Megatrends impacting SCM

Capstone: Future-proofing supply chains

Aalto University
School of Business

Prof Katri Kauppi

Business megatrends – what's topping the charts?

- **1. Accelerated digital transformation**
- **2. Inflation and supply chain security**
- **3. Sustainability**
- **4. Immersive customer experience**
- **5. The talent challenge**

1. **Demographic changes:**
2. **The digital economy becomes the norm**
3. **Flexible work**
4. **Smart, technology-enhanced experiences and services**
5. **Geopolitics and global markets shift focus**
6. **Energy transition is shaping green and smart power grids**
7. **Sustainability**

1. **Demographic changes**
2. **Shift in economic power**
3. **Rapid urbanization**
4. **Climate change and resource scarcity**
5. **Technological change**

https://www.linkedin.com/pulse/5-biggest-business-trends-2023-bernard-marr/
https://info.vttresearch.com/download-megatrends-report
https://www.pwc.nl/en/topics/megatrends.html

Global Business and Macroeconomic Trends for 2023

Inflation: At a Multidecadal High in Major Economies

Slowing GDP Growth in Most Economies

Energy: A Deepening Crisis

Interest Rates: Taming Inflation at the Cost of Growth

Labor: Shortage and Higher Wages To See Correction

GEP 2023

Which of the megatrends do you think will most impact SCM in near and far future?

Particularly for your case company?

Why?

How?

Sustainability and circularity

Aalto University
School of Business

Delivering ESG outcomes through supply chains

Data-Driven Approach To Operationalize ESG Targets

- Companies need to gather baseline data for scope 1, 2 and 3 emissions, and supplier working conditions

Collaboration and data-sharing across the chain and beyond is needed

- Shared Business Practices With Partners Through Policy
- Most of negative environmental and social sustainability issues often happen “along the chain”

Using Buying Power To Influence Supplier Sustainability

- Use leverage to add sustainability related contract terms

Focus on energy efficiency

Current supply chains built in an era of cheap oil

Energy efficiency / energy risk mitigation

- Consideration of alternative energy sources for facilities and transport fleet
- Adjusting operations (e.g. factory shifts or different manufacturing tasks) based on energy pricing during the day/night
- Adding energy self-sufficiency at larger sites (solar, wind, back-up)

Energy efficiency in last-mile logistics

Halldórsson and Wehner, 2020

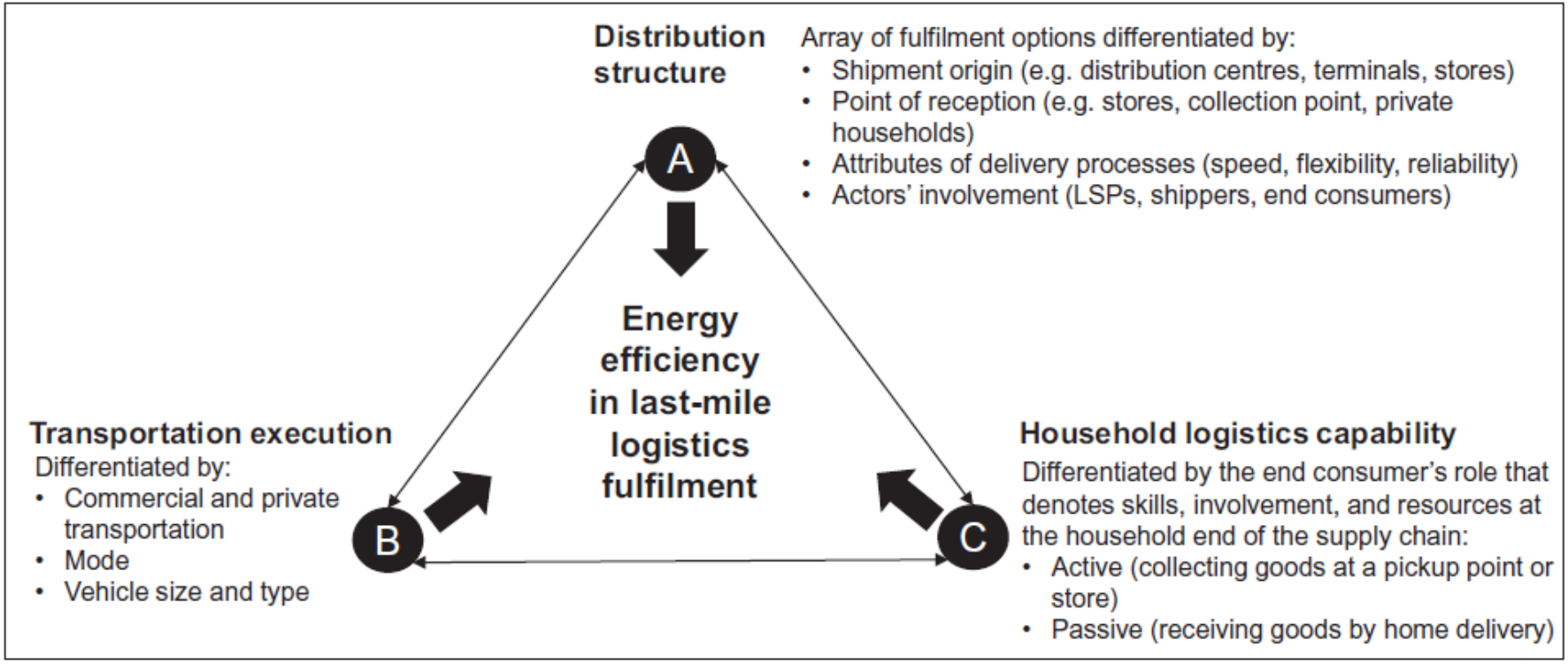


Fig. 1. The three components that shape energy efficiency in last-mile fulfilment.

Energy efficiency in last mile logistics

Halldórsson and Wehner, 2020

1. High vehicle fill rates

2. Avoidance or minimisation of private transport

3. A pull approach in last-mile fulfilment

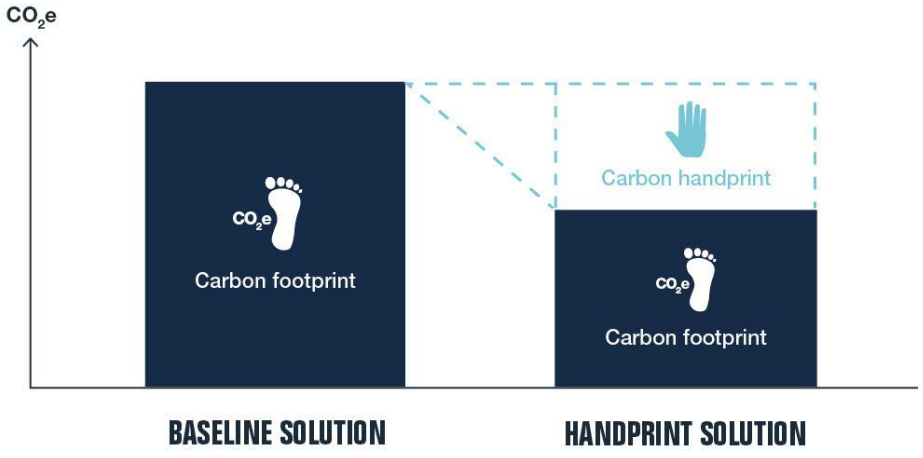
4. Commercial trucks delivering goods collectively to pick-up points or locker stations at central hubs that are regularly passed by the end consumers

5. A dense net of pick-up points

6. If home deliveries are a preferred solution high fail rates should be avoided

From footprints to handprints?

- **Handprint of a product can be created either by preventing or avoiding negative impacts (footprints) that would otherwise have occurred, or by creating positive benefits that would not have occurred (Norris, 2015).**



https://www.cargotec.com/en/blogsandcases/2021/why-is-cargotec-measuring-its-carbon-handprint/

Footprint vs handprint perspectives

Table 1. The ideas of handprint and footprint according to Biemer et al. (2013 a, b)

Handprint thinking	Footprint thinking
The good we do	The harm we do
Unlimited potential	Limited resources
Recover/Restore	Reduce/Reuse/Recycle
Influence/Educate/Inspire	Admonish
Count accomplishments	Measure quantities
Appreciate/Celebrate	Calculate
Advocate protection	Resist destruction
Entrepreneurism	Problem solving

VTT report - Carbon handprint – communicating the good we do, 2016

Current supply chains were not designed with circularity in mind…

Production has typically been centralized

- *Specialization of parts*
- *Economies of scale*

Optimizing for specialization and economies of scale has lead to global, complex supply chains, which often make circular flows difficult to implement and expensive

Circularity would often need a switch to:

- Parts commonality and easy disassembly
- More local (re)production

Some pre-requisites for circularity

- **Companies need to scale up circular solutions**
  - Design for circularity and retain asset ownership
  - Increased product traceability
  - Technology and systems to enable disassembly and market mix of new and used
- **Consumers need to be prepared for new solutions**
  - Subscription
  - Rental
  - Pre-loved
  - Upcycled
  - Repair

Questions a company should ask themselves in relation to SSCM

(BSR, 2019)

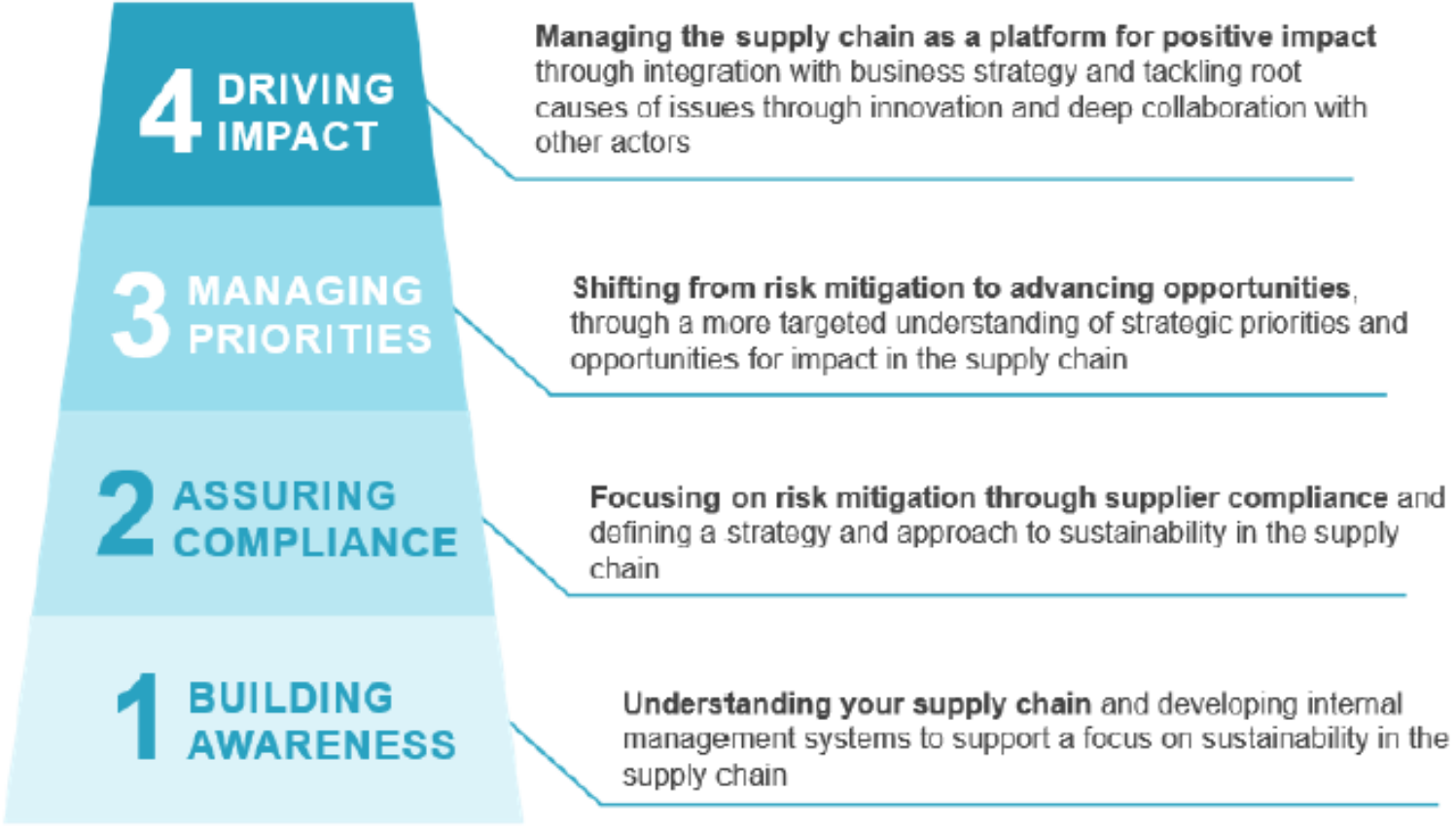
To what extent do we know our supply chain and its risks and impacts?

How integrated is sustainability into our supply chain strategies and processes?

How aware are we of the influence we have on our suppliers?

Do we have resources and do we hold ourselves accountable?

Supply Chain Sustainability Leadership ladder



BSR 2019

The demand side – how are distribution networks shaping up

Aalto University
School of Business

How is your consumption behavior different to what it was like in 2019?

Does your changed behavior have consequences to the firms you shop from?

What have they needed to / will need to do to match changes in your behavior?

Aalto University
School of Business

Consumer behavior post pandemic

(Kearney 2020)

- **Trust is paramount in consumer decision-making**
- **Consumers align behaviors and purchases with their values**
- **Consumers choose to shop and engage where, how, and when they want**
- **Consumers seek authenticity in products and experiences**
- **Consumers value belonging to and participating with broader communities**

Welcome to the age of omnichannel fulfillment

Anytime, anywhere fulfillment

Next day, same day and even same hour delivery

Exploding product variety and packaging choices

Hyperlocalization

Personalization

The future of warehousing, Kochar et al. 2021

FIGURE 1

What supply chains need

NEED GEO-SPECIFIC DEMAND SHIFTS...

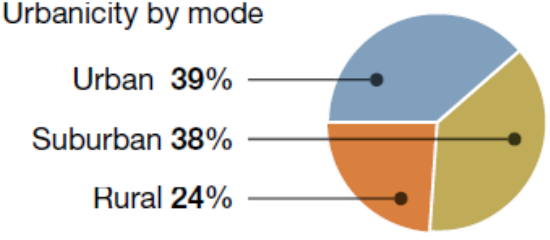
- Account for long-term demand shifts
- Segment geo-channel specific service shifts
- Segment geo-specific assortment shifts

...TO INFORM SC AND ASSORTMENT SHIFTS

- Build up/downstream assets 2-3 years out
- Design geo-specific fulfillment models
- Plan to accommodate changing product mix

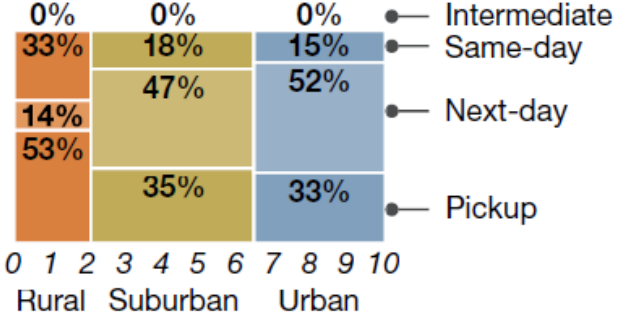
DEMOGRAPHIC-DRIVEN DEMAND SHIFTS

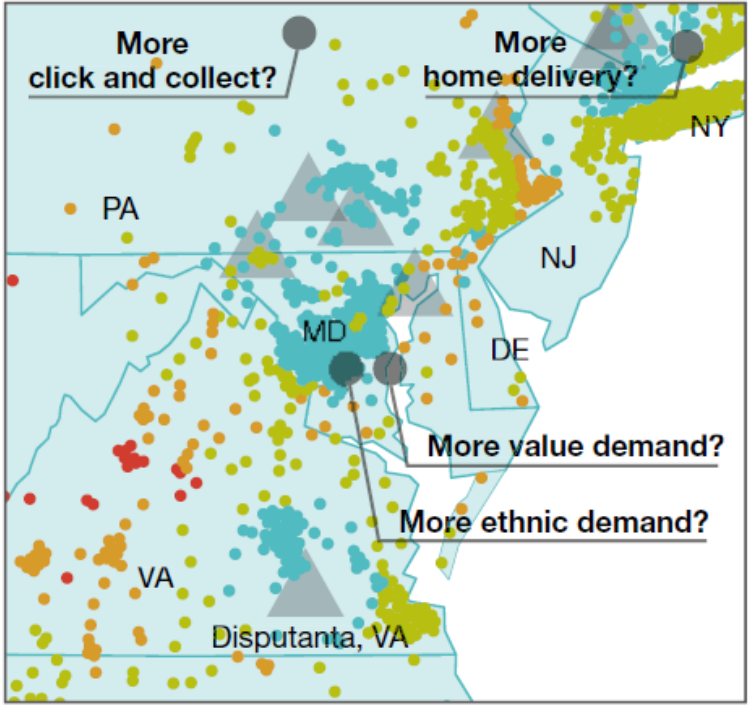
Urbanicity by mode



URBANICITY DRIVEN SERVICE SHIFTS

E-commerce service



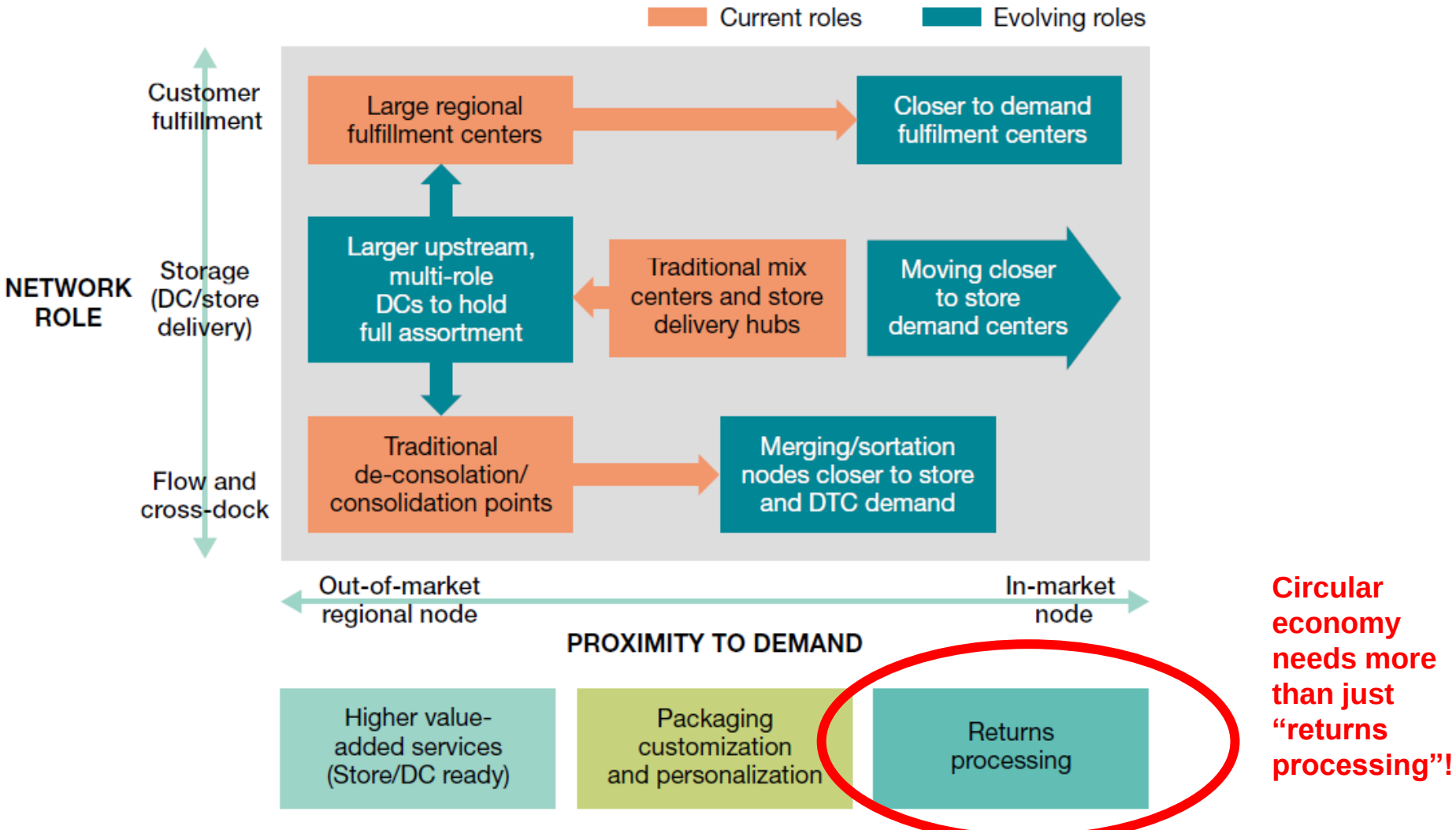


Source: Kearney analysis

Anand et al. 2021, "What got us here will not get us there"

FIGURE 1

Distribution network dimensions



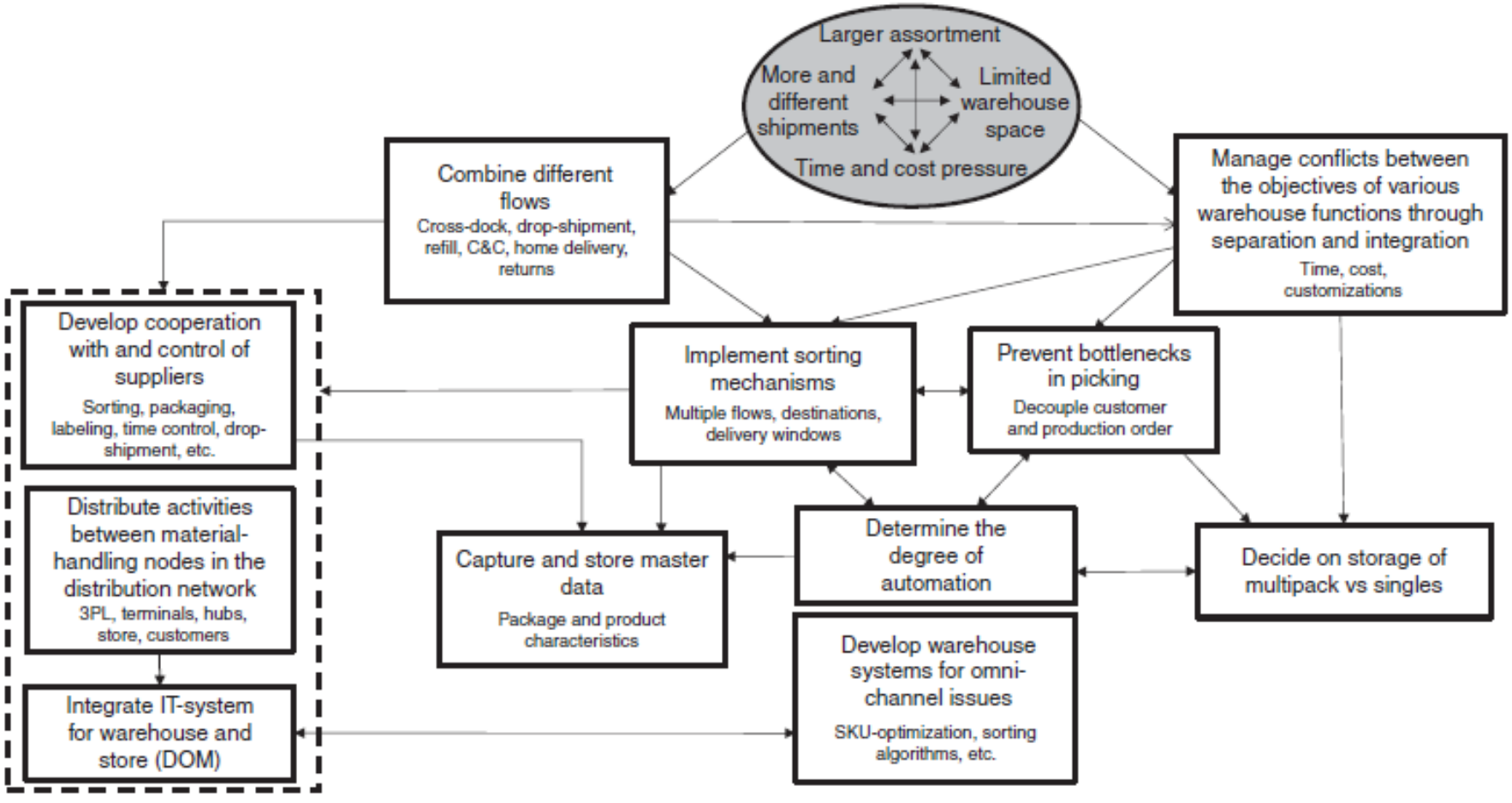
Circular economy needs more than just "returns processing"!

Future of warehousing

Facilities with capabilities suited for more complex and diverse network roles

- store delivery, customer fulfillment and cross docking

Position fulfillment nodes much closer to demand centers with forward deployed inventory



Kembro and Norrman, 2020

Principles of platforming

“Platforming is a design framework that leverages a common set of design, engineering and operational parameters and maximizes the use of modular or standardized components throughout the portfolio.”

What do you need:

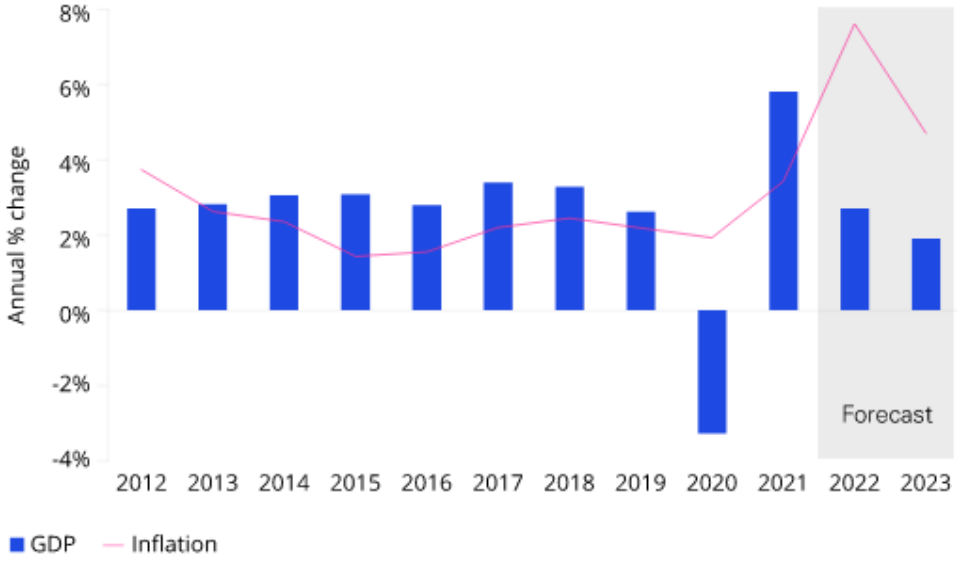
- Standardization: standard physical and digital interfaces to enable interchangeability or interoperability across products.
- Leverage commercial off-the-shelf technology. BUT for circular economy approaches in retail this is a big problem so far!

Cross-functional decision making in new product introduction

O’Keefe et al. “How platforming builds a more resilient supply chain”, 2021 SCMR

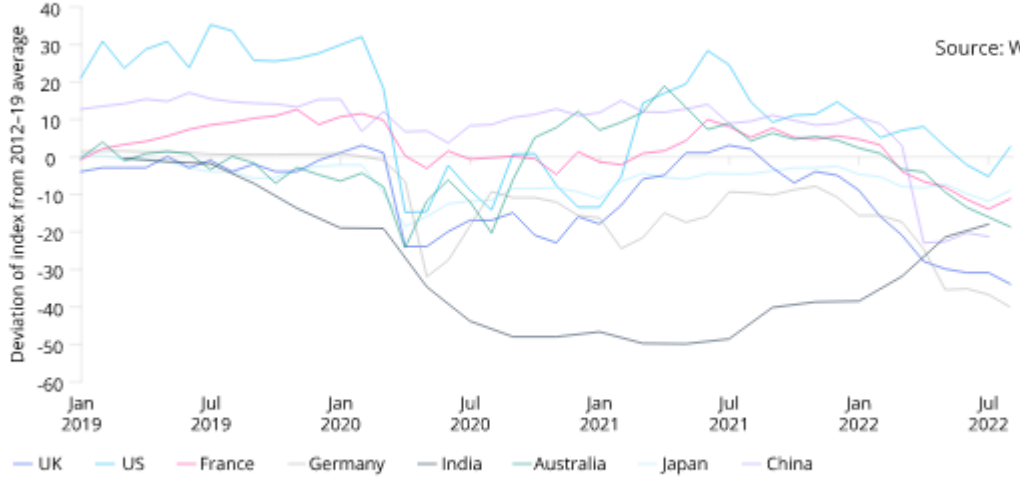
Global economic outlook is not looking promising – this will likely impact consumer spending behavior

Chart 4: World GDP growth and inflation projections



Source: World Bank, KPMG projections.

Chart 3: Consumer confidence has fallen



Source: GfK, The Conference Board, Cabinet Office of Japan, INSEE, Westpac-Melbourne Institute, China National Bureau of Statistics, Reserve Bank of India, KPMG analysis.

Source: KPMG 2022

Impact of economic situation?

Manufacturers are struggling with supply chain disruptions, labor shortages, and increased operational expenses (e.g. energy prices), as a result we may see:

- Increased delivery costs
- Lack of free returns
- Restrictions on return policies

Consumers will likely increasingly go for the lower priced alternatives

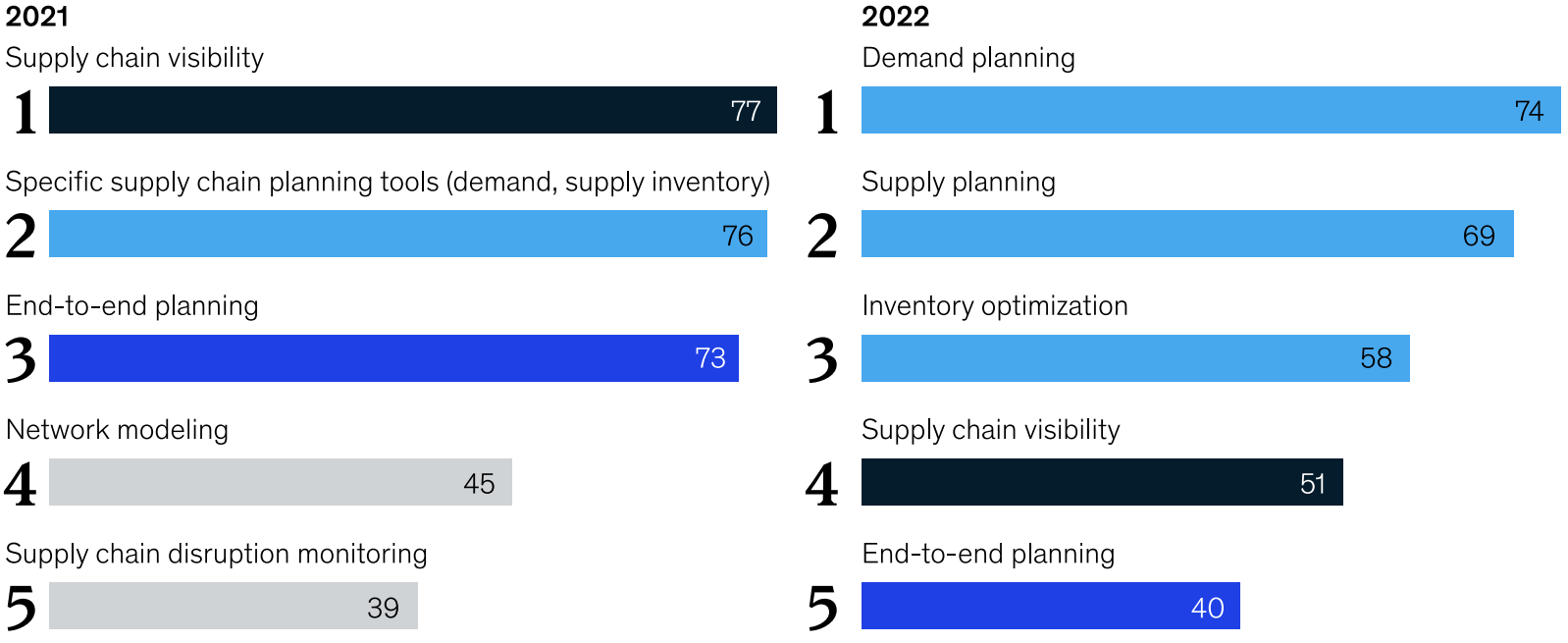
- or reused options?

Supply chain digitalization

Aalto University
School of Business

Digitization priorities are shifting from visibility to demand and supply planning.

Global supply chain leaders' agendas for digitization,[1] % of respondents (n = 113)



[1]Question: In which areas of your supply chain function have you or are you planning to implement digital technologies?
Source: McKinsey survey of global supply chain leaders, Mar 28–Apr 19, 2022

McKinsey & Company

Back to basics?

Rozados and Tjahjono 2014

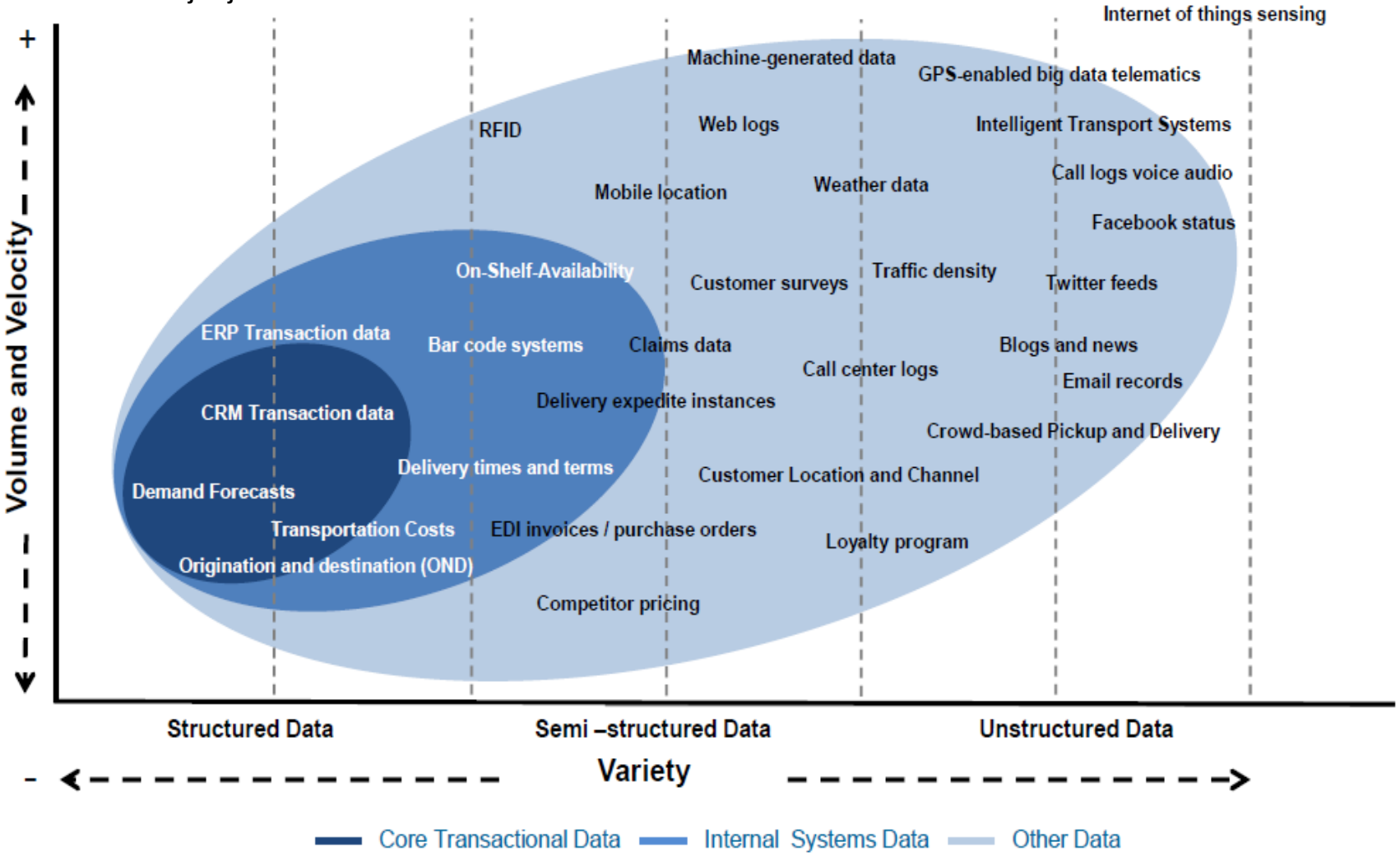
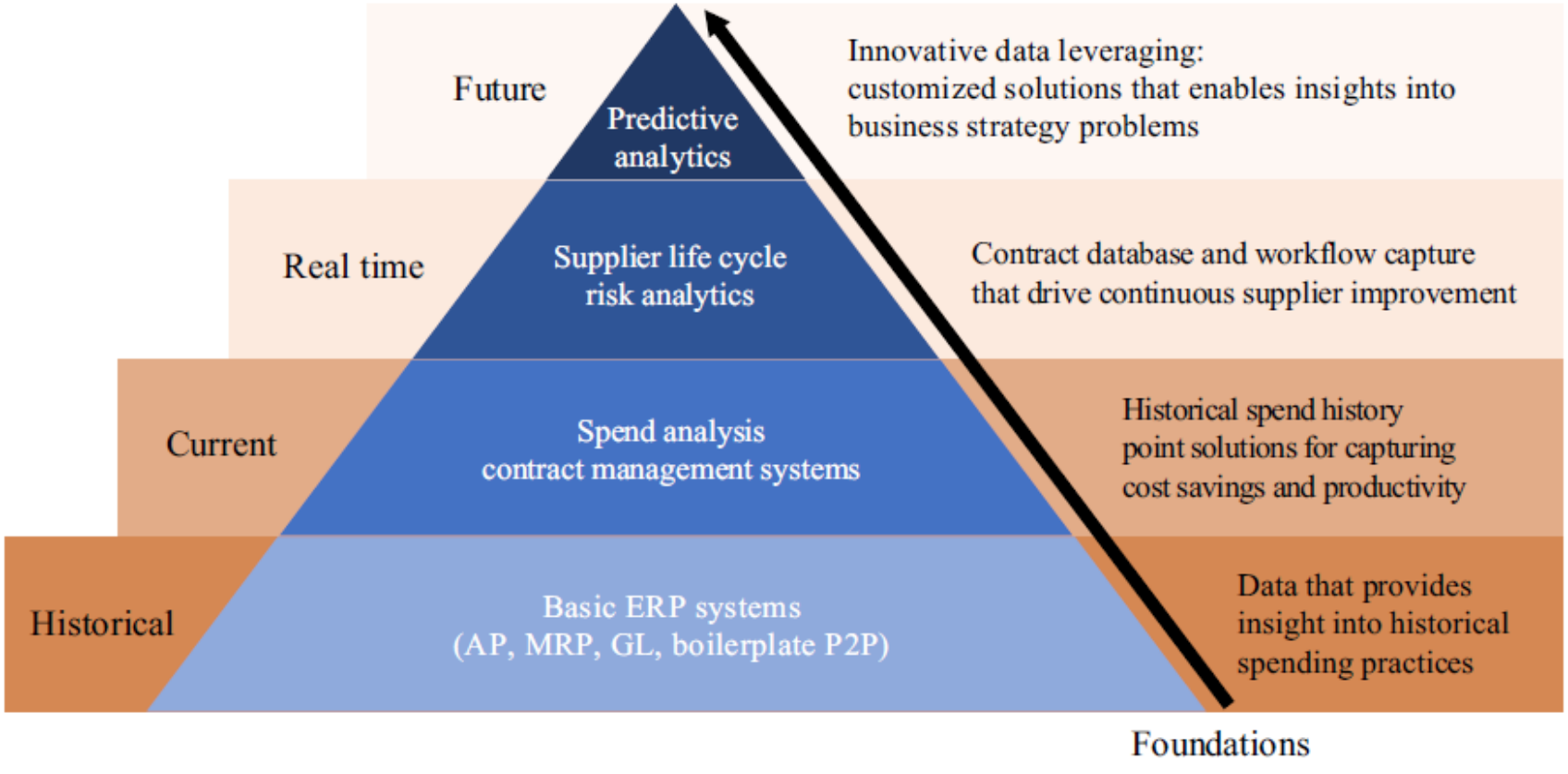


Figure 1. SCM Data Volume and Velocity vs. Variety



Aalto University
School of Business

Handfield et al. 2019

What types of digitalization projects are prioritized in SCM?

Source: GEP 2022 & The Economist

- Advanced automation and robotics
- IoT for real-time tracking and monitoring
- Predictive analytics & real-time data analytics
- AI to support decision making
- Improved traceability (e.g. blockchain)

MAKE SURE ALREADY IN USE!

- Supplier Networks
- Supplier Risk Management
- Spend Analytics
- eSourcing & eAuctions
- Electronic Catalogs
- Contract Management
- Supplier Information Mgmt
- eProcurement
- eInvoicing

Core | Solutions that are already procurement mainstays; Typically larger systems with longer implementation cycles

Cognitive Computing & Artificial Intelligence

Intelligent Content Extraction

Predictive / Advanced Analytics

Visualization

Collaboration Networks & Platforms

Crowdsourcing

3D Printing

Robotics

PICK PRIORITIES!

Maturing | Digital Technologies that are transforming procurement with shorter implementation cycles

KEEP AN EYE OUT FOR DEVELOPMENT!

Block Chain

Sensors / Wearables

Cyber Tracking

Virtual Reality / Spatial Analytics

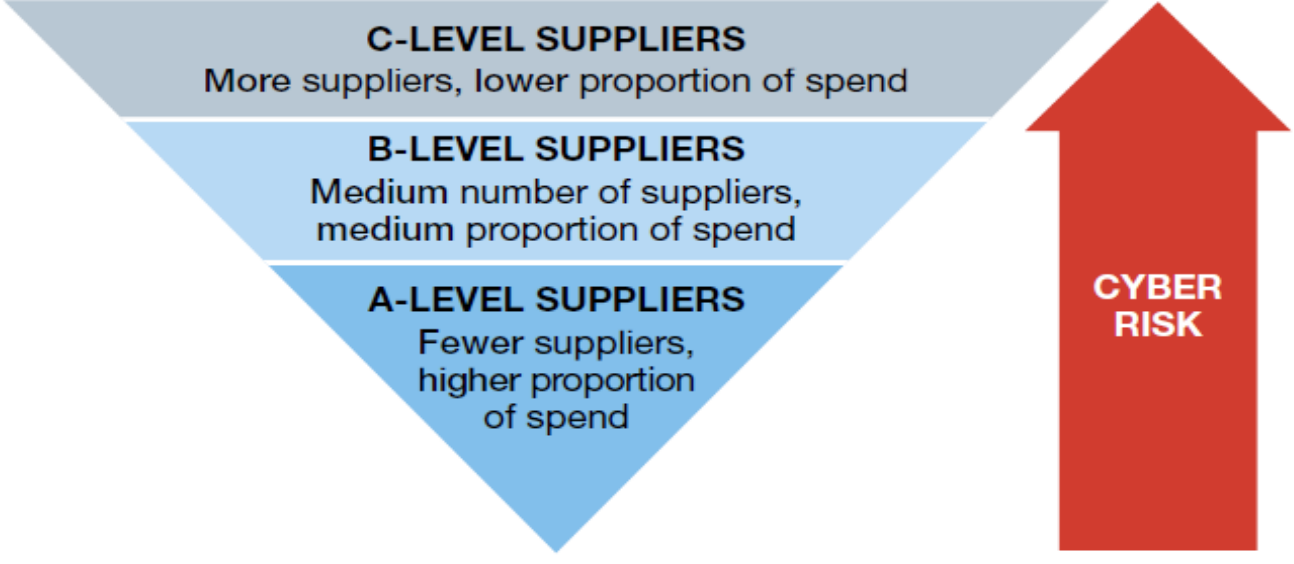
Emerging | Digital Technologies that could impact procurement in the future

HIGH ◄ **CURRENT DEPLOYMENT IN PROCUREMENT** **► LOW**

Increased digitalization brings a new risk to the table

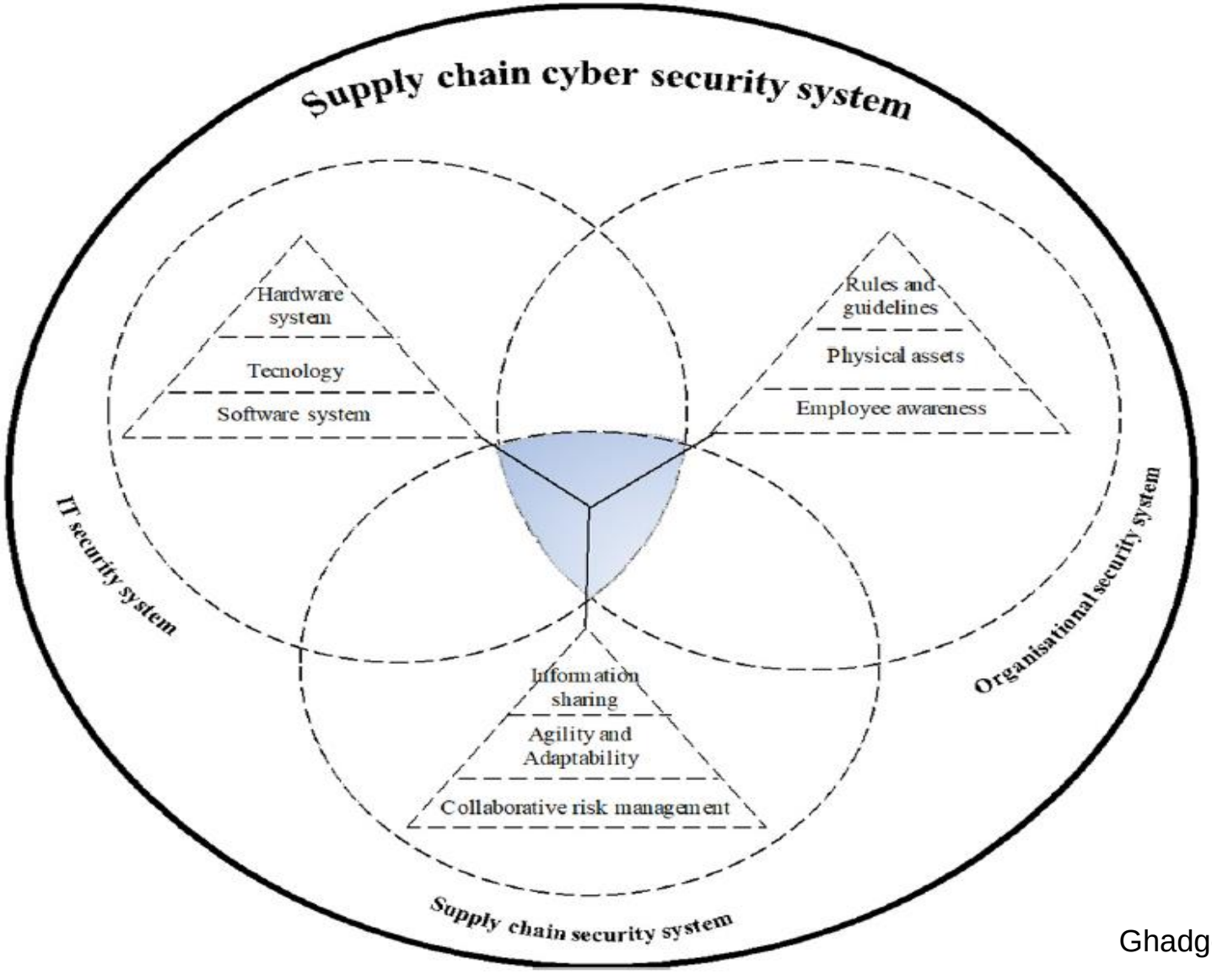
FIGURE 1

C-level suppliers and cyber risk



Source: Authors

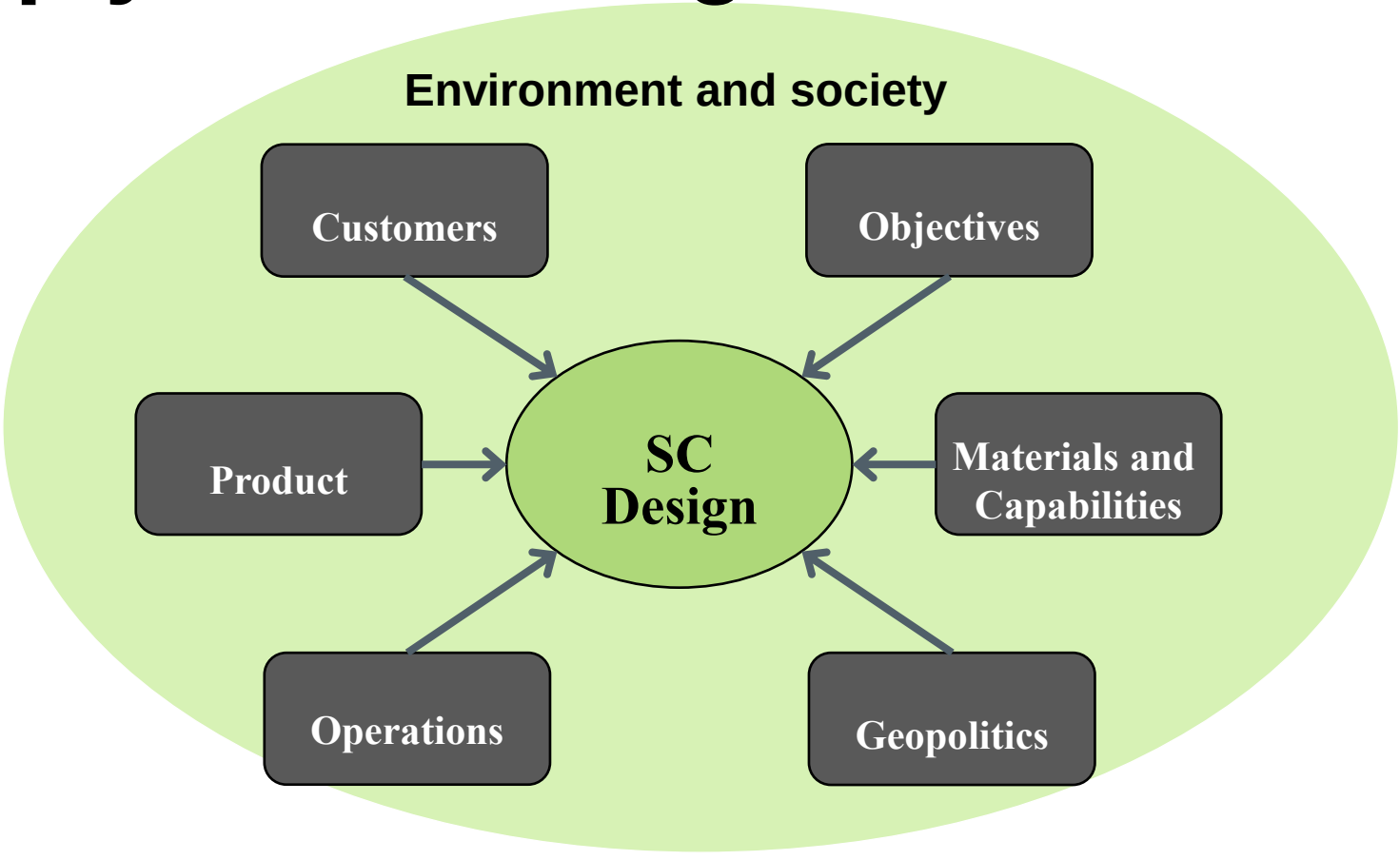
Rogers et al. 2021



Ghadge et al. 2020

It is not all about reacting to the external!!!

Supply chain design



Aalto University
School of Business

Strategy is what ultimately drives supply chain decision making

Corporate strategy and functional strategies set the targets

- First understand what you want to achieve with your supply chain
- Take into account the uncertainties and trends in demand and supply – to ensure that your supply chain and distribution network can deliver the intended strategic objectives in the environment they must operate in

In the case workshops listen carefully to what the companies want!

Strategy is not constant

Typically, the areas that need to be monitored are:

- Strategic assumptions: The assumptions on which the strategy is based
- Strategic issues: The key trends that could significantly impact the strategy if they reach critical mass
- Strategic triggers: The events that challenge the strategy