Digital Business: What's Next?

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revolutions and
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technological
enablers**

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**Which skills
should we have?**

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What's next?

Industrial revolutions and their technological enablers

01

What is industry 4.0?

Industry 1.0

Drivers

Population growth

Agrarian capitalism and mercantilism are insufficient

New findings in metal processing and machinery

Mechanical Transformation

Steam-engine in mining (1712)

Mechanical loom (1712)

Full-metal turning lathe (1797)

Steam locomotive (1804)

Impacts

Nature independent production

Industrial capitalism

Working class, urbanization, low life expectancy

Separation of roles in a family

Capitalism vs. Marxism

Industry 2.0

Drivers

Electrical powered engines

Noisy and dangerous effects of steam machines

Taylorism

Electrical Transformation

Electric powered conveyor

Telephone for coordination

Interchangeable Components (1903)

Henry Ford's assembly line (1913)

Impacts

Economies of scale - Growth of large enterprise

Cheap logistics

Public health concern

Growth of Middle class

Mass weapon production and WW1

Industry 3.0

Drivers

Advancements in electronics

Commercial uses of computers:
administration, planning, control

Computer-driven transformation

CAD (1960)

Full automatic
production line (1969)

Robot-equipped
prod. line (1971)

Computer Integrated
Manufacturing (1990)

Impacts

Higher quality
and precision

Higher efficiency through
precised planning and
control

Higher productivity

Industry 4.0

Drivers

Global value chain

Product customization

Flexible and green manufacturing

Rapid increase of computing power

Intelligent and adaptive systems

Digital transformation

Impacts

Industry key player shifts:
more opportunities for SM
and startups

Knowledge based
distributed enterprises

More

Better opportunities

Products and business

Technologies

Job loss,

Digital manufacturing loss of tax payers

We decide

The enabling technologies of industrial revolutions

The industry 4.0 enabling technologies

**Advanced and
Multimodal
Interaction**

Intelligence

**Infrastructure and
Interconnection**

What is artificial intelligence?

The sub-field of computer science / informatics that discusses mechanisms that can mimic intelligent human behavior.

**Implications on
business and society**

02

The pillars of industry 4.0 end-to-end solution

Smart Process/ Operation

Smart Product

Smart Resource/
Infrastructure

Data Driven Service

Smart Product

Self informing crops

Smart Process/ Operation

Connected farmers, suppliers, market

Smart Resource/ Infrastructure

Automatic watering,
smart transport,
smart warehouse

Data driven service

The background is a dark teal color. It features a network of thin, white, interconnected lines forming a complex, web-like pattern. Scattered throughout the background are numerous small, glowing dots in shades of teal and light blue. In the center of the image, there is a large, solid teal oval.

Industry 4.0

Implications on industries: data driven service

Airplane engine +
real time monitoring,
predictive maintenance,
optimization service

Farming machines +
Farm monitoring, social media
<https://myjohndeere.deere.com>

RALPH LAUREN

Sport shirt +
Health monitoring, early
warning system

Physical product (local) + digital service (global)

Technologies changes business models

Technologies drive changes

Disruptions because of innovative business models

Largest
retailer

© Can Stock Photo

Largest
taxi company

Largest
movie
provider

Largest
accommodation
provider

Largest
information
provider

amazon

NETFLIX

Implications on jobs

Source: Oxford University

- Some jobs won't exist anymore, even service based jobs
- Less amount of jobs and more specialized jobs
- Jobs requiring care will still survive

Jobs at high risk of automation by country

Source: UNIDO

Source: UNDP

Implication on entrepreneurship

Implication on leadership

Leadership 1.0

Charismatic

Leadership 2.0

Directive

Leadership 3.0

Relational

Leadership 4.0

Swarm

- Unity of Mission
- Leader provides the instruments
- No Ego, No Blame
- Generosity of Spirit and Action
- A Foundation of Trust-based Relationships

**Which skills should
we have?**

03

Skills for industry 4.0

Technical skills

- No interdisciplinarity, no innovation
- Adaptability to rapid changes and life long learning
- IT skills are the key to survive.

Entrepreneurship

- Collaboration in the „**global village**“
- Taking risks and dealing with uncertainty
- Responsible creativity

Adaptive learning

- Individualization
- Flexible curriculum and recognition of credits from **various education providers**

Typology of knowledge workers in industry 4.0

Education

High (PhD level)

Knowledge geek

T-Skills

Independent expert

Creative skills

Medium
(Bachelor
and Master's level)

**Knowledge worker
as new
"industrial worker"**

Problem solving skills

**Temporary project
worker**

**Trouble shooter and
project skills**

Instrumental and
linear thinking

Innovative and
systemic thinking

What's next?

04

Education (in the broad
sense) is important

Lesson 1

Education is the
passport to the
future, for
tomorrow
belongs to those
who prepare for
it today.

- **Malcolm X**

School
education

Higher education

Society

There is no elevator
to success,

you have to
take the stairs.

-Zig Ziglar

Hard work and trying to
do the best

Lesson 2

“Pendidikan berbekal **masa lalu**, mendidik **masa kini**, dan menyiapkan **masa depan**.

Dalam ruang waktu yang berubah cepat, **pembelajar sejati** sebagai solusi.”

“Masa depan tidak terjadi dengan sendirinya. Kita harus **percaya** dan **bekerja** untuk meraihnya.”

- **Prof. Dr. Muhammad Nuh**

"Kalau besar yang dituntut dan mulia yang dicari, maka payah melaluinya, panjang jalannya dan banyak rintangannya."

- Abu Hamid Al-Ghazali

“Hendaknya segera mempergunakan masa muda dan umurnya untuk memperoleh ilmu, tanpa terpedaya oleh rayuan “menunda-nunda” dan “berangan-angan panjang”, sebab setiap detik yang terlewatkan dari umur tidak akan tergantikan.”

- KH Hasyim Asy'ari

“

Menyesali nasib tidak akan mengubah keadaan.
Terus berkarya dan
bekerjalah yang membuat
kita berharga.

”

KH. Abdurrahman Wahid

Learn to change, adapt,
and become an engine of
change

Lesson 3

KODAK FILES FOR BANKRUPTCY

Eastman Kodak Co., a 130-year-old photographic film pioneer, has filed for bankruptcy protection. It said it had also obtained a \$950 million, 18-month credit facility from Citigroup to keep it going

SHARE PRICE HISTORY — WEEKLY CLOSE IN US\$

Sources: Eastman Kodak Co., Thomson Reuters, news reports

REUTERS

NETFLIX VS. BLOCKBUSTER (2004-2010)

BLOCKBUSTER REVENUE

NETFLIX REVENUE

“It is not the
strongest of that
survives, nor the
most intelligent, but
**the one most
responsive to
change**”

- Charles Darwin, 1809

Follower will never be **Leader**, except___

Source: M Nuh

Overtaking almost always happens at the **curves**: because there are **changes**

What should be implemented in Indonesia?

- Wider impacts especially for people living in villages
- Optimizing the value and efficiency of key natural resources of Indonesia.
- Focusing on *human skill*, not *human strength*
- Optimizing the roles of all societal elements through ecosystems (villagers + start-ups+ SME+ government + researchers/academia).
- Bringing Indonesia to be *leader*, not *follower*.

Agriculture 4.0

Aquaculture 4.0

Mining 4.0

Energy 4.0

Healthcare 4.0

Building custom through Habituation

Crows present in corn field

Introduction of scarecrow

Prolonged exposure to scarecrow

Brain activity response before and after habituation

learn to take lessons
from natural phenomena
and life

Lesson 4

QS Ali Imran 190-191

إِنَّ فِي خَلْقِ السَّمَوَاتِ وَالْأَرْضِ وَاخْتِلَافِ اللَّيْلِ وَالنَّهَارِ لَآيَاتٍ لِّأُولَى الْأَلْبَابِ

الَّذِينَ يَذْكُرُونَ اللَّهَ قِيَمًا وَقُعُودًا وَعَلَىٰ جُنُوبِهِمْ وَيَتَفَكَّرُونَ فِي خَلْقِ السَّمَوَاتِ وَالْأَرْضِ رَبَّنَا مَا خَلَقْتَ هَذَا بَطِلاً
سُبْحَانَكَ فَقِنَا عَذَابَ النَّارِ

Sesungguhnya dalam penciptaan langit dan bumi, dan pergantian malam dan siang terdapat tanda-tanda (kebesaran Allah) bagi orang yang berakal. (yaitu) orang-orang yang mengingat Allah sambil berdiri, duduk atau dalam keadaan berbaring, dan mereka memikirkan tentang penciptaan langit dan bumi (seraya berkata), "Ya Tuhan kami, tidaklah Engkau menciptakan semua ini sia-sia; Mahasuci Engkau, lindungilah kami dari azab neraka.

Learn to be humble and
grateful

Lesson 5

"Orang yang merasa bodoh dan belajar,
bisa menjadi pintar. Orang yang merasa
pintar, tak akan pernah menjadi pintar."

- KH Mustofa Bisri

“Semua amal ibadah, baik rohani maupun jasmani, perkataan maupun perbuatan, tidak akan dihitung kecuali disertai perilaku serta **budi pekerti** yang terpuji. Menghiasi amal di dunia dengan **adab (karakter baik)** menjadi tanda bahwa amal itu akan diterima kelak di akhirat.”

- **KH Hasyim Asy'ari**

Sumber: NU Online

Pentingnya memaknai sanad religiusitas para pahlawan dan mendoakan mereka

KH Soleh Darat (1820-1903)

Ayah beliau orang kepercayaan **Pangeran Diponegoro**
KH Hasyim Asy'ari, **KH Ahmad Dahlan**, dan **RA Kartini** adalah
santri beliau

Berbakti dan berbagi

Berbakti kepada orang tua dan guru

Berbagi rizki

Berbagi ilmu

THANKS!

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