Research Writing for Publication in Web of Science ISI journals: Some tips and suggestions

Ong S.H.
Institute of Mathematical Sciences
University of Malaya
50603 Kuala Lumpur
Malaysia
E-mail: ongsh@um.edu.my

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Topics in the presentation
- Nature of Statistics
- Local research publication scene
- Web of Science ISI journals
- Requirements for publishing in WoS journals
- Getting and Developing research ideas
- Issues about Publication—measures of quality, referee report, handling rejection

Nature of Research Field: Statistics
- Statistics is a beneficial parasite - it thrives and feeds out of other disciplines and also enriches them.
- It is important for statisticians to work with experts in other disciplines.
- We discuss the implication of this to research later on.

Changing local research publication scene
- A number of years ago University of Malaya (UM) started the trend in using research publications in Web of Science (WoS) ISI journals as one of the KPIs for its academic staff and as a measure of quality of research publications.
- Recently many Malaysian universities (including private ones) have also followed this practice.
- In past few years, University of Malaya insisted on research publications in high impact ISI journals (Tier 1).

World University Ranking
- Three popular and influential international university rankings: QS World University Rankings, Times Higher Education World University Rankings and Academic Ranking of World Universities (ARWU) or Shanghai-Jiaotong Ranking.
- These rankings use citation databases from WoS ISI or Scopus.
- Some of our local universities (e.g. UM) take part in the World University Ranking.

Institute for Scientific Information
- “The Institute for Scientific Information (ISI) was founded by Eugene Garfield in 1960. It was acquired by Thomson Scientific & Healthcare in 1992, became known as Thomson ISI and now is part of the Healthcare & Science business of Thomson Reuters.” 

Wikipedia
**What is Web of Science?**

- Web of Science: online subscription-based scientific citation indexing service owned by Thomson Reuters
- Provides comprehensive citation search in multiple databases for multidisciplinary coverage: the sciences, social sciences, arts, and humanities
- WoS consists of seven online databases: Science Citation Index (SCI) Expanded; Conference Proceedings Citation Index; Social Sciences Citation Index; Index Chemicus; Arts & Humanities Citation Index; Current Chemical Reactions; Book Citation Index

**Web of Science**

- Web of Science covers over 30,000 scholarly books, 12,000 journals and 148,000 conference proceedings (up to June 2013).
- Time period covered: 1900 to present (Compare with Scopus: 1995 to present)
- Evaluation based upon impact factor (IF)
- IF of journal=average number of citations to number of articles published in a given time frame (2-year, 5-year)

**Impact factor**

- Impact factor (IF) of an academic journal is used as a measure of relative importance of a journal within its field
- Journals are ranked based upon IF, a journal with higher impact factor is regarded as more important than one with lower IF.
- Note: Ranking based on impact factor: 1st quartile-Tier 1; 2nd quartile-Tier 2 and so on.
- Thomson Reuters publishes a yearly Journal Citation Reports (JCR) with ranking of journals according to category/field

**Weaknesses of Citation and Impact factor**

- Example: A paper was highly cited because of a gross error in it.
- CITATION DATA: THE WRONG IMPACT? *Charles Jennings (Editor of Nature Neuroscience)*
  - Impact factor highly dependent on the academic discipline; biased towards established journals; language dependent
  - A journal can adopt editorial policies to increase its impact factor. Example: Coercive citation
- IMPACT FACTORS: USE AND ABUSE M. Amin & M. Mabe

**Quality of research work/publication (KPI)**

- How is quality of research work judged? Two popular measures:
  - (a) Citation of papers
  - (b) Impact factor of journals (WoS ISI)
- These measures do have shortcomings
- Examples:
  - (a) Highly cited because researcher is the editor for a proceeding or work;
  - (b) Some papers in high impact journals are not well cited; impact factor of a journal is calculated based on a two year-period. Citations for mathematical and statistical sciences mostly occur outside this two year-period.

**Quality of a researcher’s work**

- How about the quality of a researcher’s work? Two popular measures:
  - (a) Total Citation Count of papers
  - (b) h-index
- Measures have weaknesses.
- These vary from discipline to discipline.
- However they do give a vague indication of the quality of a researcher’s work.
**H-index**

- **h-index**: A scientist's h-index is the largest \( n \) for which he/she has published \( n \) articles, each with at least \( n \) citations.

- This is the most popular of the statistics mentioned here. It was proposed by J.E. Hirsch (Hirsch 2006) in order to measure "the scientific output of a researcher" by focusing on the high-end "tail" of a person's citation distribution. The goal was to substitute a single number for publications counts and citation distributions.

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**Publishing in WoS journals: Requirements**

- Get a **good idea/problem** for the paper. Motivation for writing paper clearly and convincingly explained

- **Sound analysis** of the problem

- **Clear discussion of findings** and their merits and contributions to current body of knowledge

- **Write-up**: Good survey of topic, good grammar, flow, structure of paper etc.

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**Starting on a research paper - determining 'good' problems**

- **Characteristics** of a 'good' problem: must give rise to new contribution of sufficient importance and, more importantly, be within the **capability** of the researcher

- To determine a 'good' problem can be difficult but important since quality of the ultimate product, the research paper, depends on it.

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**Determining good problems**

- For post-grad students, thesis supervisors should have determined a feasible problem

- **How does thesis supervisor know?**

- **Thesis supervisor relies on vast experience** to select problems with good potential & to direct students according to ability

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**Beginning on research - determining good problems**

- This skill takes time to develop.

- Know the area/topic of research in order to determine what are important problems

- Be inquisitive - ask lots of questions when reading a paper. **Examples:**

- What is the conclusion and important findings of the paper? *What’s the use of this piece of research?*

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**Getting Ideas for Research**

- **Albert Einstein**: "I wouldn't know. I've only had two or three ideas in my whole life."

- **Isaac Asimov** (scientist & famous science fiction writer) has been asked where he gets the ideas to write his stories.

- He mentioned **five components** to being creative: being educated, intelligent, intuitive, have courage, and **simply being lucky**.
Getting Ideas for Research

- Statistical literature (papers, monographs, survey papers etc)- good source of ideas
- Ideas may be obtained by reading a research paper and asking the following:
  - Are assumptions made in the various published papers too strong?
  - What if they are relaxed or changed?
  - Can the method in the paper be applied in another area?
  - Is there an alternative approach to get the results?

Since statistics ‘feeds’ on other disciplines, problems arising from them are obviously a good source of important research ideas.

Real-life problems statistical problems

An excerpt from interview of G.E. Box: When we looked at several business and economic series all of them seemed to be non stationary. We realised that it was such series that Holt and Winters and other people were trying to forecast in operations research. For such series it was very reasonable to forecast with a weighted average in which the weights fell off geometrically. So we started to think of what this could mean in terms of dynamic and stochastic models and this was the beginning of the ARIMA models.

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Getting Ideas for Research

- With the emphasis on High Impact Research (publications in Tier 1 ISI journals ) ideas have to be novel enough to produce good papers.
- “Just because it has not been done before is no justification for doing it now.” – Peter Attiwill, Editor-in-Chief, Forest Ecology and Management

Working on a problem

- Usually a tough phase- false starts, faces difficulties after difficulties, disappointments: these could be blessings in disguise
- Flaws/shortcomings may lead to something new/important
- Look for silver lining: Your new method is not so good compared to an established method but is less restrictive or works well in certain situations
- Modify statement problem as you work along- examine a simpler case if necessary

Finishing up research problem

- A very important aspect of this phase is to reassess your result(s)- of course result validation do occur right from the start
- Be critical about your own work-‘attack’ it yourself
- Welcome ‘attack’ during seminar presentation of your work
- Asian culture of politeness (not wanting to offend) may be a drawback in scientific progress.
- (From Statistics and Truth by C.R. Rao)

Writing up research paper & submission

- Start writing as you progress, even an outline is useful: helps to consolidate and focus your work and identify ‘holes’
- Writing skill comes through practice-pay attention to how papers are written
- Determine appropriate journal for submission: Gauge the level and quality of journal with respect to your paper
Writing Skills

- 14 Steps to Writing Clearly

Writing well means presenting your argument and evidence in a clear, logical, and creative way. An interesting argument hidden in flowery prose is of no use to anyone.

Clear writing takes effort. Besides requiring knowledge of basic grammar and syntax, it requires a good ear, a sense of proportion, and an ability to critique oneself.

Ultimately, anyone who wants to write clearly needs to develop a critical sense. You need to be able to judge your own writing objectively and, putting aside the brilliance of the content, honestly evaluate its ability to communicate.

Some notes on writing a research paper

- A well-written abstract is important since this is the first thing a reviewer reads after the title. This is often neglected.
- Keywords are also important to improve visibility of paper.
- A clearly written Introduction to survey the research topic and provide justification.
- Logical flow from one sentence (paragraph) to another.

Publishing in journals (especially top tier ones)

- Can be tough to get papers published.
- A well-known statistician (who has published about 200 papers, many in tier 1 journals) said that rejection rate of his submitted papers is 50 percent.
- So do not be disheartened; persevere.

Publishing in journals

- G.E.P. Box’s comments in an interview about his first research papers:
  - Q: What was the kind of reaction that you received when it was first published? Did many people object to the new ideas that were in the book, or do you think it was generally accepted? What was, in general, the reaction to the book at the beginning?
  - A: As I recall, what reaction there was, tended to be negative. Some people said it wasn’t rigorous enough; others said there was nothing new in it. However, I have found that initially original work is inevitably met with some hostility. For example, my first paper on response surfaces and my first paper in which the word “robustness” appeared for the first time were both extremely difficult to get published. I think new ideas upset people.

Journal Review Process:

  - Editors of journals do regular analysis of citations per article
  - “The statistic that 27% of our papers were not cited in 5 years was disconcerting. It certainly indicates that it is important to maintain high standards when accepting papers... nothing would have been lost except the CV’s of those authors would have been shorter...”
    – Marv Bauer, Editor, Remote Sensing of Environment
  - Screening of papers before sending them for reviewing is practiced by many journals especially to weed out papers with low potential for citation.

Journal Review Process

- It’s rare to get acceptance of submitted paper without revision. More often than not, rejection is the norm.
- Publishing in journals (especially top tier ones) can be tough.
- Learning how to handle rejection is important for the progress of a researcher.
**Different types of Rejection Letters**

- Rejected, do not resubmit.
  
  "... the reviewers have advised against publication and their comments are given below."

- Rejected, may be accepted in future.
  
  "... consider a revised version taking into account the referees’ comments but would not be able to guarantee acceptance."

- Rejected, likely to be accepted in future.
  
  "... there is merit in your work but please address all points raised by the reviewers in the revised manuscript..."

**Handling Rejection:**

- Rejection is part and parcel of the process of getting a paper published.

- A well-known statistician (who has published about 200 papers, many in tier 1 journals) said that rejection rate of his submitted papers is 50 percent.

- So do not be disheartened; persevere.

- Remember there are many other journals.

**What to do with referee reports**

- Go over referees’ comments carefully. *Remember most referees are helpful but some are a pain.*

- If paper is rejected, find out why. *What are the inadequacies?*

- Are referees’ remarks justified, can the paper be improved?

- Referees’ comments are usually helpful to improve your article even if you find them ‘harsh’.

**Continuing your research**

- Attend seminars, conferences regularly — not just to keep abreast but to stay motivated.

- Talk to people in other disciplines.

- Go through journals etc from time to time.

- Do general reading to broaden your horizon.

**Guide for Postgraduate Research Students** *(http://www.math.um.edu.my)*


**Thank You**

**Good Luck in Publishing Papers**