

# **Research Performance of Senior Level Marketing Academics in the Australian Universities: An Exploratory Study Based on Citation Analysis**

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## **Abstract**

With the advent of the RQF quality assessment exercise in Australia and similar exercises being undertaken in New Zealand and elsewhere, assessing research performance is now a topic of major importance to marketing academics. Using publicly available information on Google Scholar and the freely available Publish or Perish software system, this paper presents an overview of the research performance of senior marketing academics of Australian universities based on four established measures of citations of their research publications. The relevance and value of these measures are discussed and compared to other ways of assessing research performance, and further research opportunities using this method is suggested.

## **Introduction**

In recent times, Australian academics have witnessed an increasing emphasis on research output through the implementation of the proposed Research Quality Framework (RQF) by 2008 (<http://www.dest.gov.au/>). It appears that the oft heard “Publish or Perish” philosophy, which became a buzzword with American academics in the early 70s and still continues to be an important philosophy for progression in the academia, is becoming a way of life for Australian university educators too. This does not mean that Australian universities are behind US universities in terms of their research orientation; but increasing attention is being given these days, in many nations, to measuring and comparing the research performance of individual academics and research institutions. There are several reasons for this. First, universities or other institutions for higher learning tend to view research as an essential constituent of holistic learning. These institutions and the organisations that provide funds for them can have a legitimate claim to monitor the performance of the individual academics in their pay roll in every which way they can with a view to measure their return on investment or ROI (Tome and Lipu, 2004). Second, research publication is a visible component that can add to the repute of and bring recognition to an academic institution and strengthen its image to the stakeholders in particular and the community at large. In an age when education has been globalised and commoditised, reputation of an academic institution is perhaps the most powerful ‘branding’ and promotional tool for the institution in question. Third, research abilities and skills and the research output of an academic is one of the three key measures by which he or she is evaluated for career progression (Hanna et al. 2005). While the other two areas, namely teaching and service, are considered important, in reality they are often viewed with less fervour than research strength of the academic concerned. Van Wyk (1998: 251) has rightly observed that “Researchers publish for personal and social reasons. Publications in prestigious journals add to personal prestige, acceptance among peers, and maybe sometimes awards (Nobel prizes and so on) as well.”

The details of the RQF, which has been modelled after the United Kingdom and New Zealand approach, are not known yet. However, it seems clear that a variety of new performance measures are likely to be considered in assessing an academic's research impact (Bishop 2006). One would not be wrong to speculate that these measures would include, among others, total number of published papers in refereed journals and conferences, relative rank of the journal in which an individual's papers are published, quality and impact of the research etc. The appropriateness, efficacy or usefulness of any measure, qualitative or quantitative, have always been questioned, challenged, criticised and debated. And one can safely say that the debate is not going to be resolved any time in the future. In fact it is likely to intensify as each of the different metrics available has elements that may be viewed by a researcher as unrepresentative of his/her research productivity, skill and worth. Yet, academics develop and use metrics, no matter how imperfect they may be, to measure their performance and benchmark it against others to move forward.

The purpose of this paper, however, is not speculating on what may or may not be included in assessing an individual's research performance. It uses four established metrics of research performance such as *h-index*, *g-index*, *hc-index*, and *hI<sub>norm</sub>* and analyses the research performance of the marketing professors and associate professors in Australian universities.

### The indexes defined

The traditional bibliometric indicators of research performance, such as total number of papers or total number of citations have some unique and inherent but problems. While the first does not account for the quality of research publications, the second often presents a distorted view when a single publication (or two) of major influence receive disproportionately large number of citations compared to other publications of the same author. The four indexes used in this paper were originally used by natural scientists to measure research prolificacy of scientists such as physicists and are believed to overcome some of these problems. The following descriptions of these four key measures of research output have been based on the materials available in Wikipedia ([http://en.wikipedia.org/wiki/Hirsch\\_number](http://en.wikipedia.org/wiki/Hirsch_number)) and Harzing's (2007) Publish or Perish (<http://www.harzing.com/resources.htm#/pop.htm>).

**The h-index:** Also defined as Hirsch index or Hirsch number, the h-index simultaneously measures the quality and sustainability of an academic's research output, and to some extent, the diversity of his/her research. Based on the distribution of citations received by the publications of a given researcher, Hirsch (2005) proposed that "*a scientist has index  $h$  if  $h$  of his  $N_p$  papers have at least  $h$  citations each, and the other  $(N_p - h)$  papers have at most  $h$  citations each*". This implies that if a scholar has published 5 papers with at least 5 citations each, he is said to have an h index of 5. The index is better than simpler measures such as the total number of citations or publications as it helps distinguish scholars who are truly influential from those who publish many papers but are not necessarily influential. Also, h index is not affected by single papers receiving many citations. While h index works well for comparing researchers working in the same field, (i) it fails to recognise the importance of the research; (ii) scholars with a short career are disadvantaged; and (iii) authors of review articles may have a higher  $h$  than authors making original contributions.

**The g-index:** To overcome the shortcomings of the h- index, Egghe (2006) proposed what he called the g- index to measure research productivity of scientists based on their publication. The g index also uses the distribution of citations received by a given researcher's publications

as the basis of calculation; but it gives more weight to highly cited papers. According to Egghe (2006) “given a set of articles ranked in decreasing order of the number of citations that they received, the *g-index* is the (unique) largest number such that the top *g* articles received (together) at least  $g^2$  citations.”

**The *hc index*:** This is the contemporary h-index (Sidiropoulos et al. 2006) that adds an age-related weighting to each cited article of a researcher by giving relatively less parameterized weight to his/her earlier publications. The weighting is parameterized; the Publish or Perish implementation uses  $\gamma=4$  and  $\delta=1$ . This means that citations received by an article published during the current year accounts four times while the citations received by an article published 4 years ago accounts only one time. In the same token, citations received by an article published 6 years ago, accounts only 0.67 (i.e., 4/6) times, and so on.

**The  $h_{I, \text{norm}}$ :** This index is a modification of the h-index described above formulated by the developers of the *Publish of Perish* software. To calculate this index, the number of citations for each paper is first normalised by dividing the number of citations received by a paper by the number of authors for that paper. The  $h_{I, \text{norm}}$  is then calculated as the h-index of the *normalized* citation counts. This approach more accurately accounts for any co-authorship effects that might be present in the index. It is a better approximation of the per-author impact, which is what the original h-index set out to provide.

## Methodology

This research compares the performance of the senior ranked marketing academics, i.e., the Professors and Associate Professors in the Australian Universities in terms of the four indexes discussed above. Data for the research has been obtained online (during June 2007) from the public domain, using the Publish or Perish software program that retrieves and analyses academic citations of different academic researchers all over the world. The software makes use of Google Scholar to obtain the raw citation scores of an author. It then analyses these and presents a large array of statistics such as (i) total number of papers, (ii) total number of citations, (iii) average number of citations per paper, (iv) average number of citations per author, (v) average number of papers per author, (vi) Average number of citations per year, (vii) Hirsch's h-index and related parameters, (viii) Egghe's g-index, (ix) the contemporary h-index, (x) the age-weighted citation rate, (xi) two variations of individual h-indices, and (xii) an analysis of the number of authors per paper.

It is important to note that the developers of the Publish or Perish software warns that the metrics it calculates are only as good as their input (Harzing and van der Wal, in press). Keeping this warning in view another Google based software, H-visualiser, was used to cross check (i) total number of papers, (ii) total number of citations, and (iii) the h-index calculated by the Publish or Perish and (iv) the maximum number of citations received by a paper. This check is limited as H-Visualiser also uses Google Scholar as input. Comparisons with results using Thomson's World of Science ISI citations or with Scopus would be worthwhile but access to these systems was not available to the authors. Research comparing the results of citations analysis using different inputs are provided by Harzing 2005 and Harzing and van der Wal (in press).

## Results

Table 1 presents a summary of the four research performance indexes of senior marketing academics in the Australian Universities. How do these indexes compare with those of top marketing researchers in the USA? A cursory look at these indexes of a few US marketing academics at the time of writing this paper (as number of citations increase, the index values may also increase) reveals that Kotler, Parasuraman and Bagozzi have h-indexes over 40, g-indexes over 85, hc-indexes over 24 and  $hI_{norm}$  over 30. Shelby Hunt, Jag Sheth, and David Aaker come next with h-indexes above 25, g-indexes above 50, hc indexes over 15 and  $hI_{norm}$  exceeding 20. In the Australian context there are three marketing academics with significantly higher scores on these indexes compared to other Australian Professors of Marketing, with only Jordan Louviere rivaling the scores of these US academics. We leave you to work out who they are!

**Table 1: Research Performance of Marketing Professors and Associate Professors in Australian Universities: Statistics (Highest, Lowest and Median values and Frequency Distribution of Four Selected Indicators**

STATISTICS	H index	G index	hc index	hI norm	SCORES	H index		G index		hc index		hI norm	
						No	%	No	%	No	%	No	%
<b>PROFESSORS: ALL AUSTRALN. UNIVERSITIES (N = 52)</b>					Below 4	15	28.8	9	17.3	25	48.1	23	44.2
Highest Value*	23	60	16	18	4 - 7	18	34.6	10	19.2	20	38.5	20	38.5
Lowest Value*	1	1	1	1	8 - 11	11	21.2	5	9.6	6	11.5	6	11.5
Median Value*	6	12	5	5	12 - 15	5	9.6	13	25.0	0	0	2	3.9
Modal Value	3	5	5	5	Above 15	3	5.8	15	28.8	1			1.9
<b>PROFESSORS: G8 UNIVERSITIES (N = 31)</b>					Below 4	6	19.4	3	9.7	10	32.3	10	32.3
Highest Value*	18	37	10	14	4 - 7	10	32.3	3	9.7	15	48.4	14	45.2
Lowest Value*	2	3	1	1	8 - 11	8	25.8	4	12.9	6	19.4	5	16.1
Median Value*	7	14	5	5	12 - 15	5	16.1	11	35.5	0	0	2	6.5
Modal Value	8	13, 14, 15	5	5	Above 15	2	6.5	10	32.3	0	0	0	0
<b>PROFESSORS: OTHER UNIVERSITIES (N = 21)</b>					Below 4	11	52.4	6	28.6	15	71.4	13	61.9
Highest Value*	23	60	16	18	4 - 7	6	28.6	7	33.3	5	23.8	6	28.6
Lowest Value*	1	1	1	1	8 - 11	3	14.3	1	4.8	0	0	1	4.8
Median Value*	4	5	3	3	12 - 15	0	0	2	9.5	0	0	0	0
Modal Value	3	5	3	2	Above 15	1	4.8	5	23.8	1	4.8	1	4.8
<b>ASSOC. PROFS.: AUSTRALIAN UNIVERSITIES (N = 39)</b>					Below 3	10	25.6	3	7.7	14	35.9	17	43.6
Highest Value*	11	17	8	8	3 - 5	20	51.3	16	41.0	21	53.8	19	48.7
Lowest Value*	1	1	1	1	6 - 8	6	15.4	9	23.1	4	10.3	3	7.7
Median Value*	4	6	3	3	9 - 11	3	7.7	5	12.8	0	0	0	0
Modal Value	4	3	3, 4	2	Above 11	0	0	6	15.4	0	0	0	0
<b>ASSOCIATE PROFESSORS: G8 UNIVERSITIES (N = 15)</b>					Below 3	4	26.7	1	6.7	5	33.3	5	33.3
Highest Value*	11	14	7	6	3 - 5	8	53.3	5	33.3	9	60	9	60.0
Lowest Value*	1	2	1	1	6 - 8	2	13.3	3	20.0	1	6.7	1	6.7
Median Value*	4	8	3	3	9 - 11	1	6.7	4	26.7	0	0	0	0
Modal Value	4	4	4	4	Above 11	0	0	2	13.3	0	0	0	0
<b>ASSOC. PROFS.: OTHER UNIVERSITIES (N = 24)</b>					Below 3	6	25.0	2	8.3	9	37.5	12	50.0
Highest Value	9	17	8	8	3 - 5	12	50.0	11	45.8	12	50.0	10	41.7
Lowest Value	1	1	1	1	6 - 8	4	16.7	6	25	3	12.5	2	8.3
Median Value	4	5	3	2	9 - 11	2	8.3	1	4.2	0	0	0	0
Modal Value	4	5	3	2	Above 11	0	0	4	16.7	0	0	0	0

\* Not necessarily the indexes of the same author/researcher.

Correlation between the four indexes for each of the four groups reveal very high r values ranging between 0.829 to 0.972 (significant at the 0.01 level) indicating that each of the four indexes are indeed measuring the research performance of each academic reasonably well.

## **Discussion**

The various indexes described here offer a way of measuring the performance of individual academics and research institutions and have many benefits. The information is readily available, public information that can be checked by the researchers themselves to ensure no important papers are missed or misrepresented. In addition, the measures are based on sound metrics with a good academic pedigree and could easily be used as part of a research assessment exercise, not only in marketing but across all disciplines. Also they can be computed at a much less cost than what is spent now. Scores for different departments and universities by discipline can be developed and benchmarked against other universities and nations. The scores could be combined also with other measures such as research grant success. It would also free up the time of research assessment panels to focus on other areas of research assessment that are not captured by these measures.

These measures also offer, we argue, a superior way of measuring research output than the rankings of the journal in which an article is published. To be sure, articles published in the most prestigious outlets are more likely to be read by others and cited in subsequent research. But not all publications in top journals are better than publications in less prestigious journals, as has been shown in research by (Starbuck, 2005). Research that challenges the mainstream research emphasis, for example, is difficult to publish in the top journals and research of a regional nature may find a home more readily in a regionally based journal or one in a language other than English. But if the ideas are any good and have impact they will eventually show up in the citations to it by other researchers, that may well be published in the top journals. Hence publication in top journals may be a short term proxy for the quality of an article but a more reliable long term indicator is citation.

Relying on journal rankings to evaluate research papers also runs into the problem of deciding which the top journals are. Journal rankings are generally based on the perceptions and ratings of academics themselves and this leads to various types of distortions. While there is agreement about the very top journals there is much more variation in the rankings of specialist and regional journals. Familiarity gets confused with quality, as is shown in the recent results of the international study conducted by Louviere, Gudergan and Lings (2007).

## **Conclusions and Future Research**

We have made a start with the research reported here but much more remains to be done. We have focused attention on senior marketing academics in Australia, which is only a small segment of the ANZMAC community. We have done our best to ensure the score we obtained for individuals are correct (at the time of writing the paper) and, when in doubt, erred on the side of the individual academic - so the scores are inflated if anything. We have not checked the publication details of individuals to ensure that all their publications are included in Google Scholar and nor have we attempted to combine cites to papers that are really the same but which appear to be different because of citation errors. This could have some marginal impact on individual scores.

We are currently extending the analysis to New Zealand Academics and to other ranks than Professor and will be reporting this in an article for AMJ – perhaps we should aim for a top journal! As part of this we are including other measures of performance that can be derived from the data, including the number of publications in top 10 journals, in order to see how

they correlate with the four main measures. From this we would be able to construct benchmarks for different academic ranks and for different types of universities, which will help individuals to locate themselves in relation to others of comparable rank and stage of career. We think this research and its possibilities offers a productive way forward in the debate about measuring research performance. But we are also mindful that, when you measure something, what tends to get managed are the measures rather than the system producing the measures. Hopefully the measures we have used and which are now readily available will generate the right incentives for individual academics and lead to appropriate rewarding and appreciation of each others value and contributions. We can only hope.

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