Workshop Training Materials

Recommended browsers

chrome

Mozilla Firefox
Research Impact Measurement and You

Citation Metrics Workshop

Research Impact Measurement Team
NUS Libraries
# NUS Libraries Research Impact Measurement Team

**Research Impact Library Guide**

<table>
<thead>
<tr>
<th>FoE / SoC / SDE / Law / LKYSPP</th>
<th>Irine Tanudjaja, <a href="mailto:irine.tanudjaja@nus.edu.sg">irine.tanudjaja@nus.edu.sg</a></th>
</tr>
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<tr>
<td></td>
<td>Esther Ng, <a href="mailto:clbnxe@nus.edu.sg">clbnxe@nus.edu.sg</a></td>
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</table>

| FASS / School of Business      | Richard Ho, [clbhcyr@nus.edu.sg](mailto:clbhcyr@nus.edu.sg) |

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<th>Science / YLLSOM</th>
<th>Amy Chou, <a href="mailto:amy.chou@nus.edu.sg">amy.chou@nus.edu.sg</a></th>
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<td></td>
<td>Thun Wendy, <a href="mailto:clbtw@nus.edu.sg">clbtw@nus.edu.sg</a></td>
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</table>
Some questions you may have...

• What databases can I use to find my citation counts?
• What is my h-index?
• What is FWCI?
• What is my Scopus Author ID and how do I clean up my profiles?
• Why do I need to check databases if I update my Elements profile?
• What are some other common citation metrics?
Learning Outcomes

1. Learn to use **Web of Science** to find the following for a researcher:
   i. Total citation count
   ii. h-index

2. Learn to use **Scopus** to find the following for a researcher:
   i. Scopus Author ID
   ii. Total citation count
   iii. h-index

3. Learn to use **Scival** to find the following for a researcher:
   i. FWCI
   ii. % of publications in top journal percentile
   iii. % of publications in top citation percentile
   iv. and others...
Citation Metrics

Used in:
1. Annual Reviews
2. Grant Applications
3. Promotion & Tenure

Should be used holistically:
1. Metrics are just one set of criteria for evaluating quality of a researcher
2. Other indicators should be taken into account:
   • Grants received
   • Editorial positions
   • Research awards
   • Education and service
   • Other qualitative measures of impact
Different Levels of Citation Metrics

**Journal Metrics**
- Journal Impact Factor (JIF)
- SCImago Journal & Country Rank (SJR)
- Source Normalized Impact Per Paper (SNIP)

**Article Metrics**
- Citation counts
- Field Weighted Citation Impact (FWCI)

**Author Metrics**
- H-index
- Total citation counts
- Field Weighted Citation Impact (FWCI)

[More information]
NUS Elements

• NUS’ Research Information Management system
• System to replace the old Staff Publication System
• Searches for a researcher’s publications across many data sources
• Provides basic citation metrics such as citation counts, journal metrics, h-index and Altmetrics
Why go to databases when there is Elements?

<table>
<thead>
<tr>
<th></th>
<th>NUS Elements</th>
<th>Scopus</th>
<th>Web of Science</th>
<th>SciVal (based on Scopus data)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-Citations</strong></td>
<td>Includes self-citation, no option to exclude</td>
<td>Option to exclude</td>
<td>Option to exclude</td>
<td>Option to exclude</td>
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<tr>
<td><strong>Metrics available</strong></td>
<td>At author level:</td>
<td>At author level:</td>
<td>At author level:</td>
<td>More than 30 metrics available at the author, article and journal level.</td>
</tr>
<tr>
<td></td>
<td>• No. of publications</td>
<td>• No. of publications</td>
<td>• No. of publications</td>
<td>FWCI</td>
</tr>
<tr>
<td></td>
<td>• H-index</td>
<td>• H-index</td>
<td>• H-index</td>
<td>Options to use this tool to benchmark individuals, groups as well as departments/institutions.</td>
</tr>
<tr>
<td></td>
<td>At article level:</td>
<td>At article level:</td>
<td>At article level:</td>
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<td></td>
<td>• Citation counts</td>
<td>• Citation counts</td>
<td>• Citation counts</td>
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<td></td>
<td>• Journal metrics</td>
<td>• CiteScore</td>
<td>• Impact Factor</td>
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<tr>
<td></td>
<td>• Altmetrics</td>
<td>• FWCI</td>
<td>• Altmetrics (Usage)</td>
<td></td>
</tr>
</tbody>
</table>

* NUS Elements relies on data from multiple sources like Scopus or Web of Science. To ensure accuracy of metrics in Elements, it is important to verify from the source.
# Sample Sections of the P&T Dossier

Examples of how selected sections of the P&T dossier may be presented

## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Teaching history: A summary of modules taught and student feedback</td>
<td>2</td>
</tr>
<tr>
<td>2. Teaching history: Honours and graduate students supervised</td>
<td>3</td>
</tr>
<tr>
<td>3. Reflection on student feedback</td>
<td>4</td>
</tr>
<tr>
<td>4. Reflection on results of self-administered student feedback</td>
<td>7</td>
</tr>
<tr>
<td>5. Record of teaching-related courses</td>
<td>8</td>
</tr>
<tr>
<td>6. Record of innovative and effective pedagogies in modules taught with positive student outcomes</td>
<td>9</td>
</tr>
<tr>
<td>7. Contributions to module and curriculum development</td>
<td>11</td>
</tr>
<tr>
<td>8. Future plans (Education)</td>
<td>12</td>
</tr>
<tr>
<td>9. Research programme: Explanation of one’s research standing in the field</td>
<td>13</td>
</tr>
<tr>
<td>10. Statement on contributions to co-authored publications</td>
<td>14</td>
</tr>
<tr>
<td>11. Citation and impact analysis of research output</td>
<td>17</td>
</tr>
<tr>
<td>12. Invitations to review</td>
<td>18</td>
</tr>
<tr>
<td>13. Research grants</td>
<td>19</td>
</tr>
<tr>
<td>14. Research awards/prizes</td>
<td>21</td>
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<tr>
<td>15. Future plans (Research)</td>
<td>22</td>
</tr>
<tr>
<td>16. Service contributions</td>
<td>25</td>
</tr>
<tr>
<td>17. Errors in P&amp;T dossiers that should be avoided</td>
<td>28</td>
</tr>
</tbody>
</table>

Note: More information on strategies for preparing and presenting an effective dossier may be found in the [Tenure Resource Book](#) (see Section 4).
Outline for Web of Science

1. Retrieve author’s citation metrics:
   - No. of publications
   - Citation counts
   - h index

2. Set citation alert for individual articles
What is Citation Count (Citation Analysis)?

<table>
<thead>
<tr>
<th>Cited Works</th>
<th>Citing Articles (cited by)</th>
<th>Number of Citations (times cited) for each cited work</th>
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</thead>
<tbody>
<tr>
<td>a</td>
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<tr>
<td>b</td>
<td>A, B, C, D, E</td>
<td>3</td>
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<tr>
<td>c</td>
<td>E</td>
<td>1</td>
</tr>
</tbody>
</table>

6 Citing Articles
1 Self-Citation

8 - Total citation counts
The $h$-index is an author-level metric that attempts to measure both the productivity and citation impact of the publications of a researcher.

“A researcher with a $h$-index of 4 has published 4 papers each of which has been cited at least 4 times.”
How to calculate Prof. X’s h-index?

<table>
<thead>
<tr>
<th>No.</th>
<th>Prof. X’s Papers</th>
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<tbody>
<tr>
<td>1</td>
<td>Paper A</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Paper B</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>Paper C</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>Paper D</td>
<td>7</td>
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<tr>
<td>5</td>
<td>Paper E</td>
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<tr>
<td>6</td>
<td>Paper F</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>Paper G</td>
<td>6</td>
</tr>
<tr>
<td>8</td>
<td>Paper H</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>Paper I</td>
<td>4</td>
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</tbody>
</table>

h-index = 6
Web of Science (Core Collection)

• Over 74 million records
• > 21,177 journals + books and conference proceedings
• Multidisciplinary: Life sciences, biomedical sciences, engineering, social sciences, arts & humanities.
• Strongest coverage of natural sciences, health sciences, engineering, computer science, materials sciences.
DR BRENDA S.A. YEOH

Appointment: PROFESSOR
Office: AS2/04-16
DEPARTMENT of GEOGRAPHY
National University of Singapore
10 Kent Ridge Crescent, Singapore 119260

Homepage: http://profile.nus.edu.sg/fass/geoysa/

Appointments Held
Jan 2010 – present Dean, Faculty of Arts and Social Sciences, NUS
Jul 2004 – present Research Leader, Asian Migration Research Cluster, Asia Research Institute, NUS
Jan 2005 – present Professor, Department of Geography, NUS
Jul 2010 – Jun 2013 External Examiner for Bachelor of Social Sciences, The University of Hong Kong
Jan 2009 – Dec 2009 Vice-Dean (Research), Faculty of Arts and Social Sciences, NUS
Jan 2006 – Dec 2008 Head, Department of Southeast Asian Studies, NUS
Jan 1999 – Dec 2004 Associate Professor, Department of Geography, NUS

Author Search Demo Example
Creating Citation Alerts for Researchers in WOS

• In WOS, currently the function to create citation alerts for researchers is not available but they plan to add that feature in the near future

• For now, we can create alerts for individual articles
You have 5 Citation alerts.

Your article "Global causes of blindness and distance vision impairment 1990-2020: a systematic review and meta-analysis" has been cited 5 times since 2019-08-15.

Record 1 of 5

**Diabetic Retinopathy, IncRNAs, and Inflammation: A Dynamic, Interconnected Network**

**Authors:** Biswas, S; Sarabusky, M; Chakrabarti, S

**JOURNAL OF CLINICAL MEDICINE**

**Volume:** 8  **Issue:** 7  **Published:** JUL 2019  **Language:** English  **Document type:** Review

**DOI:** 10.3390/jcm8071033

**Author keywords:** diabetic retinopathy, inflammation, IncRNAs, epigenetics, histone modifications, DNA methylation, miRNAs

**KeyWords Plus:** LONG NONCODING RNA, ENDOTHELIAL GROWTH FACTOR, NF-KAPPA-B, INTERCELLULAR-ADHESION MOLECULE-1, NITRIC-OXIDE SYNTHASE, RETINAL MULLER CELLS, GENE-EXPRESSION, NEUROTROPHIC FACTOR, METABOLIC MEMORY, DNA METHYLATION
Highly Cited Papers

- Papers that receive enough citations to be placed in the top 1% based on the number of citations received when compared to other papers published in the same field in the same year.
Hot Papers

• Papers published in the last two years that are receiving citations quickly after publication.

• These papers have been cited enough times in the most recent bimonthly period to place them in the top 0.1% when compared to papers in the same field and added to the database in the same period.

This hot paper was published in the past two years and received enough citations in July/August 2016 to place it in the top 0.1% of papers in the academic field of Clinical Medicine.

Data from Essential Science Indicators℠
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1. Spectral-Domain OCT Measurements in Alzheimer's Disease: A Systematic Review and Meta-analysis

- By: Chan, Victor T. T.; Sun, Zihan; Tang, Shumin, et al.
- OPHTHALMOLOGY Volume: 126 Issue: 4 Pages: 497-510 Published: APR 2019

2. Artificial Intelligence and Deep Learning in Ophthalmology

- By: Ting, Daniel Shu Wei; Pasquale, Louis R.; Peng, Lilly, et al.
- BRITISH JOURNAL OF OPHTHALMOLOGY Volume: 103 Issue: 2 Pages: 167-175 Published: FEB 2019


- By: Stanaway, Jeffrey D.; Afshin, Ashkan; Gakidou, Emmanuela, et al.
- LANCET Volume: 392 Issue: 10159 Pages: 1923-1994 Published: NOV 10 2018
Hands-on Exercise for WoS

Under Author search, find out following metrics for Prof Lim Kim Geok, Vivien

<table>
<thead>
<tr>
<th>H-index</th>
<th>No. of publications</th>
<th>Total No. of citation counts received up to today(exclude self- citations)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

LIM, Kim Geok, Vivien
Professor, Deputy Head of Department
**Department:** Management & Organisation
**Office:** BIZ1-8-43
**Contact:** 65-8516-7858
**Email:** bizlimv@nus.edu.sg
[Curriculum Vitae](#)
Summary of Web of Science

• Author search is an easy way to identify and retrieve all works by a particular author
• Citation reports provide metrics such as total publications, h-index, sum of times cited, citing articles
• Export citation reports to check out individual article metrics
• Create and manage individual article alerts
• Indicators of impact such as Hot and Highly Cited Papers
Outline for Scopus

1. Retrieve author’s citation metrics:
   - No. of publications
   - Citation counts
   - h-index

2. Feedback to Scopus to correct your profile

3. Set citation alert
Introduction for Scopus

Scopus includes

75+ million records
  • 68 million post-1970 records, including references
  • 6.5+ million pre-1970 records going back as far as 1788
  • 8.5+ million Open Access articles
  • 9+ million Conference papers

24,600+ active titles
  • 23,500+ peer-reviewed journals, of which more than 4,000 are Gold Open Access
  • 740+ book series
  • 300+ trade publications
  • Articles-in-press (i.e. articles that have been accepted for publication) from over 8,000 titles from international publishers, including Cambridge University Press, the Institute of Electrical and Electronic Engineers (IEEE)

194,000+ books
  • Including monographs, edited volumes, major reference works and graduate level text books
  • Focuses on social sciences and arts & humanities, but also includes science, technology & medicine (STM)
Subject coverage

Scopus content coverage by subject area:

- **Health Sciences**: 25% (7,468 titles)
- **Life Sciences**: 16% (4,883 titles)
- **Physical Sciences**: 27% (8,102 titles)
- **Social Sciences**: 32% (9,692 titles)

*Includes active titles. Titles may fall into more than one subject area.*
Professor Andrew Wee (Thye Shen)

[Publications] [Research Interests]

Professor
Department of Physics
National University of Singapore
2 Science Drive 3, Singapore 117542.
Office: S12-02-03; Tel: (65) 6516-6362; FAX: (65) 6777-6126
E-Mail: phywee@nus.edu.sg

Vice President, University & Global Relations (Apr 2014 - )
Dean, Faculty of Science (Apr 2007- Mar 2014)
Director, Surface Science Lab, NUS
Principal Investigator, Graphene Research Centre, NUS
Senior Faculty Member, NGS (NUS Graduate School for Integrative Sciences & Engineering)
Adjunct Scientist, IMRE (Institute of Materials Research and Engineering)
Fellow & President, SNAS (Singapore National Academy of Science)
Fellow & Past President, IPS (Institute of Physics Singapore)
Fellow, IoP (Institute of Physics, UK)
Academician, APAM (Asia-Pacific Academy of Materials)

Associate Editor, ACS Nano


Selected books:
Science at the Nanoscale - An Introductory Textbook
by Chin Wee Shong, Sow Chorng Haur & Andrew T S Wee

The Molecule-Metal Interface
Editors: Norbert Koch, Nobuo Ueno, Andrew Thye Shen Wee
### Recap - Scopus Basic Search

<table>
<thead>
<tr>
<th>Scopus</th>
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<tbody>
<tr>
<td><strong>Metrics available</strong></td>
</tr>
<tr>
<td><strong>At author level:</strong></td>
</tr>
<tr>
<td>• No. of publications</td>
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<td>• Total citation count</td>
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<tr>
<td>• H-index</td>
</tr>
<tr>
<td><strong>At article level:</strong></td>
</tr>
<tr>
<td>• Citation count</td>
</tr>
<tr>
<td>• Citation benchmarking</td>
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<tr>
<td>• Article FWCI</td>
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<tr>
<td>• Selected altmetrics</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Self-Citations</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Able to exclude</td>
</tr>
</tbody>
</table>

- **Clean up your Scopus Author Profile**
  1. Check affiliation details
  2. Merge Scopus Author Profiles
  3. Remove wrong documents

- **Set citation alert**
Hands-on Exercise for Scopus

Under Author search, find out following metrics for Prof Lim Kim Geok, Vivien

<table>
<thead>
<tr>
<th>H-index</th>
<th>No. of publications</th>
<th>Total No. of citation counts received up to today(exclude self- citations)</th>
</tr>
</thead>
</table>

---

**LIM, Kim Geok, Vivien**

Professor, Deputy Head of Department  
**Department:** Management & Organisation  
**Office:** BIZ1-8-43  
**Contact:** 65-8516-7858  
**Email:** bizlimv@nus.edu.sg  
**Curriculum Vitae**
Advanced search in Scopus/Web of Science
Indexed Works in Scopus/Web of Science

Prof. Somsak → Article A → Indexed in Scopus/Web of Science → Gains citation counts in Scopus/Web of Science when work is cited
How about non-indexed works?

Article X's reference list

Cites Article B

Indexed in Scopus/Web of Science

Not indexed in Scopus/Web of Science

Citation counts for Article B can be derived through a Secondary Document Search in Scopus/Cited Reference Search in Web of Science

Prof. Somsak

Prof. Lee

Article B

Article X
Summary - Scopus

• Basic Author Search should be adequate for most users

• Secondary Document Search may be necessary only if
  • You have works which are not indexed in Scopus

• However, Secondary Document Search is
  • Tedious if there are many records to verify
  • Unable to filter out self-citations and co-author citations
Outline for SciVal

1. Familiarize yourself with SciVal’s User Interface and the Benchmarking module

2. Learn to use Scival to find the following for a researcher:
   - Field Weighted Citation Impact
   - % of publications in top journal percentile
   - % of publications in top citation percentile
   - and many others...
What is SciVal?

• Tool for evaluating and visualizing research performance
• 4 main modules for obtaining metrics:
  ➢ Overview, Benchmarking, Collaboration and Trends
• Data sources:
  ➢ Article level metrics: **Scopus and PlumX Metrics**
  ➢ Usage data: **Scopus and Science Direct**
  ➢ Media mentions: **LexisNexis Metabase to Newsflo**
  ➢ Others: **12 funding agencies, 5 patent offices**
<table>
<thead>
<tr>
<th>Scopus</th>
<th>SciVal</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Updated <strong>daily</strong></td>
<td>• Updated every 2 <em>weeks to 1 month</em></td>
</tr>
<tr>
<td>• Backfiling project, from 1970 onwards</td>
<td>• Coverage <strong>only</strong> from <strong>1996 onwards</strong></td>
</tr>
<tr>
<td>• Generate <strong>citation counts</strong> up until <strong>certain years</strong></td>
<td>• <strong>Cannot exclude</strong> citations received after certain year</td>
</tr>
<tr>
<td>• Limited metrics</td>
<td>• More metrics</td>
</tr>
</tbody>
</table>
Selecting your entities:
1) Institution(s)
2) Researcher(s)
3) Publication Sets
4) Countries, Regions, Groups
5) Topics
6) Research Areas
Depending on the SciVal module, some entities cannot be selected.
Benchmarking module

To generate research impact metrics for an individual or across groups
Benchmarking module

• Used to evaluate research performance for an individual or for comparing between different researchers, institutions, or countries

• Commonly used for
  • Annual Review, Promotion and Tenure
  • Evaluating new hires
  • Departmental benchmarking

• Available to use for all entity types

• Over 30 metrics to choose from
Field Weighted Citation Impact

• A measure of how well cited the publication is compared to the average publication of the same publication type in same subject field, and in the same period

• Looks at citations received in the publication year plus 3 following years

<table>
<thead>
<tr>
<th>FWCI</th>
<th>Means</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td># of citations received for a publication = average # of citations received for similar publications</td>
<td></td>
</tr>
<tr>
<td>&gt; 1</td>
<td># of citations received for a publication &gt; average # of citations received for similar publications</td>
<td>FWCI of 2.10 means 2.1 times more cited than the average</td>
</tr>
<tr>
<td>&lt; 1</td>
<td># of citations received for a publication &lt; average # of citations received for similar publications</td>
<td>FWCI of 0.85 means 15% less cited than average</td>
</tr>
</tbody>
</table>
Outputs in Top Citation Percentiles

• A measure of whether publications are present in the most-cited percentiles compared to other publications in Scopus
• i.e. how many publications are in the top 1%, 5%, 10% or 25% of the most-cited publications?
Publications in Top Journal Percentiles

• The number or percentage of a researcher’s publications are published in top ranked journals

• Uses journal metrics like
  • Source Normalized Impact per Paper (SNIP)
  • SCImago Journal Rank (SJR)
  • CiteScore

CiteScore, SNIP & SJR are calculated based on Scopus data and are freely available at Scopus Journal Metrics
Hands-on Exercise for SciVal

Using the Benchmarking module,

Search and define Prof Lim Kim Geok as a researcher
Select and retrieve the following metrics (excluding self-citations) from 1996 to >2019 :

1) Scholarly Output
2) Citation Count
3) H-index
4) Field Weighted Citation Impact
5) Outputs in Top 25% Citation Percentiles
6) Publications in Top Journal Percentiles (top 10% in SJR)
<table>
<thead>
<tr>
<th>Researcher Name</th>
<th>Scholarly Output</th>
<th>Citation Counts</th>
<th>H-index</th>
<th>Field Weighted Citation Impact</th>
<th>% Outputs in top 25% Citation Percentiles</th>
<th>% Publications in top 10% SJR Percentiles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lim, Vivien Kim Geok</td>
<td></td>
<td></td>
<td></td>
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</table>
Wrap Up

1. Learn to use *Web of Science, Scopus and SciVal* to find the research metrics for a researcher
2. Setting up citation alerts
3. Metrics are just one set of criteria for evaluating quality of a researcher and other impact indicators should be taken into account
<table>
<thead>
<tr>
<th>FoE / SoC / SDE / Law / LKYSPP</th>
<th>Irene Tanudjaja, <a href="mailto:irine.tanudjaja@nus.edu.sg">irine.tanudjaja@nus.edu.sg</a></th>
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<tr>
<td></td>
<td>Esther Ng, <a href="mailto:clbnxe@nus.edu.sg">clbnxe@nus.edu.sg</a></td>
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<tr>
<td>FASS / School of Business</td>
<td>Richard Ho, <a href="mailto:clbhcyr@nus.edu.sg">clbhcyr@nus.edu.sg</a></td>
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<td>Thun Wendy, <a href="mailto:clbtw@nus.edu.sg">clbtw@nus.edu.sg</a></td>
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</table>
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