NEW(?) PARADIGMS IN SUPPLY CHAIN MANAGEMENT

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AGENDA

1. Introduction
2. SCM: Basic principles
3. New forces & dynamics
4. Paradigm shifts
5. Closing remarks

A little about me …

Academic Qualifications

- PhD (Industrial Management), Katholieke Universiteit Leuven, Belgium
- Master (Industrial Management), Katholieke Universiteit Leuven, Belgium
- Bachelor (Industrial Engineering), Institut Teknologi Bandung, Indonesia

Appointments

- Associate Professor, Aarhus University (BSS, Dept. Economics and Business Economics, Section Econometrics and Business Analytics), Denmark, 2010 - present.
- RCUK Academic Fellow, Cardiff Business School, Cardiff University, UK, 2005 - 2010.
- Postdoctoral Research Fellow, Katholieke Universiteit Leuven, Belgium, 2004 - 2005.
- Research Associate, Katholieke Universiteit Leuven, Belgium, 1999 – 2004.
- Lecturer, Industrial Engineering, Universitas Katolik Parahyangan, Indonesia, 1993 – 1999.

A little about me …

Teaching activities

Bachelor (in Economics and Business Administration): Operations Management

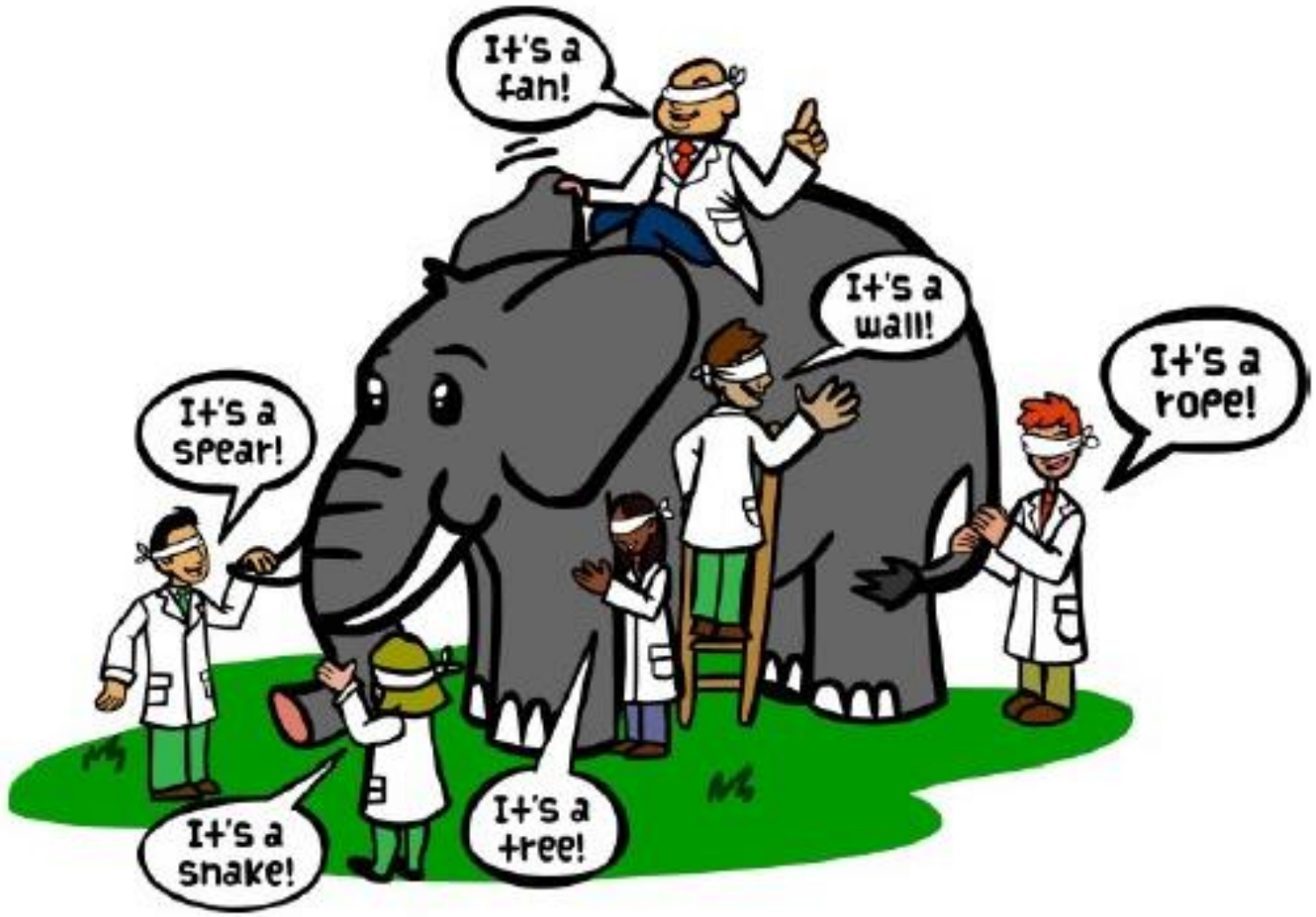
Master in Operations & Supply Chain Analytics (formerly Logistics & SCM): Supply Chain Design and Management; Applied Modelling

PhD: Reseach Processes in Operations Research with Applications in Logistics

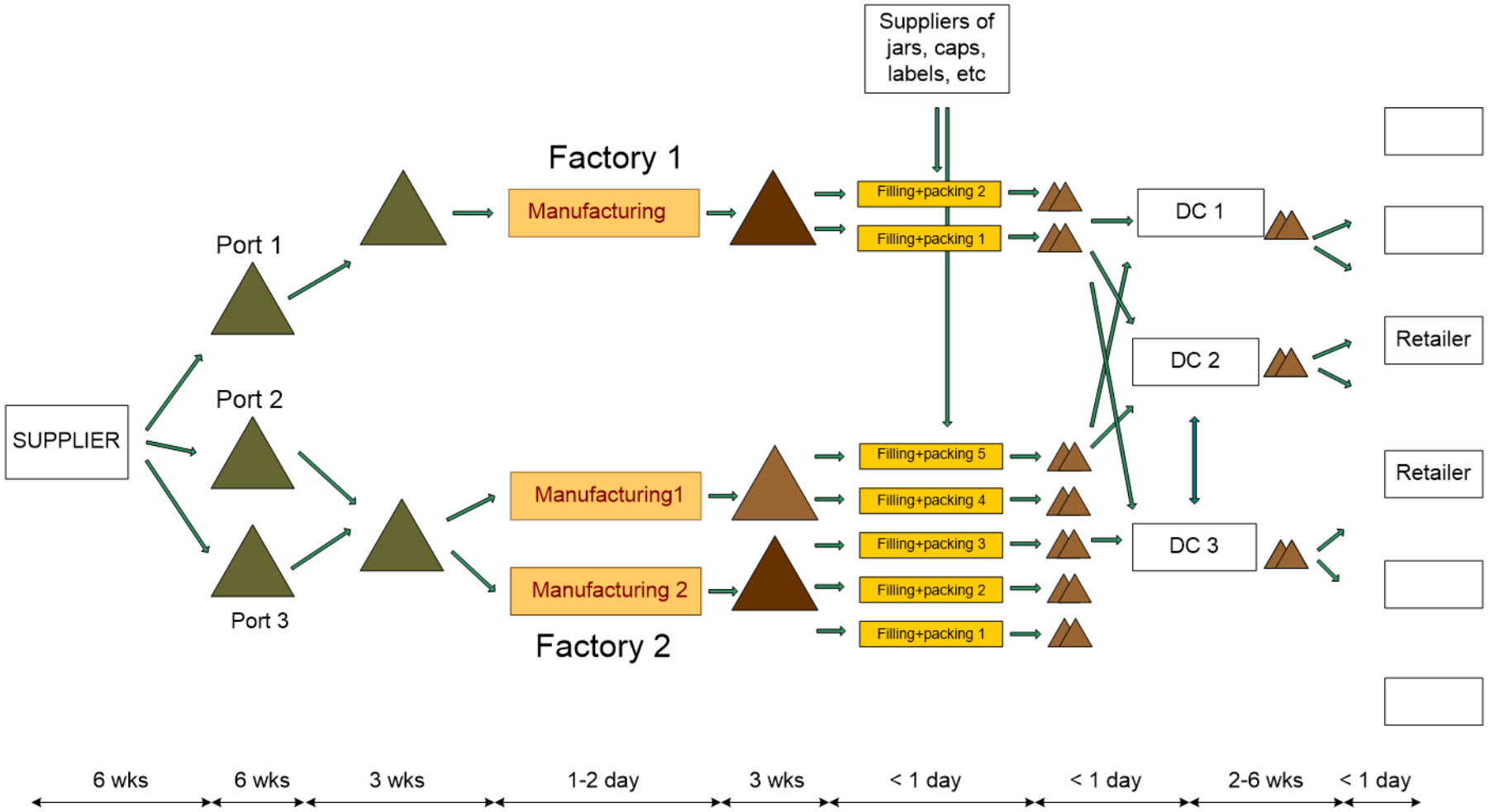
Research Interests

Supply Chain; Service parts inventory; Mass Customization; Interface between marketing and operations

What is a supply chain … ?



Supply chain example – soluble coffee



Coffee Manufacturing (continuous process)

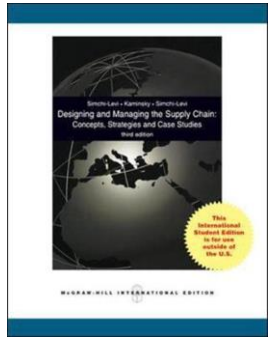
Blending → Roasting → Grinding → Extraction → Drying → Agglomeration → Aromatisation

Freeze Dried

Spray Dried

What is supply chain management (SCM)?

*Supply chain management is a set of approaches utilized to efficiently integrate suppliers, manufacturers, warehouses, and stores, so that merchandise is produced and distributed at the right quantities, to the right locations, and at the right time, in order to minimize system wide costs while satisfying service level requirements (**Simchi-Levi, Kaminsky, Simchi-Levi 2008**)*



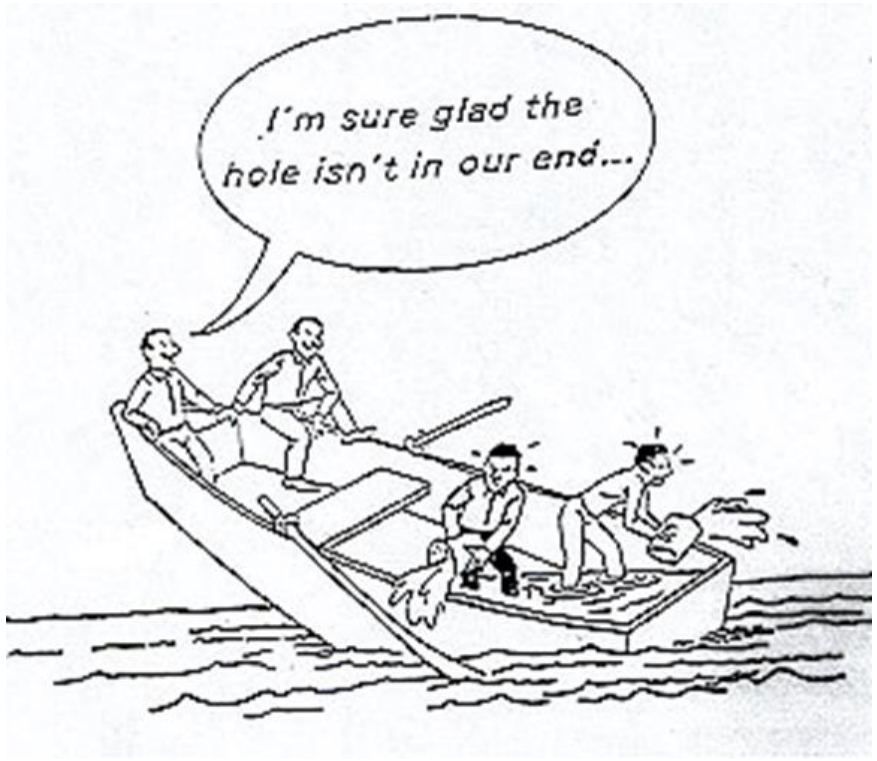
*Supply chain management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies (**Council for Supply Chain Management Professionals**)*

CSCMP™

SCM Objectives

Minimize system wide costs subject to a minimum service level or

Maximize supply chain profitability



Ideal view: global optimization

But … some challenges:

- Different players and conflicting objectives
- Market dynamics
- Complex network

SCM – Some Main Principles

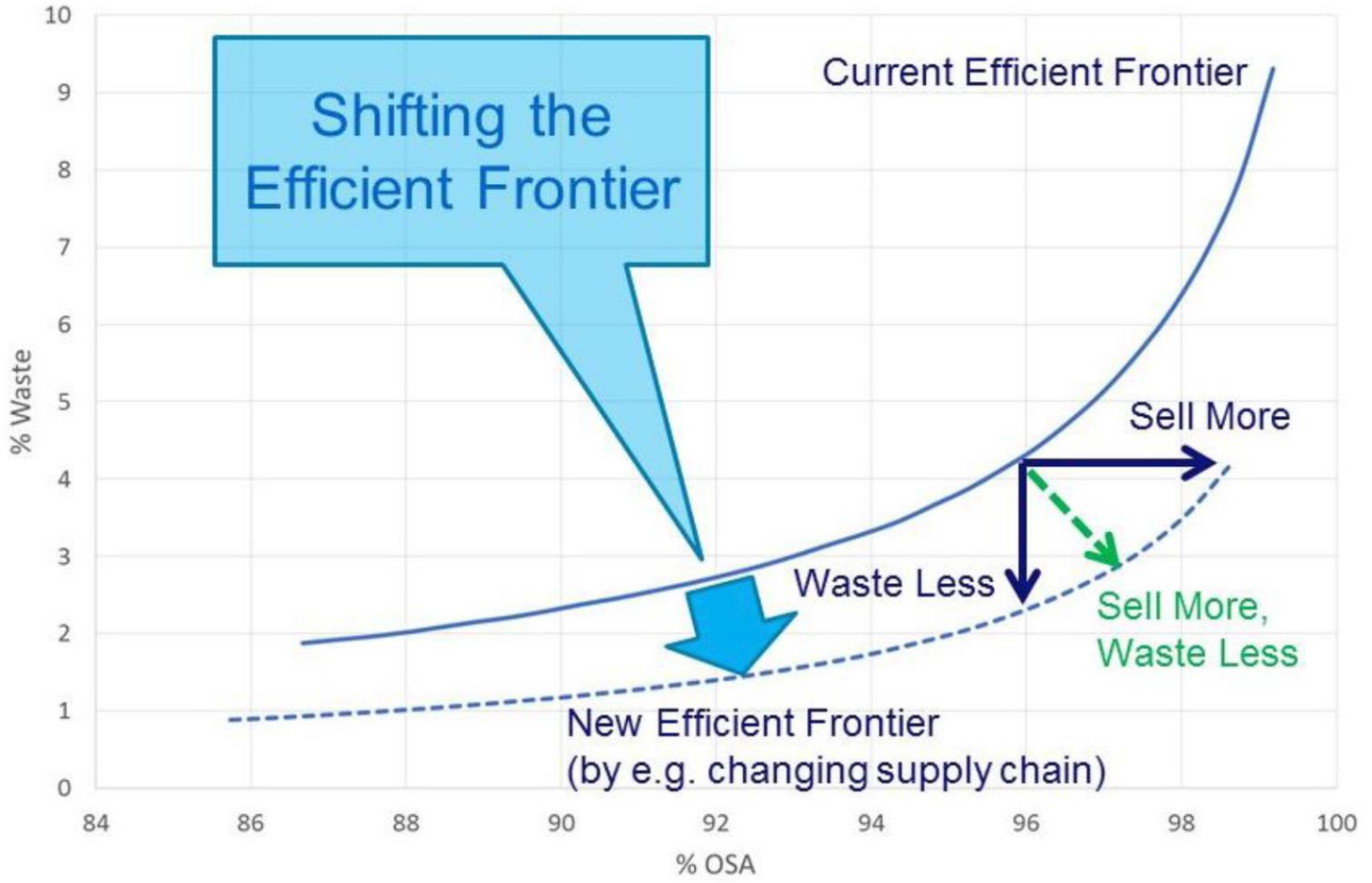
- Competition is no longer (just) between companies (products), but between supply chains (?)

  Dell (assemble-to-order, until 2007) vs Other PCs (make-to-stock)

- Multiple trade-offs – moving to a new efficient frontier (often, technologies are important enablers)

- Information sharing and collaboration (Win-win instead of zero-sum game
  - Vendor-Managed Inventory (VMI)
  - Various supply contracts

Example: trade-off in minimizing food waste



(Source: Broekmeulen & Donselaar 2019)

OSA = On-Shelf Availability

New(?) forces driving supply chain management

- Globalization
- Rising logistics costs
- The increase in the level of risk
- Increase in labor cost in developing countries
- Sustainability
- Growing volatility of commodity prices

Source: Your next supply chain, Interview with David Simchi-Levi, MIT Sloan Management Review, 2010.

- Digitalization and Big data analytics
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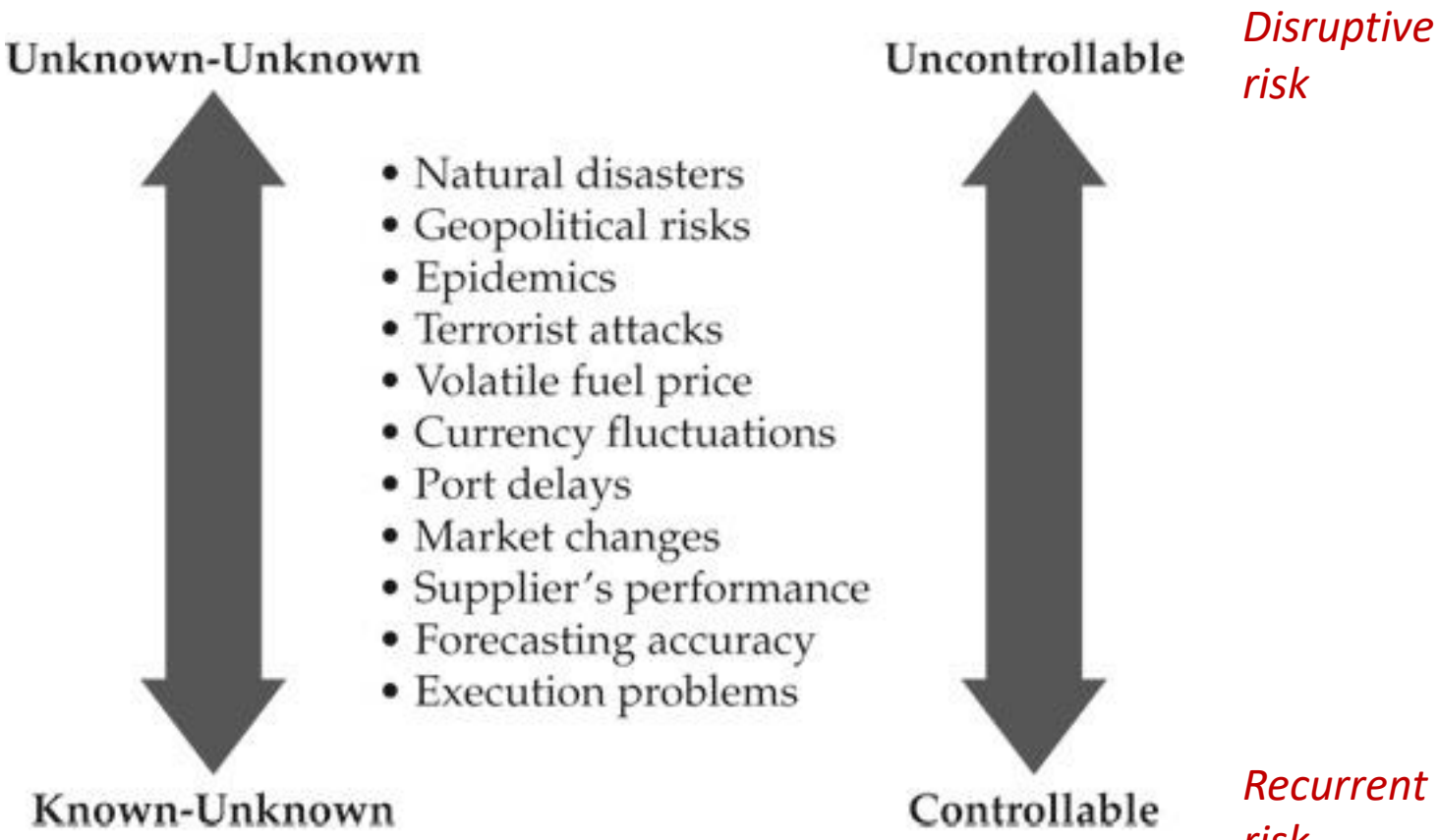
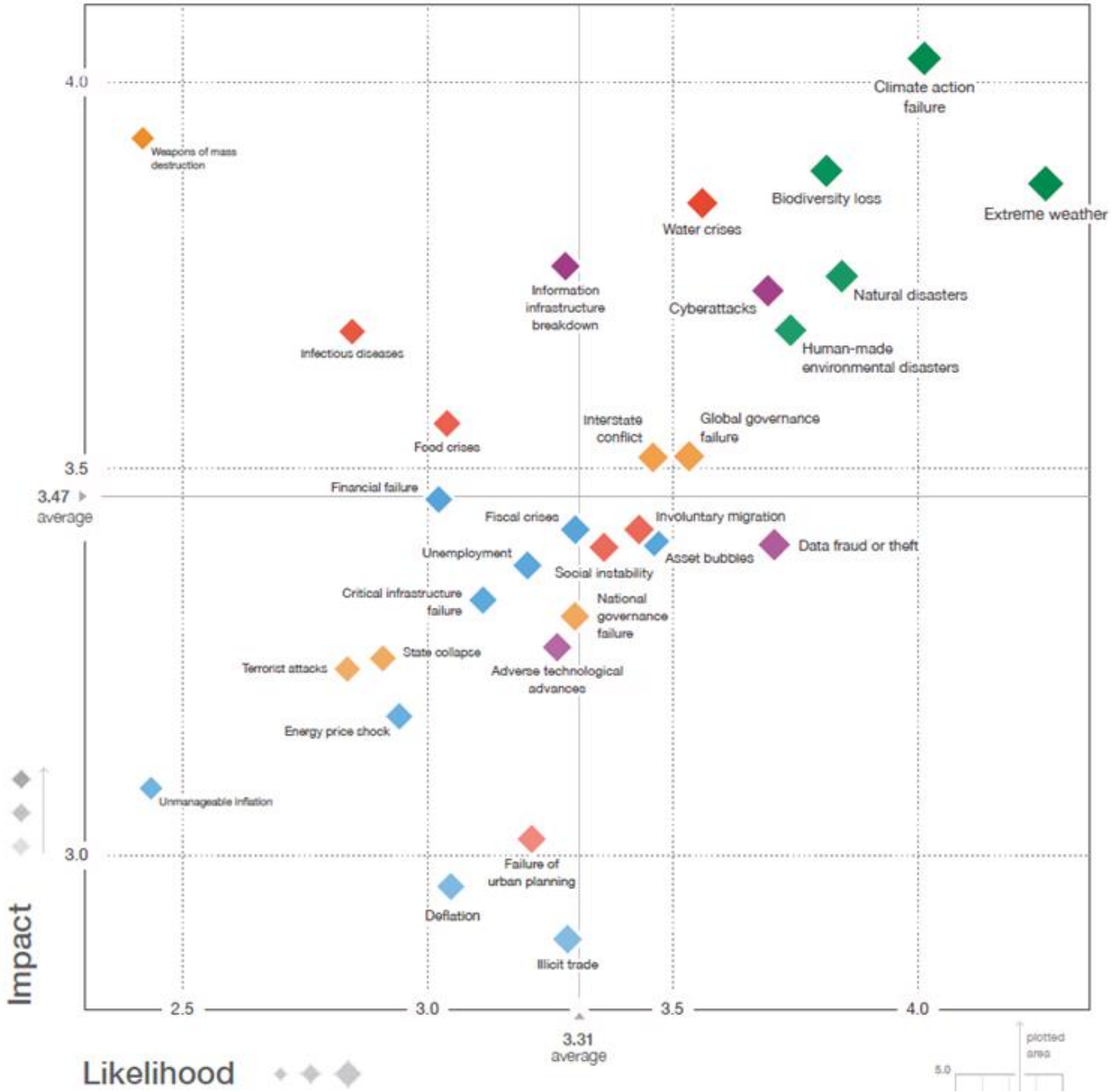
The increase in the level of (disruptive) risk

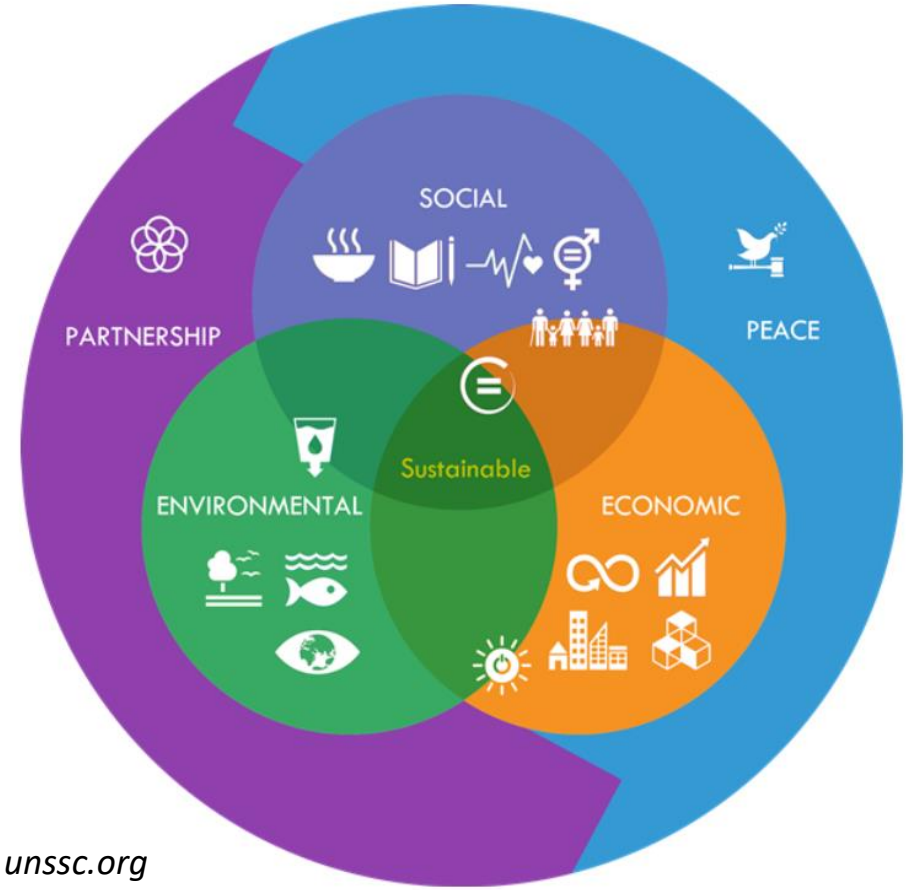


(Simchi-Levi et al. 2008)

The Global Risks Landscape 2020 (World Economic Forum)



Sustainability



Source: unssc.org

Three pillars:
Economic - Environmental - Social

In line with the “2030 Agenda for Sustainable Development”, UN

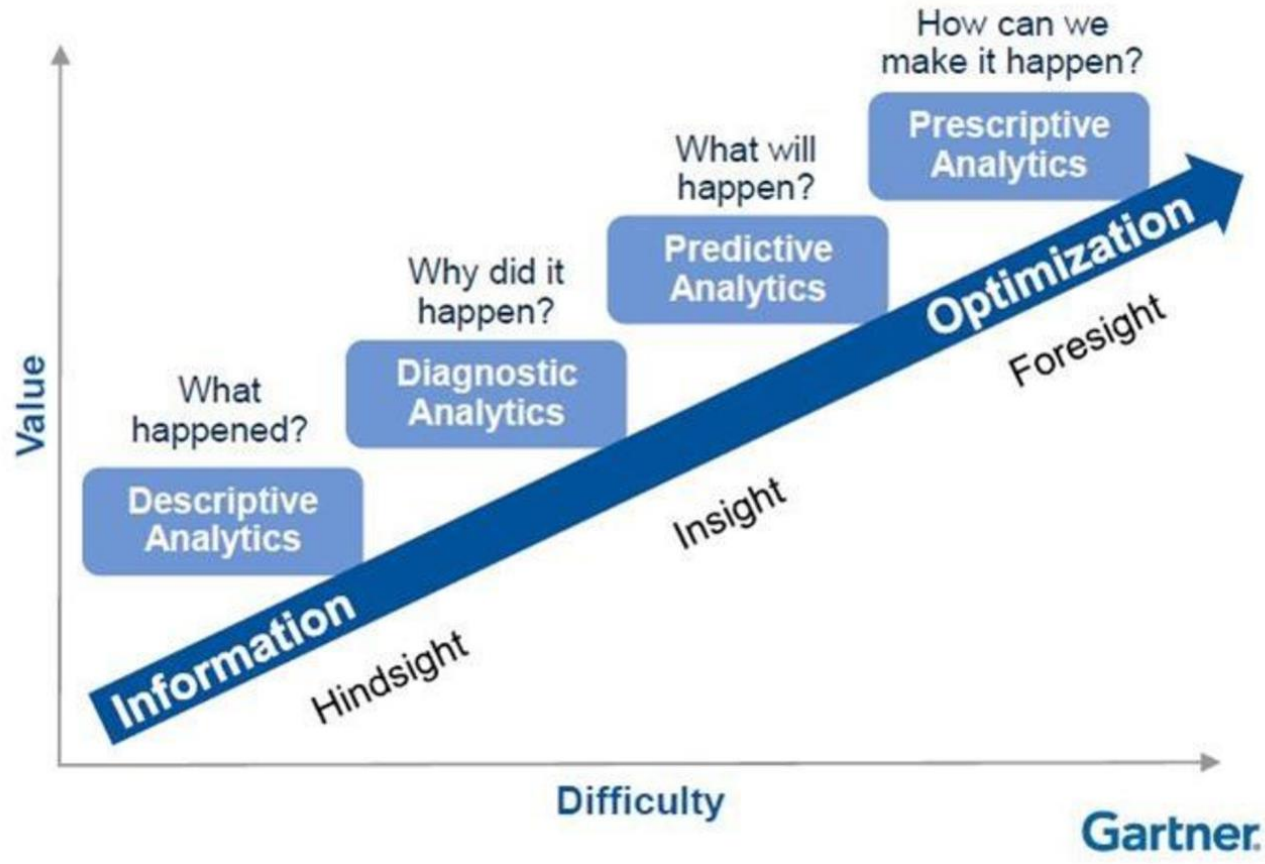
Sustainability

https://www.bbc.com/news/world-asia-32956705

The Rana Plaza tragedy served as a big wake up call for the garment industry

… Too much focus on economic sustainability !!

Big data analytics

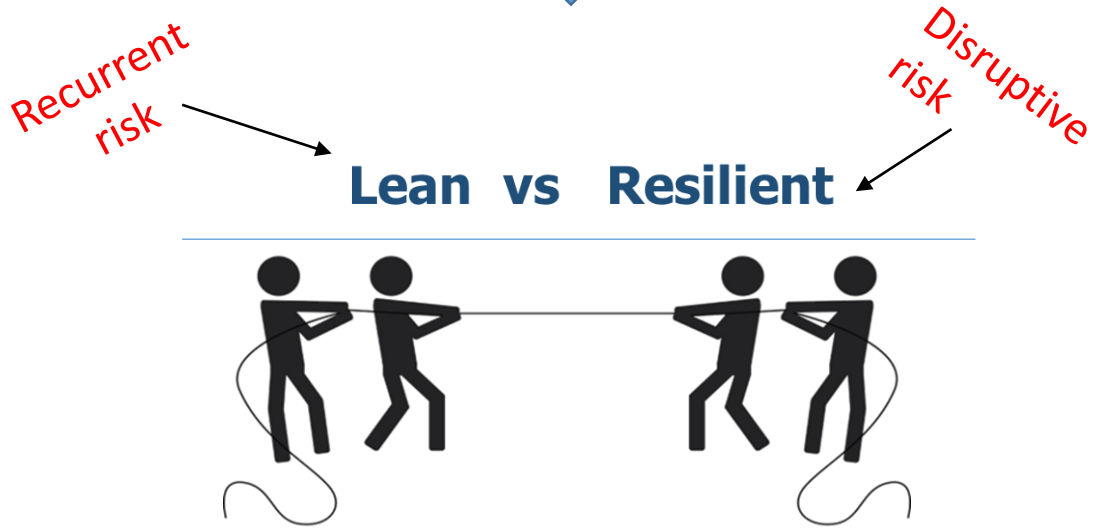


Today's technologies allow us to capture, store, aggregate, and analyze (large amounts of) data

Analytics is the application of scientific & mathematical methods to the study & analysis of problems involving complex systems (INFORMS)

Paradigm shift 1 ← the increase in the level of (disruptive) risk

Three options: Do nothing
Reactive strategy
Proactive strategy



Supply chain diversification
Offshoring vs Reshoring

Strategic inventories

Costs for implementing proactive strategies can be viewed as "insurance premium"

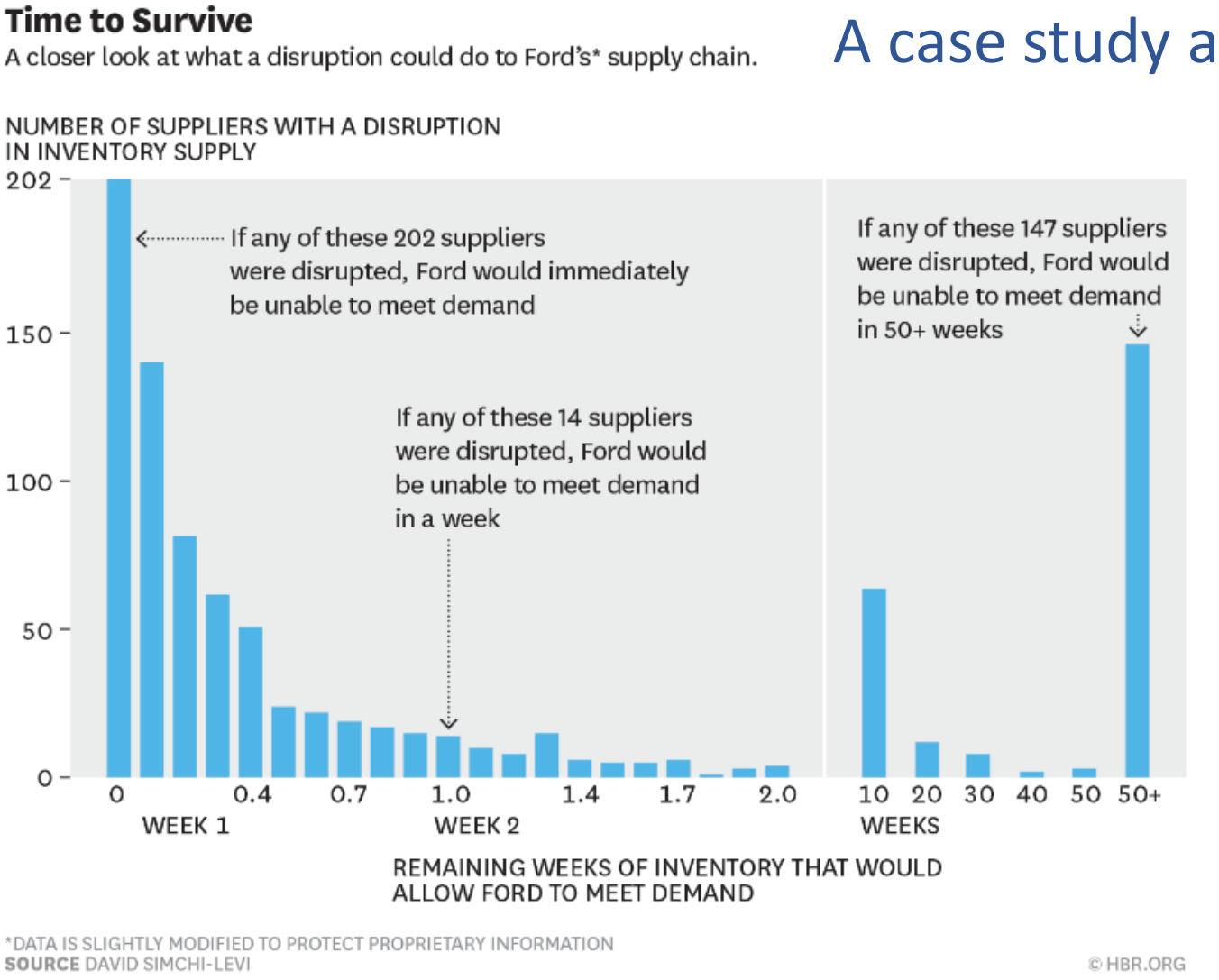
NEWS > BUSINESS

Indonesia to benefit from diversification of global supply chain, DBS says

Yunindita Prasidya
The Jakarta Post

Jakarta / Wed, July 8, 2020 / 01:13 pm

A case study at Ford Motor Company



https://hbr.org/2015/06/find-the-weak-link-in-your-supply-chain

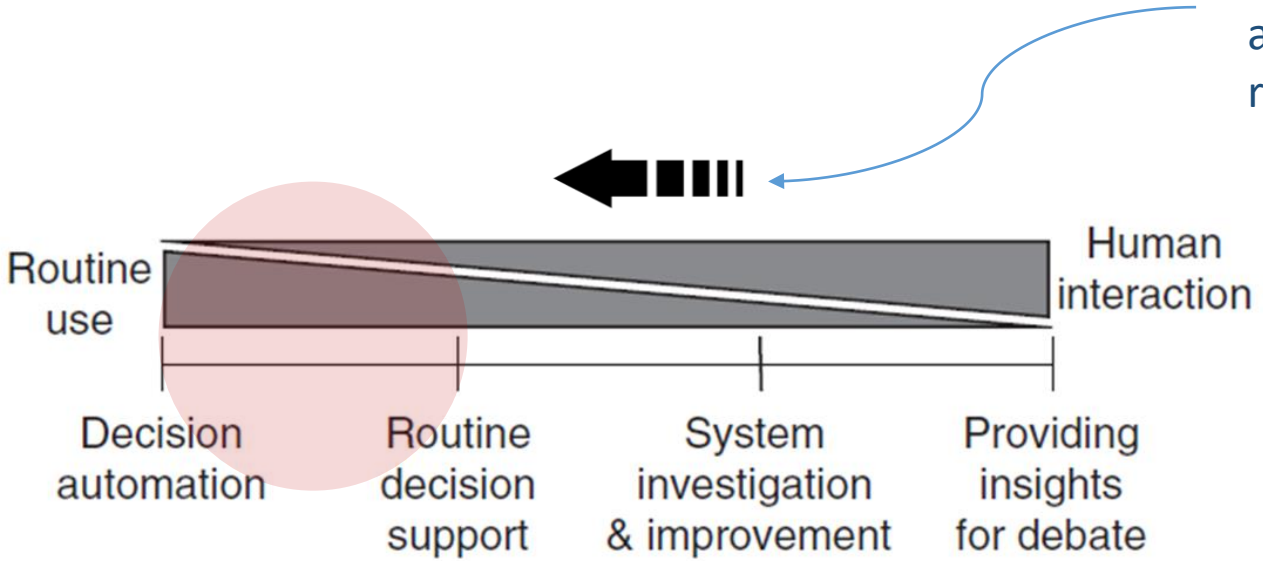
Paradigm shift 2 ← Sustainability

- Single objective → Multiple objectives
- Multi-disciplinary approach
- Changes in flow: forward
  reverse
  circular (economy)
- SC innovations for the bottom of the pyramid
- Information transparency, fair trade, CSR

ITC's E-Choupal initiative (India): *www.itcportal.com*

- Placed internet kiosks in thousands of Indian villages
- Helped farmers obtain higher selling price and access to educational materials
- ITC benefits from the lower net cost of procurement by eliminating costs in the supply chain that do not add value.

Paradigm shift 3 ← Big data analytics



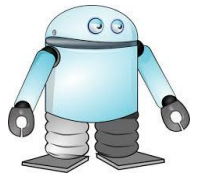
Real-time data capture and analysis will facilitate (almost) real-time responses/adjustments

Application examples:

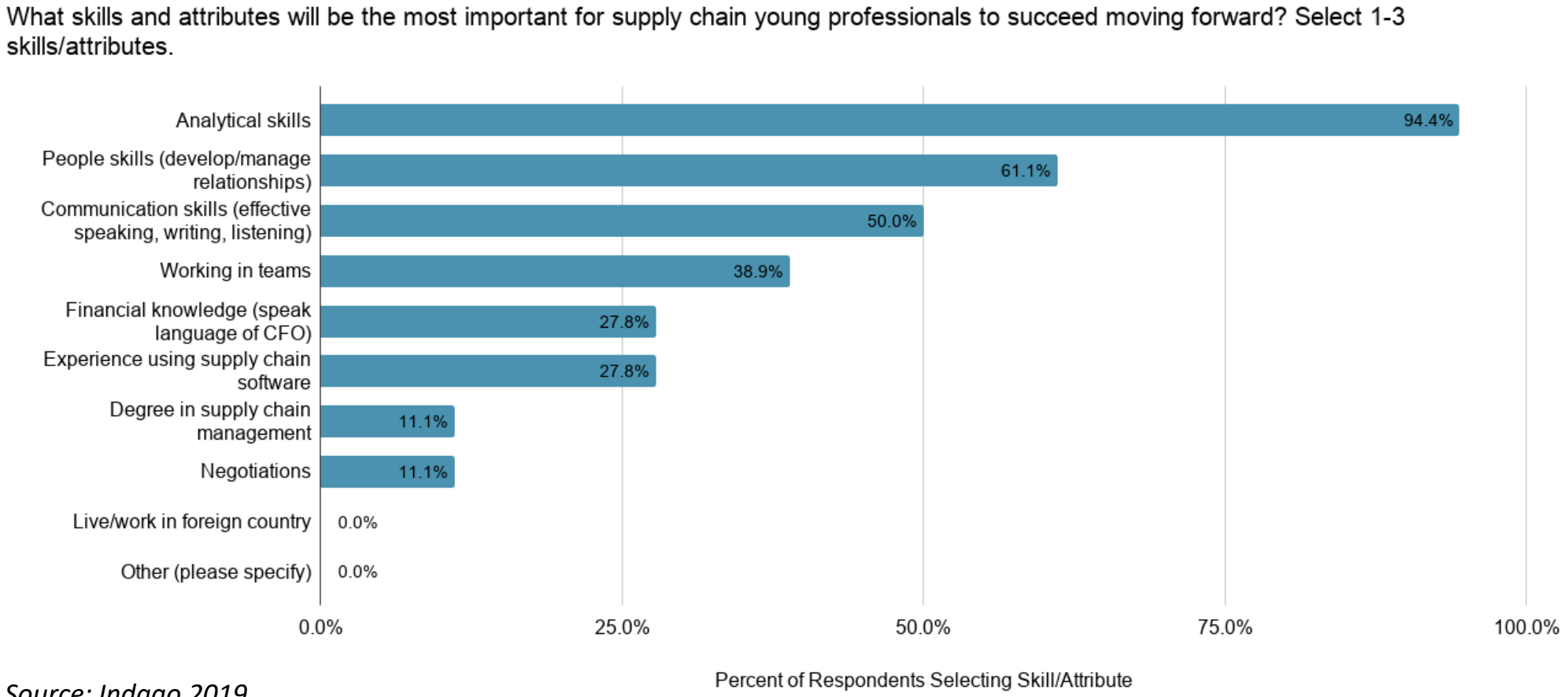
- E-commerce shipment scheduling
- Price promotions
- Maintenance

What are analytical models used for?

Need for technological investments & analytical skills (pre-requisite: data-driven decision making culture)



Paradigm shift 3 ← Big data analytics



Source: Indago 2019

Closing remarks

- The existence of new forces, or old forces but with new effects, require changes in managing the supply chain – we need to get out of “business as usual” attitude
- Coping with new challenges may require a multi-disciplinary approach and even stronger collaboration
- Great need for SCM professionals and (right) skills

Thank You !

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