Received 18 July 2014
Revised 10 November 2014
Accepted 15 November 2014

Suitability of performance indicators and benchmarking practices in UK universities

Kong Fah Tee
University of Greenwich, Chatham Maritime, UK

Abstract

Purpose – The purpose of this paper is to provide a common framework for benchmarking practices used in higher education.

Design/methodology/approach – An electronic questionnaire survey was distributed to senior management team and senior administrators among the top 200 UK universities in the world.

Findings – A review of the current practices of benchmarking among the universities in the UK is presented and the types of performance indicators adopted within universities in relation to research, teaching and administration are outlined.

Originality/value – The suitability of performance indicators adopted in the current national and international rankings is also investigated. Opinions of respondents on important factors for successful benchmarking are also compiled and analysed.

Keywords Higher education, Benchmarking, Performance indicators, University ranking

Paper type Case study

Introduction

Universities play an important role in producing skilled workers needed by the labour market. As the global environment for higher education expands, senior management in higher education should re-assess the objectives and expectations of universities (Salmi, 2009). Governments in Asia and Europe have strong motivation to restructure higher education system in their countries and develop "world-class" universities (Deem *et al.*, 2008). The need to establish one or more world-class universities has been recognised as an important task due to contribution of world-class universities to economic and social growth. In the 2000s, many countries joined the global race to build a world-class university.

What is a world-class university? World-class universities perform well in the international university ranking and produce excellent outputs including conducting cutting-edge research through licences, patents and publications in high-quality top-ranked journals as well as producing skilled and professional graduates (Salmi, 2009). A world-class university will be able to attract the best academics and students, to possess abundant and diversified funding sources and offer a rich learning and research environment, to provide favourable and autonomous governance and encourage strategic vision and innovation, so as to respond effectively to the demands of a fast changing global market (Wang *et al.*, 2012). Universities are ranked nationally and internationally based on their teaching and research performance. The criteria used are normally major awards, papers published in top-ranked journals, highly cited researchers, research income, etc. (Liu and Cheng, 2005). Senior management tends to apply "doing things smarter" or "doing more with less" in university management (Mok, 2005). All the universities are competing with each other, thus they have tried to benchmark with better ranked universities in the world by using a wide range of performance indicators.

Benchmarking: An International Journal
Vol. 23 No. 3, 2016
pp. 584-600

1463-5771
DOI 10.1108/BIJ-07-2014-0069

How good is good enough to be a world-class university? Obviously world rankings of universities are a measure of performance. Nevertheless, there has been an on-going debate about the ambiguity of the methodology of the ranking with regard to the computation of the scores and the validity of the performance indicators (Sadlak and Liu, 2007). Regardless of the biases, the power of ranking is undeniable. It is important to find out the suitability of performance indicators adopted in the current national and international rankings. International universities are competing with each other to improve or maintain their reputations and to boost their standings in the national and international rankings. Nevertheless, it is still necessary to employ performance indicators to fulfil public and stakeholder accountability.

Performance measurement using indicators is normally compulsory for every university to report against and it is used for comparison. On the other hand, benchmarking is more optional and desired on a part of a university. The term benchmarking has become popular in the business world over the last 25 years. Benchmarking is important because it provides a disciplined and realistic approach for assessing the performance in critical areas of an organisation and for learning from the experience of other organisations. Benchmarking activities have been implemented across a variety of industries and this trend has moved into higher education with various efforts. Unfortunately, not all universities are clear about the concept of benchmarking and/or how to benchmark properly. In addition, the current use of performance indicators in higher education is being driven by the desire on the part of government to introduce more market-like competition into higher education in order to make institutions more flexible, cost-efficient and responsive to the needs of society (Meek and van der Lee, 2005).

Key outcomes from benchmarking include a better understanding of practice, process or performance, improved collaboration, networking and partnership, accountability of university to stakeholders, management statistics, motivation for process improvement, etc. (HESA, 2010). In fact, benchmarking is not only a response to the fierce competition in higher education sector nationally and internationally, but also due to the need for more transparency of quality in higher education as required by Bologna process (Hamalainen *et al.*, 2003).

To address the above issues, the aims of this study are:

(1) to review the current practices of benchmarking among the universities in the UK and outline the types of performance indicators adopted within universities in relation to research, teaching and administration;

(2) to investigate the suitability of performance indicators adopted in the current national and international rankings;

(3) to compile and analyse the opinions of senior management team and senior administrators on important factors for successful benchmarking; and

(4) to review best practices to performance outcomes in the areas measured by ranking criteria.

Performance indicators

The use of performance indicators is normally directly linked to the university's strategic plan and it business functions (Ball and Wilkinson, 1994). The objectives of using performance indicators are improving efficiency, effectiveness and increasing university's economic viability. Generally speaking, performance indicators can be

classified into two main types that are measurement of results which focuses on quantity and measurement of the degree of the outcome which focuses on quality. As an example, the number of publication by an academic is a measure of quantity of research capability (Gaither *et al.*, 1994) whereas the number of citation is a measure of research quality.

Research and teaching are the two main core activities of university and the performance or quality of these two areas should be monitored every year using performance indicators. The research quality has a larger extent to influence the government funding than the teaching quality (Patrick and Stanley, 1998). The data for the performance indicators in research and teaching provide information for comparison, policy making, performance benchmarking as well as public and stakeholder accountability.

Performance indicators should include a measure of value added. Indicators such as percentage of students graduating fail to consider input or entry differences of students among universities and therefore are inappropriate. It is important to identify factors underlying the differences and reduce the input differences in outcome measurement for evaluation overall university performance (Johnes, 1992). Due to the fact that performance indicators are present in a wide range of contexts, some criteria should be used to examine the similarities and differences as well as strengths and weaknesses of the development and application of indicators systems such as sources of variation in quality, degree of government involvement, intended audiences, etc. (Gaither *et al.*, 1994). Thus, these criteria provide a framework to compare and assess their replicability and usefulness.

Although there are many advantages of using performance indicators, it can be very harmful and costly if used unwisely. For example, if expectations of performance indicators are set too high, this will cause unrealistic or improbable goals and thus demoralise motivation. Other reasons might be lack of protocol, political issues, etc. Moreover, another danger of performance indicators is uncritical interpretation or comparison between universities which will inhibit diversity (Meek and van der Lee, 2005). Nevertheless, it is still necessary to employ performance indicators to fulfil public and stakeholder accountability. The debate is whether performance indicators alone are sufficient or other process should be incorporated to assess university performance. It is suggested that benchmarking and/or peer review provides great opportunities for deeper and wider evaluation of university performance (Ball and Wilkinson, 1994).

Benchmarking

The main principles of benchmarking are to search for best practices and better performance by learning, evaluating and improving our own practice. The following questions would be answered by conducting benchmarking:

- How well are we doing compared to others?
- How good do we want to be?
- Who is doing it the best?
- How do they do it?
- How can we adapt what they do to our institution?
- How can we be better than the best (Alstete, 1995)?

Benchmarking has first been used in the management of UK university services such as estate, treasury, facilities, etc. since early to mid 1990s (Lund, 1998). Nevertheless, the usage of benchmarking in higher education has spread rapidly to most areas including standards and quality of teaching, learning and research over the last decade. The main reasons of performing benchmarking among the UK universities nowadays are due to increasingly competition and searching for regulating higher education standards (Jackson, 2001). Despite the fact that benchmarking has been used in the UK universities over the last two decades and the benefits of benchmarking are well understood, there are still some contradictions among the UK universities in the method of measurement and the indicators used. This causes the implementation of benchmarking very difficult. Understanding the concept of benchmarking is inconsistent from lack of understanding to having benchmarking champions across the UK higher education (Schofield, 1998).

Principles of good university benchmarking

Despite that the most imperative concept of benchmarking process should be considered flexible; there are other basic principles of good university benchmarking that universities need to be aware of. The first principle is to select partners that one can learn from and is able to provide mutual benefit through partnership. One of the benefits of benchmarking is to improve one's own practices by showing strong commitment and motivation to the performance and processes.

The second principle is to perceive that data collection is only part of the benchmarking process and is the activity once the key performance and processes are fully understood. Thus, it is crucial to spend sufficient time and involve substantial effort from all the participants at the very beginning of benchmarking process to ensure that the mission is in the right direction before collecting related data (ESMU, 2010).

The third principle is to establish ownership of the benchmarking process among all the participants. It is important to have commitment from senior management in both financial support and strategic plan to undertake improvement. The success of benchmarking can only be realised when the process is owned by all staff. If benchmarking is only done by specialist staff or is the only responsibility of senior management, this will result to ineffective benchmarking (Garlick and Pryor, 2004).

The fourth principle is to manage benchmarking process as an on-going activity rather than a short-term project. Therefore, it is important to continue the benchmarking process even the specific project has finished. It is time consuming but it provides continuous improvements. Senior management should constantly bring external focus on internal processes by measuring and comparing through on-going benchmarking and make suitable and correct judgements from time to time based on the context of the problem (Schofield, 1998).

Last but not least, the fifth principle is to incorporate the feedback from benchmarking activities into the process and performance improvement. According to Martin (2003), although the feedback or reflexivity is very useful for continuous improvement and is also the key to successful benchmarking, most universities have experienced the difficulty of managing reflexivity.

Things to avoid in university benchmarking

Although benchmarking is a straightforward process, several critical mistakes can be avoided by a university attempting benchmarking for the first time. Benchmarking efforts must be enthusiastically driven by senior management in order to succeed.

Unfortunately, many efforts originate at a much lower level in the university without or with marginal participation from the top. Data is an important factor in a benchmarking process. However, data are a combination of information and context. If the performance or processes to measure are not fully understood, then the collected data might be misleading or irrelevant (ESMU, 2010). Therefore, "to get the most value from the gathering and use of data, there is a need to enhance the quality of data-gathering, concentrating on what is most useful to the institution rather than what is easiest to measure and selecting appropriate indicators, refining them to suit the institutional context, and ensuring that the indicators are well defined and measurable emerge as areas in need of attention" (Stella and Woodhouse, 2007, p. 7). The advantage of quantitative data is that it seems unambiguous and clear. But different universities and countries can collect data in different ways. Therefore, data might be incompatible and thus reduce the effectiveness and certainty of the comparison process. To avoid the problem, comparison needs to be made on an objective basis for effective benchmarking.

Methodology

Research design

A review of the current practices of benchmarking among the universities in the UK was presented and the types of performance indicators adopted within universities in relation to research, teaching and administration were outlined. Therefore, this study also included designing and developing primary research materials that was an electronic questionnaire survey. Opinions of senior management team and senior administrators on the suitability of performance indicators and important factors for successful benchmarking were collected. A thorough analysis of the data from primary and secondary research was conducted and the results were displayed graphically using graphs and tables.

Data collection and rationale

An electronic questionnaire survey was produced using SurveyMonkey and distributed to senior management team and senior administrators among the top 200 UK universities in the world (sample profile will be elaborated in the next section). Invitations to fill up the survey were sent out through e-mails. The participants were allowed to access the survey for over two months and the reminder e-mails were sent to ensure participation. E-mail provides a fast and inexpensive method to communicate with potential participants. It has supplemented the secondary research by specific insights. The electronic survey was designed to obtain not only respondents' opinions about the suitability of existing performance indicators used in the current national and international university rankings, but also university-specific information pertaining to performance indicators and benchmarking activities.

For this survey, respondents were asked to answer ten questions which were divided into three main sections. There were three questions in the first section which was based on 34 performance indicators with 14 indicators for research performance, nine related to teaching as well as 11 for administration and others. All the performance indicators used in the well-established university rankings were rated from strongly agree to strongly disagree. The second section focused on the university's performance indicators and benchmarking practices. The respondents were asked to give their opinions and personal experiences about the usefulness of recent benchmarking activities. There were two open-ended questions in the third section which asked respondents to give the most important factor for successful benchmarking practice and other performance indicators that might be useful for benchmarking.

Sample profile

An e-mail was sent to the top 200 UK universities in the world based on the Academic Ranking of World Universities (ARWU) and Quacquarelli Symonds (QS) World University Rankings. These universities were Oxford, Cambridge, Imperial, University College London, Edinburgh, Manchester, Sheffield, Bristol, Nottingham, Leeds, King's College, Birmingham, Liverpool, Sussex, Cardiff, Glasgow, Southampton, Warwick, London School of Economics, Durham, St Andrews, York, Newcastle, Queen Mary, Royal Holloway, Lancaster, Exeter, East Anglia, Aberdeen and Leicester.

The sample profile includes those who are involved in benchmarking activities at their universities. All intended respondents are senior management team and senior administrators including chancellor, pro-chancellor, vice chancellor, provost, deputy vice chancellor, registrar, dean of faculty, vice-dean, head of college, head of school, head of department, director of finance, director of business affairs, chief operating officer, director of research, director of the graduate school, director of teaching and learning, faculty manager, director of facilities management, human resource director, marketing director, director of resources, etc. They were selected for their in depth knowledge of the university generally and benchmarking activity particularly. In order to avoid response bias, this survey was sent to respondents working in a variety of contexts and thus different areas were covered including research, teaching, administration, finance, reputation, international outlook, etc. Similarly, different subjects or disciplines were also covered such as engineering, sciences, social sciences, law, medicine, arts, humanities, business, etc.

The survey participation was totally anonymous, individual answers would remain wholly confidential, and the results would only be presented as statistical summaries. It was optional and participants could answer any questions they wished. Respondents did not receive any rewards for their participation but they were encouraged by offering a copy of the survey results or the report of this study which might be useful for their future benchmarking activities.

Survey data and analysis

A total of 55 respondents had filled in the survey. The survey results are discussed under the following themes: suitability of performance indicators, benchmarking practices in the UK universities and principles of successful university benchmarking.

Suitability of performance indicators

Performance indicators in higher education have been used to measure how a university is performing. It is important to develop objective, systematic and reliable performance indicators. The purpose of this section is to report on the survey results of the evaluation of 34 indicators for research, teaching and other aspects of university performance adopted in the current national and international rankings.

Suitability of indicators for research. The suitability of 14 indicators listed below for research performance is investigated through the first question in the survey. These performance indicators are adopted in the current national and global rankings which are given inside the brackets:

(1) Research Assessment Exercise (RAE) or Research Excellence Framework (REF) (The Complete University Guide, *Sunday Times* and *The Times*);

(2) number of papers indexed in Science Citation Index and Social Science Citation Index (ARWU and University Ranking by Academic Performance (URAP));

(3) number of papers published in the journals indexed by Thomson Reuters per academic staff (*Times Higher Education*);

(4) number of papers published in the journals *Nature and Science* (ARWU);

(5) citations (QS, *Times Higher Education*, URAP and Performance Ranking of Scientific Papers);

(6) number of highly cited researchers in 21 broad subject categories (ARWU);

(7) h-index (URAP and Performance Ranking of Scientific Papers);

(8) research income scaled against staff numbers (*Times Higher Education*);

(9) industry income scaled against academic staff numbers (*Times Higher Education*);

(10) number of PhDs awarded scaled against academic staff numbers (*Times Higher Education*);

(11) ratio of PhD to bachelor's degrees awarded (*Times Higher Education*);

(12) number of the alumni winning Nobel Prizes and fields medal (ARWU);

(13) number of the staff winning Nobel Prizes and fields medal (ARWU); and

(14) university's reputation for research excellence from academic reputation survey (*Times Higher Education* and QS).

It is difficult to provide an objective measure for research performance. All of the indicators listed above have some relevance, but no one on its own is a particular good indicator. As shown in Table I, 90.2 per cent of respondents either strongly or mildly agree that RAE or REF is a good indicator for research performance. However, this indicator is only applicable in the UK. This is followed by number of PhDs awarded (76 per cent), citations (65.9 per cent) and reputation for research excellence (61.6 per cent).

Table I.
Responses of the Survey Question 1: do you consider the following a good indicator of research performance in the national and international university rankings?

Indicators	Strongly agree	Mildly agree	Neither agree nor disagree	Mildly disagree	Strongly disagree	Total
RAE/REF	58.8% (30)	31.4% (16)	2.0% (1)	5.9% (3)	2.0% (1)	(51)
SCI and SSCI	10.0% (5)	46.0% (23)	30.0% (15)	10.0% (5)	4.0% (2)	(50)
Indexed by Thomson Reuters	9.4% (5)	37.7% (20)	35.9% (19)	13.2% (7)	3.8% (2)	(53)
Nature and Science	28.0% (14)	24.0% (12)	16.0% (8)	22.0% (11)	10.0% (5)	(50)
Citations	25.5% (12)	40.4% (19)	19.2% (9)	8.5% (4)	6.4% (3)	(47)
Highly cited researchers	18.0% (9)	34% (17)	24% (12)	12% (6)	12% (6)	(50)
h-index	12.0% (6)	38.0% (19)	28.0% (14)	10% (5)	12% (6)	(50)
Research income	31.3% (15)	27.1% (13)	8.3% (4)	22.9% (11)	10.4% (5)	(48)
Industry income	12.0% (6)	32.0% (16)	22.0% (11)	20.0% (10)	14.0% (7)	(50)
Number of PhDs awarded	20.0% (10)	56.0% (28)	12.0% (6)	6.0% (3)	6.0% (3)	(50)
Ratio of PhD to bachelor's degrees	5.9% (3)	15.7% (8)	33.3% (17)	25.5% (13)	19.6% (10)	(51)
Alumni winning Nobel Prizes and fields medal	9.8% (5)	23.5% (12)	23.5% (12)	17.7% (9)	25.5% (13)	(51)
Staff winning Nobel Prizes and fields medal	19.6% (10)	19.6% (10)	17.7% (9)	27.5% (14)	15.7% (8)	(51)
Reputation for research excellence	13.5% (7)	48.1% (25)	19.2% (10)	9.6% (5)	9.6% (5)	(52)

It is believed that most academics know who is good in their field and where the centres of excellence are. On the other hand, more than 40 per cent of respondents either strongly or mildly disagree that the ratio of PhD to bachelor's degrees, alumni and staff winning Nobel Prizes and fields medal are good indicators for research performance.

The main problem highlighted by the majority of respondents is that different disciplines are very different in their capacity to earn income, number of supported PhD students, capacity for citation, etc. Many of the above indicators are very science-focused and less appropriate for social sciences and humanities such as number of papers published in the journals *Nature and Science* which do not publish in all subject areas, as their titles suggest. In arts and humanities, the test of time is important rather than instant data. Legal scholarship is rarely recognised in these kinds of indicators, but it is highly influential in other ways, such as in informing policy, legal judgements and statute or parliamentary regulation. Thus, most of the indicators adopted in current international rankings are highly biased to certain particular disciplines.

Suitability of indicators for teaching. The suitability of nine performance indicators listed below related to teaching is investigated through the second question in the survey. These performance indicators are adopted in the current national and global rankings which are given inside the brackets:

(1) entry standards (Complete University Guide, *Guardian*, *Sunday Times* and *The Times*);

(2) student staff ratio (Complete University Guide, *Guardian*, *Times*, QS and *Times Higher Education*);

(3) percentage of graduates achieving a first or upper second class honours degree (good honours) (Complete University Guide and *Sunday Times*);

(4) percentage of students who manage to complete their degrees (Complete University Guide and *Times*);

(5) percentage of final year students satisfied with teaching quality (Complete University Guide, *Guardian*, *Sunday Times* and *The Times*);

(6) percentage of final year students satisfied with overall quality of their courses (*Guardian*);

(7) percentage of final year students satisfied with assessment and feedback by lecturers (*Guardian*);

(8) school heads are asked to identify the highest quality undergraduate provision (*Sunday Times*); and

(9) perceived prestige of institutions in teaching from academic reputation survey (*Times Higher Education* and QS).

Teaching quality is almost impossible to assess or is too complex to be able to assess it easily. As shown in Table II, entry standard is the strongest indicator related to teaching where 77.5 per cent of respondents either strongly or mildly agree that entry standard is a good indicator but this is obviously irrelevant to the quality of teaching. This is followed by National Student Survey (NSS) teaching (74.5 per cent), NSS overall (74.5 per cent) and completion rate (70.0 per cent). Student surveys are useful but some respondents criticise that these are not absolute measures and are weakly associated with quality of teaching.

On the other hand, more than 45 per cent of respondents believe that "opinion of highest quality undergraduate provision by school heads" is not a good indicator related to teaching. Indicators such as perceived prestige in teaching by survey and good honours are also not supported by more than 30 per cent of respondents. Institutions can improve their ratings by awarding a higher proportion of the first and upper second degrees. Overall, teaching quality is very hard to capture by any metric.

Suitability of indicators for other aspects. The suitability of 11 performance indicators listed below is investigated through the third question in the survey. These performance indicators are adopted in the current national and global rankings which are given inside the brackets:

(1) expenditure per student on all academic services (Complete University Guide and *Times*);

(2) expenditure per student on staff and student facilities (Complete University Guide and *Times*);

(3) expenditure per student (*Guardian*);

(4) institutional income scaled against academic staff numbers (*Times Higher Education*);

(5) percentage of graduates who find graduate-level job, or are studying further, within six month of graduation (Complete University Guide, *Guardian* and *The Times*);

(6) employer reputation – employers are asked to identify the universities that produce the best graduates (QS);

(7) academic reputation – active academician across the world are asked about the top universities in fields they know about (*Times Higher Education* and QS);

(8) ratio of international to domestic students (*Times Higher Education* and QS);

(9) ratio of international to domestic staff (*Times Higher Education* and QS);

(10) proportion of total research journal publications that have at least one international co-author (*Times Higher Education* and URAP); and

(11) presence (the total number), impact (the quality of the content) and openness of the university webpages (Ranking Web of Universities or Webometrics).

Table II. Responses of the Survey Question 2: do you consider the following a good performance indicator related to teaching in the national and international university rankings?

Indicators	Strongly agree	Mildly agree	Neither agree nor disagree	Mildly disagree	Strongly disagree	Total
Entry standards	26.5% (13)	51.0% (25)	10.2% (5)	10.2% (5)	2.0% (1)	(49)
Student staff ratio	23.5% (12)	45.1% (23)	17.7% (9)	9.8% (5)	3.9% (2)	(51)
Good honours	11.8% (6)	31.4% (16)	25.5% (13)	21.6% (11)	9.80% (5)	(51)
Degree completion	28.0% (14)	42.0% (21)	18.0% (9)	8.0% (4)	4.0% (2)	(50)
NSS teaching	33.3% (17)	41.2% (21)	9.8% (5)	13.7% (7)	2.0% (1)	(51)
NSS overall	35.3% (18)	39.2% (20)	13.7% (7)	11.8% (6)	0% (0)	(51)
NSS feedback	19.6% (10)	45.1% (23)	13.7% (7)	17.7% (9)	3.9% (2)	(51)
Highest quality teaching provision by school heads	5.9% (3)	11.8% (6)	35.3% (18)	31.4% (16)	15.7% (8)	(51)
Perceived prestige in teaching by survey	3.9% (2)	37.3% (19)	27.5% (14)	21.6% (11)	9.8% (5)	(51)

Different administrative and accounting structures make it very difficult to benchmark a lot of this data between higher education institutions and none of these indicators can be used in isolation. Resources have indirect impact but spending does not indicate how well the institution is doing, apart from the financial health of the institution. As shown in Table III, 80 per cent of respondents either strongly or mildly agree that career prospect is a good indicator. The performance of a university's graduates over their careers is probably the best indicator, but even this is quite uncertain. Employer and academic reputations are also either strongly or mildly agreed by 76 and 67.4 per cent of respondents, respectively as good indicators.

Half of the respondents either strongly or mildly disagree that proportion of total research journal publications that have at least one international co-author is a good indicator for international outlook. "The presence (the total number), impact (the quality of the content) and openness of the university webpages" is also not supported by more than 40 per cent of respondents.

Benchmarking practices in UK universities

The second part of the survey (Questions 4-7) was designed to review the current practices and obtain university-specific information pertaining to performance indicators and benchmarking activities. It can be shown from Figure 1 that 90 per cent (44 out of 49) of respondents' universities benchmark performance indicators with other universities or companies whereas 10 per cent (five out of 49) of respondents

Indicators	Strongly agree	Mildly agree	Neither agree nor disagree	Mildly disagree	Strongly disagree	Total
Academic services spend	4.0% (2)	54.0% (27)	16.0% (8)	22.0% (11)	4.0% (2)	(50)
Facilities spend	8.0% (4)	50.0% (25)	20.0% (10)	18.0% (9)	4.0% (2)	(50)
Expenditure per student	12.2% (6)	38.8% (19)	22.5% (11)	22.5% (11)	4.1% (2)	(49)
Institutional income	4.1% (2)	40.8% (20)	34.7% (17)	16.3% (8)	4.1% (2)	(49)
Career prospects	32.0% (16)	48.0% (24)	8.0% (4)	6.0% (3)	6.0% (3)	(50)
Employer reputation	26.0% (13)	50.0% (25)	10.0% (5)	14.0% (7)	0.0% (0)	(50)
Academic reputation	22.5% (11)	44.9% (22)	8.2% (4)	14.3% (7)	10.2% (5)	(49)
International student ratio	2.0% (1)	28.0% (14)	40.0% (20)	10.0% (5)	20.0% (10)	(50)
International faculty ratio	0.0% (0)	43.8% (21)	22.9% (11)	14.6% (7)	18.8% (9)	(48)
Publications that have international co-author	4.0% (2)	24% (12)	22% (11)	30% (15)	20.0% (10)	(50)
University webpages	4.0% (2)	20.0% (10)	32% (16)	28% (14)	16% (8)	(50)

Table III. Responses of the Survey Question 3: do you consider the following a good performance indicator (administration, etc.) in the national and international university rankings?

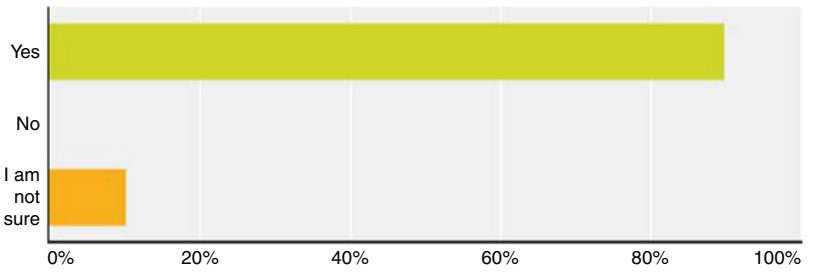

Figure 1. Responses of the Survey Question 4: does your university benchmark performance indicators with other universities or companies?

are not sure. The reasons of performing benchmarking given by respondents are summarised as follows:

(1) It is important to draw comparisons.

(2) It helps to understand our performance.

(3) We are in a reputation business. League tables strongly influence behaviour particularly recruitment of staff and students.

(4) These are published and circulated by College.

(5) We are a member of the Russell Group and find it useful to benchmark against others in that Group because it sharpens performance.

(6) Irrespective of whether we believe in performance indicators as being accurate, students, staff, government and other stakeholders read them. Therefore, we have to improve our performance indicators in order to market the university.

Table IV shows the performance indicators that the top 200 UK universities in the world most likely want to benchmark. Among the indicators suggested by the 36 respondents, 18 respondents believe that research income is one of the indicators that their universities most likely want to benchmark. This is followed by REF (14 responses) and NSS (12 responses with two for overall satisfaction). In fact, research performance and quality (five responses) can be grouped together with REF. It is suggested by respondents that every academic should be included or at least the proportion of non-included staff in REF is also factored into final league tables.

Table V shows the benchmarking partners that the top 200 UK universities in the world most likely want to benchmark against. Among the benchmarking partners suggested by the 33 respondents, Oxford and Manchester are the two most selected

Table IV.
Responses of the Survey Question 5: in your opinion, please list up to five indicators that your university most likely wants to benchmark

Indicators	Responses
Research income	18
REF	14
NSS (overall satisfaction = 2)	12
Graduate prospects and career quality	9
International engagement and reputation	8
Student satisfaction, perception and experience	7
Entry tariff or quality of student intake	6
Teaching and educational quality	6
Research output and quality of publications	5
Percentage of international students	5
Research performance and quality	5
PGR and PGT numbers	5
National and world rankings	4
Total income per student or per staff	3
Scale and types of grant capture	2
Student staff ratio	2
Student applications and numbers	2
Citations	2
Industry engagement and enterprise	2
Estate usage and expenditure	2
Ratio of firsts and 2:1s	2

Benchmarking partners	Responses
Oxford	10
Manchester	10
Cambridge	7
Sheffield	6
Leeds	6
University College London	5
Imperial College London	4
Birmingham	4
Bristol	4
Nottingham	4
Exeter	3
Sussex	2
Queen Mary	2
Edinburgh	2
Warwick	2
Durham	2
National University of Singapore	2
University of Melbourne	2

Table V.
Responses of the Survey Question 6: in your opinion, please list up to three universities/ companies that your university most likely wants to benchmark against

universities for benchmarking. This is followed by Cambridge, Sheffield and Leeds. It can be shown that most of the benchmarking partners for the top 200 UK universities in the world are also universities from the Russell Group.

Figure 2 shows that majority of respondents (65.2 per cent) believe that their benchmarking experience was very useful or somewhat useful whereas only 8.7 per cent (four out of 46) of respondents believe it was somewhat useless. The reasons or comments given by respondents are summarised as follows:

(1) it has revealed some shortfalls;

(2) it allows us to see what is possible;

(3) it forces one to address areas of apparent weakness and identifies areas of potential strength;

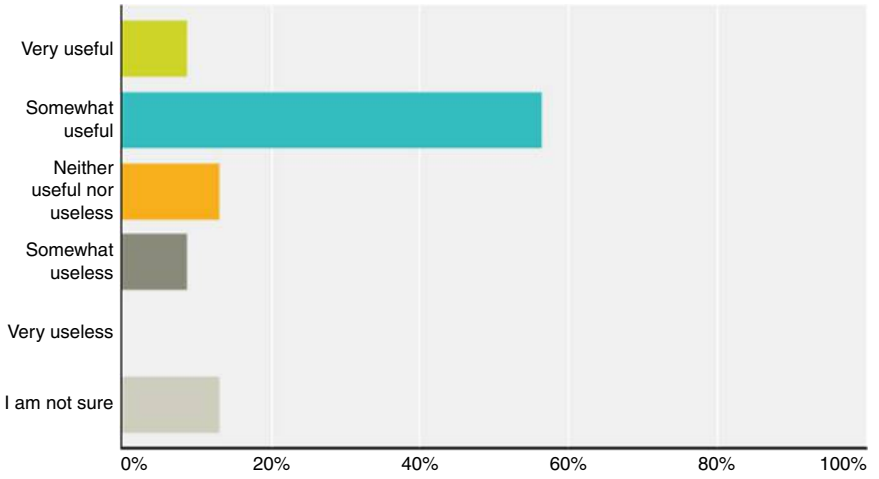

Figure 2.
Responses of the Survey Question 7: which of the following categories best describes your university's experience conducting benchmarking?

(4) it only works if you can benchmark against universities with similar academic profiles;

(5) benchmarks should always be used as indications for possible further consideration and not as the final proof;

(6) it is very difficult to pick the right benchmarks and to avoid having too many of them; and

(7) high-level benchmarking may not translate to other tiers where comparisons are skewed or misleading.

Principles of successful university benchmarking

In Question 8, respondents were asked to give the most important factor for successful benchmarking practice. In total, 25 responses were received and analysed in the following paragraphs.

In the process of identifying university performance, the breadth of indicators must be considered to cover the range of activities undertaken in complex global universities. The multiplicity of measures which are relevance to all subjects, not just science, must be taken into account for rating universities. However, for benchmarking, it is important to pick a small number of items which really matter where we can measure performance and find comparative data from other higher education institutions. In addition, what to benchmark must be within our rigorous control, so that it can be changed accordingly to improve our institution.

The choice of institutions for comparison is also an important factor for successful benchmarking practice. It is important to benchmark against the right comparators such as universities with similar academic profiles. It is sometimes possible to find the most relevant comparators by looking at overseas universities. Good benchmarks also need to be capable of analysis at faculty, academic unit, departmental and course level as well as institutionally.

Granularised understanding of the activities, responsibilities and priorities of the institution supporting genuine like-with-like comparisons is the key factor for successful benchmarking practice. Obviously, no two universities are alike and there are always reasons why one or other universities differ in its performance according to any one of the benchmarking criteria. So it is also useful to understand the differences between benchmarked institutions and the difficulty of comparing apples and pears. The results of any comparison have to be carefully interpreted and this in turn brings a subjective element to bear in the comparison. Allowances must be made for differences that are defendable. Most benchmarking is criticised by a department or school that comes out badly on the basis of it being unfair due to various factors not being taken into account.

Other important factors collected from respondents include having up-to-date information, confidence that all institutions return data the same way, application of common sense to data and recognition that a target-obsessed culture is corrosive. Finally, it cannot be used as an absolute indicator on which to make policy and senior managers need to understand the context before making any decision.

In Question 9, respondents were asked to give other performance indicators that are useful for benchmarking. It has to acknowledge that the quality of university research and education can only be assessed after 10 + years a student has graduated or a piece of research has been conducted. Very few benchmarks account for this because this is almost impossible to conduct. A thorough activity identifying "alumni career quality"

and long-term research impact would be the goal. Six-month employment surveys are largely irrelevant. Papers and citations, particularly citation indices are very short-term outputs compared to the real impact of a piece of research. In addition, the extent to which alumni value their educational experience is also very significant, but it needs to be offered with a perspective of 10 + years rather than upon graduation.

Other performance indicators suggested by respondents are listed as follows:

(1) financial health such as return on capital employed, surplus as percentage of income;

(2) annual quality-related income from Higher Education Funding Council for England;

(3) endowment;

(4) research grant success rate;

(5) academic staff achievement and quality;

(6) spin out companies;

(7) knowledge exchange;

(8) research value to society;

(9) impact on local, regional and international stakeholders;

(10) major research awards;

(11) influence of student learning;

(12) student engagement;

(13) small group teaching;

(14) amount of formative assessment;

(15) proportion of students from local catchment area;

(16) widening participation;

(17) social mobility;

(18) social justice;

(19) regional regeneration;

(20) carbon emissions per million turnover;

(21) numerous esteem factors;

(22) public reputation;

(23) staff number in particular disciplines; and

(24) discipline breadth such as present/absence of medical school.

All the indicators suggested above are relevant but some of them need to be further defined and cascaded down to measure at lower levels.

There is no way to force questionnaire recipients to complete the survey, a fact that could lead to a low response rate and the results of the questionnaire bias and less valid. Further study will be conducted to obtain more reliable data and use more advanced statistical approach to analyse the data. The scope of the survey is confined to the top 200 UK universities in the world. It is possible to further investigate the topic to other universities in the UK and the world.

Linking best practices to performance outcomes

Universities are trying to increase their ranking positions by improving their performance in the areas measured by ranking criteria. The key step is collecting and analysing various types of data which are essential to identifying areas for improvement and determining best practices. Best practices for research and teaching excellence as well as other aspects of university are summarised as follows.

Best practices for research

Strategic research and funding allocation are among the most important factors for universities to improve and maintain their rankings. Universities should form research institutes or research groups in the areas where they have the potential to be world leader as well as in the areas in response to external funding opportunities. University can increase the number of postgraduate research students through scholarship scheme. The high-ranked universities are normally universities with strong grant winning culture. A grant winning culture is the university's ability that is conducive to success in grant applications. Therefore, it is important to support this culture. Universities should also develop international collaboration by establishing strategic partnerships through international research funds and the Worldwide Universities Network.

In addition, universities should focus on research outputs such as publishing papers in high-impact international journals by finding out where to publish using bibliometric tools (Tempest and Kamalski, 2009). Overall, universities should exploit their facilities and infrastructure in order to deliver world-class research, for example, library should acquire wide range of e-journals for researchers to use.

Best practices for teaching

Many universities have suffered a low score in the NSS due to the poor quality of feedback and assessment, thus they should boost NSS scores in order to improve their national rankings by responding to student demands. Universities should look for the opportunity to use IT technology in teaching, learning and assessment (Catcheside, 2012). However, IT technology can also lead to negative effects if it is used inappropriately. More broadly, universities should invest facilities and infrastructure in high-quality teaching to improve student learning experience.

The student staff ratio has been used in some national and international league tables for rating higher education institutions. Some universities employ income from variable fees to recruit staff in order to improve student staff ratio with the aim to improve student experience (Court, 2012). Academic staff is an important asset for a university and should be paid competitively. Thus, universities should recruit and retain high-performing staff in pursuing world-class teaching and research. On the other hand, universities also need to train potential early career researchers who will success in world-class education and research.

Best practices for other aspects

University rankings have been increasingly important and additional fund should be raised by universities for educating students and increasing their world rankings. Many universities in Asia have changing their strategies for appearance as a top 100 universities in the world. Germany is also spending more money in several research intensive universities with the aim to increases their reputation and world rankings (Serwach, 2008). One of the ways for universities to get more money is fund-raising.

Universities in the USA such as Harvard raise their fund through donations from former alumni and sponsors (Garner, 2013). Obviously, there are several ways to increase donations such as promoting funding projects, athletic tickets, etc. Fund-raising activities are time consuming and if not effective, universities should either stop or improve the performance of their fund-raising activities.

For world-class research universities, strategic collaboration with industry partners is top priority. The benefits include substantial streams of external funding, enhanced opportunities for academics and graduates to work on groundbreaking research, vital inputs to keep teaching and learning on the cutting edge of a discipline, and the impact of delivering solutions for pressing global challenges (Science Business Innovation Board, 2012).

Many international university league tables employ university's reputation as one of the ranking criteria. Former University of California President Clark Kerr said "A reputation, once established, is an institution's greatest asset" (Serwach, 2008). It cannot be denied that it takes a lifetime to build a reputation and the efforts of universities to impact their reputation for a short term have less influence on their rankings. Nevertheless, it is always important to market a university to everyone including prospective students, peer institutions, employers, etc.

Conclusions

An electronic questionnaire survey has been conducted to review the current practices of benchmarking among the universities in the UK. The majority of respondents' universities benchmark performance indicators. Based on the responses from the survey, good benchmarks need to be capable of analysis both at course level as well as institutionally. The types of performance indicators that are commonly used in the global and UK league rankings are also outlined and discussed. According to the responses, REF, entry standards and career prospects are among the chosen good indicators. The findings from the survey and the discussion on benchmarking and performance indicators could provide invaluable information to decide which indicators should be adopted and to conduct a successful benchmarking activity.

References

Alstete, J.W. (1995), "Benchmarking in higher education: adapting best practices to improve quality", ASHE-ERIC Higher Education Report No. 5, Washington, DC.

Ball, R. and Wilkinson, R. (1994), "The use and abuse of performance indicators in UK higher education", *Higher Education*, Vol. 27 No. 4, pp. 417-427.

Catcheside, K. (2012), "University teaching and assessment will not improve without tighter regulation", Guardian Higher Education Network, London, 29 June.

Court, S. (2012), An analysis of student: staff ratios and academics' use of time, and potential links with student satisfaction", University and College Union, London.

Deem, R., Mok, K.H. and Lucas, L. (2008), "Transforming higher education in whose image? Exploring the concept of the 'world-class' university in Europe and Asia", *Higher Education Policy*, Vol. 21 No. 1, pp. 83-97.

ESMU (2010), *A University Benchmarking Handbook: Benchmarking in European Higher Education*, European Centre for Strategic Management of Universities, Brussels.

Gaither, G., Nedwek, B.P. and Neal, J.E. (1994), "Measuring up: the promises and pitfalls of performance indicators in higher education", ASHE-ERIC Higher Education Report No. 5, Washington, DC.

Garlick, S. and Pryor, G. (2004), *Benchmarking the University: Learning About Improvement*, Department of Education, Science and Training, Australia.

Garner, R. (2013), "Donations to universities hit record high", *The Independent*, 11 April.

Hamalainen, K., Hamalainen, K., Jessen, A.D., Kaartinen-Koutaniemi, M. and Kristoffersen, D. (2003), "Benchmarking in the improvement of higher education", ENQA Workshop Report No. 2, Helsinki.

HESA (2010), "Benchmarking to improve efficiency", HESA status report, Cheltenham.

Jackson, N. (2001), "Benchmarking in UK HE: an overview", *Quality Assurance in Education*, Vol. 9 No. 4, pp. 218-235.

Johnes, G. (1992), "Performance indicators in higher education: a survey of recent work", *Oxford Review of Economic Policy*, Vol. 8 No. 2, pp. 19-34.

Liu, N.C. and Cheng, Y. (2005), "The academic ranking of world universities", *Higher Education in Europe*, Vol. 30 No. 2, pp. 127-136.

Lund, H. (1998), "Benchmarking in UK higher education", in Schofield, A. (Ed.), *Benchmarking in Higher Education: An International Review*, CHEMS, London and UNESCO, Paris, pp. 47-64.

Martin, A. (2003), "Universities quality agency: 2002 institutional audit reports, analysis and comment", AUQA occasional publication, Melbourne.

Meek, V.L. and van der Lee, J.J. (2005), "Performance indicators for assessing and benchmarking research capacities in universities", APEID, UNESCO Bangkok Occasional Paper Series Paper No. 2, Paris.

Mok, K.H. (2005), "The quest for world class university: quality assurance and international benchmarking in Hong Kong", *Quality Assurance in Education*, Vol. 13 No. 4, pp. 277-304.

Patrick, W.J. and Stanley, E.C. (1998), "Teaching and research quality indicators and the shaping of higher education", *Research in Higher Education*, Vol. 39 No. 1, pp. 19-41.

Sadlak, J. and Liu, N.C. (2007), *The World-Class University and Ranking: Aiming Beyond Status*, UNESCO-CEPES, Bucharest and Shanghai Jiao Tong University, Shanghai.

Salmi, J. (2009), *The Challenge of Establishing World-Class Universities*, The World Bank, Washington, DC.

Schofield, A. (1998), *Benchmarking in Higher Education: An International Review*, CHEMS, London.

Science Business Innovation Board (2012), "Making industry-university partnerships work: lessons from successful collaborations", Brussels.

Serwach, J. (2008), *How We Keep Score: College Rankings, Reputation and the University of Michigan*, The University of Michigan, Ann Arbor.

Stella, A. and Woodhouse, D. (2007), "Benchmarking in Australian higher education: a thematic analysis of AUQA audit reports", Australian Universities Quality Agency, Melbourne.

Tempest, D. and Kamalski, J. (2009), "Turning the ranking tables on their head: how to improve your standing", *Research Trends*, 11 May.

Wang, Q., Cheng, Y. and Liu, N.C. (2012), *Building World-Class Universities: Different Approaches to a Shared Goal*, Sense Publishers, Rotterham.

Corresponding author
Kong Fah Tee can be contacted at: K.F.Tee@gre.ac.uk