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# Personalized Rankings: A New Ranking System for Taiwanese Universities

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## ABSTRACT

*Because traditional college rankings had many methodological problems a new type of user-based ranking, called “personalized college ranking” was developed in many nations in the late 1990s. The main objective of this paper, therefore, is to explore what challenges are involved in the development of current college rankings nationally and globally and how to establish a new type of ranking system. The paper starts by attempting to understand the pitfalls and criticisms of college rankings. Based on the analysis of five major personalized rankings, it outlines strategies and pathways for establishing personalized college rankings in Taiwan.*

**Keywords:** *Higher education, personalized college ranking, Berlin principles*

## Introduction

Among all college rankings currently used around the world, an annual ranking of American universities published since 1983 by the magazine *U.S. News and World Report* has been recognized as the most influential. Since then many countries have followed and have published national college rankings, such as Canada's *Maclean's*, Britain's *The Times Good*

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*Universities Guide*, Japan's Asahi Shimbun, and Germany's The Center for Higher Education Development.

Since the beginning of the 21<sup>st</sup> century, the development of college rankings has become internationalized. Shanghai Jiao Tong University in Mainland China published the first global ranking of universities in June 2003, the "Academic Ranking of World Universities" (ARWU). This ranking uses internationally recognized academic performance and achievements as major indicators in rating 1,000 universities worldwide. Indeed, the release of this ranking caused widespread discussion in the international community and the indicators have also become a major concern for national governments that seek to create world-class universities. The Shanghai Jiao Tong University rankings triggered intense global academic competition throughout the world, and shortly after the release, Britain's *Times Higher Education Supplement* (now *Times Higher Education*) came out with its own World University Rankings covering 200 universities in 2004. Another World ranking titled Webometrics Ranking of World Universities was published by Cybermetrics Lab, CINDOC-CSIC in Spain in the same year (Hou, 2007).

Before the 1990s, most college rankings or league tables in Taiwan were published by the mass media and did not draw public attention due to a lack of validity and credibility in methodology. Driven by the globalization of higher education, universities and government agencies started to develop rankings as a tool to encourage institutions to strive for excellence. At present, there are three major types of college rankings in Taiwan. Each has its own distinctive characteristics. There is a national ranking by Tamkang University, a global ranking by the Higher Education Evaluation and Accreditation Council of Taiwan (HEEACT) and a personalized ranking called College Navigator in Taiwan also developed by HEEACT.

The main objective of this paper is to explore the challenges involved in the development of current college rankings nationally and globally and the improvements that are expected from a new type of ranking system. The paper starts by attempting to understand the pitfalls and criticisms of college rankings. Based on the analysis of five personalized rankings, it outlines the strategies and pathways for establishing personalized college rankings in Taiwan.

## **The Rationale for College Rankings**

With the rapid expansion of higher education and a surge in the number of universities the era of marketization has officially begun. Universities are beginning to be accountable towards stakeholders as business enterprises are. As higher education institutions continue to marketize, they are expected to be more responsible to their stakeholders by disclosing assessment outcomes in public. Zumeat (cited in Schmidtlein & Berdahl, 2005, 74). indicated that “colleges and universities face unprecedented external demands and this shift in states’ expectations and relations with colleges and universities is significant not only for academe’s own interests but for important societal values”.

Academic rankings and league tables that create data transparency are regarded as an important instrument for the evaluation of quality in higher education institutions (Muller-Boling & Federkeil, 2007). Hence, “Rankings are inevitable – in the era of massification, those who finance higher education and the public want to know which academic institutions are the best” (Altbach, 2006). According to Sadlak (2006), the former Director of UNESCO-European Centre for Higher Education, “ranking, which can be defined as an established approach, with corresponding methodology and procedures, for displaying the comparative standing of whole institutions or certain domains of its performance, is now fast becoming a world wide phenomenon” (p.3). It is being done for a variety of reasons, such as providing the general public with information, fostering healthy competition among higher education institutions, stimulating the evolution of centers of excellence, and offering an additional rationale for allocation of state funds (Sادلak, 2006). It is now an accepted component of an external tool for quality assurance.

Therefore, because of marketization and accountability in higher education, “ranking systems are clearly here to stay”, as Merisotis (2002) has clearly noted, whether or not colleges and universities agree with them and whatever their outcomes.

College rankings have become a way for universities to prove to the public and prospective students that their products and services are worth investing in, and this inevitably leads to severe competition among universities (Stella & Woodhouse, 2008). Thus, the increasing number of college and university rankings published by commercial magazines, academic institutions, or government agencies has become a manifestation of the new competitive higher education environment and a driver of change.

## Pitfalls and Criticism

Yet, rankings continue to have a controversial role and arouse fierce debates among rankers, institutions and users though they have gained legitimacy from society, government and students. In fact, there are several problems and pitfalls in current global and national college rankings, including the arbitrary selection of indicators and weightings, undefined users and simplistic presentation (Aguillo, Ortega, & Fernandez, 2007). To analyze the methodologies of the current global and national rankings, there are four kinds of problem (Hou, 2008).

1. Criteria are heterogeneous: Usher & Savino (2006) divided indicators of quality into seven categories, including reputation, research output, learning input (staff & resource), learning output, final outcome and student quality. In fact, most rankings only include learning input and research output without considering learning output or final outcome.
2. The distribution of indicator weightings is too arbitrary: Except for the CHE ranking, the weight proportion is determined arbitrarily by rankers. They do not even explain how the criteria are weighted. For example, THE-QS has no explanation for the use of 10 % for *international outlook* in its methodology. Also, the *U.S News and World Report* and *Maclean's* adopt the indicator of *student/faculty ratio* but with 5% and 10% weightings respectively.
3. Sources of data are not credible. Basically, there are three sources of data on institutions, survey data, independent third parties and university sources (Usher & Savino, 2006). However, the use of these data sources has its problems. Survey data may be too subjective and university data can be manipulated. As for public databases, the problem is that they are established for their own specific purposes and may not have the data needed by ranking organizations.
4. Outcome presentation is too simplistic. It seems easy and simple for users to differentiate good from bad by numerical order but this may not be the best way. Users neither realize the content and context of an institution nor get the relevant information they really need if ranking outcomes are presented simplistically.

In order to maintain the quality of rankings, the International Ranking Expert Group (IREG) founded in 2004 by the UNESCO European Centre for Higher Education (UNESCO-CEPES) and the Institute for Higher Education Policy have come up with the Berlin Principles on Ranking of

Higher Education Institutions which consist of 16 descriptive principles for the good practice of college ranking regarding four aspects: purpose and goal of rankings, design and weighting of indicators, collection and processing of data, and presentation of ranking results (The 2<sup>nd</sup> IREG, 2006). It is expected that any desired ranking will assess the quality in its own data collection, methodology, and dissemination based on these principles.

According to the 2<sup>nd</sup> IREG conference, it was expected that the Berlin Principles would “set a framework for the elaboration and dissemination of rankings—whether they are national, regional, or global in scope—that ultimately will lead to a system of continuous improvement and refinement of the methodologies used to conduct these rankings” (The 2<sup>nd</sup> IREG, 2006). Generally speaking, these principles aim at the improvement and self-evaluation of rankings of higher education institutions. They have begun to have an impact on rankers and scholars. At the 3<sup>rd</sup> meeting of IREG, some researchers started to use the Berlin Principles to assess the quality of a variety of current evaluation and ranking systems. In 2009, IREG 4 in Astana, Kazakhstan, decided to accredit college ranking systems based on the Berlin Principles.

## **Internationalization in Higher Education and Personalized College Rankings**

Major changes are taking place in higher education all over the world. Rising competition has prompted higher education institutions to increase their attractiveness in the market and profile by themselves. In order to become strong players in the global knowledge-based society, colleges and universities are taking advantage of rankings to establish the benchmarks that will help them develop strategies to achieve these goals. Hence, performance indicators and benchmarks in rankings are needed by university leaders to make informed choices for strategic development and to enhance their international competitiveness (CHE and CHEPS, 2008).

Foreign students are a key element of internationalism. About two million students study outside their home countries and it is estimated that this number may grow to eight million by 2025 (Altbach, 2004). Hence, a reliable national or international college ranking system with comparable information about higher education institutions worldwide has become important for international students in order for them to make well-informed choices

However, as mentioned above, owing to methodological problems and a lack of relevance to the need of domestic and international students in many of the league tables or rankings, some groups have launched a non-traditional, student-oriented ranking system called personalized college rankings that can provide information about universities for students without a well-defined ranking outcome presentation. Generally speaking, personalized college rankings target students as major users, which current league tables do not. They respect users' needs in the selection of indicators and weightings through web-based platforms. The goal of the information system is to lead to a match between the students and the institution or program in which they are most interested. Hence, some have suggested that, instead of the term "ranking", an appropriate term for this student information service system would be "matching" (Stichting SURF, 2008).

### **Five Major Personalized College Rankings**

Personalized college rankings started to develop in the late 1990s. Up to now, there are four major personalized college ranking systems established either nationally or regionally. The first personalized college ranking system called "University Ranking" was published by the Centre for Higher Education Development in Germany in 1998. The other three new ones published after 2000 are the Canadian Maclean's "Personalized Ranking Tool" in 2006 and the Dutch "Studychoice.nl" and the British Times' "Push" in 2007.

In the CHE *University ranking*, since 1998, 290 German universities have been included, with more than 300,000 students and around 31,000 professors taking part in the surveys. Programs from universities and from universities of applied sciences are presented separately (German Academic Exchange Service [DAAD], 2007). There are three central methodological principles of the CHE-ranking that distinguish it from traditional ranking approaches. First, it focuses on the purported value of a specific subject or program at a university rather than that for the university as a whole. Instead of calculating an overall value out of single (weighted) indicators, it provides a multi-dimensional ranking in which each indicator is presented separately. In addition, universities are ranked in three groups – top, middle and lower (Muller-Boling & Federkeil, 2007).

Maclean's *Personalized Tool* is an instrument that offers students the ability to select seven indicators drawn from the most recent edition of the "Maclean's University Ranking", and then weight them according



to their own preference (Maclean's, 2008). How many institutions users select to rank depends on their need. It means users can choose all universities, or select some of them by region, such as universities in the West, Ontario, Quebec or the Atlantic region only. After these three steps, the program will come up with an individual ranking across all of the schools that users select.

The Dutch *studychoice 123* is a college selecting tool created under the auspices of the Studiekeuze123 partnership that includes the higher education institutions (HBO-Raad, VSNU and PAEPON) and the students' organizations (LSVb and ISO). The Ministry of Education, Culture and Science of the Netherlands is, however, the major financial sponsor for the project. In *studychoice 123*, users can compare higher education study programs on the basis of 90 criteria, ranging from student views about teachers, contents of the programs, starting salary on graduation to average room rent or number of pubs and bars in the various university cities. Users may choose to separate them or put them together, to consider their choice of programs across the sectors of the higher education system. There are also three steps in making choices for users as Maclean's does (Stichting SURF, 2008). For the result presentation of each criterion, like CHE, the selected study program is placed in three groups- highest score (green), average score (yellow), and lowest score (red).

The Times' Push is also a new but powerful tool to help students find their ideal university. Through the website, "Push", as a university guide with 132 universities, is designed to help students narrow down the choice to a shortlist and put it in their own order of preference by using over 200 criteria (Push, 2008).

The most recent one is Forbes' "Do it yourself ranking" just published in 2009. Like other personalized rankings, it customizes the process, allowing users to construct their own list according to personal tastes and preferences (Forbes, 2009). First, users can choose the region and institutional size that suit them, then 12 relative importance of different criteria provided will help users find the best school for them. In addition, general information of the ranked institution will be listed as reference on the result and be sent to users as they requested.

While examining these five rankings according to the Berlin Principles, they all clearly state their purposes and target groups provided with the relevant data, which is consistent with the Berlin Principles 1, 2, 12 and 15. Besides, these four rankings empower users to select or weigh criteria, corresponding to the Berlin Principles 7 and 9 as well. In addition, with

Table 1: Comparison Among 5 Major Personalized College Ranking

	Centre for Higher Education Development	Maclean's	Studiekeuze123 Partnership	Push	Forbes
Basic facts	<i>University Ranking</i>	<i>Personalized Tool</i>	<i>Studychoice.nl</i>	<i>Push University ranking</i>	<i>Do it yourself ranking</i>
Goal	government 11 years (since 1998) University selection students	mass media 3 years (since 2006) University selection students	government 2 years (since 2007) University selection students	mass media 2 years (since 2007) University selection students	mass media 1 year (since 2009) University selection students
Method	ranking group history purpose target groups 22 indicators selection weighting none	22 subject institution user's choice	90 program/subject none	200 institution none	12 institution none
Presentation	Peer assessment and student institution	Peer assessment / database	Student survey/ database	Student survey/ database	Student survey/ database
	websites				

Source: author

web-based data, they can correct the errors and faults and update the data quickly. Yet, in the absence of a true audit process, the major concern in these four rankings is still with the quality and consistency of data.

## **The Developmental Framework of the Taiwan Personalized College Rankings**

### **Rapid Expansion in Taiwan Higher Education**

With the number of higher education institutions growing dramatically in the 1990s, Taiwanese higher education gradually transformed from an elite type into a universal one. Following this rapid expansion, colleges and universities in Taiwan have been given more administrative autonomy and academic freedom in order to take account of pluralistic needs.

In overall terms, the development of higher education in Taiwan can be separated into five stages: germination (1919 to 1945, the Japanese Colonial Era), development (1945 to 1970), consolidation, (1971 to 1985), expansion (1985 to 2000), and saturation (2000 to present) (Department of Higher Education, 2006).

In the Japanese Colonial Era, the university, employing seminars and lectures as its model of instruction, was highly elitist and most students were Japanese. By the 1960s, because of the rise in labor intensive industries and other factors, higher education (especially junior colleges) expanded rapidly. The number of higher education institutions increased from 7 in 1950 to 92 in 1970. The number of students also increased from approximately 7,000 to more than 200,000, a 30-fold increase.

Amid flourishing economic development, social liberalization, and democratization in the 1990s, universities began to seek autonomy. In 1996, in order to create unimpeded access to vocational education, junior colleges were encouraged to upgrade to colleges and universities of technology. The number of higher education institutions increased from 105 to 150, and the number of students also swelled from around 430,000 to 1,192,139, soaring by more than 2.5 times. By 2008, the number had gone up to 163 largely due to the upgrade of junior colleges to 4- year universities. From 2002 to 2008, the number of undergraduate students soared by 25.38%; the number of students taking master, programs increased by 58.17%; and the number of candidates for doctoral degrees increased by 59.52% (Department of Higher Education, 2008).

Table 2: Number of Colleges and Universities from 1986 to 2008

Year	Universities				Colleges				Sum
	National	Public	Private	Total	National	Public	Private	Total	
1986	9	0	7	16	6	0	6	12	28
1991	13	0	8	21	14	1	14	29	50
1992	13	0	8	21	14	1	14	29	50
1993	13	0	8	21	14	1	15	30	51
1994	15	0	8	23	16	1	18	35	58
1995	16	0	8	24	17	1	18	36	60
1996	16	0	8	24	19	2	22	43	67
1997	20	0	18	38	19	2	19	40	78
1998	21	0	18	39	20	2	23	45	84
1999	21	0	23	44	23	2	36	61	105
2000	25	0	28	53	22	2	50	74	127
2001	27	0	30	57	21	2	55	78	135
2002	27	0	34	61	21	2	55	78	139
2003	30	0	37	67	19	2	54	75	142
2004	34	0	41	75	15	2	53	70	145
2005	40	1	48	89	9	1	46	56	145
2006	40	1	53	94	10	1	42	53	147
2007	41	1	58	100	9	1	39	49	149
2008	41	1	60	102	7	1	37	45	147

Source: Department of Higher Education. (2008b). *Introduction to higher education in Taiwan* Retrieved April 14, 2008, from [http://www.edu.tw/high/download.aspx?download\\_sn=87&pages=3](http://www.edu.tw/high/download.aspx?download_sn=87&pages=3)

### Internationalization in Taiwanese Higher Education

In order to strengthen the international outlook of Taiwanese higher education, colleges and universities are encouraged by the government to enhance various types of cross-campus academic cooperation and activities with foreign universities. To attract more international students studying in Taiwan is one of the initiatives. In August 2003, under the guidance of the Executive Yuan, the expansion of overseas student recruitment was incorporated into Taiwan’s National Development Plan, prompting all universities to make inroads into international education markets and recruit international students. Currently, the total number of international students, including degree-level, exchange, and language study students, has reached 17,742. The number of degree-seeking international students in Taiwan higher education institutions increased approximately from 3,935 in 2006 to more than 5,259 in 2007 (Department of Higher Education, 2008a). In the academic year of 2008, as Table 3

shows, the top five institutions by the proportion of international students are National Taiwan Chi Nan University, National Chengchi University, National Taiwan University, National Chen Kung University and Kaohsiung Medical University. In addition, Taiwan National University and National Cheng Kung University have a total enrollment of more than 1,000, international students.

Table 3: International Students Top 5 Universities

Institutions	Proportion of International Student (%)	Number of International Students	Total enrollment	Rank
National Chi Nan University	7.18	353	4951	1
National Chengchi University	5.59	860	15391	2
National Taiwan University	5.5	1801	32761	3
National Chen Kung University	4.74	1020	21521	4
Kaohsiung Medical University	4.29	317	7395	5

*Source:* Education Statistics (2008). *The number of foreign students studying in Taiwan exceeds 17,500 in 2007.* Retrieved April 14, 2008, from <http://english.moe.gov.tw/ct.asp?xItem=8798&ctNode=1184&mp=1>

### **The Role of the Higher Education Evaluation and Accreditation Council of Taiwan (HEEACT) in Developing the Personalized College Ranking System in Taiwan**

As higher education has expanded rapidly in quantitative terms, how to maintain quantity and quality while also preserving or raising university academic performance, has become a key focus of Taiwanese higher education. In 2005, a professional organization to assess colleges and universities, Higher Education Evaluation and Accreditation Council of Taiwan (HEEACT) was established to oversee current assessment mechanisms, enhance teaching assessment, maintain teaching quality and periodically conduct administrative assessments. One of the major functions of HEEACT is to conduct evaluation projects on 76 four year universities and colleges in Taiwan, with the aim of assisting the institutions to identify their own strengths and features and enable sustainable self-improvement mechanisms. In addition, HEEACT is also dedicated to developing professional and objective assessment criteria, cultivating evaluation experts and reviewers and establishing a database of assessment talent and information to ensure objectivity and credibility (HEEACT, 2005).

In order to improve the quality of Taiwan higher education quickly, HEEACT has also conducted several performance based ranking projects such as qualitative and quantitative statistical analysis of scientific journal papers, patent ranking of university and industry collaborations, performance ranking of scientific papers of world class universities and recruiter satisfaction survey. In addition to the evaluations and rankings above, HEEACT also plans to establish a consumer-oriented ranking service system to provide more transparent university information for prospective students locally and internationally. In April, 2008, the board of HEEACT launched a new initiative, “College Navigator in Taiwan”.

## **Framework of the Taiwan Personalized College Ranking**

The ideas underlying the pilot project ‘College Navigator in Taiwan’ launched by HEEACT is based on the evolution of higher education expansion and internationalization. As a quality assurance agency, HEEACT plays the role of publishing transparent information about more than 160 colleges and universities in Taiwan so that students may make well-informed choices in selecting where to go to study. Though many of the current national or global rankings present university data, they neither cover all universities in Taiwan nor provide the teaching quality information that local and international students urgently need.

Based on the five major personalized rankings, the initial phase of Taiwan personalized college ranking was developed and published in 2009. The concept, method and application of the Berlin Principles in Taiwan personalized college ranking are stated as follows: (<http://140.136.131.76:83/index2.asp>.)

### **Target Groups**

In order to differentiate itself from other rankings with undefined users, the target groups of “College Navigator in Taiwan” are mainly university entrants, including high school graduates, working students looking for a post-secondary degree and transfer students both local and international. They are all secondary school graduates seeking a suitable university in their field of interest.

## Selection of Institutions and Programs

Muller-Boling and Frederkel (2007) have indicated that “the information, that a specific university ranked in the middle, which inevitably will be the result of the whole university, would not have any relevance for a freshman in field” (p.193). It means programs or subjects would be preferred by target groups rather than whole institutions. However, “College Navigator in Taiwan”, at the initial stage, just ranked the institutions as Maclean’s did.

The selection of institutions starts with 69 four year colleges and universities evaluated by HEEACT from 2006 to 2010. In addition, the related general information is listed in the results for the user’s reference.

## Criteria and Indicators

The choice of criteria and indicators will determine the quality of the rankings. Users can decide if the rankings are suitable for them according to the number and content of criteria and indicators. Because students are the target groups, the criteria and indicators will respond to what they are concerned with, including information on teaching and research performance as well as facilities and support for students.

After studying the major personalized college rankings and other influential league tables published by *U.S. News and World Report*, Shanghai Jiaotong University and *Times Higher Education*, the preliminary criteria model included academic survey, student selectivity, faculty, library, research output, teaching quality and international outlook and so on. The number and content of the indicators were determined and focus groups were held in July and August, 2008. Users were given a certain amount of autonomy over selection of indicators and weightings. This means that they are able to select the indicators within criteria and weight each one themselves. In addition, users can rank the institutions that they are interested in by region, type, size and program. More detailed information on universities such as founding year, mission, and total enrollment, number of programs, and website, room and board, tuition, is listed for user’s reference on the ranking outcomes. There are 11 criteria, 24 indicators, 5 preferences and 16 items of general information. The following Table 4 is the model of criteria. (Futher information is shown in Table 4, Table 5 and Table 6).

Table 4: Model of Criteria

Tier	Content	Number
Criteria	academic survey, student selectivity, student demographics, faculty, library acquisitions, research output, teaching quality, international outlook, graduation rate etc.	11
Indicator	enrollment rate, proportion of graduate students, graduation rate, proportion of faculty members above assistant professors, proportion of professors with a highest degree, proportion of full-time faculty, faculty-student ratio, total expenditure per student, number of articles published in SCI/ SSCI/ AHCI per faculty, National Science Foundation grants per faculty, proportion of international students, proportion of international faculty, library expenditure per student, etc.	24
Preference	location, size, type, program/ discipline, etc.	5
General information	history, enrollment, number of programs, and website, room and board, student service, scholarship, tuition etc.	16

Source: author

Table 5: Definition of Criteria and Indicators

Criteria	Indicators	Definition
Peer assessment	Academic survey	Opinions of college presidents, vice presidents and deans to judge a school's academic performance.
	Enrollment rate	Number of freshmen enrolled at the school/number of freshmen approved by ministry of education for that school
Student selectivity	Number of national academic awards earned by students within last 3 years	Number of students who participated in NSC projects and number of research awards to students by NSC
Student demographics	Proportion of graduate students enrolled	Number of graduate students enrolled/total enrollment
Teaching quality	Faculty-student ratio	Number of full-time equivalent faculty/number of FTE students
Faculty resources	Proportion of full-time faculty	Number of full-time faculty/number of full-time and part-time equivalent faculty
	Proportion of professors with Ph.Ds	Number of full-time faculty with Ph.Ds/number of full-time faculty
	Proportion of faculty members above assistant professor	Number of assistant professors, associate professors, and professors/ full-time faculty



Criteria	Indicators	Definition
	National Academy membership	Number of NSC distinguished scholars, Academicians of Academia Sinica and National lectures in the school's faculty
Research output	Number of articles published in SCI/ SSCI/ AHCI per faculty	Number of articles published in SCI/ SSCI/ AHCI/number of full-time equivalent faculty
	Number of articles published in SSCI/per faculty	Number of articles published in SSCI/ number of full-time equivalent faculty
	Number of articles published in SCI/per faculty	Number of articles published in SCI/ number of full-time equivalent faculty
	Number of articles published in AHCI per faculty	Number of articles published in AHCI/number of full-time equivalent faculty
Research grants	Citations in SCI/SSCI/AH&CI per faculty	Number of citations/number of full-time equivalent faculty
	Total number of National Science Council grants by faculty	Amount of NSC grants received by full-time equivalent faculty
	Total amount of National Science Council grants in sciences	Amount of NSC grants received in sciences and medicine fields by full-time equivalent faculty
	Total Amount of National Science Council grants in social sciences and humanities	Amount of NSC received in social sciences and humanities fields by full-time equivalent faculty
	Number of National Science Council projects per faculty	Total number of NSC projects/ number of full-time-equivalent faculty
	Number of National Science Council projects in sciences per faculty	Number of NSC projects in sciences and medicine fields/number of full-time-equivalent faculty
Library	Number of National Science Council projects in social sciences and humanities per faculty	Number of NSC projects in social sciences and humanities/number of full-time-equivalent faculty
Library	Number of library holdings per full-time-equivalent student	Total library holdings/number of full-time-equivalent students
Financial resources	Educational expenditures per student	Total education expenses/total full-time equivalent enrollment
Internationalization	Proportion of international students	Number of international students/ number of full-time-equivalent students
Graduation rate	Proportion of international faculty	Number of international faculty/ number of full-time equivalent faculty

Source: author

Table 6: Preference and General Information of the Ranking

Preference	Location	north/central/south/east
	Size	above 15000/ 10000~14999/ 5000~9999/ below 4999
	Type	public / private
	Field /Program	Comprehensive (Medical School) Humanities & social sciences Sciences Biomedicine Engineering & IT
	<hr/>	
General information	History	Establishing year
	Address	Map and address
	Website	Website
	Application	Procedures for school application
	Evaluation & accreditation	Accredited status / MOE Research Project / MOE Teaching Excellence Project
	Student enrollment	Undergraduate programs / graduate programs and Doctoral programs
	Programs and disciplines	Number of undergraduate programs / graduate programs and doctoral programs
	Room and Board	Number of beds and price
	Student club	Type and number
	Scholarship	Scholarship / total education expenses
	Tuition	Information about programs
	Alumni	Number of Outstanding Alumni

Source: author

## Data Sources

The ranking group collected data in three ways: academic survey, databases and institutions. A student survey was planned for the second stage.

### 1. Academic survey

This is a kind of peer assessment; the object of which is to understand the views and attitudes of academics from universities and colleges in Taiwan. The respondents include presidents, vice presidents and deans of academic affairs, general affairs, student affairs and R&D, and dean of colleges of education. The institutions were evaluated on a 5-point scale from 1 (marginal) to 5 (distinguished). A total of 422 questionnaires were distributed of which 316 were returned by November, 2008. The overall response rate was 74.88%.

2. Universities

This focuses on the data collection of general information from 69 universities. The information on qualitative description of features and strengths, tuition, student support and services, accommodation and so on, is collected through the institution itself and institutional websites.

3. Independent third parties

According to Usher and Savino (2006), a third party source “is generally considered the “gold standard” of comparative data since it is, at least theoretically, both accurate and impartial” (p.10). The ranking group tries to collect data from independent databases including the Ministry of Education, the 2009 Tamkang ranking report, the National Science Foundation, ISI and Scopus.

## Presentation of Results

Many current rankings provide a single integrated score that allows an ordinal fixed ranking of entire institutions. But it is not the case with a personalized college ranking system which emphasizes the abandonment of well-defined indicators and weighting to avoid a “one-size-fits-all” approach.

In *College Navigator in Taiwan*, all data with comparative and basic information on universities is published and updated annually on the HEEACT website so that users can interactively make their own league tables by selecting and weighting indicators according to their preference. To facilitate users understanding of ranking results, each indicator is grouped into 4 categories;

1. Top Group (green upward arrow, the indicator is in the top 30% of all institutions).
2. Middle Group (yellow sideward arrow, the indicator is between 31% and 69% of all institutions).
3. Final Group (pink downward arrow, the indicator is in the bottom 30% of all institutions).
4. Unranked Group (data is not found in the independent database).

## Language

In the context of globalization, the mobility of students in different nations is growing faster and faster. In order to attract more international students

for colleges and universities in Taiwan, HEEACT's website is published in Chinese and English. However, slightly different contents are provided in both versions due to the needs of the two types of students. Information such as applications, study in Taiwan and so on is especially for international students.

## **Applicability of the Berlin Principles to *College Navigator in Taiwan***

The framework of *College Navigator in Taiwan* is developed according to the Berlin Principles.

1. User and goal:  
According to the Berlin Principles, the rankings should be clear about their purposes and their target groups. In *College Navigator in Taiwan*, students who are seeking a university degree are the target groups including high school graduates, working students, international students and all school leavers. The goal of *College Navigator in Taiwan* is to provide information for students on university selection.
2. Criteria and weighting  
Transparency and relevance of indicators regarding the methodology are emphasized in the Berlin Principles. All criteria and indicators in *College Navigator in Taiwan* were finalized after discussions with experts and focus groups. In addition, users are able to weigh the indicators they select, which will lead to a quite personalized ranking outcome according to their preference.
3. Data collection  
In the Berlin Principles, the range of information sources is very important, and the data should be collected with proper procedures for scientific data collection. *College Navigator in Taiwan* adopted two major scientific methods for data collection, including independent databases and surveys.
4. Result presentation  
As to the presentation of ranking results, the Berlin Principles noted that users should be provided with a clear understanding of all factors and should have a choice in how rankings are displayed. In addition, the rankings should be organized and published in a way that errors and faults can be corrected. Users of *College Navigator in Taiwan*

are empowered to rank the institutions according to their preference, corresponding to the concept of respect for user’s choice. In addition, the data will be updated annually through the use of the IT system.

## Statistical Analysis of User’s Attitude Toward Criteria and Function of the System

To get a good sense of users’ attitude toward the whole system the ranking group conducted ten focus group sessions to hear their opinions and to see how the system could be developed and improved in the initial phase.

The focus group sessions were held from September to December of 2008. Ten senior high schools in various areas around the nation were selected randomly, including five public schools and five private ones. A total of 168 students participated in the focus sessions and filled out questionnaires to express their attitude toward the quality of the indicators and the functions of the system. The results showed that the mean score of 20 indicators is above 3.0, in addition to the number of SSCI and SCI papers (Table 7). Most participants agreed on the indicators, but did not completely understand the content of all indicators. They expected to get more detail about the description of the indicators (Table 8).

Table 7: Top 10 Indicators that Senior High School Students Feel are Very Important

Indicators	Importance		
	Number	Mean	Standard Deviation
Equipment expenses per full-time-equivalent student	162	3.65	0.58
Expenditure per student	164	3.61	0.64
Proportion of students abroad	121	3.55	0.64
Number of volumes and volume equivalents per full-time-equivalent student	165	3.49	0.67
Library expenditure per full-time-equivalent student	166	3.46	0.65
Graduation Rate	165	3.44	0.73
Total amount of National Science Foundation grants per faculty	163	3.43	0.72
Total number of English taught courses	164	3.42	0.71
Academic survey	163	3.40	0.66
Faculty-student ratio	165	3.38	0.70

Source: author

Table 8: Top 10 Indicators that Senior High School Students Find Understandable

Indicators	Understanding		
	Number	Mean	Standard Deviation
Proportion of students abroad	120	3.30	0.72
Graduation Rate	166	3.29	0.70
Pass rate of English proficiency test	165	3.27	0.72
Faculty-student ratio	167	3.22	0.75
Equipment expenses per full-time-equivalent student	165	3.20	0.75
Total number of English taught courses	165	3.19	0.75
Number of volumes and volume equivalents per full-time-equivalent student	165	3.18	0.73
Proportion of international faculty	166	3.16	0.77
Proportion of full-time faculty with Ph.Ds	166	3.16	0.82
Proportion of international students	165	3.15	0.78

Source: author

In order to get more suggestions from users, the ranking group conducted another survey after the establishment of the ranking system. There were 11 questions regarding the quality of the indicators and the functions of the web-based system. The mean scores ranged from 3.63 to 4.23. The results showed that users were well satisfied with the quality

Table 9: Mean Scores for Users' Attitude toward the Function of the Ranking

Questionnaires	Mean score
Q1. Definitions of indicators are clearly stated.	3.73
Q2. Selection of indicator number is reasonable. (between 5-10)	3.63
Q3. Presentation of ranking outcome is clear and understandable.	3.66
Q4. Presentation of basic information for each institution is clear and understandable	3.69
Q5. Information provided is useful for me to select a school to study	3.76
Q6. It is convenient for me to operate this ranking tool.	4.06
Q7. Speed of this system is moderate and does not take me too much time.	4.23
Q8. Functions in the system are highly stable.	3.91
Q9. Web pages are presented clearly.	4.16
Q10. Contrast of color is nice and comfortable	3.81
Q11. Information on the web-pages is easily read.	3.93

Source: author

of the speed, the convenience, and the web pages of the system. On the other hand, they were dissatisfied with three items: “selection of indicator number”, “presentation of ranking outcome” and “presentation of general information for each institution”. To conclude, users agreed on the role of the system as an information provider but expected to have more autonomy over the selection of indicator number and to have more transparent data about higher education institutions.

## Conclusion

As Altbach (2006) has noted, “rankings are inevitable and probably necessary in the competitive and market-oriented academic world of the 21<sup>st</sup> century”. They focus attention on key aspects of academic achievement which may influence policymakers in higher education and student’ choices of universities. Yet, current rankings often measure some parts of higher education using flawed metrics. They also ignore key academic roles such as teaching and do not look at all at what students need.

But no matter how many problems exist in the rankings, the social demand for data transparency through different mechanisms of quality assurance is growing rapidly. With no attempt to weight the indicator and assign ordinal ranks arbitrarily, the development of “College Navigator in Taiwan” has responded to the trend of internationalization in higher education and respects the personal needs of each user according to the Berlin Principles. However, like the classic rankings, the big challenge for all personalized college rankings in the future is to ensure that they can provide accurate and relevant assessment and measure the right things for target groups. Generally speaking, *College Navigator in Taiwan*, as a driving force has increasingly inspired Taiwan colleges and universities to think how to respond to students’ needs and to promote their quality and international visibility in global higher education.

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