Link and Match: Higher Education Institutions and Industries in Germany

HENDRO WICAKSONO

PROFESSOR OF INDUSTRIAL ENGINEERING,
JACOBS UNIVERSITY BREMEN

PRESIDENT COMMISSIONER,
PT LABDHA TEKNIKA NUSANTARA

Contents

- I. Cooperation between Higher Education and Industry in Germany
- II. Dual System Model
- III. Triple Helix Innovation

I. Cooperation between Higher Education and Industry in Germany

Industry in Germany

World class industry,
Hidden Champions

Image: BiBB

Employee with at least bachelor degree

Types of Higher Education in Germany

University/Technical
University

University of
Applied Sciences (FH)

University of Cooperative
Education (Dual System)

School of Education (PH)

Theologische Hochschule

Fachhochschulen für öffentliche
Verwaltung (FHöV) and
DHV Speyer

University

- Offer almost all study programs
- Offer PhD programs
- Focuses on research, theories, and sciences
- Learning in large classes
- Minimum student supervision
- Professors have experiences in research

University of Applied Sciences

- Do not offer medicine, teacher education, law, and natural sciences
- No PhD programs, except in cooperation with universities
- Focuses on the applications of sciences
- Learning in smaller classes
- Intensive student supervision
- Professors have experiences in industry

Bidirectional Relationship between Industry and Higher Education

- Recruitment of professors
- Research contracts and funding
- Visiting lecturers
- Accreditation

- Internships
- Research transfer
- Consulting
- Supply of skilled labors

Comparison between Indonesian and German Lecturer

Qualification	S2 or S3	++ S3 ++
Linearity vs. transdisciplinary	Linearity is important	Transdisciplinary is strength
Decision maker in recruitment	Policy makers	Users: colleagues, industry, students, ...
Authority	According to rules from government/policy makers	<i>Freedom of teaching and research</i>
Access to resources	Resources are managed by „home base“, e.g. study program, faculty	Resources are managed by the professor
Teaching load	12 SKS?	9/10 SWS (Uni), 18 SWS (FH/UAS)
Performance evaluation	Standardized (nationally)	Based on agreement by considering strengths and weaknesses
Career mobility: industry - academia	Generally not possible	Encouraged

II. Dual System Model

University of Cooperative Education and
Vocational School

What is Dual System?

Business/Industry

**3-4 days a week
($\pm$ 70%)**

- Students register to the company
- Students get working contract

School/University

**1-2 days a week
($\pm$ 30%)**

- No maximum age limit

Education Structure/Focuses

- Practices
- Professional skills e.g. soft skills, work safety, etc.
- Casuistic learning

- Theories
- Structured thinking
- Systematic learning

Source: Bertelsmann Stiftung

Dual System is Public Private Partnership

Regulation and supports:

- Responsible for school/university education
- Support negotiation processes

Source: Bertelsmann Stiftung

Funding

Funding sources

Sumber: Statistisches Bundesamt

Cost per student per year (Euro)

Sumber: BiBB

	Value (EUR)
Gross costs	15.288
Profit	11.692
Net costs	3.596

Quality standardization

- Standardization of curriculum for each profession (total 326 professions)
- Standardization of qualification examination procedures
- Rights and obligations of parties to a vocational contract
- Requirements for place suitability and vocational educators
- The tasks of “quality insurance bodies” such as chambers of commerce, professional unions in monitoring vocational education

Public Acceptance

■ Neu abgeschlossene Ausbildungsverträge
Ende September

■ Ausbildungsstellenangebot ¹⁾

■ Ausbildungsstellennachfrage
(traditionelle Definition)

■ Ausbildungsstellennachfrage
(erweiterte Definition)

Source: Bertelsmann Stiftung

Stakeholders

- Industry
- Prospective students + society
- Political actors

Supply and demand

Successful Countries Adapting Dual System

Switzerland

Austria

Denmark

Norway

Netherlands

Luxemburg

Adapt each pillar to suit the local context

Not Successful Countries

- Centralistic social structure
- Lack of a quality control role: professional associations and chambers of commerce
- There is no clear separation between planning and operational work

- The partnership between the government and the private sector is not successful
- Private sector is highly market dependent
- Vocational schools are either fully financed by the government or the private sector

- Public acceptance of vocational graduates is low

III.

Triple Helix Innovation

Triple Helix Innovation Model

Model 1

Model 2

Model 3

(Etzkowitz & Leydesdorff 2000)

Triple Helix Implementation in Germany

1: University Spin-Off

EXIST
Existenzgründungen
aus der Wissenschaft

Startup founder scholarship

Grants for transfer from research to start-up

Support of start-up culture in university

Example of
successful startups

OPENEXPERIENCE

SHAREMAC

vilisto
einfach Wohlfühlklima

NosoEx[®]
powered by GWA Hygiene

Transformation of University Program

Image: HS Karlsruhe

- Integration of startup programs in university's curricula
- Startup activities substitutes courses credits

2: Open Research and Innovation Projects

Project Examples

3: Strategic Alliances and Innovation Clusters

Source: BMWi

4: Collaborative innovation labs: Industry 4.0 implementations

- Small and Medium Enterprises
- University Research
- Research Outside University
- Large Companies

Testbeds

Source: Plattform Industrie 4.0

Triple Helix Model 3 Requires Transformation of All Parties

From teaching to **research and innovation** university

From closed to **open innovation**, from one-man show to **ecosystem of global village**

From top-down to **bottom-up** policy making

Indonesia: Quintuple Helix?

(based on Carayannis et al 2012)

Takeaways for Indonesia

- Link and match required transformation in different sectors in higher education e.g. career mobility, recruitments, curriculum, accreditation
- Dual systems and vocational education require ecosystems
- Adoption of dual system requires contextualization, not just copy-paste
- Balance between standardization and flexibility
- Triple Helix Model 3 requires transformation of all parties

Thank You

LinkedIn

<https://www.linkedin.com/in/hendrowicaksono/>

Facebook

<https://www.facebook.com/hendro.wicaksono.9>

Email

h.wicaksono@jacobs-university.de
hendro.wicaksono@genolife.org
hendro.wicaksono@green-indonesia.com

Homepage

<http://indeed.user.jacobs-university.de/>