The Impact of Digital Age on Higher Education
Beyond Transformation from Physical to Digital Sphere

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Outline

1. Argument

2. Introduction
   • HE reform in the past
   • HE Digitization in the beginning

3. Case Studies
   • Digitization in HE Education
   • Digitization in HE Scholarly Communication

4. Consequences of Digitization on HE
Argument

- The digitization process had greater impact on higher education than mere digitization.
- The current higher education reform is first accelerated through digitization process.
- But especially when openness and quantitative measurements come into play,
- Digitization has impacts and challenges the traditional higher education value system, forcing the elite university to become a universal university.
- Isn’t it time to reconsider higher education fit for 21st century with the digital enablers in play?
Disruption process of HE through digitization

0 Trial period
Replacing Physical Action to Digital

1 Begin of Disruption
Opening up Digital Contents

2 Continuing Disruption
Quantitative Indices, Data-linkage

3 Disruption
New Values shifts in
1. HE Reform in the past
2. The Digitization Process of HE in the beginning
Background: Higher Education Reform since 1990s

- In response to the mass and universal access of higher education:
  
  ➢ Globalization
    • Bologna Process
    • World University Rankings, Brain Gain
  
  ➢ Marketization
    • Agile University Management
    • Governance Reforms
  
  ➢ Massification of HE
    • Learning Outcome
    • Accountability
Elite to Mass to Universal Student Access

- Proposed by Martin Trow in 1973
- Describing the transition in higher education according to HE Enrollment rate

<table>
<thead>
<tr>
<th>Stages of Higher Ed</th>
<th>Elite</th>
<th>Mass</th>
<th>Universal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher Ed Enrollment</td>
<td>-15%</td>
<td>15% - 50%</td>
<td>50% -</td>
</tr>
<tr>
<td>Access</td>
<td>Privilege</td>
<td>Right</td>
<td>Obligation</td>
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<td>Student Body</td>
<td>Uniform</td>
<td>Diverse</td>
<td>Extremely Diverse</td>
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<tr>
<td>Governance</td>
<td>Consensus making by academics</td>
<td>Professional Staff &amp; Bureaucracy</td>
<td>Administration</td>
</tr>
</tbody>
</table>
The Changing Landscape of HE by the change of student body

- Project-based collaboration with Society
- Problem-based learning, Interdisciplinary
- Professional Education
- Liberal Arts Education
- Vocational Training, Re-education
- Capacity Building, Competency Education

University Graduates
Skilled Worker

Literacy Education

Mass to Universal Access

Student Body

Student Age

Young - Elite

Old
The Issues of Higher Education in the era of Mass Access

Higher Ed in Mass Access

- Shrinking Higher Ed Budget
- Large Enrollment & Diverse Student Body

- Shrinking Resource Per Student
- Need for Detailed Student Advice

 Doing more with less!
How can we provide more Detailed care with less resources?

It is a structural problem for higher ed in mass access that you need to do more with less!
The shrinking gap between society and the academia

- **Tertiary education attainment rate is rising**, especially for younger generation.

- Thus, citizens literacy and analytical skills are getting comparable to the academia.

- This results in **stronger demand for accountability and societal problem-solving**.

![Tertiary Education Attainment Rate by Age distribution](source: OECD, “Education at a Glance 2017” (data as for OECD countries: 2016))
Accountability issues and social demands on rise

- Information disclosure
- Data-driven decision making
- Open and fair process
- Accreditation and Assessment
- Social impact
- Global and societal challenges
The current university administrations are just overwhelmed and exhausted by the university reforms driven by globalization, marketization, and HE massification!
The Digitization Process

1950s:
- Introduction of Electronic Computers
  - Only few professionals involved

1970-80s:
- Introduction of Supercomputers and Workstations
  - Broader but still limited people at large companies, public institutions, universities have access to computers.

1990s-:
- Introduction of Personal Computers
- The Internet open for civilian use
  - Start of Information Society
Information Society in Full Swing

- Digital technology as communication tools
  - E-mails, Blogs, SNS, e-shopping, news sites, search engines, portal sites, etc.
  - Computer use beyond document creation and computation needs.
Digitization Process in Higher Education

- Supercomputers for Large-scale computation needs
- Establishment of Computer Science Department
- Personal Computer and Internet Access for every staff
- Electronic Database and Journals
- Information System for University Management
- Online Learning, Standard Testing
Digitization in HE Education

- MOOCs—a solution for HE budget deficit
- Learning analytics—remedial education, personalized learning
- Competency-based education and assessment—education for adults
- Unbundling of HE—modular and flexible learning
- Raison d’Etre of Universities—learning with peers?
How it started, and how it is now.

- **2012:**
  - The Year of MOOCs

- **2013 – 2014:**
  - Spreading out in the World
  - Various different Evolutions

- **2015 –
  - ??
The Issues in US Higher Ed

- A shrinking higher education budget followed by...
  - Tuition rise
    ...and the middle class left out of higher ed
  - Shortage in course provision
    ...and 6-yrs graduation rates falling!
Shortage in course provision

Faculty & Staff Demography and Credits Offered at California Community Colleges (2000-2012)

Dwindling of credits offered by 20% in four years

（出典）カリフォルニア州コミュニティ・カレッジ総長室情報マネジメントシステム データ・マート（http://datamart.cccco.edu）
MOOCs
The Savior of higher ed

free!
massive
open access

Courses with credit
The enforcement of MOOCs (2013)

- ACE College Credit Recommendation Service (ACE CREDIT®) evaluates MOOCs

- California Bill seeking campus credit for MOOCs (now put on ice)

- UK Commission on the Future of Higher Ed calls for MOOCs credit recognition and other

- European MOOC platformiversity provides ECTS credits

- Several universities starting to approve MOOCs
  - U Cal, Colorado State U, Georgia State U, Maryland U

- San Jose State University experiments with Udacity and edX

- Georgia Tech offers MOOC-like online master’s degree

- Major-like MOOC sequence: MIT “Xseries”, Coursera “Specialization”
The Misstep of MOOCs as higher ed alternative

- Not leading to credits, let alone degrees!
  - cautious students
  - low retention rate (5-8%)
  - participants mostly degree holders
MOOCs Findings

Participants

- Low retention rate
- Mostly degree-holders
- White males in their 30s

COST

- $100-300k per MOOC
- TEAM: 10+ staff
The MOOC Hype Fades, in US


---

**STATUS OF MOOC OFFERINGS of US Universities and Colleges**

- No Plans
- Not Decided
- Planning a MOOC
- Have a MOOC

---

**MOOCS ARE A SUSTAINABLE METHOD FOR OFFERING COURSES of US Universities and Colleges**

- Disagree
- Neutral
- Agree

---

Source: Chronicle of Higher Education: “The MOOC Hype Fades, in 3 Charts” (2015/2/5)

Online Learning Consortium: “2014 Survey of Online Learning, Grade Level: Tracking Online Education in the United States, 2014”
http://onlinelearningconsortium.org/read/survey-reports-2014/
Impact of MOOCs

-2011

e-learning
OCW
Online education
Distance education

2012
MOOC

2013
Online Learning

2013
Competency/Personalized Learning

2013
Active/Flipped Learning

Unbundling of Higher Ed
Year?
MOOCs and Active Learning

MOOCs, the Textbook of 21st Century

I hate to work self-paced!

Gaining Competency Useful for Jobs

Active Learning again....!

Flipped Classroom
Merging of adaptive learning and personalized learning

Assessment

Optimization of Learning modules

gaming

Time efficient

self paced

personalized

Learning
Arizona State University (ASU): “A New American University”

Proposed by President Michael Crow

“A New American University”

Access, Excellence, Impact

We measure ourselves not by who we exclude, but rather by who we include and how they succeed.

It is not the right thing to do to be regarded as a top university by high selectivity!
ASU: The most advanced university in US solving higher ed issues by utilizing digital technology univ-wide

1. ASU Online
   - Gaining 100,000 students by 2020

2. Remedial Education using Adaptive Technology

3. eAdvisor
   - Automatic Advising in Selection of Courses and Major

4. Global Freshman Academy
   - Providing open freshman courses through edX.
Stackable competencies, and direct assessment method

Competencies are stackable

Directly assess Competencies!

No need for study if certain competency is already acquired

This competency model is based on the framework developed by the Manufacturing Advancement Center Workforce Innovation Collaborative (MACWIC) in collaboration with employers statewide.
Wisconsin University System

...UW Flexible Option

- Public University to provide competency-based program
  - EARN YOUR DEGREE FASTER—OR TAKE MORE TIME IF YOU NEED IT
  - SAVE TIME AND MONEY BY EARNING CREDIT FOR WHAT YOU ALREADY KNOW
  - GET PERSONALIZED, ONE-ON-ONE SUPPORT
  - RECEIVE A WORLD-CLASS UNIVERSITY OF WISCONSIN EDUCATION

Two Options

- All you can learn Option
  - $2250 for all you can learn in 3 months

- Single Competency-Set Option
  - $900 for single competency-set

http://chronicle.com/article/Competency-Based-Education/141871/?cid=at&utm_source=at&utm_medium=en
UW flexible option, http://flex.wisconsin.edu/
Georgia Tech
...Alliance with Udacity and AT&T

- Georgia Tech to offer new online master’s degree in computer science (May, 2013)

- Aim
  - To provide an online program much cheaper than usual program, and enrolling more students
    - 1 credit-$134, 3 year program: $2,000
    - Enrollment in 3 years: 10,000 students

- Alliance
  - Georgia Tech: Program and degree
  - Udacity: Platform and mentor
  - AT&T: Investment ($2mil) and employee training

Source: Inside Higher Ed, “Massive (But Not Open),” (2013.5.14)
Coursera Specialization
... Re-bundling by professors

Specializations On Coursera
Master New Skills with Sequences of Courses

Coursera Specialization:
- Master New Skills with Sequences of Courses and Capstone Project
- Fee: Signature Track Fees for the series of courses

Mobile Cloud Computing with Android

- **Course 1**: Programming Mobile Applications for Android Handheld Systems
- **Course 2**: Pattern-Oriented Software Architectures: Programming Mobile Services for Android Handheld Systems
- **Course 3**: Programming Cloud Services for Android Handheld Systems
- **Capstone Project**

An example of higher ed Unbundling process!

(出典)Coursera Specialization: “Mobile Cloud Computing with Android”
https://www.coursera.org/specialization/mobilecloudcomputing/2?utm_medium=listingPage
"Future of MIT Education"
...Modularizing Courses, Greater Flexibility in Curriculum

**Greater Flexibility in Undergrad Curriculum**

- Diverse Pedagogies
  - Project-based
  - Blended Learning
  - Service Learning
  - Learning Communities

- Modularity into Curriculum

- New assessment
  - instant feedback
  - viva voce exams
  - competency-based assessments

Academic Village: blended learning needs blended spaces allowing to move from classrooms, labs, cafes, residential halls, seamlessly.

Raison d’Etre of Universities in the Digital Age

"The purpose of education is not to make men and women into doctors, lawyers and engineers; the purpose of education is to make doctors, lawyers and engineers into men and women."

What is the Raison d’Etre of Universities if information passing can be entrusted to online learning?

“Ultimately, learning is a social experience. Harvard is Harvard not because of the buildings, not because of the professors, but because of the students interacting with one another.”

W.E.B. Du Bois
Sociologist
Pan-Africanist

Terry Aladjem
Executive Director, the Derek Bok CTL, Harvard U

[Inside Higher Ed (2012.9.11) MOOC’s Missing Pieces
Harvard Magazine, “Twilight of the Lecture: The trend toward “active learning” may overthrow the style of teaching that has ruled universities for 600 years,” (March-April 2012)]
Digitization in Scholarly Communication

- OAJ—a solution against rising subscription cost
- Megajournals—valuing academic soundness
- Funding agencies and public—accountability
- Data-driven science—fourth paradigm and research platform
- World university rankings—publish or perish, reviewers fatigue, fraud, reproducibility crisis, predatory journals, IF
- DORA and bibliodiversity—regain academic dignity?
How it started: “Serials Crisis”

- Journal subscription cost rising faster than the inflation speed
  - Four times higher in 2011 than 1986

*Includes electronic resources from 1999-2011.
We are writing the articles!

Isn’t it unfair that the publishers are making profit, and many academics cannot even afford to read the articles?!

The journal subscription is too expensive!

- Provided definition of OA
- Two ways to achieve OA:

1. Self-Archiving (green OA)
   - Author’s final manuscript or the publisher’s version after a certain embargo period is archived on a website accessible worldwide.

2. Open-access Journals (gold OA)
   - Subscription fees are omitted instead of a fee charged to the author, usually called the article processing charge (APC).

Source: Budapest Open Access Initiative
http://www.budapestopenaccessinitiative.org/read
PLOS ONE, the mega-journal

- Does not limit number of articles by journal’s physical capacity.
- As such, judge articles only on scientific soundness, not perceived importance or impact.
- A very broad subject scope
- A large editorial board of academic editors, as opposed to a staff of professional editor
- An open access model, often involving article processing charges

Source: Ben Mudrak, “What Is a Megajournal?”
https://www.aje.com/arc/what-is-a-megajournal/d
Move at Governmental-level

- Protest from a medical patient
  - "It is unfair that taxpayers do not have access to academic articles and thus cannot study their own medical condition, as the price of academic journals is exorbitant”.

- Funding agencies start making OA a mandate for scholarly articles funded publicly
  - NIH(US)-2008-"NIH Public Access Policy”
  - RCUK(UK)-2013-provides grant to universities for APC
The push which triggered US government to adopt OA policy
PubMed Central (PMC) — The first digital repository established by a funder to comply for OA mandate

- Online research articles archive in biomedical and life sciences established by NIH.
- As of 2007, NIH made OA a mandate for research outputs funding by NIH.
  - Researchers must archive their author’s final version on PMC.
- As of July 2018, about 5 million articles available.

(Note) PubMed Central is renamed to PMC in 2012.

https://www.ncbi.nlm.nih.gov/pmc/
Private funders providing publish platform for immediate OA

https://f1000research.com/about
From Access to Research Publications to Access to Research Data

Publicly-funded Research

Research Data

Research Publications
Emergence of a Fourth Research Paradigm

1. Thousand years ago – Experimental Science
   - Description of natural phenomena

2. Last few hundred years – Theoretical Science
   - Newton’s Laws, Maxwell’s Equations...

3. Last few decades – Computational Science
   - Simulation of complex phenomena

4. Today – Data-Intensive Science
   - Scientists overwhelmed with data sets from many different sources
     - Data captured by instruments
     - Data generated by simulations
     - Data generated by sensor networks
   - eScience is the set of tools and technologies to support data federation and collaboration
     - For analysis and data mining
     - For data visualization and exploration
     - For scholarly communication and dissemination

Astronomy has been one of the first disciplines to embrace data-intensive science with the Virtual Observatory (VO), enabling highly efficient access to data and analysis tools at a centralized site. The image shows the Pleiades star cluster from the Digitized Sky Survey combined with an image of the moon, synthesized within the WorldWide Telescope service.

Science must move from data to information to knowledge

With thanks to Jim Gray
Changing business from Publisher to Platform Provider for Research Support!

Source: Acquired from Dr. Anders Karlsson, Vice President, Strategic Alliances, Global Academic Relations, Elsevier-Japan, Nov. 2016
There is no escape from Elsevier!

The publishers are controlling research!

We are providing excellent research environment!

(Publisher) Platformer

Researcher

The M&As of Elsevier
11 European research funders demand immediate OA...the Plan S of cOAlition S

- Declaring that publicly-funded research outputs from respective funders must be published OA immediately after 2020.
  - Articles can only be published on compliant OA journals or platforms. Hybrid journals are explicitly excluded.
  - Aiming to transform hybrid and subscription journals to OA journals.

- Supporting funders
  - Austria, France, Ireland, Italy, Luxembourg, Netherland, Norway, Poland, Slovenia, Sweden, UK
  - Remaining 18 European funders also expected to participate

Source: cOAlition S (2018.9.4)
https://www.scienceeurope.org/coalition-s/
Academic journals by the type of OA

![Proportion of journals published 2016](image)

- **Subscription only**: 37.7%
- **Delayed OA**: 2.2%
- **Open-access**: 15.2%
- **Hybrid Journals**: 45%

*From Scopus database. Hybrid journals are subscription titles that allow authors to make individual papers open for a fee.

Source: Nature, “Radical open-access plan could spell end to journal subscriptions” (2018.9.4)
https://www.nature.com/articles/d41586-018-06178-7

The hybrid journals allow double-dipping through subscription and APC!
Jussieu Call for Open science and bibliodiversity

Promote a scientific publishing open-access model fostering bibliodiversity and innovation without involving the exclusive transfer of journal subscription monies to APC payments.

https://jussieucall.org/jussieu-call/
World University Rankings
putting quantitative pressure on universities

THE World University Rankings 2019: top 10

<table>
<thead>
<tr>
<th>2019 rank</th>
<th>2018 rank</th>
<th>University</th>
<th>Country</th>
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<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>University of Oxford</td>
<td>United Kingdom</td>
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<tr>
<td>2</td>
<td>2</td>
<td>University of Cambridge</td>
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<tr>
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<td>Stanford University</td>
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<tr>
<td>4</td>
<td>5</td>
<td>Massachusetts Institute of Technology</td>
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</tr>
<tr>
<td>5</td>
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<td>California Institute of Technology</td>
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<td>Harvard University</td>
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<td>Imperial College London</td>
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<tr>
<td>10</td>
<td>9</td>
<td>University of Chicago</td>
<td>United States</td>
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</tbody>
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Quacquarelli Symonds社（QS社、ロンドン）は19日、「第16回QS世界大学ランキング2020」を発表した。それによるとランクインした日本の41大学のうち、半数以上の24校が順位を落とした。

また、研究パフォーマンスにおける上位100位以内に、初めて日本の大学が入らなかった。高等教育セクターの国際化に対する日本の大学の試みは、同ランキングの結果として、その成果を表すには至っていないことが分かった。

高等教育のグローバルコンサルティング企業QS社が作成する同ランキングは、世界の大学の上位1000位までを網羅したものです。英国タイムズ高等教育版（米国）は8年連続で世界2位という新記録を樹立した。

日本の大学を見ると、最上位は東京大学で23位から22位へと過去最高の順位に上げている。東大は4年連続で順位を上げており、31位だった2015年に比べると9ランク上昇。

東大は、QS社のAcademic Reputation（学術評判）指標で100/100の高評点を獲得。Academic Reputationでは学術機関のパフォーマンスを評価するもので、日本大学における世界トップの位置を示すもので、アジアでは唯一。引き続き、世界で最も高評価を得ている学術機関のひとつとして認知されるに至った。
Web of Science calculating citation indices

Someya, T.
# Retraction Watch

## The Retraction Watch Leaderboard

with 21 comments

Who has the most retractions? Here's our unofficial list (see notes on methodology), which we'll update as more information comes to light:

<table>
<thead>
<tr>
<th>Rank</th>
<th>Name</th>
<th>Total Retractions</th>
<th>Sources</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Yoshitaka Fujii</td>
<td>183</td>
<td>Final report of investigating committee, our reporting</td>
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<tr>
<td>2</td>
<td>Joachim Boldt</td>
<td>96</td>
<td>Editors in chief statement, additional coverage</td>
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<td>3</td>
<td>Diederik Stapel</td>
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<td>Our cataloging</td>
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<td>Adrian Maxim</td>
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<td>IEEE database</td>
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<td>5</td>
<td>Peter Chen (Chen–Yuan Chen)</td>
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<td>6</td>
<td>Hua Zhong</td>
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<td>Journal</td>
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<td>Shigeaki Kato</td>
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<td>James Hunton</td>
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<td>PubMed and Thomson Scientific</td>
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<td>Friedhelm Herrmann</td>
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</tr>
<tr>
<td>18</td>
<td>Noel Chia</td>
<td>21</td>
<td></td>
</tr>
</tbody>
</table>

Source: The Retraction Watch Leaderboard

Reproducibility Project: Psychology

HAVE YOU FAILED TO REPRODUCE AN EXPERIMENT?
Most scientists have experienced failure to reproduce results.

Source: Nature, “Over half of psychology studies fail reproducibility test” (2015.9.27)
https://www.nature.com/news/over-half-of-psychology-studies-fail-reproducibility-test-1.18248
Predatory Journals using the OA journal business models

Please pay attention to Predatory Journals!

...Thousands of scientists publishing in pseudo-scientific journals!
Registered Reports peer reviewing the design of study

- "Registered Reports eliminates the bias against negative results in publishing because the results are not known at the time of review."
- "Because the study is accepted in advance, the incentives for authors change from producing the most beautiful story to the most accurate one."

(出典) Center for Open Science (COS), “Registered Reports”
https://cos.io/rr/
Reviewer Fatigue especially in English-speaking countries


Uneven Contributions
Researchers in the United States and the United Kingdom tend to review more papers than they submit, whereas those in China and India review fewer.

- United States
- China
- United Kingdom
- Japan
- Germany
- Canada
- Australia
- Italy
- Brazil
- France
- India
- Spain
- South Korea
- Netherlands
- Turkey
- Taiwan
- Sweden
- Iran
- Poland
- Malaysia

Number of papers (millions)

% of manuscripts submitted

- Reviews completed
- Manuscripts submitted

43%
Changing Scholarly Communication

...Peer Review System

- **Open Peer Review**
  - Reviewer’s comments are open to public with/without the name of reviewer
  - Enabling transparent peer review

- **Post Publication Peer Review**
  - Peer review done after publishing
  - Speeding up publishing, and allowing to count impact in peer review

- **Cascading Peer Review**
  - Peer review comments transferred to next submission
  - Reducing costs and improving efficiencies in peer review

It takes too long until published!

Too many paper to review!

Do the reviewers really understand my work?
San Francisco Declaration on Research Assessment (DORA)

- the need to eliminate the use of journal-based metrics, such as Journal Impact Factors, in funding, appointment, and promotion considerations;

Source: San Francisco Declaration on Research Assessment (DORA)  
https://sfdora.org/
Consequences of Digitization on HE

1. Disruption process of HE through digitization
2. Massification of HE and Open Science
3. Concluding Remark
Disruption process of HE through digitization in Education

0  Trial period
   Replacing Physical Action to Digital

1  Begin of Disruption
   Opening up Digital Contents

2  Continuing Disruption
   Quantitative Indices, Data-linkage

3  Disruption
   New Values shifts in

Online Learning

MOOCs, learning analytics

Personalized learning
   Direct Assessment

Unbundling of HE
   From Knowledge to Collaborative learning

63
Disruption process of HE through digitization in ScholCom

0 Trial period
Replacing Physical Action to Digital

E-journals

1 Begin of Disruption
Opening up Digital Contents

Open Access Journals
Megajournals

2 Continuing Disruption
Quantitative Indices, Data-linkage

University Rankings
IF, Citation indices

3 Disruption
New Values shifts in

From Professionalism
to quantitative measure
Relation between the digitization of HE and university reform:
Digitization accelerating the reforms and even taking over!
Stakeholder of Open Science

We keep our balance through TRADITION!

Funders
University Administration
Libraries
Publishers
Government
Citizen
Researchers
ICT centers

...Researchers are not anymore the mere players in research activities.
The push and resisting force towards Open Science

The degree of Open Science is determined by the balance of two forces.

Way to do Research

Open Science?

Traditional Scholarship

Intl. Competitiveness

Researcher Career

HR Skills

Data Protection

Digital Technology Data Deluge

Accountability

Avoid duplicate investment

Solving Social Issues

Citizen Science

Acceleration of Research

Inter-disciplinary Research

Research Reproducibility

Excess in Research Output

Transformation of Scholarly Communication System

Research Transparency

Excess in Research Output
Analogy between the Massification of HE and Open Science

- Growing university attainment rate
  - Growing citizens who understands academia
  - Increasing demand from society to academia
    - Accountability, university-industry linkage, research reproducibility, open scholarly communication
  - Closing gap between society and academia
  - Academia to be within and with the society
    - Citizen science, societal problem solving, innovation...
Understanding Open Science from Massification of HE

☐ Massification of HE
  ■ Change of university education and management in response to the change of student body and increased social demand through the growth in university enrollment.

☐ Open Science
  ■ Change in academic research in response to accountability issues and the social demand for academia to be with the society induced by the growth in university attainment rate, i.e. growth of population in society who understands the academia.
Time lag in HE Massification between Education and Research

- University Education fit for diverse student body
- Freshman courses
- University management

- University Education needed in Society
  - Competency Edu.
  - Professional Edu.

Enrollment Growth → Diverse Student Body → Univ. Graduates Growth → Closing gap between Academia & Society

Academia and Society Merges?

- Social demands on Rise
- Publicly-funded research must be OA

- Academia a with and within Society
  - Societal problem-solving
  - Citizen science, impact
Conclusion:
FUTURE HE REFORMS

- HE reforms around globalization, marketization, massification of HE has almost saturated.
- Digitization process started independently from HE reform process, but then got to facilitate and accelerate the process.
- Digitization is even shaping the higher education in the future.
- Isn’t it time to get the grip on digitization in HE to get strategically ahead?