Knowledge Capital in the Philippines
What’s at Stake and the Roads to Take

What is Knowledge Capital?
- Approaches and outcomes that expand the boundaries of scientific inquiry
- Capacity in creating innovations and improvements in the processes of production and distribution

How is Knowledge Capital Created?
- Advanced Studies
- Scientific Publications
- Research and Development

Why is Knowledge Important?
- Key to Progress
- Source of Contemporary Innovation
- Means that energize Industry 4.0

How does Knowledge Capital Shape the Direction of Industry 4.0?
- Integrating the physical, digital, and biological worlds
- Redefining required set of skills
- Enhancing connectivity
  - People to People
  - Object to Object
  - People to Object
Key Research Areas in Industry 4.0

1. Medicine
2. Engineering
3. Materials Science
4. Chemistry
5. Biochemistry
6. Physics
7. Computer Science

*Based on publications in Scopus journals of developed economies

Citable Documents in Scopus Journals (1996-2018)

<table>
<thead>
<tr>
<th>Area of Study</th>
<th>Number of Publications</th>
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<tbody>
<tr>
<td>Medicine</td>
<td>8,192</td>
</tr>
<tr>
<td>Agricultural Sciences</td>
<td>8,082</td>
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<td>Social Sciences</td>
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<td>Biochemistry</td>
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<td>Engineering</td>
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<td>Environmental Science</td>
<td>3,370</td>
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<tr>
<td>Computer Science</td>
<td>3,075</td>
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</table>

USA  China  Japan  South Korea  Singapore  Philippines
Share of the Philippines in Global Publications in Key Research Areas

**Good News!**
Share of the Philippines in citable documents has increased significantly by 2018.

Leading Producers of Scientific Papers in the Philippines
**Major Directions in the Production of Scientific Papers**

In the last 22 years…

Production of scientific papers in the Philippines has been insignificant compared with the leading producers in the world and the region.

But by 2018…

The marginal production in 2018 has improved substantially.

Top 4 Private Universities & the UP System are the leading producers of scientific papers in key research areas.

Production of Publications:

5 Private Universities > 21 State Universities and Colleges (SUCs)

92 SUCs that received research budgets from the government have no data of publication in the Scopus data base in the last 22 years

**MOVING FORWARD**

Provide financial research support to key private universities

Increase public funds for the expansion of knowledge capital

Rationalize the provision of research funds for SUCs

Expand graduate education and intensify research and development activities in key areas

**CREATIVE TEAM**  
Tereso S. Tullao, Jr.  Justin Raymond S. Eloriaga  Sunyoung Won

Based on the Professorial Lecture:  
“Kontribusyon ng mga Pribadong Pamantasan sa Pilipinas sa Paglikha ng Yamang-Kaalaman” (Tullao, 2019)