encourages current university students to go back to their high schools and give presentations there about the study and life in the university. "Study Try-out" is another two-day project during which students from the high schools work on a case-study together and try to solve the case with the help of the UT students. Afterwards they write a report and present the findings, and get the feedback from the supervisor.

<u>Faculty Level</u>

In order to keep students well-informed about the study programs, the communication department within the faculty of Management and Governance develops tailor-made activities for students who are interested in a certain area of study. For instance, 'Mini-Conference' is organized for the English-taught program - European Studies. Students from the high schools come to the university and have discussions about a chosen European subject. In cooperation with companies in the neighborhood, 'Meet & Greet' is particularly designed for prospective BIT (Business & IT) students, who will get a general impression about the kind of work they will be doing, and will have the opportunity to talk with potential employers. For students who are coming to study Business Administration at the UT, guest lectures are usually organized for a large group of business students.

4.1.2 Highlighted Information

There are various types of information included in the UT's current communication strategy. Program information is mostly addressed in the university's publications and websites, informing students about the duration of the study, structure of the program (specializations), course offerings, language of instruction, accreditation status, and future career prospects (the expected

role in the workplace), etc. Detailed information about the labor market and success stories of graduates is publicized in the UT's alumni magazines (Dutch only) and/or on the alumni website. Finance-related information is highlighted in the UT's informational sources as well, such as tuition fees, scholarships, accommodation and costs of living, which is particularly targeted at international students. Other information including the university's profile, admission criteria, on-campus facilities, student life, and extracurricular activities (e.g. become a member of the student union) is well collected and accessible to potential students. Besides, interviews with current university students about their study and life in the university and in Enschede are also incorporated in the UT's publications.

However, it appears that the UT does not communicate much performance-related information to students, although some information is readily available in the university. For example, when students are asking about the number of international students enrolled at the university, or the percentage of students who immediately get a job after graduation, they usually get the answers during the information day, rather than through the UT's written and digital information sources. Since some performance-related information (e.g. the number of students who come from a specific country) is only available at the central communication department, it is a bit difficult for the faculty to disseminate such information to students in a timely manner. In order to inform students about the graduate employment rates, for instance, the faculty could collect data from the UT alumni bureau, which is part of the central communication department of the university and is responsible for regularly gathering up-to-date information from graduates.

4.1.3 Information Channels

Since the current Dutch students of the UT are mostly from the nearby regions, the university is trying to approach more students from the whole Netherlands as well as international students from other countries through a variety of information channels:

Communication efforts:
- Inform deans and teachers of high schools: send letters to high schools about the study programs at the UT, and when the open days will be organized
- Send potential students emails or postcards about the information day by virtue of the UT's customer relationship management system
- Attend different education fairs around the world

Marketing efforts:
- Advertise in newspapers
- Try to increase awareness via online marketing, like banners on the websites, visible to search engines, etc.
- Develop a new marketing campaign: new branding/logo, new layout of the brochures, etc.
- Make promotional movies for prospective students (in both English and Dutch), including interviews with graduates and professors from the university

4.1.4 Strategy toward International Students

In order to increase the number of international students, external communication and international recruitment is pivotal for the university. Ms. Hanna Lange, who is the international recruitment officer at the UT central communication department, gave us adequate information about the university's current communication and marketing strategy toward international students – how it promotes itself in the international markets and how it communicates with students from diverse countries.

Information Sources

At this moment the UT focuses on eight countries in which it does international marketing and recruits international students. These countries include China, Indonesia, Turkey, Russia, and Mexico, etc. Once or twice a year people from the UT (mostly from the central communication department) participate in the education fairs in each country. For instance, they visit CIEET (China International Education Exhibition Tour) in several cities in China, including Beijing, Shanghai, Nanjing, and so on.

During the education fairs some printed materials of the UT will be sent out to students and parents. There is a general brochure in which all the programs are listed, a general leaflet about the university (translated in the language of the country), and a program-specific leaflet with detailed information about the Master's degree programs. Since a lot of students leave their email address at the booth, the UT will keep in touch with these students by sending them emails when there are changes in the study programs, or giving them any information they would like to know, such as the scholarship deadlines, the availability of accommodation, and part-time job opportunities, etc. In addition, the UT has representatives in three main countries: China, Indonesia, and Turkey. These representatives serve as a bridge between the university and the potential students, who can easily communicate with, or translate the documents to students and parents in the language of their own country.

It is worth noting that recently the UT is trying to translate its website into the third language - German, as a growing number of German students are coming to The Netherlands for study, who have become the largest group of international students. For example, in European Studies - the English-taught program for Bachelor's and Master's students, around 50% of students are from Germany.

Highlighted Information

As most students would like to know how the program looks like and which specializations are offered, information about each study program is always stressed in the UT's informational sources, which includes:
- The goal of the program
- Duration of the program
- Structure of the program (tracks/specializations)
- Content of the program (courses offered)
- Career prospects (the kind of work students are expected to do)

- And, accreditation status of the program, etc.

According to Ms. Hanna Lange, next to the program-specific information, international students have three general questions when they are searching for a Dutch university:
1) What are the *admission requirements* for applying for the university?
2) What are the *total costs* (tuition fees and living expenses) of studying in the Netherlands?
3) What types of *scholarships* are available?

Accordingly, such information is mostly addressed in the UT's brochures and on the UT's website. For instance, international students must show proof of sufficient mastery of the English language with a minimum of IELTS 6.5 or TOEFL 90. The tuition fees for non-EU students are much higher than those for EU students, which cost them € 6,547 for the one-year Master's program and each year € 8,600 for the two-year Master's program. Basically there are three sources of scholarships targeting international students: UTS (UT Scholarships), mostly funded by companies in the region; Scholarships offered by some famous companies, like Shell and Philips; Scholarships from the Dutch government, such as the Huygens Scholarship Program and the Netherlands Fellowship Program (NFP). In addition, the government of several countries offer scholarships, like in China, the Orange Tulip Scholarship Program and the China Program are provided by the Chinese government.

Besides, information about the application procedures is also important for international students, such as the deadlines for submitting all the documents, how the visa and residence permit will be arranged, and how long the whole process takes, etc. And, information regarding the various international associations at the UT is also mentioned in the brochures and on the website.

Conclusion:
Apparently, the UT makes use of various information sources to attract students, such as the university website, catalogues and brochures, information days, guest lectures at Dutch high schools, and roundtable meetings with potential students. The UT participates in the education fairs in different countries and sends out printed materials to international students. In addition, the faculty of Management and Governance has developed tailor-made activities for students who are interested in a particular area of study. In these informational sources different types of information are addressed. Program-specific information is included in the program leaflets and it is also accessible on the faculty websites. At the central university level, there is information about the university profile, on-campus facilities, and student life, etc. While for international students, information regarding the admission criteria, application procedures, tuition fees and scholarships is also highlighted. Nonetheless, it turns out that not much performance-related information has been included in the communication strategy toward potential students. Since German students are highly concerned about future employment opportunities and Chinese students expect high quality of education in a renowned institution in the foreign country, they need more comparable information on the various institutions' performance in terms of the education quality and the employment outcomes of graduates. Thus this kind of information might especially be helpful for international students in the choice of a foreign university/program.

4.2 Performance Measurement in Universities

After identifying the main sources and types of information that currently feature in the UT's communication strategy, we will continue to explore which information on the UT's (education) performance is readily available to be integrated into its strategy toward prospective students. Since there are a variety of indicators that measure the performance of the university and faculties, we will first explain what performance indicators are, and how they are applied to higher education institutions. Some of the indicators are used to measure the input of the university, i.e. resources, human, plant, and funds employed by universities; some indicators are process-oriented which examine how those resources are deployed by a university; while other indicators assess the output of the university - what outcomes have actually been achieved (Higgins, 1989). In this research we will mainly focus on the performance indicators that can better describe the university and programs and inform student choices.

4.2.1 Performance Indicators

"A performance indicator is a quantitative or qualitative description which provides strategic information about the condition, health or functioning of the institution or system." (AUCC, 1995) More specifically, "performance indicators are a range of statistical parameters representing a measure of the extent to which a higher education institution or a program is performing in a certain quality dimension. They are qualitative and quantitative measures of the output (short-term measures of results) or of the outcome (long-term measures of outcomes and impacts) of a system or of a program. They allow institutions to benchmark their own performances or allow comparison among higher education institutions". (Vlãsceanu et al., 2004, p. 39)

According to the definition, performance indicators take two forms. The first form is inherently quantifiable – anything attached to a number (e.g. student applications and enrolments). Such information is mainly used for internal and external reporting and monitoring purposes, and for informing management decisions as well. The second form is more focused on the translations of qualitative issues, especially the direct outcomes of university practices, programs and instruction (e.g. student satisfaction, research output, rankings). These indicators usually serve as a means for the university to demonstrate its effectiveness in achieving its goals and objectives.

It is of vital importance for every institution to choose the most appropriate indicators that can be used as tools for assessing its overall performance and benchmark them against relevant peer institutions (CUC, 2006). Based on the CUC report and in consideration of our own situation in The Netherlands, we extract a number of performance indicators which serve the purpose of measuring and monitoring institutional and educational performance, and at the same time, will be helpful for (international) students in the college choice process. These indicators fall into six performance areas: academic profile, market position, admissions and enrolment, education performance, research performance, and financial aspects, which are displayed in the table below. In order to ensure that the interpretation of these indicators lies within a set of controlled parameters, their relevant measurements, i.e. where the data can be obtained, are also illustrated.

Table 6: Institutional & Educational Performance Indicators

Performance Area	Performance Indicators	Measurement
Academic Profile	Medium-term Academic Ambitions	Mission statement
	Student Population: character & diversity	Proportion of national students
		Proportion of international students
		Male/female ratio; Ethnic groups
	Strategic Alliances	Academic co-operations with institutions
		Partnerships with industry and business
Market Position	Academic Distinctiveness	Assessment of coherence and achievement of chosen positioning
	Position in Peer Group and League Tables	World university rankings
		National rankings
		Subject-specific rankings
		Peer assessment data
Admissions & Enrolment	Admissions Criteria (bachelor /master)	Entry standards for EU students
		Entry standards for Non-EU students
	Enrolment Targets	Enrolment figures (by student population)
		Enrolment figures (by programs)
Education Performance	Accreditation Status	Latest assessments by QA agencies
	Instructional Quality	Course availability in general & in specific field of study
		Class size and student-teacher ratios
		Instructor qualifications and experience
		The number of programs that are accredited
	Student Progression	Drop-out and retention rates in each year and area
	Student Achievement	Graduation rates (bachelor /master)
		Average time to degree
		Number of honors degrees awarded
	Student Satisfaction	Student feedback on courses and lecturers
		Recommendation rate by students
		Student opinion survey (facilities, services, etc.)
	Employment Outcomes	Graduate employability
		Employment rate of graduates
		Student destinations
		Average graduate starting salary
		Alumni satisfaction survey
		Employer feedback on graduates
Research Performance	Research Outputs	Articles published in top journals
		International awards
		Patents granted; Inventions
		Highly cited researchers
		Number of PhDs
Financial Aspects	Financial Indicators	The amount of scholarships and grants offered
		Trends in tuition fees

Source: items are derived from the CUC Report (2006) and the theoretical study (Table 4)

Academic Profile & Market Position

Most institutions have their own strategic goals and objectives, which are embodied in the mission statement. In the first instance, though, it is important to make clear to students what sort of institution it is, how the institution is positioning itself academically (e.g. education, research, strategic partnerships), and what makes it distinctive from other institutions - its specific appeal to students (e.g. a particular approach to pedagogy). In addition to internal strategic documents, institutions could take additional external sources of information into account and see whether some of the information can be used to describe their academic profile and appeal to more students, such as recent reports by accreditation and quality assurance agencies, results of National Student Survey, the institution's position in published league tables and rankings, as well as feedback from employers and professional bodies.

Quality of Student Learning Experience

Lilly et al. (2000) pointed out that the perception of an institution's commitment to educational support is by far the most important consideration within students' college choice process. From the perspective of most institutions, "the quality of the student learning experience is probably the single most important performance criterion – if it is poor, both academic reputation and public funding may be adversely affected, in turn damaging the profile and sustainability of the institution". (CUC, 2006) Therefore the intention of many universities is to ensure that students are getting what they need in terms of the instructional quality and educational support. This is associated with teaching strategies and approaches, curriculum delivery, learning resources, student support services, social and recreational facilities, and cultural opportunities, etc.

4.2.2 Educational Indicator Frameworks

According to AUCC (1995), "*educational indicator frameworks often employ the input - process – outcome model. Inputs represent what universities start with (students, teachers, instructional and facilities characteristics); Process refers to what universities do with the inputs (programs and processes such as curricula, faculty workload, instructional organization, use of technology, student/teacher time, student/teacher ratios, institutional climate); Outcomes are the cognitive (achievement or value- added) and non-cognitive effects of the university experience on students (work, incomes, skills, attitudes and behaviors)*."

Skinner & Tafel (1986) described a scheme for promoting excellence in undergraduate education in Ohio, and listed several performance criteria which include:
- Inputs: resource characteristics (student input characteristics, qualifications and experience of faculty, accessibility and usefulness of instructional resources and supporting services);
- Process: program characteristics (purposes, curricula, planning);
- Outcomes: program evaluation (performance of graduates in professional tests, internal and external assessment of program quality, e.g. rankings, student evaluations).

4.2.3 Education Performance Measurement

"Although based on the same data as management information, performance indicators serve a different purpose. They are most relevant in normative evaluation processes which seek to assess the extent to which a program, a practice or a policy is meeting its stated objectives." (AUCC, 1994)

Education performance can be measured in various ways. One aspect of performance measurement is to take a health-check in some area, (student satisfaction, for example) (CUC, 2006). In order to measure the quality of the student learning experience, many institutions collect instant feedback from students on the courses they take and the lecturers they meet, and (semi-) annually asking for student opinions about the facilities and services they use, so that they can have an overview and a better understanding of student satisfaction at the university - which areas students rate well and which areas need to be further improved. Student feedbacks and comments on courses, in particular, will motivate faculty to improve curriculum content and delivery.

In addition, some institutions conduct alumni satisfaction survey in order to assess graduates' overall satisfaction with the quality of their program, their satisfaction with the courses in terms of directions, assistance, feedbacks given by teaching staff, and their satisfaction with the courses in terms of the generic skills (e.g. analytical, problem-solving, communication, teamwork skills) obtained which are pivotal in the workplace. As student learning achievements are direct results of the education program (Vlãsceanu et al., 2004, p. 63), the evaluation of these outcomes is useful for improving student learning and development, program quality, and teaching effectiveness.

Another aspect of performance measurement is to monitor progress or achievement against pre-defined objectives (CUC, 2006), such as student applications and enrolments, which can be monitored at a particular date. A typical way of monitoring performance is to measure progress or trend. For instance, student performance and achievement can be measured by means of student retention, progression, and graduation rates, average time-to-degree, and so forth. Moreover, education performance can be assessed in terms of the employment outcomes of graduates, such as graduate employability, the employment rate, and the average graduate starting salary, etc.

A further aspect of performance measurement is through external assessment, such as accreditation, peer reviews, and subject or faculty rankings. In The Netherlands information on the quality of educational programs can also be obtained through the annual student survey conducted by weekly magazine Elsevier (Sá et al., 2004). A large number of university students are involved in the survey and are asked to give points to the quality of academic studies with respect to:
- Teaching facilities: computer rooms, seat availability;
- Curriculum: topics in the program and its relevance
- Tutors and lecturers: supervision, office hours, lectures and syllabus quality;
- Teaching quality: research skills, lectures;
- Examination: connection between lectures, study materials and exams; and,
- Communication between the institution and the student.

4.2.4 Education Performance Measurement in UT - Faculty Level

According to the Educational Charter (2007), the primary object of the faculty of Management and Governance is to provide first-rate academic teaching through a number of high-quality and international-standard programs. These programs are designed to fit in with the academic objectives, which include topics highly relevant to the field of study, and are intellectually challenging and encourage reflection on the relevant specialist field. The faculty will ensure that students are provided with thorough and timely information on the structure and content of the courses and any relevant changes. Lecturers will ensure that they possess up-to-date information on the subjects they teach.

Course Evaluations

Within the faculty of Management and Governance, education quality is monitored and controlled by the Education Quality Committee (OKC) together with the program committees. They primarily execute course evaluations of Business, Public Administration and Technology courses attended by Bachelor or Master students, and try to evaluate all of the courses at least one time in a cycle of three years. This is not only essential for lecturers to review their work and maintain the quality of the program, but also for external review and (future) accreditations.

In doing so, a questionnaire is established in consultation with the lecturers concerned and is then sent to the students who have registered for the course. The outcome of the questionnaire is in the form of a report which will be sent to the lecturers, the education director and the program committee who can take actions to improve the quality of the curriculum. Sometimes a panel conversation will be arranged between the lecturer and some students, and a delegate of the OKC and the program coordinator will also be present. During the conversation students can directly give their opinions on the strengths and weaknesses of the course that they followed.

In addition, course evaluation interviews are conducted twice a year with the purpose of maintaining and enhancing the quality of the courses (Study Guide 2008/2009). Each department evaluates all the courses with the lecturers, and makes plans for improvements in the following year. The departments also regularly seek opinions from previous graduates so that they can take the current employment market into consideration when setting new plans for the courses. Once every six years, each department is subject to an external review and accreditation.

Interview with Employers
● Inquiry into the workplace: Part of the system of quality assurance is a regular inquiry of the (future) employers (Students' Charter 2008/2009), asking for their opinions and feedbacks on the UT graduates.
● Job performance and assessment interviews: The faculty adopts a system in which job performance interviews take place every year and assessment interviews take place every three or four years. One of the purposes of these interviews is to have a clear idea about the general and specific skills required in the workplace, and to make possible improvements in the educational programs and student learning experience.

Conclusion:

In higher education institutions, performance indicators serve the purpose of measuring and monitoring institutional and educational performance, and assessing the extent to which a program, a practice or a policy is meeting its stated objectives. Information regarding the student's education performance (i.e. student progression, achievement, satisfaction, and employment outcomes) gives prospective students a better picture of the education quality of the university and helps them make more informed decisions. International students, in particular, will be interested in the education performance information because they are making a big investment decision and it is important for them to be clear about the level of difficulty of the study programs, the quality of student learning experience, the skills, knowledge, and attitudes to be acquired, and the employment opportunities after graduation. The University of Twente monitors and controls its educational performance by conducting student satisfaction survey, course evaluations, inquiring into the workplace, and through external assessment (accreditation). Such information is stored in the education quality control unit of the university.

4.3 The UT's Institutional Plan for Education

The 'Institutional Plan 2005-2010' provides an overview of the UT's mission and key strategic objectives for the medium term. It includes the university's profile, its policies and plans in education and research, as well as its relationships with strategic partners.

Mission Statement

According to the Institutional Plan (2005), the University of Twente is an entrepreneurial research university with a focus on technological developments in the knowledge society. It aspires to establish a single Federation of Technical Universities (3TU) in the Netherlands by 2010. This mission can be concretized for each of the UT's core activities: education and research.

The UT places great emphasis on education of excellent quality, using internationally accepted quality standards as benchmarks. In order to meet the increased demand for highly qualified graduates at both national and international levels, particularly in science and technology sectors, the university is striving to educate more students with a Bachelor's and Master's diploma. In doing so, it intends to set up a considerate number of new academic programs, improving graduation rates, and assuring internal quality for education.

4.3.1 Undergraduate Education

Objective: To achieve a 15% increase in the number of new Bachelor's students in 2010 compared to the number of registrations in the 2003-2004 academic year. 10% will come from Germany.

- *Broaden the range of attractive programs with more flexible and challenging tracks*. The UT is trying to offer bachelor's students more learning routes and targeted supervision with the purpose of increasing its appeal to students and presumably reducing its drop-out rates.
- *Increase first-year student intake*. The UT takes on challenge of increasing the number of first-year students from diverse countries, so that the admission criteria will be set flexible. In

order to guarantee the quality of student learning, the university/faculty will provide students with constant tutoring and mentorship, as well as intensive supervision.

- *The possibility of honors tracks.* Students are offered the opportunity to follow an honors track in each of the Bachelor's programs, i.e. an intensified curriculum that leads to an internationally recognized honors degree. These possibilities for differentiation and intensification will create a challenging palette, providing individual students an appropriate learning route.
- *Relationship with pre-university education.* In order to recruit more students from the region, the UT is taking an active role in cooperating with secondary schools in the Eastern Netherlands. This is done through the exchange of information, familiarizing secondary school students with the university in a broad sense, and staff exchange.
- *Relationship with the German border region.* Given the UT's geographical position near the German border, it is necessary to extend regional recruitment into Germany. Some programs are particularly welcomed by German students, such as psychology, which has limited intake in Germany, and public administration, which are rarely offered there.

4.3.2 Graduate Education

Objectives:

a) *To achieve a 20% increase in the number of new students in the Master's programs compared to the number of registrations in the 2003-2004 academic year.*

b) *To achieve a 30% increase in the number of new international students in the Master's programs compared to the number of registrations in the 2003-2004 academic year.*

- *Two types of Master's programs available.* The UT Master's programs (altogether 33 programs) are designed for a large number of national and international students, while the purpose of Research Master Programs is to contribute to the UT's strategic position as entrepreneurial research university with excellent education and research.
- *English-taught environment.* All Master's programs will be offered in English. Since educational quality will then be partly dependent on teaching staff's English language proficiency, the UT is formulating a Language Policy Plan which attempts to provide adequate training and support to teaching and administrative staff.
- *Broader and more diverse intake of students.* The regular Master's programs are intended for UT Bachelor's diploma holders, higher professional education transfer students, and international Bachelor's diploma. Therefore, the programs will be structured in such a way that they can accommodate students with diverse educational backgrounds. "Admission to the Master's program should not be based on the concept of eligible subjects but rather on suitable knowledge, skills and motivation." (Institutional Plan, 2005)
- *Intensify the cooperation with higher professional education institutes.* The UT is developing transition programs for students in the final phase of higher professional education, with the aim to recruit more talented students and guarantee a smooth transfer from higher professional education institutes to the university.
- *Create a distinctive international profile.* Some of the programs are developed in cooperation with other institutions which contribute to the UT's international profile. In collaboration

with the universities in Germany, programs are offered in a multicultural setting and are featured with an international structure and a double diploma. These joint programs help the university increase its brand visibility and familiarity in foreign countries, and are attracting an increasing number of students from the Netherlands, Germany, and other overseas countries. In addition, the UT tries to address its distinctive profile nationally and internationally by offering a limited number of Research Master Programs that contribute to its profile as an entrepreneurial research university and that are ranked among the international top in terms of quality.

- *Supporting scholarship programs*. In order to attract more international students, the UT places a strong emphasis on extending its scholarship program (Twente Scholarship Program) for excellent foreign students. This program will be used in particular to facilitate admission to Research Master Programs.

- *The Graduate School Twente* has been established, which is headed by the UMT – the University Management Team. It is focusing on the recruitment of national and international graduate students based upon an appropriate selection mechanism and an effective scholarship system.

4.3.3 Graduation Rates

Objectives:
b) *To increase the graduation rates for Bachelor's students to 75% by 2010.*
c) *To increase the graduation rates for Master's students to 90% by 2010*

- Increase the number of students to the UT's various programs.
- Ensure successful completion of the Bachelor's and Master's programs. The UT is working on the further elaboration of the study advice-mentorship system, the further implementation of ICT in education, and enhancing the independence and resilience of students through the student competence development programs.
- Tightening the relationships with secondary schools would reduce the risk of high drop-out rates.
- Given the objective of substantially increasing the number of international students, it is important to ensure sufficient care and supervision of this specific group of students. Student Union and its international associations play a crucial role.

4.3.4 Internal Quality Assurance for Education

Objective: *During the period of 2005 to 2010, the UT will have implemented a sound quality assurance policy for education based on PDCA circles. This policy will enable the UT to meet the criteria for various external accreditations.*

The UT's policy on internal quality assurance for education will be based on the principles of a *balanced quality assurance model* that is to demonstrate the excellent quality of the range of programs offered. A useful tool for such a system is the PDCA circle (Planning, Do, Check, and Act). This model will primarily monitor the internal quality of the educational programs, and will

also have to be able to demonstrate that it can maintain and build on the quality measured at the time of accreditation.

Conclusion:

With the purpose of attracting a larger number of undergraduate and graduate students, the UT is attempting to create more attractive and flexible (English) programs, to broaden the intake of first-year students, to strengthen its cooperation with national and international institutions, and to create a distinctive international profile. In addition, the UT is dedicated to improving the graduation rates for Bachelor's and Master's students, and assuring internal quality for education.

4.4 Information on the UT's Education Performance

In order to recruit more students from the Netherlands and from other countries, the UT's central communication department is working on a new strategy toward prospective students. As we mentioned previously, since many international students (Chinese and German students in particular) are highly concerned about the quality of the study programs and their future career opportunities, we suggest that more information on the UT's educational performance be integrated into the communication strategy so as to help students make better decisions. In this way, we will try to find out which performance-related information is regularly collected and is readily available in the university – at both the central university level and the faculty level.

4.4.1 Available Information – Central University Level

According to Mr. Walter Nijhuis, who is engaged in institutional research at the UT, some information on the university's educational performance is made public, such as the percentage of international students, the number of Bachelor/Master diplomas issued, and staff-student ratio, etc., which can be accessed from the UT Institutional Research website or from certain publications, like the annual report of the university. However, some information, like the average length of time to degree, retention and drop-out rates, is mainly used for internal monitoring of student performance rather than external communication purposes. Based on the UT Annual Report (2008), we get some facts and figures of the university in terms of its education and research in the past five years, as well as some other data/figures on the UT's and its faculties' (educational) performance (as shown in the tables below).

Table 7: Five-year Key Figures

	2004	2005	2006	2007	2008
Total number of students enrolled	7,357	7,673	7,849	8,061	8,245
Number of Bachelor students	3,748	4,336	4,806	5,202	5,409
Number of Master students	432	951	1,358	1,810	2,099
Number of first-year students	1,481	1,604	1,643	1,719	1,750
Market share first-year students	3.5 %	3.6 %	3.6 %	3.5 %	3.4 %
Number of Bachelor diplomas issued	66	331	503	716	821
Number of Master diplomas issued	33	160	338	547	819
Number of international students	344	487	607	766	950

Percentage of international students	4.7 %	6.3 %	7.7 %	9.5 %	11.5 %
Number of first-year international students	178	231	251	331	400
[1] Percentage of first-year international students	12 %	14.4 %	15.3 %	19.3 %	22.9 %
[2] Staff/Student ratio	4.1	3.6	3.4	3.5	3.9
Number of cited publications	1,589	1,756	1,611	1,906	1,870

Source: Annual Report UT (2008, p18); UT Institutional Research website

[1] Number of first-year international students divided by Number of first-year students

[2] Full-time equivalent academic staff per 100 students

Table 8: Employment Outcomes of Graduates

	2003	2004	2005	2006	2007
Percentage of students who get a job after graduation	92	91	97	96	96
Average unemployment duration after graduation	2 months	3 months	3 months	2 months	1 month

Sources: Annual Report UT (2008, p28)

Table 9: Accreditation Status of the Programs

Number of Bachelor's programs accredited by NVAO in 2008	14
Number of Master's programs accredited by NVAO in 2008	14

Source: Annual Report UT (2008, p29, 30)

Table 10: First-year International Students (bachelor and master)

	Number of First-year Students	Germany	China	Other Countries	Number of First-year International Students	% International Students
2006	1,643	171	8	72	251	15.3 %
2007	1,719	244	8	79	331	19.3 %
2008	1,750	272	16	112	400	22.9 %

Source: Annual Report UT (2008, p45)

## 4.4.2 Available Information – Faculty Level

Table 11 shows the number of students enrolled in each faculty of the UT since 2004 to 2008. In comparison, the faculty of Management and Governance (MB) recruits most students every year. However, as shown in table 12, most international students are enrolled in the faculty of Behavior Sciences (GW), especially for the Bachelor's programs.

Table 11: Number of Students Enrolled per Faculty

	2004	2005	2006	2007	2008
CTW	1,548	1,554	1,649	1,654	1,755
EWI	1,776	1,689	1,500	1,171	1,057
GW	1,232	1,420	1,482	1,633	1,727
MB	1,809	1,872	1,990	2,280	2,270
TNW	991	1,132	1,228	1,322	1,436
Total	7,356	7,673	7,849	8,060	8,245

Source: UT Institutional Research website

Figure 4:
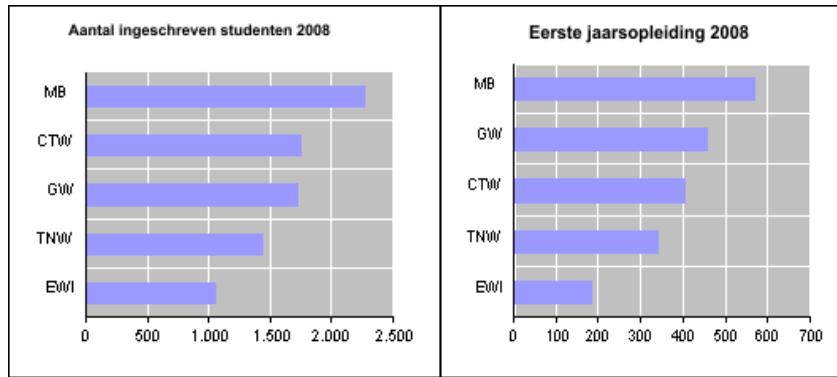
Source: UT Institutional Research website

Table 12: Percentage of International Students per Faculty

		2006	2007	2008
CTW	Bachelor	1,0%	0,7%	0,9%
	Master	3,0%	3,0%	3,9%
EWI	Bachelor	1,6%	2,4%	3,1%
	Master	10,3%	10,0%	14,9%
GW	Bachelor	26,5%	31,8%	36,2%
	Master	11,7%	7,5%	10,3%
MB	Bachelor	11,4%	14,8%	17,6%
	Master	13,1%	13,0%	14,9%
TNW	Bachelor	1,4%	2,2%	3,2%
	Master	8,5%	6,1%	9,0%

Source: UT Institutional Research website

Figure 5:
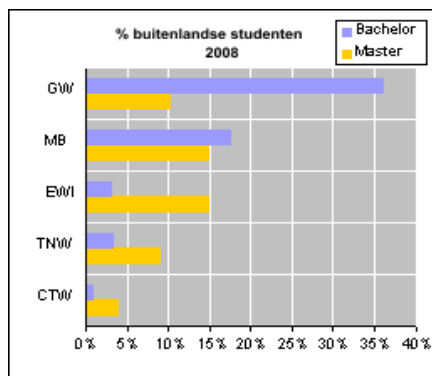
Source: UT Institutional Research website

In addition, there is information regarding the number and the percentage of students enrolled in each study program, which is sorted by different student populations (Dutch students, international students, first-year students) and different levels of study (Bachelor studies and Master studies). Also information about the number of issued Bachelor/Master diplomas for each program is readily available.

The following information will be interesting for students from Germany.

Table 13: German students enrolled, by program

	Total	Psychology	Public Administration	Communication Studies	Other Programs
2006	171	76	62	13	20
2007	244	87	85	31	41
2008	272	99	91	27	55

Source: Annual Report UT (2008, p45)

Conclusion:

We find that some information on the UT's educational performance is regularly collected and is readily available on the university's Institutional Research website (Dutch only), such as the application and enrollment figures, percentage of international students, and the number of Bachelor/Master diplomas issued (sorted by student populations, faculties, and programs). Some performance-related information, like the staff/student ratio and the percentage of students who find employment after graduation, is included in the UT's annual report and is mainly used for internal and external reporting purposes. Other information which in relation to the student's education performance (student progression and achievement), such as the average length of time to degree, drop-out and retention rates in each year (Bachelor/Master), is mostly used for internal monitoring purposes and has not yet been integrated into the UT's communication strategy toward prospective students.

Since the existing performance information would provide students with a clear picture of the characteristics of the student population, the level of difficulty of the study programs, the quality of student learning experience, and the employment opportunities after graduation, we assume that some of the information can be used and be communicated to potential (international) students which helps them make more informed decisions.

4.5 Higher Education Rankings – Institutional Perspective

As we mentioned in Chapter3.2, higher education rankings provide an assessment of the relative quality and performance of the universities, which play an informative role in the student's college choice process. From the institutional perspective, rankings help universities set and define targets or brand and advertise themselves (Hazelkorn, 2009a). In this section, we will explain the impact of rankings on higher education institutions and on the University of Twente itself.

4.5.1 Impact on High Education Institutions

"Rankings are used to help identify strengths and weaknesses, and to help clarify and refine profile and mission. Rectors may engage their entire senior staff at an annual retreat, or the discussion may occur at the departmental level, but the aims are similar: to facilitate organizational change, underpin quality assurance, set key performance indicators, inform resource allocation and investment, identify peers and networks, and improve reputation." (Hazelkorn, 2009b)

Reputation and Recruitment

Rankings are one way to reflect institutional reputation and prestige (Hazelkorn, 2007). A positive ranking positively impacts on attracting students, establishing academic co-operations, program development, allocating funding, and motivating teachers and lecturers. Hence, a lot of universities use their good ranking results for marketing and publicity purposes, trying to become better known through press releases, official presentations and websites.

According to Hazelkorn (2008), reputation derived from league tables and rankings is a critical determinant for student applicants. A growing number of students make college choices on the basis of the rankings of the institution or the reputation of the particular faculty. Prospective graduate students, in particular, are more inclined to use rankings given their maturity, mobility, and career focus. Therefore, rankings do have influence on the attractiveness of the institution to students. In many instances, the recruitment of (international) students will become easier if the university occupies a favorable position in some world famous rankings, such as the Shanghai ARWU Ranking and the Times-QS Ranking, or some discipline-based rankings like the Financial Times ranking of the top business and management programs.

Strategic Planning

"Rankings force/help institutions to become more accountable, set strategic planning goals, and provide comparative information to students, parents and other stakeholders." (Hazelkorn, 2008) Salmi and Saroyan (2007) indicate that rankings can be used in a constructive way that forms a vital part of institutional strategic planning and development.

Based on Hazelkorn (2009a)'s more recent research, it is found that rankings do have a significant impact on academic decision making and behavior. A growing number of university leaders are taking the league table results seriously and trying to integrate them within their strategic planning processes in an attempt to maintain and improve their reputation and profile nationally and internationally. They use rankings to identify strengths and weaknesses, and seek to make relevant changes - taking strategic (e.g. set up a new strategic plan), organizational (e.g. deal with indicator improvements and manage ranking-related information and data), managerial (develop better management tools), or academic actions (e.g. create new academic programs and improve teaching practices). Nonetheless, it is worth noting that institutions can not take measures that merely related to raising their academic ranking without enhancing educational quality (e.g. favoring research over teaching). Instead, they could use rankings to prompt change in areas that directly improve student learning experiences (Hazelkorn, 2009b).

Quality Assurance

"Rankings are regularly used as a benchmarking mechanism and a quality assurance measure. They put pressure on institutions to enhance quality to attract students…Academic improvements and campus developments are occurring because HEIs are using rankings to benchmark their performance and facilities, and engage in continued quality assurance." (Hazelkorn, 2009b)

According to Hazelkorn (2009b), a lot of institutions in Germany are using rankings to identify key performance indicators and internal benchmarks. They believe that rankings can facilitate

institutional discussions about what leads to success and how the institution can better document and report that success. Universities are driven by rankings so that they place great emphasis on the educational quality and institutional performance.

Apparently rankings help institutions identify good and weak performance, and are influencing their quality assurance processes. As a result of the lower-than-expected rankings, some institutions may be motivated to improve the quality of their academic programs by reviewing existing curricula, adopting new teaching and learning practices, and developing more English language programs, etc.

4.5.2 Impact on the UT

In comparison with other universities in The Netherlands, the UT is not ranked favorably according to the Shanghai ARWU Ranking (ranked in the range 300-400 among world universities in 2008) and the Times-QS Ranking (ranked No. 200 in 2008). While looking into some specific disciplines, like computer science and chemistry, the UT is ranked among the top 3 in the country. "A higher rank is perceived as better", Mr. Walter Nijhuis stressed.

Some institutions find the rankings so important that they adjust their policy to achieve higher scores as determined by the ranking systems. For instance, they make investments in-house (e.g. improving the academic facilities and resources) in an effort to attract more talented students. The University of Twente, however, is focusing its attention on the improvement of quality in education and research. Although the UT provides the ranking organizations with adequate information regarding the academic performance of the university, it has not yet adapted its strategy to arrive at a higher rank either in the Netherlands or in the whole world (Diversiteit, kwaliteit en groei, 2009).

In spite of this, the UT is taking various measures that aim to fulfil its mission, and some of which potentially influence the ranking of the university. As illustrated in the Institutional Plan 2005-2010, the UT is endeavoring to increase the number of international students and to improve its graduation rates. Moreover, it is trying to broaden the range of English-taught programs and to strengthen its co-operation with institutions in other countries. These efforts reflect common ranking criteria (e.g. international attractiveness, graduation rates) and might improve the current ranking of the university. Therefore, it is important that the UT ensure accurate and timely data collection so that all relevant activities can be captured by the ranking organizations. In addition, it can measure performance on a set of indicators that are essential to the university's success, and track progress toward institutional goals.

Based on the interview with Mr. Walter Nijhuis, we got to know the main functions of the Institutional Research Office of the UT. The Office serves as a major repository of information on the UT's education, research, finance, and personnel. It collects, analyzes, and interprets data at the central university level as well as at the faculty level, and presents the data to university decision-makers for use in planning and policy-making. It also functions as an information agent, delivering timely and relevant information according to the request. In addition, the Institutional

Research Office has the responsibility of compiling reports required by the university board. Every month it works on a two-page report which contains a number of figures about the UT's performance together with some explanations from the faculty (e.g. why extra staff are being employed). Then the Office reports directly to the university board who will be monitoring the actual performance of the faculties.

Furthermore, there is a monthly meeting between the Institutional Research Office and the Concern Control Department of the university, and controllers from each faculty will also participate. Recently they are discussing about setting performance indicators at the departmental level, as some departments are looking for better figures that monitor their own performance. It is presumed that departments have their own tailor-made indicators in the near future. These performance indicators are really the ones they would like to show to the university board.

Conclusion:

In short, rankings have a significant impact on academic decision-making and behavior. Since rankings are one way to reflect institutional reputation and prestige, they help institutions brand or advertise themselves, and attract more student applications due to positive results. In addition, rankings help institutions identify strengths and weaknesses, clarify and refine profile and mission, which can be integrated within their strategic planning processes. Rankings also encourage institutions to identify key performance indicators and internal benchmarks, and to engage in continued quality assurance. Unlike some other universities who have adjusted their policy to achieve higher rankings, the UT is focusing its attention on the improvement of education and research quality. However, some of the efforts that are being made (e.g. increase the number of international students, improve graduation rates, broaden the range of English programs, and strengthen international co-operations) reflect common ranking criteria and would potentially increase the ranking of the university.

Chapter 5: Assessment and Improvement of the Strategy

Chapter2 and Chapter3 have laid a theoretical framework for understanding the factors influencing student college choice and students' information needs during the lengthy search process. By means of interviews and a review of the internal documents of the university Chapter4 has examined the UT's communication strategy toward prospective students with a particular emphasis on the information related to the institutional and educational performance. In this chapter we proceed to the assessment/characterizing of the communication strategy of the university by setting up two checklists which include all possible sources and types of information (items are derived from the theoretical study) that can be used to inform student choices. The assessment of the current and the desired strategy that is relevant for different student populations will enable us to find gaps and to identify areas for improvement and/or changes.

In doing so, we will start by examining the current situation of the UT to see whether it is on the track towards achieving its objective of attracting (inter-)national students. Depending on the two checklists we will try to find out whether the UT's current communication efforts (the information sources used and the types of information addressed) satisfy the needs of different student populations, assessing the differences between the current and the desired strategy, and indicating areas that can be improved. We will make recommendations for the UT's communication strategy toward, in particular, international students, and will recommend on the UT's internal communications between the central communication department and the faculty-level department.

5.1 Current Situation

<u>Central University Level</u>

Since Sep.1st 2009, the UT is introducing its new corporate identity which is visibly manifested by way of a new logo and new elements of style feature in the university's publications and websites. The main purpose of the new design is to make the UT's brand visually distinguishable so that it can appeal more to its targeted audience (e.g. students, parents, researchers, institutions, companies). Moreover, the new visual identity is manifested through communication, such as advertising, public relations, and information, which helps to better present the university to both internal and external stakeholders.

Currently there are many more information resources available on the UT's website, some of which are targeted at prospective students who are seeking for where and what to study in The Netherlands. For example, the new column "Study Choice" leads students directly to a broad range of academic programs at the UT. Based on the relevant types of study students can easily find the subject that they are most interested in. In addition, some internal documents of the university are also made transparent to the public, such as the UT's Institutional Plan 2005-2010, Strategic Vision 2009-2014, Bachelor and Master Satisfaction Monitor Report, which give potential students more insight into how the university fulfils its mission, to which areas it is attaching importance, and what about student opinion towards the study programs, academic facilities, and student services, etc. At this moment, most of these documents are only available in Dutch. While for international students, the UT has published a lot more practical information

(documents) on the website, like the International Student Handbook, which includes various issues students would like to know before and upon their arrival at the university.

In addition, the UT central communication department is launching a specific strategy toward prospective graduate students, as they are aware of the fact that graduate students have different information needs from undergraduate students. According to Mrs. Rita de Wilde, who is in charge of the graduate recruitment of the university, master's students are highly concerned about the content of the study programs. Therefore information regarding the specializations, professors, research subjects and career prospects is especially important for them. Besides attending the education fairs in The Netherlands and in other countries, the central communication department is trying to work more closely with the alumni office, involving former graduates during the master information days and asking them to make presentations about their learning experience at the university, their opinion on the program, and their career after graduation.

Faculty Level

The communication department within the faculty of Management and Governance is now working on a new strategy which aims to attract more students to the faculty. It is searching for information regarding the distinctiveness (unique selling points) of each study program, and trying to communicate in a way that makes it more attractive to students. According to Mrs. Bertyl Lankhaar, they are attempting to communicate more quality-related information to students as the quality of education associated with the employment outcomes (indicating the quality of graduates) are considered important by international students.

Some efforts are being made which keep students better informed about the high-quality programs at the faculty. For instance, the newly designed leaflet of Public Administration addresses the positive accreditation status of the program: *"It is accredited both nationally (by the Accreditation Organization of the Netherlands and Flanders –NVAO) and internationally (by the European Association for Public Administration Accreditation) and therefore meets the highest standards in terms of quality."* The leaflet also highlights the employment opportunities of the program: *"Graduates of the four-year program are successful in finding employment within a short period of time. Around 30% of former students are employed in various forms of government…Another 40% are employed in various organizations in the business sector…The remaining graduates join NGOs, government funded organizations, educational institutes, housing corporations, or work as researchers at different universities."*

Moreover, the faculty M&G is now seeking for new promoters (current Master's students studying Business Administration, Health Sciences, Industrial Engineering and Management and Public Administration) who can assist in the information events and inform potential graduate students about their study at the university and their life on the campus/in the city. The faculty is also looking for students who would like to guide a potential Master's student through a study day at the UT, taking the student to the lectures and showing him/her the campus, the student accommodation, and the city – Enschede.

Conclusion:

The UT's efforts to create an impressive visual identity, providing abundant online information resources, describing the study programs in an attractive way, communicating quality-related issues to students, and involving current students and alumni in the (master) information days are effective in presenting and promoting the university/programs and informing potential undergraduate and graduate student choices.

5.2 Assessment of the UT's Communication Strategy

Based upon the literature review on student college choice (Chapter2) and student information needs (Chapter3), and the interviews with the UT communication department regarding the communication strategy of the university (Chapter4), we formulate two checklists below which list a variety of information sources that can be used to inform student choices and the different types of (performance) information that can be communicated/disseminated to potential students. The main purpose is to confront theory with empirical reality, helping us assess the differences between the actual and the hypothesized strategy that are relevant for different student populations and identify room for improvement.

5.2.1 Checklist for Information Sources

In Chapter2 we looked into the factors influencing student college choice, and in Chapter3 we examined students' information needs and the main sources of information that they use in the college search process. Given that different student populations (Dutch students, non-Dutch EU students, and non-EU students) prefer or are influenced by different sources of information, the university has to make sure that all those sources of information are available to students. Therefore, the checklist below is to assist us in reviewing the current communication strategy with regard to the information sources that are in use (checked items concluded from the interviews in Chapter4) and the additional sources (unchecked items derived from the theoretical study in Chapter3 and according to our own situation in the Netherlands) that can be taken into account to attract more prospective (international) students. The grey checkboxes include a mix of checked and unchecked items which indicate areas that can be improved. In the last column of the checklist we also indicate the student population(s) for whom these sources of information are most relevant (built on the theoretical study in Chapter3.3).

Table 14: Checklist for Information Sources

	Checklist – Information Sources	Student Population(s)
☒	University /faculty websites	All student populations
☒	University publications (printed materials):	
	☒ Informative catalogue of the university	All
	☒ Program leaflet	All
	☒ Study guide	All
	☒ International student handbook	International students
	☐ Scholarship handbook	Non-EU students
	☒ Alumni magazine (Dutch version)	Dutch-speaking students

☐	Alumni magazine (English version)	International students
☒	Open days (promotional movies, workshops, tours)	Dutch students, German students
☒	Tailor-made activities for different study programs	Students in the Netherlands
☒	Education fairs in different countries	International students
☒	Direct approach:	
	☒ Presentations /guest lectures at high schools	Dutch students
	☐ Presentations at Dutch HBO-institutions	Final year bachelor students
	☒ Personal meetings with high school students	Dutch students
	☒ Send letters to high schools	Dutch students
	☒ Send emails or postcards to interested students	Students in the Netherlands
	☐ Direct mail to home (about the study programs)	Students in the Netherlands
☒	Advertising through:	
	☒ Newspapers	Dutch-speaking students
	☒ Internet	All
	☐ Radio & television	Dutch-speaking students
	☐ Billboards	Students in the Netherlands
☐	University students and alumni recommendations	Students in the Netherlands

Source: items are derived from the theoretical study (table 3 and table 5)

As the table illustrates, the UT has made use of various information sources (checked items)   to attract national and international students. The university and faculty websites, as one of the most frequently used sources, are presenting a new look to the public both in terms of the new visual identity and the improved contents (more information available). The UT also uses a variety of printed materials to inform student choices, such as the informative catalogue of the university, program leaflet, and study guide. Some publications are designed for specific student populations, like the International Student Handbook, which is typically targeted at international students. Since the alumni magazine is compiled in Dutch, it is only relevant for Dutch-speaking students. Information days/campus tours attract students from the Netherlands and the adjacent country Germany, and participating in the education fairs in different countries presents the university/programs to international students. In addition, the UT approaches Dutch high school students in different ways and also advertises itself in newspapers. At the faculty level, tailor-made activities are organized for students choosing distinctive study programs.

Looking through the unchecked items, we find that some information sources are not used by the university, such as the Scholarship Handbook, alumni magazine (English version), presentations at Dutch HBO-institutions (target group is the final year bachelor students who are planning to go to the university for a master program) , direct mail to home, and advertising through billboards. The use of those information sources can help the UT better inform international student choices and approach more (HBO bachelor) students in the Netherlands.

5.2.2 Checklist for Information Types

It is essential for students to capture sufficient quality information to make good college choice decisions. In Chapter3 we examined students' information needs and a wide variety of information that they perceive important in the search of a particular institution/program. Since different student populations have different information needs and they have their own preferences for certain types of information, the university has to make sure that relevant information is included in its communication strategy and is timely delivered to students. The following checklist helps us assess the various types of information that are currently used/addressed (checked items concluded from the interviews in Chapter4), and identify which (performance) information (unchecked items derived from the theoretical study in Chapter3 and according to our own situation in the Netherlands) can still be integrated into the strategy toward prospective (inter-)national students. Following each unchecked item we mark Yes or No (Y/N) which represents whether the information is currently available in the university/faculty or not. In the last column of the checklist we also indicate the student population(s) for whom these types of information are most relevant (built on the theoretical study in Chapter3.3).

Table 15: Checklist for Information Types

Checklist – Types of Information			
Central-level Information			*Student Population(s)*
University Profile			
☒	Institutional Type		All
☒	Mission statement		All
☐	Distinctiveness of the University	[Y]	All
	Academic Reputation:		
☐	☐ Worldwide rankings	[Y]	International students
	☐ Subject-specific rankings	[N]	International students
	☐ International awards	[Y]	International students
	University location:		
☒	☒ Geographic location and district boundaries		Dutch, German students
	☐ Demographic information for the City	[N]	Dutch students
	Student characteristics:		
	☒ Size of student population (undergraduates, graduates)		All
	☐ % National students	[Y]	All
☒	☐ % International students	[Y]	All
	☐ Male/female ratio	[Y]	All
	☐ Ethnic group by percent	[Y]	International students
	☐ Number of Nationalities	[Y]	International students
	Environmental characteristics:		
	☒ Campus environment (how green the campus is)		All
	☒ Student life (cultural and leisure activities)		Dutch students
☒	☒ (International) student associations		All
	☐ Bedrijvendagen Twente (company days)	[Y]	International students
	☒ Student accommodation		All

☒	Campus facilities:		
	☒ Educational facilities (e.g. library, ICT services)		All
	☒ Recreational facilities (e.g. pubs, sports center)		Dutch students
	☒ Student support services (counseling, medical center)		International students
	☐ Career guidance and advice	[Y]	International students
☒	Strategic alliances:		
	☒ Academic co-operations with other institutions (3TU)		All
	☒ Partnerships with industry and business		All
Admissions			
☒	☒ Admissions criteria (e.g. Minimum IELTS score)		International students
	☐ Number of applicants (undergraduates, graduates)	[Y]	All
	☐ Number of enrolments (undergraduates, graduates)	[Y]	All
Financial Aspects			
☒	☒ Tuition fees		Non-EU students
	☒ Scholarships and grants		Non-EU students
	☒ Cost of living		International students
Education Performance ☐	Student progression:		
	☐ Drop-out rates in each year (bachelor/master)	[Y]	All
	☐ Retention rates in each year (bachelor/master)	[Y]	All
☐	Student achievement:		
	☐ Number of Bachelor/Master diplomas issued	[Y]	International students
	☐ Graduation rates (bachelor/master)	[Y]	International students
	☐ Average time-to-degree	[Y]	International students
	☐ Number of honours degrees awarded	[Y]	International students
☐	Student satisfaction:		
	☐ Student feedbacks on Courses and Lecturers	[Y]	All
	☐ Results of the student opinion survey	[Y]	All
	☐ Results of the alumni satisfaction survey	[N]	All
☐	Employment outcomes:		
	☐ Graduate employability	[N]	International students
	☐ Employment rate of graduates	[Y]	International students
	☐ Average time to find employment	[Y]	International students
	☐ Student destinations	[Y]	International students
	☐ Average Graduate starting salary	[Y]	International students
	☐ Employer feedbacks on graduates	[Y]	

Faculty-Level Information

Faculty Populations			
☒	☒ % Undergraduates (and by programs)		All
	☒ % Graduates (and by programs)		All
	☐ % International students (and by programs)	[Y]	All
	☐ % Research and teaching staff	[Y]	All
	☐ % Administrative and support staff	[Y]	All
	☐ Student/faculty ratio	[Y]	All

Faculty Reputation ☒	☒ Instructor qualifications and experiences		International students
	☐ Faculty contact hours	[Y]	All
Program Information ☒	Programs offerings (the availability of specific programs)		Dutch, German students
☒	Program characteristics:		
	☒ Program duration		International students
	☒ Language of instruction		International students
	☒ Accreditation status		International students
	☒ Program design/structure		All
	☒ Specializations offered		All
	☒ Variety of courses available		Dutch, German students
	☐ Flexibility of classes	[Y]	All
	☐ Workload Required	[Y]	All
	☐ Approaches to Teaching and Learning	[Y]	International students
	☐ Companies involved in the program	[Y]	International students
	☒ Knowledge & skills to be acquired		All
	☒ The kind of work students are expected to do		All
	☒ Internships/graduate projects for Dutch students		Dutch students
	☐ Graduate projects for international students	[Y]	International students

Source: items are derived from the theoretical study (table 4, table 5 and table 6)

The above table shows that the UT uses various types of information to attract prospective (international) students, informing them about the university and the study programs. At the central university level, there is information about the university profile (e.g. institutional type, mission statement, location, size of student population), environmental characteristics (e.g. campus environment, student life, accommodation, on-campus facilities, student support services), and the university's strategic alliances (e.g. academic co-operations with other institutions). Some information that is more relevant for international students (e.g. admission criteria, application procedures, tuition fees and scholarships, international student associations) is also addressed. At the faculty level, there is detailed information about the study programs (e.g. duration of the study, language of instruction, accreditation status, structure of the program (specializations), course offerings, and future career prospects).

However, it is apparent that not much performance-related information has been included in the UT's communication strategy toward potential students. Based on our interview with the institutional research office and a review of the internal documents of the university, we find that some information on the UT's educational performance, such as the proportion of national and international students (central-university level and faculty/program level), student application and enrollment figures, the number of Bachelor/Master diplomas issued in each year and area, and Bachelor/Master student satisfaction with their learning experience in the university, is regularly collected and is readily available on the UT's Institutional Research website (Dutch only). Some performance information, like the staff/student ratio and the percentage of students who find employment after graduation, can be found in the UT's annual report 2008 and is mainly used for

internal and external reporting purposes. Other information related to the student's education performance (student progression and achievement), such as the drop-out and retention rates in each year, graduation rates, average length of time to degree, is mostly used for internal monitoring purposes and has not been included in the UT's communication policy.

Information in terms of the employment outcomes of graduates (e.g. student destinations, the average length of time to find employment, and average graduate starting salary) is well collected in the WO Monitor Report (Dutch only) and is accessible on the UT's institutional research website. Information regarding the employer feedbacks on the UT graduates, though, can be acquired from the university's education quality control unit (Chapter4.2.4).

Other information that is not emphasized in the current communication strategy but is readily available in the university and will be interesting for potential (international) students includes male/female ratio, number of student nationalities, career guidance and advice, and so forth. Moreover, information about the faculty populations (e.g. proportion of research and teaching staff, student/faculty ratio) and faculty contact hours has not been addressed in the major faculty-level sources (faculty websites, program leaflets).

5.3 Improvement of the UT's Communication Strategy

Critically reviewing the two established checklists (one for information sources and the other for information types) helps us assess the differences between the current and the desired strategy, and identify room for improvement. In the following section, we will give some recommendations for the UT's communication strategy with regard to the additional sources and types of information that can be used to inform potential student choices, and, in particular, the strategy toward international students.

5.3.1 Recommendations on Information Sources

Since a lot of information on the UT website is only available in Dutch, there are often inconsistencies between the Dutch sites and the English sites, and potential students might be confused if they switch between the two languages. Therefore, we recommend that more information/useful documents be translated into English and be accessible to more non-Dutch speaking students.

In addition to making the general catalogues and program leaflets more valuable and attractive to students, the UT can also use some other types of printed materials. As we found in the literature and were informed from the interview, students from non-EU countries are highly concerned about the scholarship options when they are searching for a foreign institution. In this way, a Scholarship Handbook can be developed which clearly presents a list of scholarship, grant and loan programs based on such categories as field of study, level of study, minority status, and religious affiliation. And, in order to give potential students some impressions about the university graduates and the current employment market, the UT Alumni Magazine is a helpful source of

career information which is recommended to be offered in English and be delivered to international students as well.

Due to a much wider choice of English bachelor programs, a large number of international undergraduates are studying at HBO-institutions (universities of Applied Sciences) instead of research universities in The Netherlands. However, some of the ambitious students would like to continue their master's study at a Dutch university. The UT can take the opportunity to approach this target group (the final year bachelor students who are planning to go to the university for a master program) by promoting itself at different HBO-institutions, introducing the university and its Master's and Pre-Master's programs to (international) students. This will help the university raise brand awareness and potentially increase the number of applicants.

Besides mailing letters to high schools and sending emails to those who have registered at the university's customer relationship management system, the UT can make use of billboard advertising which is an effective way to keep students informed about the Bachelor/Master information days (date and venue) of the university. And it is relatively inexpensive compared to other forms of advertising. Through advertising in high traffic areas (e.g. train stations, bus stops), the UT can also present its new visual identity (new logo and layout) to the public as billboard advertisements are designed to catch the attention of passers-by and create a memorable impression quickly.

5.3.2 Recommendations on Information Types

University Profile

The university profile provides students with the facts and figures about the university at a glance and offers an overview of the university's main activities. We suggest that the UT put more focus on demonstrating its distinctiveness/key competitive advantages to students. For instance, the combination of engineering, natural, behavioural and social sciences has given the university a distinct position among the Dutch universities; Graduates from the UT are noted for their special attitude, knowledge and skills, and are described as entrepreneurial, internationally-oriented, and multi-disciplinary (Strategic Vision, 2009).

The following information that is relevant to the university's profile can also be included in the communication strategy toward prospective students:
- Student characteristics including male/female ratio, student application and enrolment figures, the proportion of national and international students, the proportion of different ethnic groups, and the number of student nationalities in the university.
- The UT has an attractive*, green campus* which is unique among other Dutch universities.
- Bedrijvendagen Twente (company days) is held every year on the campus which attracts many famous Dutch /International companies, e.g. Shell, ING, Unilever, Heineken.
- Integrand Twente is the student employment and internship agency on the campus. It has established close relationships with a number of companies in the Netherlands, providing students with information about (graduation) placements, summer placements, work assignments, in-house days, business courses and training offered by those companies. In

addition, Integrand is a good career advisor which gives students tips on how to write a proper motivation letter and CV and how to prepare themselves for a successful job interview.

Education Performance

Universities use measures to define their mission and monitor performance, while consumers of higher education (i.e. prospective students) seek information and measures to inform their decisions. In order to give students a better picture of the education quality of the university, the UT can take more education performance information into account and try to integrate it into its communication strategy (only if the data/figures show positive results when benchmarked against other Dutch universities). For example,
- Student drop-out and retention rates in each year and area
- Number of Bachelor/Master diplomas issued in each year and area
- Graduation rates and the average time-to-degree
- Number of honours degrees awarded each year
- Graduate employment rates and the average length of time to find employment
- Average starting salary for university graduates
- Highest rated items from each category according to the Bachelor/Master Student Satisfaction Survey
- Evidence of graduate capabilities from employers of recent graduates

These data and figures provide potential students with greater insight into the UT's educational performance in terms of student progression, achievement and success during and after their studies, which in turn reflect whether the university is fulfilling its teaching and learning objectives and outcomes, at the central level, at the faculty level, and at the program level. International students, in particular, will be interested in the performance information because they are making a big investment decision and it is important for them to have a clear idea about the level of difficulty of the study programs, the quality of student learning experience, and the employment opportunities after graduation.

Faculty-level Information

At the faculty level, information must be more specific and targeted. Students choose the faculty mainly because of the subject they feel interested in. In this sense, program information is of great importance to students. We suggest that the communication department take the following information into consideration when describing the study programs:
- The flexibility of classes (e.g. a flexible time-table, evening classes) gives students more room to arrange their study, work, and social activities.
- Student workload required in terms of time employed and the amount of individual work to complete a course.
- Approaches to teaching and learning, such as lectures, group works, individual assignments, or a combination. Teaching in the form of project-based group work encourages students to design solutions for complex issues, which increases student problem-solving skills.

- Companies involved in the program: Some companies are invited to give presentations during the classes, and sometimes company visits are part of the curriculum which introduces students to the business reality.
- Internships/graduate assignments for international students.
- Education performance information at the faculty level and at the program level (only if the data/figures show positive results when benchmarked against other similar faculties or programs in The Netherlands).

For example, based on a selected number of criteria shown on Studychoice123.nl in terms of student views about the study program/courses and the employment outcomes of graduates, we compare the English-tutored MSc program "Business Administration" offered by the University of Twente with three other research universities in The Netherlands. As table 16 illustrates, the UT is rated well on the quality of teaching, the teaching methods used in the study program, and the communication between the institution and students. However, the results show no difference in the earnings and employment outcomes of graduates among the four universities.

Table 16: Comparison MSc program "Business Administration" among four Universities

Business Administration (English)	University of Twente	Erasmus University Rotterdam	University of Groningen	VU University Amsterdam
Student Opinions (average score)				
Overall view of program	7.1	7.3	7.1	6.8
Content quality	7.5	7.8	7.6	7.3
Teaching methods	7.6	7.1	7.3	6.8
Coherence [1]	6.8	7.1	7.0	6.6
Specializations available	7.0	7.2	7.0	6.3
Teaching quality	7.6	7.5	7.6	7.1
Feasibility [2]	6.9	7.1	6.7	6.7
Career preparation	6.5	7.1	6.6	6.6
Communication	7.3	7.1	7.3	6.8
Study & teaching facilities	6.9	7.6	6.8	6.7
Employment Outcomes				
Average gross starting salary (€)	2,627 €	2,627 €	2,627 €	2,627 €
Percentage of graduates who find employment (%)	94 %	94 %	94 %	94 %
Percentage of graduates who find a fixed job (%)	75 %	75 %	75 %	75 %
Average time to find employment (month)	1 month	1 month	1 month	1 month
Satisfied with choice of study (% of graduates)	88 %	88 %	88 %	88 %
Study prepares well for work (% of graduates)	82 %	82 %	82 %	82 %

Source: Studychoice123.nl

[1] Student assessment of the study program/courses between theory and practice
[2] Student assessment of how feasible it is to complete the program within the given time

Therefore the UT can select some kind of performance information that looks more promising than or is comparable to other Dutch universities and communicate to students, getting them more interested in the institution, the faculty and the study programs.

In addition, information regarding the proportion of research and teaching staff at the faculty, student/faculty ratio, and faculty contact hours can be addressed on the UT faculty website. The faculty can also highlight its research profile/research activities in the publications, which will be helpful for prospective graduate students who are seeking for a faculty that meets their research interest.

5.3.3 Strategy toward International Students

Since 2009 the University of Twente is participating in the International Student Barometer (ISB) survey of foreign student satisfaction twice a year which aims to enhance the learning experience of current and future students. International students at the UT are asked to grade their satisfaction levels in the areas of learning, living, and support services offered by the university. The results of the survey will help the UT get a better picture of its performance in these areas, understand the needs of international students and make improvements where necessary and possible.

According to the results of the first-round survey in 2009 (Kuyper, P., 2009), around 83% of the UT international students (more than 400 students participated in the survey, including exchange students and PhD students) would like to recommend the university to their home countries, which is quite promising. It is also worth noting that the UT is ranked No.1 in terms of internet access among the universities worldwide, which unveils that the UT campus is covered by the world's most extensive and fastest wireless networks.

Satisfactory areas:
- 89% of the participating international students are pleased with their living in the university. Security and living costs, in particular, are the two items which have received higher scores in comparison with other Dutch universities.
- 87% of the participating international students are satisfied with their learning in the university. The content of the curriculum, library facilities, research and technology are praised highly by students.

Unsatisfactory areas:
- There are few opportunities to do a part-time job during study in the Netherlands.
- Students do not receive adequate career advice and guidance from the university.
- The university is lacking a multicultural environment.

Recommendations:

Inform students about the UT's strengths

Based on the International Student Barometer survey, the UT can intensify the communication of its strong points to prospective students, such as the best internet access services, high student satisfaction rates in living and learning, the security of the city, the availability of inexpensive accommodation, a well-stocked library, and the advanced R&D facilities, etc. In addition, the tuition fees (for non-EU students) at the UT are relatively lower compared to other universities in the Netherlands.

Create an international atmosphere on the campus

In order to make the campus more international, we recommend that campus newspapers, magazines, leaflets, and announcements be offered in English. International students may not be interested in those activities that are only designed for Dutch students, but the English announcements will at least keep them informed about what is happening around them. We also suggest that the UT organize more multicultural activities that involve both Dutch students and international students.

Provide career advising and counselling services

Since international students perceive the importance of finding employment after graduation, either in the Netherlands on in other countries, the UT must provide them with adequate career advising and counselling services and keep them well prepared for the future. For instance, career counsellors give students guidance on basic job search issues, helping them improve their CV/cover letter writing skills and interview skills, and assisting them in the evaluation of a particular job or internship offer. More career-related information can be offered to students, such as the company directories and career guides. For further individual career advising assistance, students can turn to career advisors of their major, who can help them with questions about their career choice and planning issues. Listening to student needs and learning about their career interests, skills and values, career advisors can also work with students to develop a plan that reaches their career goals.

Participate in the alumni satisfaction survey

In addition to the International Student Barometer survey, the UT can also participate in the Alumni Barometer Survey so as to collect opinions of the graduates about their experiences as a student at the university and their career to date. The results of the survey will not only help the UT enhance the learning experience of current and future students, but also improve its relationship with alumni in the Netherlands and in the rest of the world.

5.3.4 Improvement of Internal Communications

As we mentioned in Chapter4, some performance-related information is only available at the Central Communication Office, making it a bit difficult for the faculties to disseminate such information to students in a timely manner. When it comes to more detailed information regarding the performance of the institution (in the areas of education, research, personnel, and finance), the UT's Institutional Research Office is responsible for collecting, analyzing, and keeping these

figures, and delivering the information as required. Therefore the main question is how to facilitate a more effective communication between the central university and the communication department at the lower faculty level.

Generally internal communications between the central university and the faculties and departments can be in the form of face-to-face interactions, meetings, telephone conversations, e-mails, memorandums, and formal reports, etc. In order to make sure that the communication department at the faculty level acquires adequate information for developing its own strategy toward prospective students or keeping it for future use, we suggest that more university-wide information resources (data/figures, addressed and unaddressed documents) be shared on the UT intranet and be made easily accessible to the lower-level departments.

In doing so, the Central Communication Office can take the following steps:
- Regularly collect data from the Institutional Research Office in acquiring information about the UT's educational performance (e.g. student drop-out and retention rates, average time-to-degree).
- Regularly collect data from the Alumni Office and the Education Quality Control Unit in acquiring information about the employment outcomes of graduates.
- The collected information must be compiled and be classified into different categories.
- An index or table of contents can be created which makes it easier for people to find the relevant information.
- Put the document (performance-related information) into a shared folder on the intranet, making it accessible to the corresponding departments.

Furthermore, the faculty-level communication department must be kept informed of significant changes to the policies and regulations (e.g. admission requirements for students), as well as changes in matters that impact on the university's teaching and learning, by emails, formal announcements, and/or through regular meetings.

Conclusion:

In this chapter we have focused on the assessment and improvement of the UT's communication strategy by setting up two checklists which synthesize all possible sources and types of information that can be used to inform student choices. Assessing the differences between the current and the desired strategy that is relevant for different student populations enables us to identify areas that can further be improved (the additional information sources and information types that can be made use of) - at both the central university level and the faculty level. The improvements in the communication strategy toward international students (i.e. inform students about the university's strengths, create an international atmosphere on the campus, provide career advice and counselling services), in particular, not only influence the decisions prospective students make when choosing where to study in the Netherlands, but also have a significant positive impact on the current UT students, improving their learning experience at the university. Therefore, although these efforts cost money and staff time, they can be seen as a long-term investment and their potential benefits might outweigh the costs.

Part D

Conclusions and Recommendations

Chapter 6: Conclusion

In this chapter we will present the main findings and conclusions of the research, which are based upon the theoretical framework of student college choice (Chapter2 and Chapter3) as well as the empirical research (Chapter4 and Chapter5) into the communication strategy of one particular university - the University of Twente. Management implications are followed, and finally, the contributions of this study and suggestions for future research are discussed.

6.1 Conclusions and Answers to the Research Questions

The primary objective of this research is to examine the sources and types of information that influence a student's college choice in the Netherlands, and the ways in which the University of Twente can take this into account to become more attractive to prospective (inter-)national students. Therefore, the *central research question* of this study is formulated as:

> **Which sources and types of information affect a student's college choice behavior, and in what ways can the University of Twente (UT) take this into account to improve its attractiveness to prospective students?**

Our research findings are further elaborated on the basis of each sub-research question.

Research Question 1:
RQ 1a: What types of information do students use in the choice of a university/program, and through which sources do they get the required information?
The decision to enroll at a particular university is a complicated and lengthy process, which involves need recognition, information search, evaluation of alternatives, and final enrolment decisions. Prospective undergraduates and graduates are influenced by different factors during this decision-making process. In comparison, graduate students are more concerned about the academic environment of the institution, the content of the program (desired specialization), and future career prospects.

In general, there are three categories of information sources that students use in the college choice process. Direct sources include university websites, publications and other printed materials, which directly present the university and its programs to students; Media sources involve different forms of advertising, consumer guides (Keuzegids), and higher education rankings published in magazines (e.g. Elsevier) and/or on the internet; Social sources are characterized by interpersonal communication. In addition to receiving advice from parents, friends, and high school, students attend open days or education fairs where they can talk face-to-face with university teachers.

These information sources contain different types of information which may be used by students. For the university as a whole there is information about the characteristics of the institution (e.g. academic reputation), campus environment (e.g. student life), financial issues (e.g. tuition fees, scholarships), career prospects, and admission criteria. At the faculty level, information is more specific, which highlights the study programs and the faculty.

RQ 1b: What is the role played by higher education rankings?

Higher education rankings are a one-dimensional presentation of the relative quality of a set of institutions. From the perspective of students, rankings serve as important information tools which help them make informed decisions. Presenting in a clear and concise manner, rankings keep students informed of the most prestigious universities in the world or in a particular country, help them compare information from a large number of institutions and sort out the ones that best fit their needs. Since rankings compare higher education institutions through a selected set of performance indicators (focusing either on the research performance or on the education performance), they provide students and parents with comparable performance information on the institutions, such as graduate employability, research output, the international reputation and international attractiveness of the university.

While from the institutional perspective, rankings have a significant impact on academic decision-making and behavior. Since rankings are one way to reflect institutional reputation and prestige, they help institutions brand or advertise themselves, and attract more student applications due to positive results. In addition, rankings help institutions identify strengths and weaknesses, clarify and refine profile and mission, which can be integrated within their strategic planning processes. Rankings also encourage institutions to identify key performance indicators and internal benchmarks, and to engage in continued quality assurance. Unlike some other universities who have adjusted their policy to achieve higher rankings, the UT is focusing its attention on the improvement of education and research quality. However, some of the efforts that are being made (e.g. increase the number of international students, improve graduation rates, broaden the range of English programs, and strengthen international co-operations) reflect common ranking criteria and would potentially increase the ranking of the university.

RQ 1c: Do different student populations (assorted by nationalities) differ in terms of the sources and types of information that are used to inform their choices?

Guided by consumption motives, Dutch students are not only seeking knowledge but also a sense of personal social fit at a university. Therefore, the attractiveness of the campus and student life is of great importance to them. Moreover, they are attracted by universities with more diverse course offerings. University websites and open days are often the most frequently used information sources among Dutch students.

German students desire for self-improvement and they choose institutions on the basis of their personal interest in a specific subject. In addition, they attach importance to the future employment opportunities and the possibility to work independently. Most German students have a preference for using printed materials during the college search process. Also they visit the university websites, and some of them refer to the CHE excellence ranking to make better choices.

Chinese students are strongly driven by investment motives, who perceive the importance of a high quality of education and a successful career in the future. In many cases, the rankings of the institutions and the financial issues weigh heavily on their minds. Most Chinese students access the official websites for first-hand information about the country and the institutions. In addition, they attend education exhibitions where they receive brochures and catalogues of the universities.

Research Question 2:

RQ 2a: What sources and types of information currently feature in the UT's communication strategy – at both the central university level and the faculty level?

The UT makes use of various information sources which include the university website, catalogues and brochures, information days, guest lectures/presentations at high schools, and roundtable meetings with potential students, etc. In addition, the UT participates in the education fairs in different countries and sends out printed materials to international students. It has representatives in three countries, which serve as a bridge between the university and international students. In order to keep students well-informed about the study programs, the faculty of Management and Governance develops tailor-made activities for students who are interested in a particular area of study, such as 'Mini-Conference' for European Studies students, and 'Meet & Greet' for BIT students.

There are different types of information that feature in the UT's communication strategy. Program leaflets contain detailed information about the duration of the study, purpose and structure of the program, course offerings, accreditation status, language of instruction, and future career prospects. Program-specific information can also be accessed on the faculty websites. At the central university level, there is information about the university profile, on-campus facilities, and student life, etc. While for international students, information regarding the admission criteria, application procedures, tuition fees and scholarships, and international student associations is highlighted.

RQ 2b: What is the role played by information related to the students' education performance in the communication strategy?

In higher education institutions, performance indicators serve the purpose of measuring and monitoring institutional and educational performance, and assessing the extent to which a program, a practice or a policy is meeting its stated objectives. The University of Twente measures its educational performance by conducting student satisfaction survey, course evaluations, monitoring number of graduates, and through external assessment (accreditation). In order to assess whether the university is fulfilling its teaching and learning objectives and outcomes, the UT is also dedicated to the measurement of student progression, achievement, and employment outcomes, such as the drop-out and retention rates in each year, the average time-to-degree, graduate employment rates, and the average length of time to find employment, etc.

Information regarding the student's education performance (i.e. student progression, achievement, satisfaction, and employment outcomes) gives prospective students a better picture of the education quality of the university and helps them make more informed decisions. International students, in particular, will be interested in the education performance information because they are making a big investment decision and it is important for them to have a clear idea about the level of difficulty of the study programs, the quality of student learning experience, the skills, knowledge, and attitudes to be acquired, and the employment opportunities after graduation. Therefore, some of the performance information (only if the data/figures show positive results when benchmarked against other institutions or similar study programs) can be used in the communication strategy toward potential students.

Research Question 3:

RQ 3a: Which performance-related information is regularly collected and is readily available in the UT to be integrated into its communication strategy toward potential students?

Some information on the UT's educational performance is regularly collected and is readily available on the university's institutional research website, such as the student application and enrollment figures, the proportion of national and international students, the number of Bachelor/Master diplomas issued in each year and area, and Bachelor/Master student satisfaction with their learning experience in the university. Some performance-related information, like the staff-student ratio and the percentage of students who find employment after graduation, is included in the UT's annual report and is mainly used for internal and external reporting purposes. Other information which in relation to the student's education performance (student progression and achievement), such as the drop-out and retention rates in each year, graduation rates, average length of time to degree, is mostly used for internal monitoring purposes and has not been integrated within the UT's communication policy.

Moreover, information in terms of the employment outcomes of graduates (e.g. student destinations, the average length of time to find employment, and average graduate starting salary) is well collected in the WO Monitor Report and is accessible on the UT's institutional research website. Information regarding the employer feedbacks on the UT graduates, though, can be acquired from the university's education quality control unit.

RQ 3b: Given what we know from the literature, in which areas can the UT's communication strategy be improved at both the central university level and the faculty level to attract more prospective (inter-)national students?

We recommend that the UT offer more information in English on the university website. The alumni magazine can also be translated into English and be delivered to international students. A Scholarship Handbook can be developed which lists all the scholarship, grant and loan programs. Making presentations at different HBO institutions, the UT can approach more (international) Bachelor students in the country. Through billboard advertising the university can not only keep students informed about the information days, but also present its new visual identity to the public.

In addition, the UT can integrate more valuable information into its communication strategy, such as the male/female ratio, the number of student nationalities, the company days, and the student internship agency on the campus. Information on the UT's educational performance (only if the data/figures show positive results when benchmarked against other institutions or similar study programs in The Netherlands) can also be considered, such as the student progression, graduation, and employment rates, average graduate starting salary, and evidence of graduate capabilities from employers. At the faculty level, in order to describe the programs in a more attractive way (what students can expect from the programs), information like the approaches to teaching and learning, the total student effort required to achieve a degree, companies involved in the courses, and internship opportunities can be included in the program leaflets. In addition, the proportion of research and teaching staff at the faculty, student/faculty ratio, faculty contact hours, and the research profile/research activities of the faculty can be addressed on the UT faculty website.

Furthermore, the UT can improve its communication strategy toward international students by intensifying the communication of its strengths to students (e.g. the best internet access services, the security of the city, relatively low tuition fees, and inexpensive accommodation). It can try to make the campus more international by offering English newspapers and flyers and organizing multicultural activities. In order to enhance the student learning experience of its current and future students, the UT can also participate in the alumni satisfaction survey and provide more career advising and counselling services.

Conclusion: Central Research Question

Having responded to the sub-research questions, we can now answer the central research question: "*Which sources and types of information affect a student's college choice behavior, and in what ways can the University of Twente (UT) take this into account to improve its attractiveness to prospective students?*"

In general, there are three categories of information sources (i.e. direct sources, media sources, social sources) that students rely on during the college choice process. These information sources contain different types of information which may be used by students. At the central university level, there is general information about the institution, admissions, and financial issues; while at the faculty level, information is more focused on the study programs and the faculty itself. In order to communicate effectively with potential students, it is important to take into account the specific needs of different student populations. Dutch students are attracted by universities with more diverse course offerings and the quality of student life; German students choose on the basis of their personal interest in a specific subject and the increased employment opportunities; Chinese students who are driven by investment motives expect a high quality of education and a successful career in the future. Since higher education rankings play an informative role in students' college choice, many Chinese and German students turn to the rankings to make more informed decisions.

With the purpose of attracting more national and international students, the UT can make use of some additional information sources, and integrate more valuable information into its communication strategy. Education performance information (only if the data/figures show positive results when benchmarked against other institutions or similar study programs in The Netherlands), in particular, can be used which gives potential students a better picture of the education quality of the university and assists them in making better decisions. Moreover, the UT can improve its strategy toward international students by communicating the university's strengths to students, providing more career advising and counselling services, and creating a more international atmosphere on the campus. Hopefully these efforts would help the UT satisfy the needs of different student populations and increase its attractiveness to prospective (inter-)national students.

6.2 Management Implications

In Chapter5, we have made recommendations for the improvement of the communication strategy of the university. The improvements in the information types are realistic because most of the suggested information (at both the central university level and the faculty level) is readily available in the university. For instance, education performance information can be collected from the UT's institutional research office. Although the suggested improvements in the information sources (e.g. offer an English-version alumni magazine, develop a Scholarship Handbook, give presentations at Dutch HBO-institutions, billboard advertising) and the strategy toward international students (e.g. make the campus more international, provide career advice and counseling services, participate in the Alumni Satisfaction Survey) cost time and money, their potential benefits that will bring to the university (i.e. increased student applications and enrollments) might outweigh the costs so that they can still be considered and be applied.

When improving the communication strategy, it is important to keep consistency in the aesthetic appearance (new logo and layout), linguistic style, and messages (e.g. up-to-date facts and figures) used in the various information sources (i.e. university website, publications and other printed materials, media, events). Student-oriented information must be presented in a clear and understandable way, and be easily accessible to different student populations. Making sure that
- Students understand the contents and messages
- The communication materials are adapted to them
- Certain types of information are available when needed
- And note that students need benchmark information to compare institutions/programs

In addition, the UT administrators must be aware of the factors that make the university attractive (e.g. fast internet access, inexpensive accommodation), as well as those that make it unattractive to students (e.g. university location, inadequate career advice and guidance). In this way, significant changes/improvements can be made which would possibly increase the university's recognition among potential students. In order to become more competitive in the Dutch university market, the UT must be equipped with the ability to support and satisfy the needs of different student populations, delivering an excellent learning experience, and ensuring students' academic success and fulfilling their career goals. With the purpose of achieving a major increase in the number of international students, the UT can make continuous efforts in the following areas:

Student learning experience:
- Extend the range of English language programs (bachelor programs, in particular)
- Provide innovative and professionally relevant courses that increase graduate employability
- Develop more international activities and exchange programs
- Offer more attractive scholarships and benefits to students
- Increase international facilities
- Improve the international student support services (e.g. language skills training)
- Improve the staff/student ratio so as to enhance the teaching environment.
- Increase internship/traineeship options (contact with different companies in terms of

graduation projects and future employment)
- Ensure that the UT graduates possess the necessary skills and attributes for employment (e.g. communication, problem-solving, and teamwork skills)
- Focus on internal quality assurance

Marketing & Communication:
- Allocate more overseas offices for international recruitment
- Develop a special marketing orientation program that targets a special market (e.g. Chinese student market)
- Provide students with reliable and up-to-date information about the quality of teaching and learning at the university

Performance Measurement:
- Ensure institutional performance data are collected and monitored in good time
- Show whether progress is being made, and goals and objectives have been reached
- Monitor student performance and achievement
- Develop performance indicators that could aid student choice
- Broaden data collection to include employers
- Benchmark against other universities or similar faculties/programs in The Netherlands
- *Maintain consistently high rates of student satisfaction in the areas of learning, living, and student support services*
- *Achieve higher retention, completion, and graduate employment rates*

Furthermore, we advise the UT to acknowledge the influence of higher education rankings on the recruitment of (international) students and place more emphasis on improving its rankings nationally and internationally. At this moment the UT has not adjusted its policy to achieve higher scores as determined by the ranking systems, so that the impact of rankings on institutional decision-making and behaviour is inconspicuous. In spite of this, the UT is starting to pay closer attention to the rankings which is reflected in the Strategic Vision 2009-2014, "for undergraduate programs, our ambition is to again lead the Dutch quality league tables", and this strategic objective will drive the university to use rankings to identify strengths and weaknesses and to make relevant changes. Hopefully the UT would increase its overall rankings as well as the rankings in specific subject areas in the near future. This, in turn, would lead to increased reputation, increased student applications and enrolments, and increased revenue of the university.

Conclusion:

Although these efforts cost money and staff time, they can be seen as a long-term investment and their potential benefits might outweigh the costs. The improvements would not only influence the college choice decisions of prospective students, but also have a significant positive impact on the current UT students, which potentially lead to increased student satisfaction, academic achievement, and their persistence within the university. In the near future, this would also bring positive financial gains to the university due to the increased enrolments of (international) students. Therefore, these costly efforts are "no regret" polities that can be justified for reasons of communication strategy, recruiting students, and general quality considerations.

References

Annual Report 2008. University of Twente. (May, 2009).

Art & Science Group. (1995). *Student*POLL, 1(1).

AUCC – Association of Universities and Colleges of Canada. (1994). Measuring Up: Using Indicators to Manage Change. Workbook and Proceedings, 2, Ottawa.

AUCC – Association of Universities and Colleges of Canada. (1995). A Primer on Performance Indicators. *Research File*, 1(2).

Bloomer, M. & Hodkinson, P. (1997). *Moving into FE: The voice of the learner*. London: Further Education Development Agency.

Boyd, S., Chalmers, A., and Kumekawa, E. (2001). *Beyond School*. Wellington: New Zealand Council for Educational Research.

Brent, G., Vanessa, P. and Gary, J. (2004). Preferred Information Sources of High School Students for Community Colleges and Universities. *Community College Journal of Research and Practice*, 28(10), 795-803.

Cain, P. and McClintock, J. (1984). The ABC's of choice. *Journal of College Admissions*, *105*, 15-21.

CHE - Centrum für Hochschulentwicklung (2009). "CHE Ranking". Retrieved from: http://www.che-ranking.de/cms/?getObject=614&getLang=en 16/07/2009.

Christie, H., Munro, M. and Fisher, T. (2004). Leaving university early: Exploring the difference between continuing and non-continuing students. *Studies in Higher Education*, 29 (5), 617-636.

Cremonini, L., Westerheijden, D. and Enders J. (2008). Disseminating the right information to the right audience: cultural determinants in the use (and misuse) of rankings. *Higher Education,* 55, 373-385.

CUC – Committee of University Chairman. (2006). *CUC Report on the Monitoring of Institutional Performance and the Use of Key Performance Indicators*. CUC Support Office.

"Diversiteit, kwaliteit en groei: Uitgangspunten voor de internationale strategie van de Universiteit Twente". (2009). University of Twente. Retrieved from: http://www.utwente.nl/sc/strategie%20%26%20communicatie/internationalisering/diversiteit_kwaliteit_groei.doc/index.html 01/09/2009.

Duan, J. P. (1997). The influence of various factors on international students in selecting universities: A South Australian study of Chinese students from Hong Kong and Malaysia. Retrieved from: http://start.managementfirst.com/Insight/ViewContentServlet?Filename=/published/emeraldfulltextarticle/pdf/0080180204.pdf 18/07/2009.

Educational Charter 2007. School of Management and Governance, University of Twente. (October 2007).

Erdmann, D. G (1983). An examination of factors influencing student choice in the college selection process. *Journal of College Admissions*. 100, 3–6.

Evenson, S. E. (1998). Perceptions of Indiana high school counselors on the usefulness of reputational rankings in higher education. Unpublished master's thesis, Ball State University,

Muncie, Indiana.

Fam, K. S., & Gray, B. (2000). Asian values and education promotion: An empirical study. *Marketing in a Global Economy Proceedings,* 431–438.
Retrieved from: http://www.utdt.edu/congresos/empresarial/papers-ama/100.PDF 18/07/2009/

Fuller, W., Manski, C., and Wise, D. (1982). New evidence on the economic determinants of post-secondary schooling choices. *Journal of Human Resources*, 17(4), 472-498.

Gareth, D. (2005). Chinese students' motivations for studying abroad. *International Journal of Private Higher Education*, 2, 16–21.

Hazelkorn, E. (2009a). The Impact of Global Rankings on Higher Education Research and the Production of Knowledge. *UNESCO Forum on Higher Education, Research and Knowledge*, Occasional Paper No. 15.

Hazelkorn, E. (2009b). Impact of College Rankings on Institutional Decision Making: Four Country Case Studies. *IHEP - Institute for Higher Education Policy*. Issue Brief, May 2009.

Hazelkorn, E. (2008). Learning to Live with League Tables and Ranking: The Experience of Institutional Leaders. *Higher Education Policy*. 21, 193-215.

Hazelkorn, E. (2007). The Impact of League Tables and Ranking Systems on Higher Education Decision Making. *Higher Education Management and Policy*, 19(2).

Higgins, J. C. (1989). Performance measurement in universities. *European Journal of Operational Research*, 38, 358-368.

Hooley, G. J. and Lynch J.E. (1981), "Modeling the student university choice process through the use of conjoint measurement techniques", *European Research* 9(4), 158-170.

Hossler, D., & Gallagher, K. (1987). Studying student college choice: A three phase model and the implications for policy makers. *College and University*, 2, 207-221.

Howard, M. (2002). Student use of rankings in national magazines in the college decision-making process. An EdD dissertation, The University of Tennessee, Knoxville. Retrieved from: http://etd.utk.edu/2002/HowardMichele.pdf 22/06/2009.

Institutional Plan 2005-2010. University of Twente. (March, 2005).

James, R. (2000). How school-leavers choose a preferred university course and possible effects on the quality of the school-university transition. *Journal of Institutional Research,* 9 (1), 78-88.

Jones, E. D. (2002). Factors that influence the college choice for African American students. Dissertation, Union Institute and University.

Jongbloed, B., Kaiser, F., Salerno, C., and Weert, E. (2004). *Een helpende hand in studiekeuze land: Studiekeuze informatie producten vergeleken in enkele Westerse hoger onderwijs systemen.* Thematic report. CHEPS – International Higher Education Monitor, Enschede.

Kallio, Ruth E. (1994). "Factors Influencing the College Choice Decisions of Graduate Students". Paper presented at the Annual Forum of the Association for Institutional Research (34th, New Orleans, LA, May 29-June 1, 1994).

Kern, C. (2000). College choice influences: Urban high school students respond. *Community College Journal of Research and Practice*, 24, 487-494.

Kotler, P. & Armstrong, G. (1994). *Principles of Marketing*. 6th ed., Prentice-Hall, New York.

Krampf, R.F. and Heinlein, A.C. (1981), "Developing marketing strategies and tactics in higher education through target market research", *Decision Science* 12(2), 175-193.

Kuyper, P. (2009). "UT doet het prima bij buitenlandse student". UT NIEUWS, Sep. 2009. Retrived from: http://www.utnieuws.utwente.nl/new/?artikel_id=74641 16/09/2009.

Lin, L. (1997), What are student education and educational related needs? *Marketing and Research Today* 25(3), 199-212.

Liu, N.C. & Cheng, Y. (2005). The Academic Ranking of World Universities. *Higher Education in Europe*, 30 (2), 127-136.

Liu, N.C. (2008). "Academic Ranking of World Universities - Methodologies and Problems". Center for World-Class Universities, Graduate School of Education, Shanghai JiaoTong University, China. Aug.2009. Retrieved from: http://www.arwu.org/rank/file/ARWU-M&P.pdf 16/10/2009

Malaney, G. D. (1987). Why students pursue graduate education, how they find out about a program, and why they apply to a specific school. *College and University*. 62(3): 247-258.

Mazzarol, T., & Soutar, G. N. (2002). "Push-pull" factors influencing international student destination choice. *The International Journal of Educational Management, 16*(2/3), 82.

Mazzarol, T., Soutar, G. N. and Tien, V. (1996), "Education linkages between Canada and Australia: an examination of the potential for greater student flows", unpublished paper, Institution for Research into International Competitiveness, Curtin Business School, Perth.

McDonough, P. M., Antonio, A. L., Walpole, M. B., and Perez, L. X. (1998). College rankings: Democratized college knowledge for whom? *Research in Higher Education*, 39(5), 513-537.

McGrath, A. (Ed.). (2001). *America's Best Colleges* (2002 ed.). Washington, DC: US News & World Report.

Morse, R. J., & Gilbert, J. (1995). *Evaluating and responding to college guidebooks and rankings* (pp. 91-108). New Directions for Institutional Research, no. 88. San Francisco: Jossey-Bass Publishers.

NVAO (Nederlands – Vlaamse AccreditatieOrganisatie). 2003. "Accreditation Framework".

Nguyen, A.N. & Taylor, J. (2003). Post-high school choices: New evidence from a multinomial logit model. *Journal of Population Economics*, 16, 287-306.

Nuffic (Organization for International Cooperation in Higher Education). 2009. "Higher education in The Netherlands: the system, institutions and degrees".

O'Brien, A., Webb, P., Page, S., and Proctor, T. (2007). "A study into the factors influencing the choice-making process of Indian students when selecting an international university for graduate studies using Grounded Theory". Paper presented at the conference in Amsterdam in the Netherlands, July 2007.

OECD (Organization for Economic Co-operation and Development). 2007. "Education at a glance".

Oosterbeek, H., Groot, W. and Hartog, J. (1992), "An empirical analysis of university choice and earnings", *The Economist* 140(3), 293-309.

Payne, J. (2003). *Choice at the end of compulsory schooling: A research review*. Department for Education and Skills, Research Report No 414.

Sá, C., Florax, R., and Rietveld P. (2004). Determinants of the regional demand for higher education in The Netherlands: a gravity model approach, *Regional Studies*, 38(4), 375-392.

Salmi, J. and Saroyan, A. (2007). League tables as policy instruments: uses and misuses. *Higher Education Management and Policy*. 19(2), 31-68.

Skinner, P., and Tafel, J. (1986). Promoting excellence in undergraduate education in Ohio. Journal of Higher Education, 57(1), 93-105.

Soutar, G. N. and Turner, J.P. (2002). Students' preferences for university: a conjoint analysis. *The International Journal of Educational Management* 16(1), 40-45.

Stewart, Norman R., et al. (1997). Counsellor Impact Upon College Choice. Paper presented at the Annual Meeting of the American Educational Research Association (Washington, DC, April 20-24, 1987).

Strategic Vision 2009-2014. University of Twente. (September, 2009).

Students' Charter 2008/2009. School of Management & Governance, University of Twente. (July, 2008).

Studychoice 2009-2012 program. Studychoice123. (2008). Retrieved from: http://www.studychoice123.nl/UserFiles/File/SK123_MJP_20090325_ENG.pdf 25/10/2009

Study Guide 2008/2009. School of Management & Governance, University of Twente. (July, 2008)

Times Online (2009). "Good University Guide 2010: How the tables work". Retrieved from: http://www.timesonline.co.uk/tol/life_and_style/education/good_university_guide/article2235223.ece# 18/08/2009

QS Top Universities. (2009). "The Methodology: A simple overview". Retrieved from: http://www.topuniversities.com/worlduniversityrankings/methodology/simple_overview 18/08/2009

US News & World Report. (August, 2008). Why U.S. News ranks colleges. *America's Best Colleges*. Retrieved from: http://www.usnews.com/articles/education/best-colleges/2008/08/21/why-us-news-ranks-colleges.html 01/07/2009.

Vlãsceanu, L., Grünberg, L., and Pârlea, D. (2007). *Quality Assurance and Accreditation: A Glossary of Basic Terms and Definitions. 2nd ed.* Bucharest, UNESCO-CEPES.

VSNU - Association of Universities in The Netherlands (2008). "Education". Retrieved from: http://www.vsnu.nl/Focus-areas/Education.htm 08/07/2009.

Wikipedia (2009). "Information Source". Retrieved from: http://en.wikipedia.org/wiki/Information_source 10/06/2009.

Yang, M. (2007). What attracts mainland Chinese students to Australian higher education. *Studies in Learning, Evaluation*, 4(2), 1-12.

Zhang, X. (2001). "Chinese families spend heavily on children's Education". *China Today*. Nov. 23, 2001. Retrieved from: http://www.china.org.cn/english/2001/Nov/22548.htm 18/07/2009.

Appendices

Appendix I: Interview Questions

1. What is the UT's current communication strategy toward prospective students?

a) Which informational sources does the university use to attract students?

b) What types of information are addressed in these informational sources?

c) Is there any performance-related information included in the UT's communication strategy? Which information? What about information related to the students' education performance?

d) In year 2008, the University of Twente was ranked number 148 on "Webometrics Ranking of World Universities", is ranking information helpful to attract more students' attention?

2. Since the student population is not homogeneous in the Netherlands - there are Dutch students, non-Dutch EU students, and non-EU students, is the university adopting different strategies toward different groups of students?

a) Are the informational sources being used and the types of information being addressed differ between national and International students?

b) Is there a specific strategy toward International students (for instance, students from China)?

c) How does the university get in touch with potential (inter-)national students?

3. In which areas can the UT's communication strategy be improved at both the central university level and the faculty level to attract more prospective (inter-)national students?

a) Does the current communication strategy work effectively in attracting students, and what changes/improvements are being made?

b) Does the communication department often report to the university dean in terms of the strategy being designed or changed; and does the communication department need additional information from the university dean to improve the strategy?

c) What other performance-related information can be integrated into the communication strategy, and what other informational sources can be made use of?

d) How can the university become more interactive with potential students and their parents in the Netherlands?

e) In what ways can the university become more attractive to international students?

Appendix II: Student College Choice Process

The chart depicts the student college choice process and its most important variables.

Student characteristics
gender, race, religion, income

parents' occupational status, education and income, family culture

High school characteristics
social composition, quality, curriculum, programs

Influencers / media used
parents, counsellors, peers, publications, college officers, other media

College aspirations → Search process → Deciding on applications → ○ → Enrolling

Personal attributes
class rank, academic ability, student's performance

other abilities, self-image

personal values and goals, lifestyle

Aid and tuition policy
tuition, fees, availability of grants, loans, etc.

College actions
recruitment activities, admissions policies

College actions
admit / deny, financial support awarded

Environment
occupational structure, economic conditions, labour market, cultural conditions

College characteristics
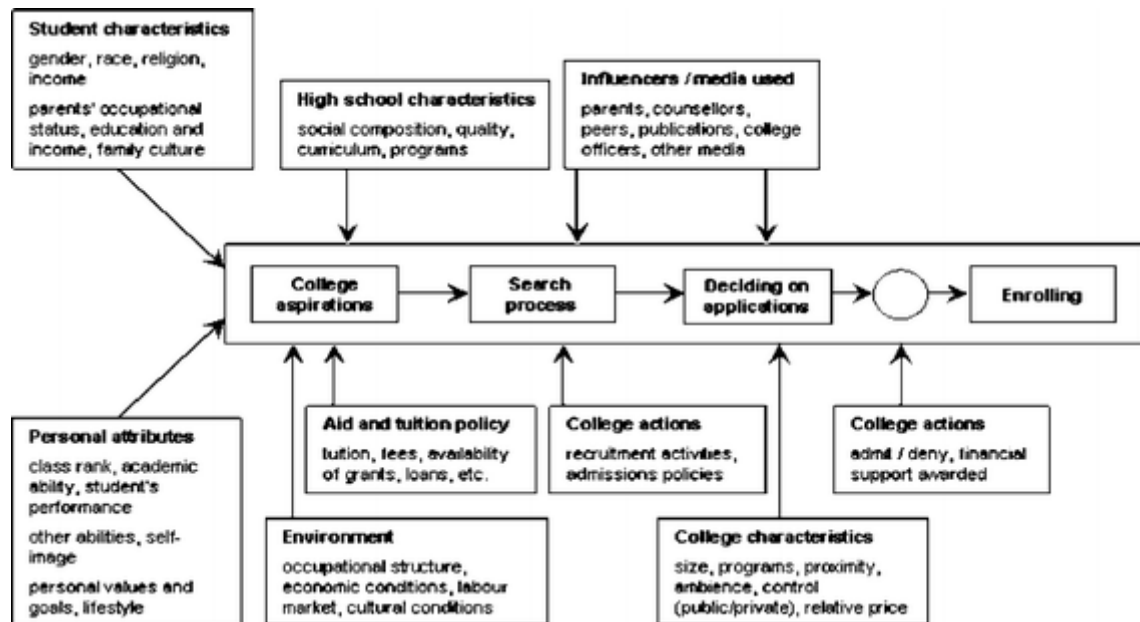size, programs, proximity, ambience, control (public/private), relative price

Chart 1: The student choice process and its most important variables

Source: Cremonini et al. (2008)

Appendix III: Ranking Methodologies

1. Shanghai Jiao Tong University - Academic Ranking of World Universities (ARWU)

Criteria	Indicator	Code	Weight
Quality of Education	Alumni of an institution winning Nobel Prizes and Fields Medals	Alumni	10%
Quality of Faculty	Staff of an institution winning Nobel Prizes and Fields Medals	Award	20%
	Highly cited researchers in 21 broad subject categories	HiCi	20%
Research Output	Articles published in Nature and Science*	N&S	20%
	Articles indexed in Science Citation Index-expanded, and Social Science Citation Index	PUB	20%
Per Capita Performance	Per capita academic performance of an institution	PCP	10%
Total			100%

* For institutions specialized in humanities and social sciences such as London School of Economics, N&S is not considered, and the weight of N&S is relocated to other indicators.

Table 1: Indicators and Weights in the Shanghai Ranking
Source: Liu (2008)

Definition of Indicator

Alumni:
- The total number of the alumni of an institution winning Nobel Prizes and Fields Medals.
- Alumni are defined as those who obtain bachelor, Master's or doctoral degrees from the institution.
- Different weights are set according to the periods of obtaining degrees. The weight is 100% for alumni of 1991-2000, 90% for alumni of 1981-1990, 80% for alumni of 1971-1980, and so on.
- If a person obtains more than one degrees from an institution, the institution is considered once only.

Award:
- The total number of the staff of an institution winning Nobel prizes in physics, chemistry, medicine and economics and Fields Medal in Mathematics.
- Staff is defined as those who work at an institution at the time of winning the prize.
- Different weights are set according to the periods of winning the prizes. The weight is 100% for winners since 2001, 90% for winners in 1991-2000, 80% for winners in 1981-1990, 70% for winners in 1971-1980, and so on.
- If a winner is affiliated with more than one institution, each institution is assigned the

reciprocal of the number of institutions.
- ➢ For Nobel prizes, if a prize is shared by more than one person, weights are set for winners according to their proportion of prize.

HiCi:
- ➢ The number of highly cited researchers in 21 broad subject categories in life sciences, medicine, physical sciences, engineering and social sciences.
- ➢ The definition of categories and detailed procedures can be found at the website of Institute of Scientific Information.
- ➢ The total number of HiCi is about 5000, about 4000 of which is university staff.

N&S:
- ➢ The annual average number of articles published in Nature and Science in the past five years.
- ➢ To distinguish the order of author affiliation, a weight of 100% is assigned for corresponding author, 50% for first author (second author if the first author is the same as corresponding author), 25% for the next author, and 10% for other authors.
- ➢ Only publications of article type are considered.

PUB:
- ➢ Total number of articles indexed in Science Citation Index-expanded (SCIE) and Social Science Citation Index (SSCI) in the past year.
- ➢ A weight of 2 is assigned to articles indexed in SSCI to compensate the bias against humanities and social sciences.
- ➢ Only publications of article type are considered.

PCP:
- ➢ The sub-total scores of the above five indicators divided by the number of full-time equivalent academic staff.
- ➢ If the number of academic staff for institutions of a country cannot be obtained, the total scores of the above five indicators is used.
- ➢ For ranking 2005, the number of full-time equivalent academic staff is obtained for institutions in USA, China, Australia, Italy, Netherlands, Sweden, and Belgium etc.

Main Sources of Data

- Nobel laureates: http://www.nobel.se
- Fields Medals: http://www.mathunion.org/medals/
- Highly-cited researchers: http://www.isihighlycited.com
- Articles published in *Nature* and *Science*: http://www.isiknowledge.com
- Articles indexed in SCIE and SSCI: http://www.isiknowledge.com

2. The Times Higher Education - QS World University Rankings

Criterion	Indicator	Weight
International reputation of university	1. **Academic Peer Review**: 9,386 (in 2009) leading scholars evaluate universities in specific research areas.	40 %
International reputation among recruiters	2. **Employer Review**: Worldwide interviews with 3,281 (in 2009) recruiters at international corporations regarding the 20 universities with the most qualified graduates.	10 %
International research impact	3. **Citations per Faculty**: Number of citations in Scopus per faculty member.	20 %
Teaching quality	4. **Faculty Student Ratio**	20 %
International outlook	5. **International Students**: Number of international students	5 %
International outlook	6. **International Faculty**: Number of international faculty members	5 %

Table 2: Indicators and Weights in the Times Ranking

Source: THES (2009)

http://www.topuniversities.com/university-rankings/world-university-rankings/methodology/simple-overview

Definition of Indicator

ACADEMIC PEER REVIEW

The Academic Peer Review is the centerpiece of the THE - QS World University Rankings and is based on an online survey distributed to academics worldwide. Results are compiled based on three years worth of responses totaling 9,386 in 2009. Respondents are not permitted to submit their own institution or to respond more than once (their latest response is counted). Weightings are applied both geographically and by discipline to ensure as fair a representative spread as possible.

EMPLOYER REVIEW

Similar to the Academic Peer Review, this indicator is based on a global online survey, this time distributed to employers. Results are again based on three years worth of "latest response" data. Geographical weightings are again applied to ensure fair representation from key regions of the world.

FACULTY STUDENT RATIO

Faculty Student Ratio is used in many ranking systems and evaluations in the world, and whilst it may not be a perfect measure of teaching quality, it is the most globally available and accessible measure of commitment to teaching - an indication that the institution in question has sufficient staff to teach its students.

CITATIONS PER FACULTY

Citations are a widely used, conventional measure of research strength. A citation is a reference to one academic publication in the text of another. The more citations a publication receives the better it is perceived to be, the more highly cited papers a university publishes, the stronger it can be considered to be. As a measure this is somewhat geared towards scientific and technical subjects, which is why it doesn't carry more weight. The source used in this evaluation is Scopus, the world's largest abstract and citation database of research literature. The latest five complete years of data are used. The total citation count is factored against the number of faculty in order to take into account the size of the institution.

INTERNATIONAL FACTORS

In today's increasingly globalized world, the most successful universities have to attract the world's best students and faculty. Simple evaluations of the proportion of international students and international faculty serve as indicators of an institution's international attractiveness. These indicators are then combined using standard statistical methods to yield the overall scores you will see in the results tables.

3. CHE Excellence Ranking

The CHE – Centre for Higher Education Development has launched a "Ranking of Excellent European Graduate Programs" (CHE Excellence Ranking for short) for the disciplines of biology, chemistry, mathematics and physics, and has now added the disciplines political science, psychology and economics as a supplement. The ranking identifies outstanding academic departments across Europe and presents detailed information about program offerings and academic qualities to assist prospective graduate students in their search for the most suitable institution to pursue a Master's or doctorate degree. Alongside this, the CHE wants to highlight the research strengths of European HEIs and provide those HEIs listed in the ranking with ideas for the further improvement of their already excellent programs.

Criteria

About 80 different criteria were used for the CHE Excellence Ranking. The criteria are divided into six groups: data for doctoral programs, data for master's programs, data on the faculty level, data on the university level, pre-selection data, and students' judgments. (Source: http://www.excellenceranking.org/eusid/EUSID?module=Baustein)

Data for Master's Programs

Data regarding the master's programs offered by the faculties and departments, e.g. the names of the various programs and their structure or the languages in which they are taught.

➢ **Degrees of freedom**

Describes the degrees of freedom for choosing courses, i.e. the percentages of compulsory courses, compulsory optional subject courses and optional subject courses

➢ **Distribution of credits**

How the necessary credits are distributed between coursework, thesis and other requirements

➢ **Female students**

Total number of female students in this master's program

➢ **General remarks regarding the masters program**

General remarks regarding the master's program

➢ **General special features**

General special features of the master' program that the faculty wants to highlight

➢ **Interdisciplinarity**

Many programs in natural sciences nowadays are interdisciplinary. In order not to miss any programs which are to a considerable amount based in natural sciences this question identifies the level of interdisciplinarity.

➢ **International students**

Total number of international students in this master's program

➢ **Internships**

Many master's degree students choose to enter business life and industry rather than to pursue a career in higher education. For these students, practical experience can be of specific importance.

> **Languages**

Most of the master's programs will be offered either in English or in the language of the country in which the HEI is located. However, it might be possible that other languages are offered.

> **National classification**

The (national) classification of the master's program, e.g. "research oriented"

> **Number of applicants and places**

This indicator tells something about the demand situation for the program. It does not give any information about the quality of the program but indicates whether the reputation of the program is rather high. If the number of applications is considerably lower than the number of places a program might be considered less well-known. If the number of applications is two or three times higher than the number of places the program might be considered prestigious among possible students.

> **Number of ECTS-Credits**

Usually programs will allocate ECTS points according to the classical framework of 60 points per year. Thus a range of anything between 60 and 120 points is possible.

> **Scheduled duration**

Master's programs can vary from 1 to 2 years. It may be important for selecting a program to know how many years it may take to finish it. This question is asking for the "scheduled" duration taking into account that the individual duration may differ.

> **Special features regarding admission**

Next to the standard application procedure, some programs might have special requirements that interested applicants should know about long before applying in order to prepare themselves properly.

> **Special features regarding alumni program**

Once the students graduate, the alumni work starts. Alumni can be extremely important for the future success of a program as they may (or may not) act as ambassadors for the HEI and the program. Thus a structured alumni program should be standard. This questions asks for additional special features with which the institution aims at keeping their alumni interested.

> **Special program form**

Does the master's program have a special program form e.g. joint/double degree, part time or work-based?

> **Students**

Total number of students in this master's program

> **Study abroad**

In most relevant master's programs study abroad periods are either mandatory or optional. This question asks for the type of study abroad offered.

> **Tuition fees for EU students**

In master's programs, tuition fees are not unusual. However, two different levels for EU and non-EU students are often found. This indicator provides information about the amount of tuition fees for students from EU countries.

> **Tuition fees for non-EU students**

In master's programs, tuition fees are not unusual. However, two different levels for EU and non-EU students are often found. This indicator provides information about the amount of tuition fees for students from non-EU countries.

> **Data on the Faculty Level**
> Data regarding the faculty or department, e.g. staff and students or the research profile.

➢ **Area of research**

For graduates or students interested in doctoral research, one of the most important aspects of a higher education institution may be its research teams and research foci. This question asks for this specific information and allows for very detailed information on research options at the higher education institution in question.

➢ **Counseling by academic staff**

International students sometimes need additional information on expectations, regulations and rules. Also concrete help on academic issues is relevant. Therefore this information has special quality value.

➢ **Counseling by students**

International students in particular are sometimes reluctant to talk with "official" administrative staff about problems with their studies or personal issues. Student-to-student counseling can therefore be an important add-on.

➢ **Doctoral students**

This is a size indicator showing what the mass impact of the department or faculty is in terms of output of doctoral degrees.

➢ **Female doctorates**

Another indication for the gender distribution in a department or program

➢ **Female master's students**

Another indication for the gender distribution in a department or program

➢ **Female staff**

This indicator relates to the question of gender mainstreaming. It shows the level of equal opportunity employment efforts and results.

➢ **Funding for international master's students**

Many intellectually gifted international students are not financially well-off. Funding options are therefore an important factor.

➢ **International doctorates**

Another indication for the level of internationality in a department or program

➢ **International master's students**

Another indication for the level of internationality in a department or program

➢ **International staff**

This indicator is meant to highlight the degree to which the department or faculty is interested and able to internationalize its academic staff.

➢ **Master's students**

This is a size indicator showing what the mass impact of the department or faculty is in terms of output of master's students.

➢ **Research profile**

The faculties are asked to describe their research profile/research activities. This information can be used by future Master's and doctoral students to find a faculty that meets their research interest.

➢ **Staff (with a doctoral degree)**

This indicator is a size indicator showing the human resource potential of a department or faculty.

> **Data on the University Level**
> Data regarding the university as a whole, e.g. number of students or possibilities for student accommodation.

➢ **Accommodation for graduate students**

It is assumed that accommodation quality may vary substantially between normal student accommodation, which might also be available to graduate students, and accommodation which is provided exclusively to graduate students.

➢ **Accommodation for international students**

Institutions may provide special accommodation for international students which may cater the needs of this target group.

➢ **Accommodation for students**

Accommodation is an important aspect, particularly for international students. Detailed information is considered to be important for students from abroad.

➢ **Counseling for international students**

Counseling is considered one of the key aspects related to study success. International students may need additional and different counseling in order to cope with the new environment, differing expectations and challenges.

➢ **Exchange students**

This indicator is aiming at providing insight into the exchange activities of the higher education institution and its attractiveness among students from partner institutions.

➢ **Female students**

This indicator reflects the heterogeneity of the student group in terms of diversity of gender.

➢ **International students**

This indicator reflects the heterogeneity of the student group in terms of diversity of origin.

➢ **Total number of students**

This is an indication of the size of the higher education institution. Some students might prefer small-size institutions whereas others are looking for the stimulation and exchange found in larger groups.

> **Students' Judgments**
> Judgments of the doctoral and master students on their study situation, e.g. on study organization or the quality of the laboratories

➢ **Advisory (mas.&doc.)**

The individual judgment of the advising capacities can be compared to the department's self-assessment or presentation and thus might show whether input and output are congruent.

➢ **Career centers (mas.&doc.)**

Students in master's and PhD programs are particularly interested in good counseling on future careers. Thus the perceived quality of this service is considered pivotal.

➢ **Conference attendance (doc.)**

For doctoral students it is pivotal to be able to present their ideas to the scientific community as early as possible and in very different ways. This indicator reflects the perception of the doctoral students in as far the higher education institution supports this interest.

➤ **Contact with other students (doc.)**

Alienation and isolation are typical dangers for doctoral students. Teamwork and continuous exchange of ideas as well as day-to-day social life are important pillars on which a successful doctoral research stay is built.

➤ **Counseling (mas.)**

Counseling is considered one of the key aspects related to study success. In addition, international students may need additional and different counseling in order to cope with the new environment, differing expectations and challenges.

➤ **Examinations (mas.&doc.)**

This indicator reflects the perception of fairness and adequacy of the examinations in the programs. This helps students to evaluate whether high quality of research and teaching is combined with a positive personal attitude.

➤ **IT-infrastructure (mas.)**

For students of natural sciences the IT structure is of considerable importance for research and study. This indicator is reflective of the level of technological support in a department.

➤ **Laboratories (mas.&doc.)**

In natural sciences, the quality of labs is at the forefront of student interests. The personal evaluation of the students is relevant because it indicates the congruence between expectations and experienced reality.

➤ **Library (mas.&doc.)**

Studying always relies on access to media of different kinds. The perceived quality of the hardware, software, literature, services and environment is considered important to international students.

➤ **Overall study situation (mas.&doc.)**

If students are overall satisfied with their study conditions and life this may indicate that even though some aspects might not be perfect, the overall situation is supportive of international students.

➤ **Publication possibilities (doc.)**

"Publish or perish" is still a pre-condition in natural sciences. Therefore good options for doctoral students to publish their results can be an interesting incentive to choose an institution.

➤ **Research community (doc.)**

Networking can be pivotal for doctoral students in order to develop a standing in the scientific community. A faculty which actively supports the immersion of its doctoral students in the scientific community can be an advantage.

➤ **Research stay (doc.)**

Research is in itself international. Therefore, an HEI has to provide satisfactory conditions for international experience of their doctoral students.

➤ **Room (mas.)**

Accommodation is an important aspect of life for students. The perceived quality of rooms and space are therefore relevant to prospective applicants.

➤ **Social relations (mas.)**

Alienation and isolation are typical dangers for students studying abroad. A good network of social contacts can prevent these undesired side effects.

➢ **Study organization (mas.&doc.)**

This indicator links with the advisory and other support services and highlights how students regard the quality of the services related to their study experience. The better the service the easier it is for students to concentrate on their main task: studying.

➢ **Teamwork (doc.)**

The team spirit in a research group can be pivotal for the success of a doctoral project. It is also important as it might lay the basis for future cooperation and networking.

➢ **Time for PhD project (doc.)**

Doctoral students are often not only responsible for their thesis but also for other research work and maybe even teaching. Often the work on the thesis suffers under too much time pressure for other activities. Thus this indicator shall clarify how the doctoral students estimate the sufficiency of time allocated to their doctoral project.

➢ **Training (mas.&doc.)**

This indicator is evaluating the academic strength as perceived by the students in the field of framework knowledge and abilities.

➢ **Websites (mas.)**

Most students interested in studies abroad will use the internet as their first choice of information. Thus the perceived quality of the web presence is relevant.

➢ **Workroom (doc.)**

As doctoral students have to spend several years in a research unit, the working conditions can make a difference. They also indicate how appropriate the doctoral students consider their work environment for their project.