

PRESIDENTIAL ADDRESS

THE SOUTH AFRICAN STATISTICAL JOURNAL

In preparing this presidential address, I reviewed some of the addresses given by recent predecessors. The president in 2004 spoke about the development of human statistical capacity in a statistics agency and the role of the South African Statistical Association (SASA) in this regard. Last year, the president discussed transformation and other challenges facing SASA. Both of these addresses were in response to a number of challenges posed to SASA by the Minister of Finance, Trevor Manuel, in 2003 at the opening of the 50th anniversary annual SASA conference.

Today I want to highlight and talk about another challenge the SASA is facing: the challenge is the South African Statistical Journal (South African Statist. J.). Let me put this theme into perspective by referring to the mission statement of SASA and how we try to achieve those goals . According to Hunter(1994) a profession is one that:

1. Advances its art through research;
2. Communicates its art through journals and meetings;
3. Educates;
4. Defines its art to society;
5. Serves society;
6. Serves its members.

I believe that all of the activities stated above are important to accomplish the mission of our Association which is: "To facilitate advancement of statistical knowledge and promote applications of statistical theory in all spheres of life and hence contribute positively to the development of South Africa". If we fail in any one of the activities stated above, I am afraid that we are not striving to accomplish the stated mission of the Association. Point 2 above stresses the importance of communication through journals and meetings. We are busy with our annual meeting in which no less than four international guests participate. Also, local members of SASA will present lectures

during the next three days and we will communicate our art through this meeting.

I want to concentrate on the journal issue. I do not think that many of you would differ from me if I say that the state of our discipline can be judged, at least partly, by the standard of our journal. Allow me to present to you a short description of the history of our Journal. The SASA was founded in 1953. In 1966 the total membership of SASA reached about 180, and in the same year the Executive Committee (EC) of the SASA decided to start with its own Journal. Prof. J.E. Kerrich, President of SASA wrote, in his introductory note in the first issue of the Journal which appeared in 1967 "Its inception was due to the energy and enthusiasm of men younger than those who founded the Association". The task and the responsibility of the launching of the Journal was entrusted to D.J. Stoker. He acted as editor for the first two years and was assisted in the editorial task by Prof. H.S. Steyn and C.F. Crause for the first issue and by C.F. Crause and J.H. Venter for subsequent issues. The first issue contained papers written by J.H. Venter, C.G. Troskie and P.E.R. Armsen. In 1969 the position of the editor of the Journal was split into the Editor and the Managing Editor. C.F. Crause, assisted by J.H. Venter, then was responsible for the editorial task and D.J. Stoker continued with the managing task. In 1972 an Editorial Committee was formed with C.F. Crause and J.H. Venter as its members and D.M. Schultz took over from D.J. Stoker as Managing Editor. Since then editor changed every two years, and up till now there has been four Managing Editors. At present there are a Managing Editor, two Co-Editors, an Editorial Advisory Board consisting of two persons and five Associate Editors.

On the inside of the front cover it is stated that "The journal will publish innovative contributions to the theory and applications of statistics" There are thus two sections in the journal, one for theory and methods and the other for applications. It is also stated that **authorative** review articles on topics of general interest which are not readily accessible in a coherent form, will also be considered for publication, as well as articles of general or non-technical nature provided that the topic is of current interest to the theory, application or teaching of statistics.

Recently, in March 2006, a document titled “A report on a Strategic Approach to Research Publishing in South Africa” was completed by the Academy of Science of South Africa, in short called the ASSAf report. In the preface of the report it was stated that two factors affected the publication of local scholarly journals in South Africa in the recent past. The first was the establishment of the Bureau of Scientific publications that subsidized the publication of a number of journals established during the 20th century. The idea was to foster academic publication in South Africa and to make their products available to an international readership. The second influence was a new mechanism of funding universities, which rewarded them directly for the academic publications they produced. The report stated that these influences had a significant impact on the development of local journals, the behaviour of individuals, the financial sustainability of learned societies that produced the journals, and the institutions that received the “output” subsidy.

The Bureau was closed recently, but the funding of “outputs” from the tertiary institutions continued but included also a reward for completed masters and doctoral degrees. This development raised two questions. The first was if it was appropriate for the state to support the publication of (some) learned journals in the interest of developing intellectual exchange. The second question was whether all of the articles, published in journals recognized for the output subsidy of universities, deserved to receive recognition, in view of the wide variation in quality of the material produced. The Academy was commissioned in 2001 in this context by the Department of Arts, Culture, Science and Technology (now the Department of Science and Technology) to undertake a study to address these two questions, with a view to making recommendations for the optimal development of policy in the future.

The effect of globalization on knowledge exchange resulted in scientific journals being published in English. Also most of them had their origins in Europe and North America. This probably led to the neglect of regional journals and also to the development of benchmarks based on bibliometric analysis of publication patterns that resulted in global ranking of tertiary institutions. The report mentions the fact that internationally South

Africa is dwarfed in the area of research publishing, but can be considered as a gaint on the African continent. Pouris(2003) bibliometric analysis of the country's research publications captured on the Journal Citation Reports of the Institute of Scientific Information, ISI showed that about 3500 listed papers with at least one South African author address were published in 2000, representing about 0.5% of all papers in the three major databases of that system, covering over 5500 selected international journals in Science , Engineering and Medicine , 1800 in the Social Sciences, and 1200 in the Arts and Humanities. South African Research Journals constituted only 19-23 of the indexed journals on the combined databases in 2002-4 (0.2%, or 2 in every 1000) containing about 350 papers of the ISI total for the country (1 in every 10) and the rest of Africa, only 2 (Pouris 2005).

An analysis of the number of South African publications (i.e. articles where at least one author gives a South African address), for the discipline of Mathematics, using the ISI databases, during four 5-year periods – 1981-1985, 1990-1994, 1995-1999 and 2000-2004 showed the percentage changes for consecutive periods as 20%, 30%, and -4% respectively. The percentage change in 2000-2004 relative to 1981-1985 was 49%. *It should be remembered that in the ISI classification system Statistics and Mathematics are grouped together in the Mathematics discipline.*

Citation impact analysis (number of citations received per paper published) is in some ways superior to publication counting. This type of analysis is a well established quantitative methodology in the context of journal assessment; the point being that *journals whose articles are never or rarely cited will eventually lose their audience and authors.* The average citation rate for *world publication* of the Mathematics discipline was determined for the same four 5-year periods mentioned previously. The impact of South African articles relative to the world output (defined as the citation impact for the country's discipline divided by the citation impact of the world) was also determined to be 0.76, 0.94, 0.86 and 1.04 for the consecutive four 5-year periods. The previous information forms part of a larger group in which aggregate citation statistics of 21 broad science disciplines were reported. The disciplines were ranked according to relative

impact and in this case Mathematics tops the list with a relative impact of 1.04. The caveat that groups with small number of articles can have higher relative impacts than larger groups becomes evident in this case.

To conclude, the report states that the bibliometric analysis of South African publications in the ISI system points to a clear need for support of selected local journals to improve and entrench their position in the ISI system. This conclusion supports the fact that the ability of scholarly and scientific journals to reach their target audiences and to become internationally visible, to a large extent determines their long term significance throughout the world.

This brings me to the next point I would like to discuss: the state of South Africa's scientific journals and more specifically the state of the South African Statist. J.. There are currently at least 255 South African scientific or scholarly journals recognized by the Department of Education (DoE) as meeting the minimum requirements for state subsidy under the policy of supply-side support for authors (and their institutions) who publish in these journals. Twenty-three of these journals appear in one of the ISI Citation Indexes, 14 are indexed in the International Bibliography of the Social Sciences, while the remaining 220 journals are "accredited" separately by the Department. Criteria for accreditation by the DoE were the following:

- The required purpose of the journal is to disseminate research results, and the content has to support high-level learning, teaching and research in the subject area concerned;
- The journal requires an ISSN (International Standard Serial Number);
- The journal has to be published regularly (frequency of publication)
- The journal requires an editorial board that was reflective of expertise in the subject area covered;
- The members of the editorial board are required to have standing in their respective subject areas in terms of their own peer-reviewed research, through their publications and citations;

- Articles accepted for publications in the journal require to be peer-reviewed;
- The journal requires to be distributed beyond a single institution.

It should be mentioned that the South African Statist. J. was included in the ISI lists, but were recently removed due to a low impact factor. This automatically raises the question whether the journal is now inferior in quality to journals which are included in the ISI lists. This same question can be asked of the journals which are accredited separately by the DoE. A bibliometric analysis of South African journal publications, for the period 1990-2002, resulted in the following observations:

- As far as ISI versus non-ISI journals are concerned there was a significant increase in the number of South African articles published in ISI-journals. In the case of Natural Sciences 61% of all articles appeared in foreign ISI-indexed journals and 24% appeared in South African ISI-journals. This implies that an overall total of 85% of articles appeared in ISI-journals.
- As far as the distinction between local and foreign journals is concerned, the proportion of articles in foreign journals has increased from just over one third in 1990 to nearly half in 2002.
- The spread of journals was assessed where scholars in a particular field published their papers; as a measure of “spread” the number of journals was counted in which 50% of the articles appeared. A total of 35 499 articles appeared in 2357 journals that were classified as “natural sciences”; 50% appeared in 90 journals only; the South African Statist. J. formed part of this group with a 0.39% contribution to the total number of articles.
- A tendency that was observed is the significant ageing of actively publishing scientists in the South African science system. The analysis of authorship by age against Journal Index Category revealed that the age profile of authors in South African ISI-journals (mostly natural sciences) shifted from 22.4% of authors

above the age of 50 in 1990 to 47.4% in 2002. A similar shift in foreign ISI-journals varied from 23.8% to 41.6%.

- In order to assess the impact factors and citation profiles of South African journals a measure which take into account field-dependent citation characteristics had to be developed. To cope with field-dependent citation characteristics and small numbers in determining impact factors, the citation window was extended to eight years (1994-2002) and two consecutive citing years (2002-2003). The resulting Composite Extended Journal Impact Factor (CE-JIF 2002/2003) provided a more reliable measure of the citation impact of local journals. The impact factor analysis using CE-JIF2002/2003 was restricted to the subset of 107 local journals that received at least 1 citation during the extended citation window. Only 6 journals surpassed a modified impact factor of 0.50. The CE-JIF2002/2003 for the South African Statist. J. was at a rather low and disappointing 0.08. The conclusion is that our journal may be part of a substantive cluster (perhaps affecting as many as half of all South African journals) that have almost *no international visibility* in that articles are not cited outside South Africa.

In terms of citation frequency the journal was placed in a very low citation frequency category of between 10 and 25 with a 7% share of citation from South African (co-) authored research papers (citing years 2001-2004 and cited years 1980-2004).

It is clear from the previous remarks that the South African Statist. J. can be considered as a regional journal (in the international context) with almost no international visibility. A low citation frequency resulting in a low impact factor is probably the reason why the journal was dropped from the ISI listings; the reasons for the current state of affairs are probably not that easy to identify, and only a detailed investigation into this matter will reveal the real causes of this problem. However, I want to speculate on some of the reasons that led to the visibility problem. Furthermore, finding enough articles of quality to publish also seems to be a factor that might affect the frequency of publication, and

hence the visibility, of the journal in the future:

- Well established South African researchers in statistics tend to publish in international ISI journals, rather than publishing in the South African Statist. J. Publishing in an international ISI listed journal with a relatively high impact factor, means that their articles might be cited more frequently. This will enhance their visibility as authors of papers in their respective fields of specialization. Visibility is important for researchers when they are evaluated by peers for placement in research categories as specified by the National Research Foundation (NRF). The ASSAf report shows in an analysis of international journals included in the Science Citation Index, that the so-called aggregate cited half-life of articles in the field of Probability and Statistics is larger than 10. This measure is an indication of the turnover rate of the body of work on a subject, and is calculated in the same way as the journal cited half-life which is the median age of articles that were cited in the Journal Citation Report (JCR) year. It is for this reason why experienced authors will publish in more prominent international journals.
- The significant ageing of actively publishing scientists in South Africa, mentioned earlier, is also a problem in our own discipline. The actively publishing scientists will be those who publish more in international statistical journals. In order to achieve a more balanced age distribution, young scientists should be recruited and drawn into the research system. However, Schools of Statistics find it increasingly more difficult to retain promising young statisticians. After graduation students leave for jobs in other sectors, where salaries are significantly higher than those at universities. Also, the chronic shortage of skilled statisticians means that there will be a constant demand for trained statisticians from these sectors. A recent report, by SASA, on capacity building in Statistics in South Africa that appeared in the newsletter, mentioned the fact that because of poor salaries lecturers embark on doing consulting work. The amount of time spend on doing consulting work implies that very little or no time is available for doing research.

- Diminishing state subsidies and mergers between universities which led to budget constraints have resulted in a situation where increasing numbers of students have to be serviced by the same number (or less) of staff. This impacted negatively on staff members' ability to do research and eventually on the communication of these results in statistical journals.
- I am aware of at least one university where an incentive scheme envisaged by the department of research support, allows for larger subsidies when articles are published in international journals, as opposed to those in local journals. This move will obviously impact negatively on our own journal. The incentive is now to publish internationally rather than locally. This is an example of how important it is for university management to increase publication outputs.

The importance of the ASSAf report lies in the fact that it highlighted the problems that exist in research publishing in South Africa. Furthermore it had to recommend and support a new strategic framework for South African journals, on the basis of evidence and comparative information. The first recommendation states “ that all stakeholders in the South African research enterprise should each in their own way support local/national research journals that actively seek to be of international quality and are indexed in an internationally recognized, bibliometrically accessible database, through following best practice in editorial discernment and peer review, including adaptations

- that address inherent problems and capitalize on technological innovations;
- that judiciously enrich content to promote coherence and value adding functions;
- that provide the local scholarly community with opportunities for participating in the full range of scholarship enhancing activities associated with the process of publishing original research outputs;
- that vigorously seek financial sustainability from multiple income streams; and
- that accept systemic peer review and periodic audit which has a marked developmental focus

The SASA should see to it that the South African Statist. J. is in a position to benefit from the recommendations made in the report. An important challenge in this regard will be to improve the international visibility and quality of the journal. Every member of the SASA should join in this effort. My proposals to achieve these goals are as follows:

- we must encourage our actively publishing members of SASA to publish some of their work in our journal. It might be that they are part of that group of ageing scientists, but we need their expertise to improve the quality of our journal.
- a significant proportion of members of SASA do not work in an academic or research environment. They are the statisticians in industry, government and the private sector. There must be numerous statistical problems solved in these areas that can be considered as contributions to the applications of statistics. The absence of incentive schemes like those in academia might pose a problem, but ways and means must be found to encourage these members to present their work for publication in the journal.
- members of SASA who are actively involved in research and are known internationally can “recruit” articles for our journal by persuading young researchers of other countries to publish in our journal. I am aware of members serving on editorial boards of journals that are “recruiting” articles in this way.
- the report on capacity building in statistics states that 25 Ph.D’s are delivered per annum in South Africa. Where are the research results of these Ph.D’s published? If all of these results are submitted for publication in our journal, there would be enough articles to publish the journal quarterly instead of bi-annually. The point here is that supervisors and students should be encouraged to use their own journal as a vehicle to report their results.
- research into the theory of statistics is necessary for the development of our discipline. However, we should recognize that the boundaries of statistics are not

fixed. There is a growing trend of many new important statistical developments occurring at the interfaces of statistics and other disciplines. We must take care that the results of the research that takes place at these interfaces are published in our journal.

- Recently the South African Statist. J. became part of the new trend in research publishing which is based on the advent of affordable global connectivity via the World Wide Web. An agreement with a company called Igenta Connect makes provision for both “pay per view” and “online subscription” options. It is to be hoped that this initiative will contribute towards the enhancement of the visibility of our journal.

In closing I would like to mention that the proposals is not intended to be an exhaustive list, some of you might not even agree with them, but the idea is to stimulate discussion amongst the members of SASA on how to improve the journal in terms of quality and visibility. Through collective discussion proposals will emerge which will help us to attain our goals.

REFERENCES

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