

Capstone: Future Proofing Supply Chains

Strategic Foresight in Supply Chain Management

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Aalto University
School of Business



Class Discussion

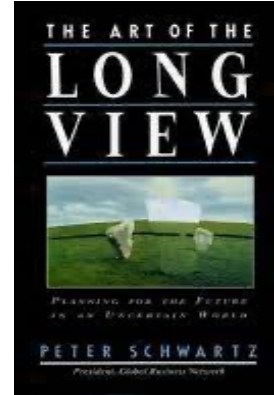
**What do you see happening in
business and society the next 10
years?**



Strategic Foresight and Scenario Planning

Background and objectives

- Background
 - Developed at RAND and SRI
 - Applied at Royal Dutch Shell
 - Described in *The Art of the Long View*
- Objective is to tell stories that are...
 - Interesting
 - Plausible
 - Relevant



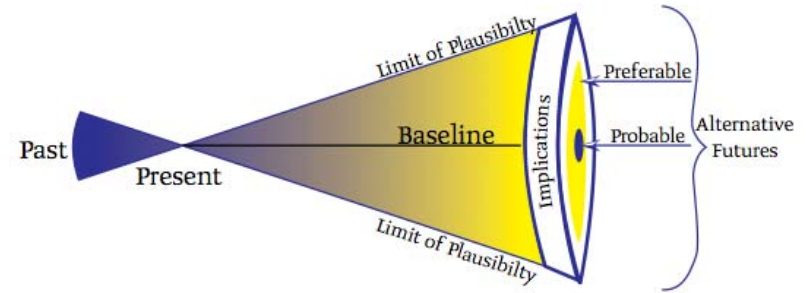
“The purpose of scenarios is not to predict the future. Their purpose is to gather and transform intelligence of strategic significance into fresh perceptions.”

-- Pierre Wack in Schwartz,
The Art of the Long View

Three types of futures thinking

There could be multiple plausible futures...

Futures	Forces	Thinking	Techniques
Probable	Constants Trends	Definite Scientific	History Extrapolation
Plausible	Discontinuities Surprises	Speculative Imaginative	Scenarios Simulation
Preferable	Choices Images	Visionary Empowered	Visioning Planning



The Future is many not one

Strategic Foresight Methods

An overview of the different methods of scenario planning

1. **Judgment** (Genius, Visualization, Sociodrama, Coates & Jarratt)
2. **Baseline** (Trend extrapolation, Manoa, Systems Scenarios, Trend Impact Analysis)
3. **Elaboration of fixed scenarios** (Incasting, SRI Matrix)
4. **Event sequences** (Probability trees, Sociovision, Divergence Mapping, Future Mapping)
5. **Backcasting** (Horizon Mission Methodology, Impact of Future Tech)
6. **Dimensions of uncertainty** (Morphological analysis, Field Anomaly Relaxation, GBN, Option Development & Evaluation, MORPHOL)
7. **Cross-impact analysis** (IFS, SMIC-PROB-EXPERT)
8. **Systems modeling** (Sensitivity analysis, Dynamic scenarios)

Strategic Foresight Process

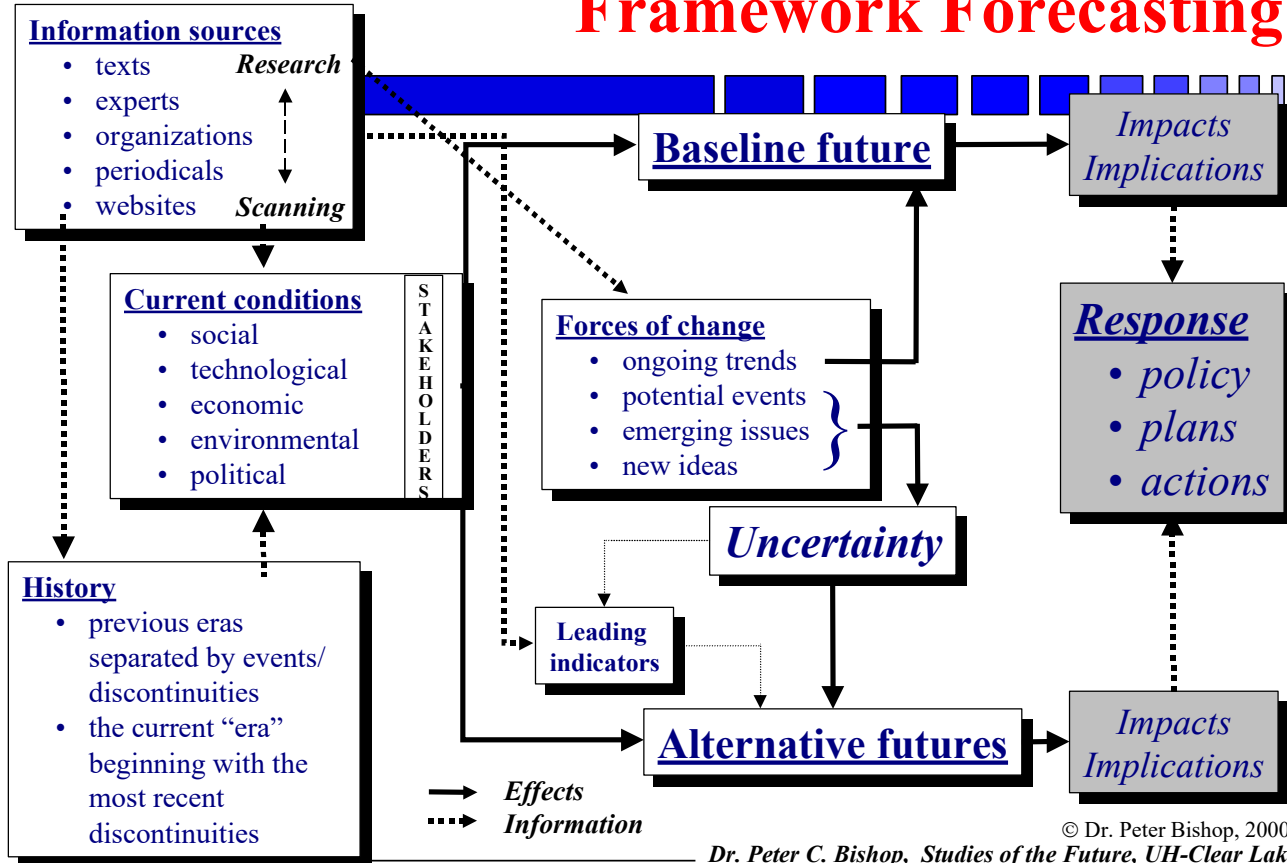
Process steps in a strategic foresight engagement

Step	Description	Product
Framing	<i>Scoping the project:</i> attitude, audience, work environment, rationale, purpose, objectives, and teams.	Project plan
Scanning	<i>Collecting information:</i> the system, history and context of the issue and how to scan for information regarding the future of the issue	Information
Forecasting	<i>Describing baseline and alternative futures:</i> drivers and uncertainties, implications, and outcomes	Baseline and Alternative Futures (Scenarios)
Visioning	<i>Choosing a preferred future:</i> envisioning the best outcomes, goal-setting, performance measures	Preferred Future (Goals)
Planning	<i>Organizing the resources:</i> strategy, options, and plans	Strategic Plan (Strategies)
Acting	<i>Implementing the plan:</i> communicating the results, developing action agendas, and institutionalizing strategic thinking and intelligence systems.	Action Plan (Initiatives)

Framework Forecasting Method

The secret for forecasting the future!

Framework Forecasting

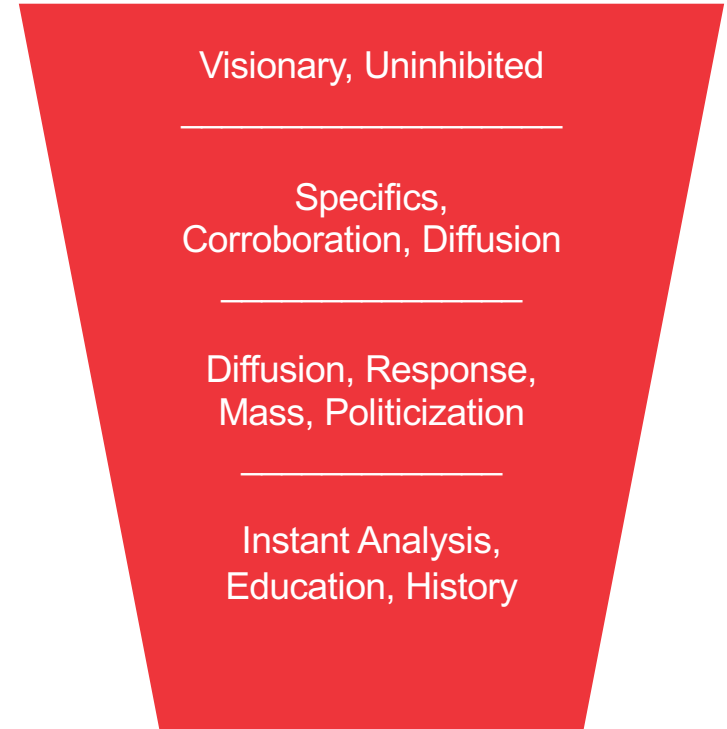


Information Sources

Information sources provide the basis for research and scanning

Potential Information and Data Sources

Visionary	Art, fiction
Uninhibited	Fringe media, underground
Specifics	Notes, speeches, monographs
Corroboration	Tech journals, stat documents, abstracts
Diffusion	Popular tech journals, insider newsletters
Response	Intellectual magazines, general newsletters
Mass	General interest pubs, books
Politicization	Government reports and surveys
Instant analysis	Social Media, News, radio, TV, Internet
Education	Academic journals, textbooks
History	Doctoral dissertations



Weak & Early Warning Signals

Horizon or environmental scanning warns us about change coming in the future.

The term evokes images of lookouts on old ships or modern-day radar scanning the horizon.

Lookouts and radars report sightings or signals from objects that are far off before they have the chance to harm to a vessel, a plane or a fortified encampment.

It takes time for the objects to get to the lookout's or the radar's location, time that people can use to prepare. The farther away the object is, the longer it takes for the object to arrive and the more time there is to prepare.

At the same time, most potentially threatening objects at sea or in the air pass off to one side or the other without interacting with the ship or plane.

But woe to the lookout who does not report the object anyway. He would not be doing his job if he only reported objects that were about to hit the ship.

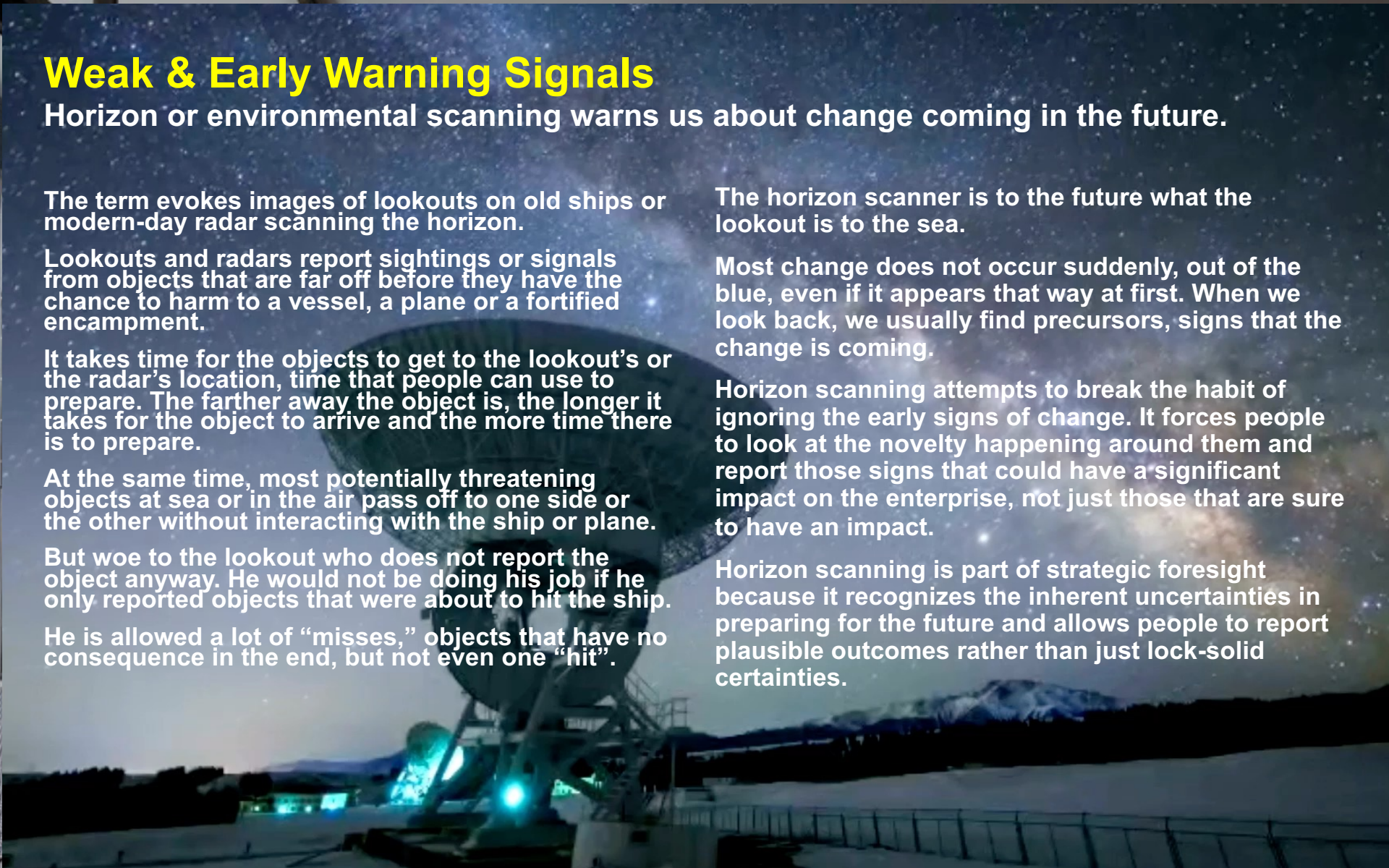
He is allowed a lot of "misses," objects that have no consequence in the end, but not even one "hit".

The horizon scanner is to the future what the lookout is to the sea.

Most change does not occur suddenly, out of the blue, even if it appears that way at first. When we look back, we usually find precursors, signs that the change is coming.

Horizon scanning attempts to break the habit of ignoring the early signs of change. It forces people to look at the novelty happening around them and report those signs that could have a significant impact on the enterprise, not just those that are sure to have an impact.

Horizon scanning is part of strategic foresight because it recognizes the inherent uncertainties in preparing for the future and allows people to report plausible outcomes rather than just lock-solid certainties.



Scanning the environment for weak signals

Weak or early signal = scanning hit!

- A weak or early signal of change is called a **scanning hit**—an event or a new piece of information that signals that change is coming.
- The hit itself is something new or different, something out of the ordinary, a discrepancy in the pattern.
- It is not itself a significant change, but it could someday develop into a major change with important consequences for a domain or an enterprise.
- Scanning is inherently subjective, making it very hard to teach or practice with any degree of repeatability.
- It is also difficult to achieve credibility as an objective function since a significant event to one person may not be significant to another..
- **Balance scanning** involves one or more individuals, picking up weak and early signs of change, and making subjective judgments based on their knowledge and experience by selecting what they believe are real signs of change in a sea of noise, most of which will probably not amount to anything anyway.

- Scanning is difficult because with **weak signals**, the signal to noise ratio is very low.
- Strong signals are widely reported in the media. While a scanner might draw novel implications from a widely reported news story, the event or information itself is not special or unusual since everyone knows it already.
- The best hits are those that are not widely reported.
- The problem is that they appear in an ocean of information of no consequences whatsoever.
- Another complexity is that early signals are by nature early. They take a long time to develop into full-blown change.
- While early is good because it gives time to prepare, early also allows time for a lot of other things (or in fact no things) to happen.

**”There is nothing “weak” in the signal itself.
What is weak is the attention paid to the signal
when it is still possible to introduce
appropriate responses, take decisions and
avoid reactive modes endangering the
enterprise. “**

- Peter Schwartz



Group Discussion

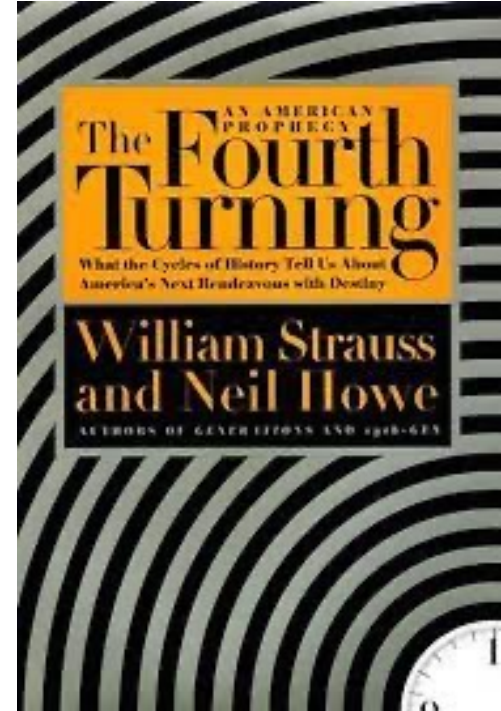
What are some examples of early warning signals that were ignored and led to systemic failures?



History: The Fourth Turning

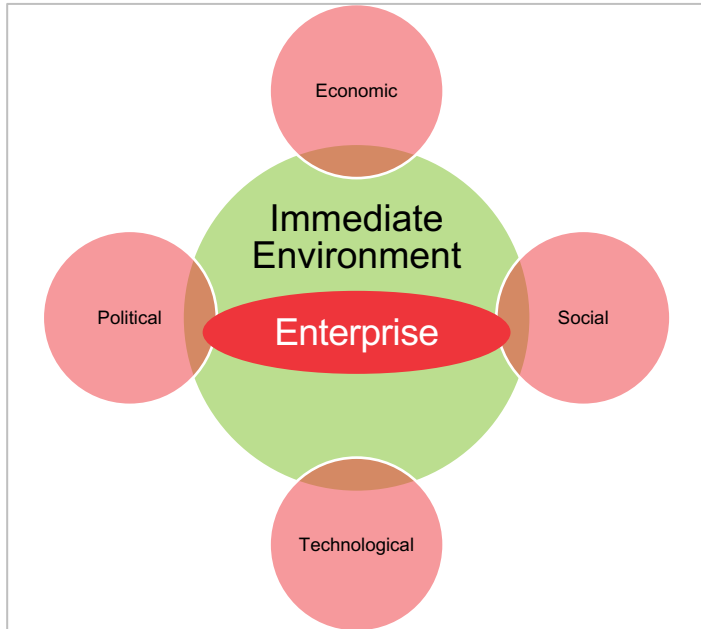
Strauss – Howe Generational Theory

The **Strauss–Howe generational theory** describes a theorized recurring generation cycle in American history. According to the theory, historical events are associated with recurring generational personas (archetypes). Each generational persona unleashes a new era (called a turning) lasting around 20–25 years, in which a new social, political, and economic climate (mood) exists. They are part of a larger cyclical "saeculum" (a long human life, which usually spans between 80 and 100 years, although some *saecula* have lasted longer). The theory states that a crisis recurs in American history after every saeculum, which is followed by a recovery (high). During this recovery, institutions and communitarian values are strong. Ultimately, succeeding generational archetypes attack and weaken institutions in the name of autonomy and individualism, which eventually creates a tumultuous political environment that ripens conditions for another crisis.



Three levels of change..

Enterprise, immediate, and global environment impact change



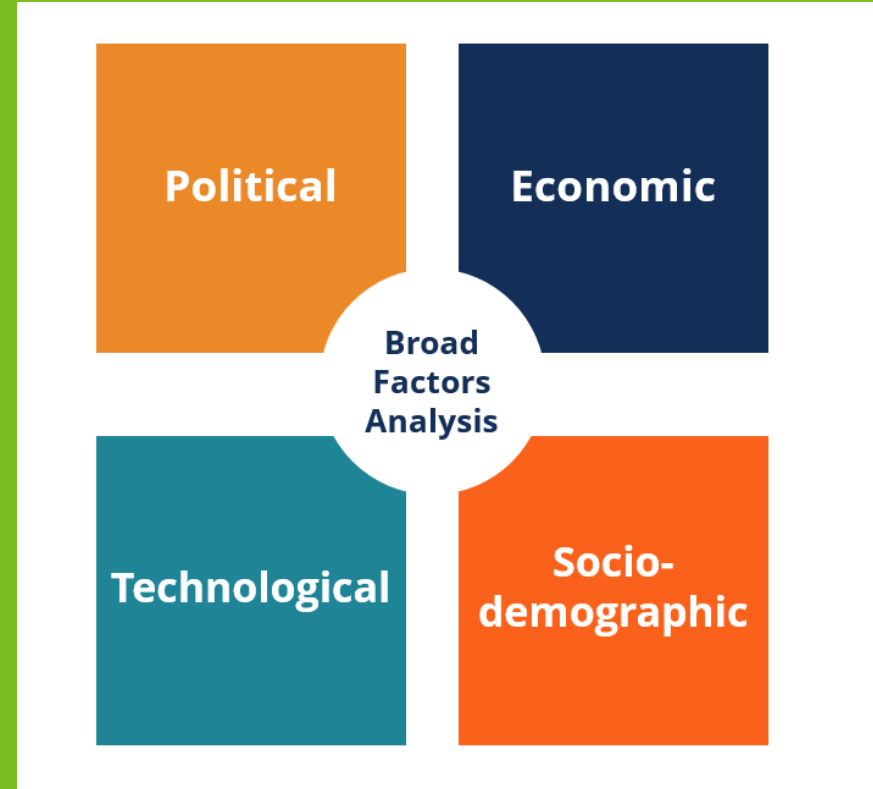
Level	Definition	Example for a university
Enterprise	The individual, family, company, or community that the scanning is for	Faculty, administration, facilities, equipment, policies, procedures
Immediate Environment	Factors that affect the future of enterprise directly in the short term	Students, employers, academic disciplines, other universities, and govt.
Global Environment	Factors that affect the future of an industry indirectly in the long term	Population, political climate, public opinion, technologies, economy

Broad Factor Analysis

A **Broad Factors Analysis** assesses and summarizes the four macro-environmental factors:

- **Political**
- **Economic**
- **Social**
- **Technological**

These factors have significant impacts on a business's operating environment, posing opportunities and threats to the company and all of its competitors.



Broad Factor Analysis

Political <ul style="list-style-type: none">•Government stability•Pandemic policies / mandates•Public and media scrutiny of govt. officials•Impact of wars or conflicts, creating worsening relations between nations•Elections and (non)support of govt. institutions•Middle East, BREXIT, China, EU, NATO	Economic <ul style="list-style-type: none">•Interest rates, inflation, unemployment•National debt levels•Consumer spending strength•Govt. stimulus of the economy•Economic impact of COVID on specific industries•Labor shortage (e.g.) great resignation•Supply chain disruptions
Socio-Demographic <ul style="list-style-type: none">•Aging population•Infant mortality rates•Remote work & increased free time•Urban vs rural•Social relationships impacted by digital•Mental & physical health•Ethnic, racial, religious, and gender issues	Technological <ul style="list-style-type: none">•Advances in bio-tech & virology•Demand for technology sector products & services•Increased automation of routine processes•E-commerce consumer purchases•Crypto adoption and regulation•IPR and copyright infringements•Levels of research funding for innovation & tech.



Group Work

Break up into your groups & conduct your own Broad Factor Analysis (PEST) global driving forces.

30 minutes



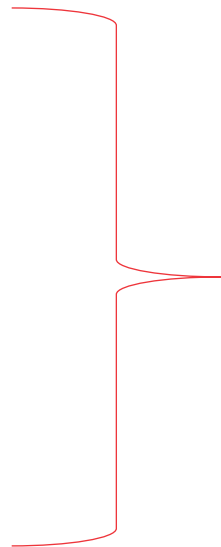
Uncertainties and the Future





State, effect, and response uncertainties

State
Uncertainties

Effect
Uncertainties

Response
Uncertainties

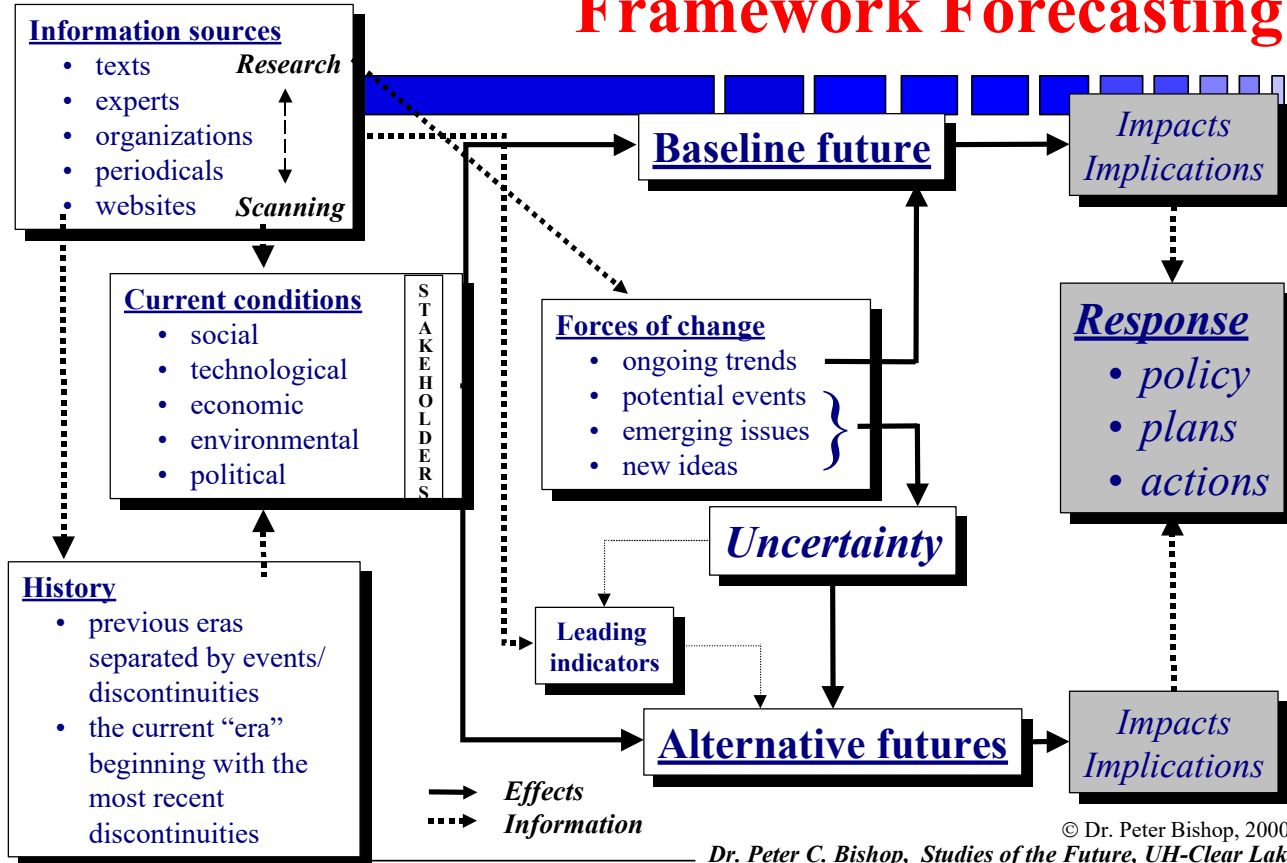


Level 1 A Clear Enough Future	Level 2 Alternate Futures	Level 3 A Range of Futures	Level 4 True Ambiguity
			
<ul style="list-style-type: none"> Forecast and prediction are possible. Forecast can be precise enough e.g. for decision-making or strategy development. State uncertainty is low, effect and response uncertainty are manageable. 	<ul style="list-style-type: none"> The future = one of few alternate, discrete outcomes. Predict the outcome is impossible, probability can be assigned to alternate outcomes. State uncertainty increases, effect and response uncertainty still manageable. 	<ul style="list-style-type: none"> The future = a range of alternative outcomes. The range bounds a continuum where the actual eventually lies. No natural discrete scenarios emerge. State uncertainty further increases at this level, so do effect and response uncertainty. 	<ul style="list-style-type: none"> Nearly impossible to foresee the range of potential outcomes. All state, effect, and response uncertainties are high at this level.

Framework Forecasting Method

The secret for forecasting the future!

Framework Forecasting



Leveraging Scenario Planning in Supply Chain Management



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Traditional Supply Chain Planning

Strategic supply chain planning tends to be linear

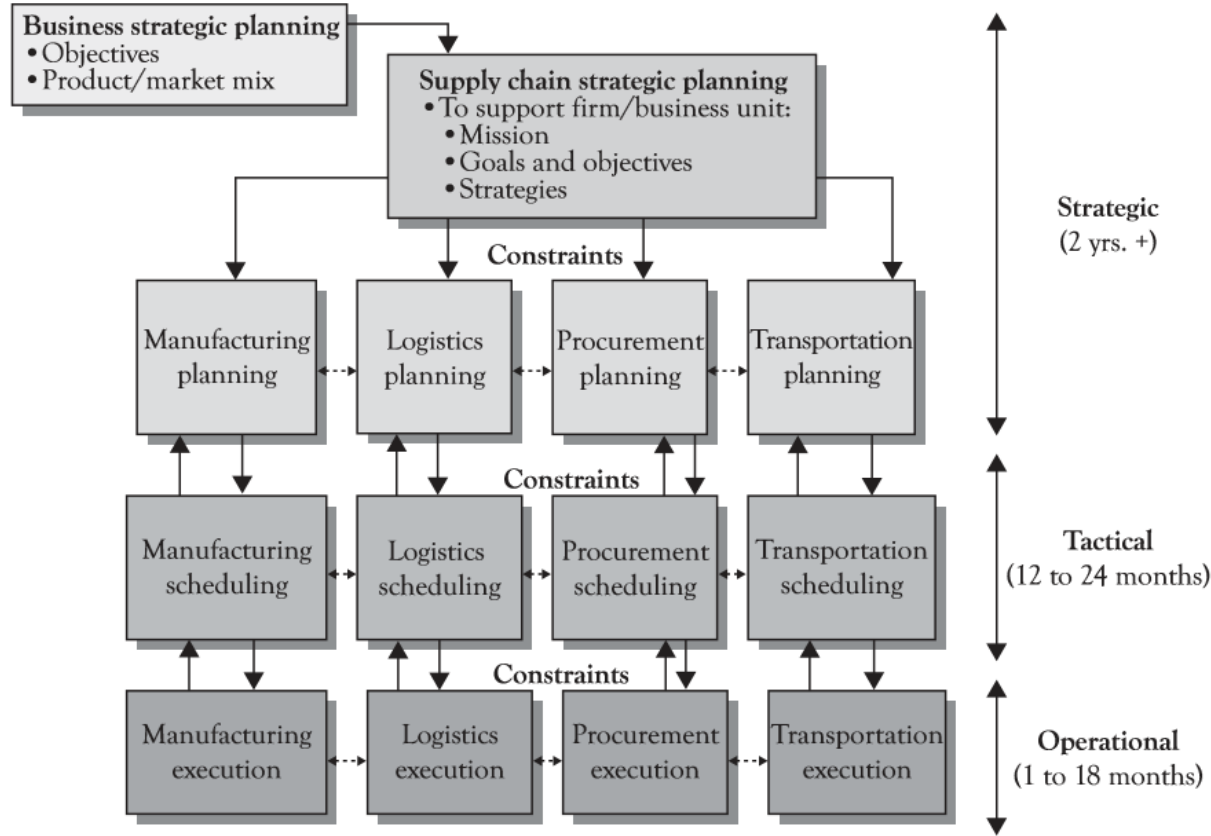


Figure 3.1. A unified business and supply chain planning framework.

How SCM executives create value from scenarios

Background on scenario planning

How can supply chain executives create scenarios at such a rapid pace without compromising the quality and the extent of information needed to create relevant scenarios?



Leverage digital capabilities: data from sensors, social media, texts, and analyze this data using advanced analytic tools and techniques. Secondly, by engaging in collaborative scenario planning, in which upstream and downstream organizations in a supply chain jointly create scenarios.



Framework for Supply Chain Scenario Planning

Six step process framework for supply chain scenario plan

Accelerating Supply Chain Scenario Planning

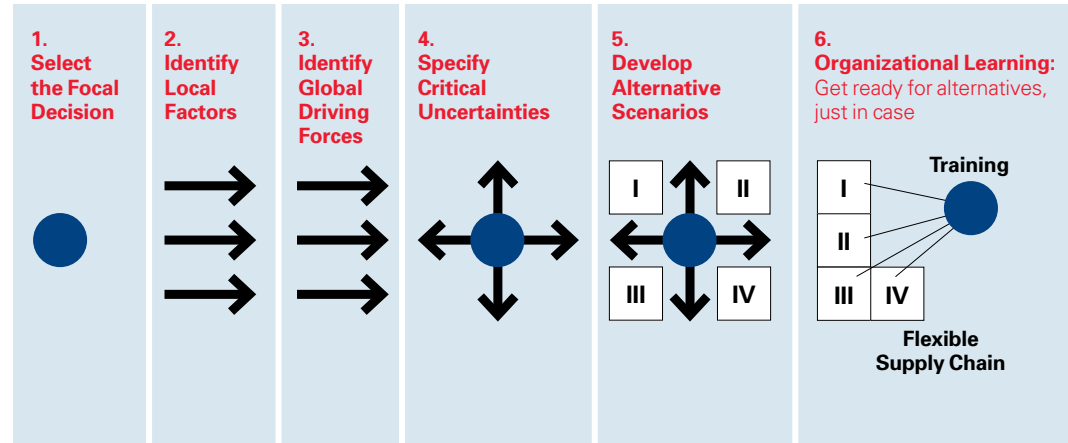
The pandemic showcases a need to make slow-moving supply chains nimbler. Using data and collaborating with partners on scenario planning can empower companies to adapt.

BY NITIN JOGLEKAR AND SHARDUL PHADNIS

In spring 2020, when the COVID-19 pandemic had disrupted supply chains across numerous major industries worldwide and showed no signs of abating, most organizations had limited vision in terms of how they should prepare to resume business activities. This lack of clarity resulted from a confluence of uncertainties, including when an effective vaccine might be widely available and what mandates governments might implement to curb the coronavirus's spread. As organizations and their supply chain partners have turned to scenario planning to help them "see" actionable paths amid the pandemic, such planning has become faster, nearer term, more inclusive, and digital.¹ Our field research has found that digital technologies, data, and collaboration with supply chain partners are central to this effort.

Conventional scenario planning involves considering possible future states for a planning horizon ranging from three to 30-plus years. It requires a multistep deliberation process within the boundary of a single organization or its supply chain that may take a few months after the data has been analyzed. (See "A Primer on Supply Chain Scenario Planning," p. 74.) Planners revisit these scenarios when uncertainties emerge, especially as a crisis becomes evident.

Developments in the past five years have triggered widespread applications of scenario planning, but with shorter time frames and different methods than in the past. U.K. citizens' 2016 vote to leave the European Union, as well as issues emerging from U.S.-China trade negotiations that began in 2017, raised concerns about major supply chain disruptions whose precise nature was



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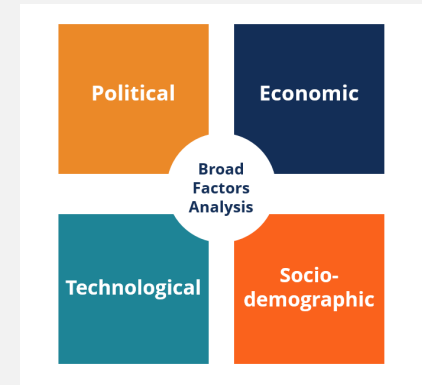
Step 1 and 2: Select a focal decision & identify global driving forces

1. The focal decision hinges on the firm's future vision, strategic initiatives, ambition level.



Example: Company X wants to expand into the German market and wants to understand how many production plants and DCs it needs to meet market demand in 2028.

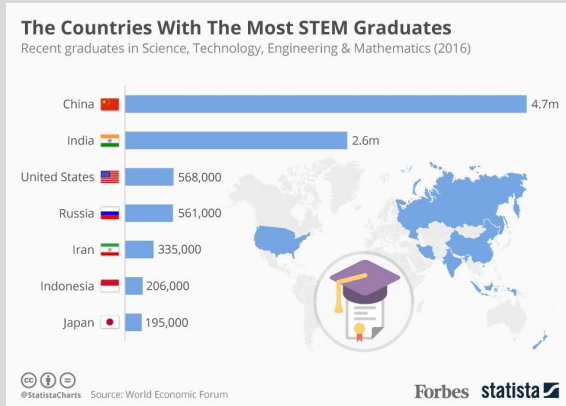
2. Global driving forces can be identified by utilizing Broad Factor Analysis (e.g.) PEST, STEEPL, etc..



Example: Company X's main product targets females between 18-35 years old. Based on census data there, will be 18 million females of that age group in 2028.

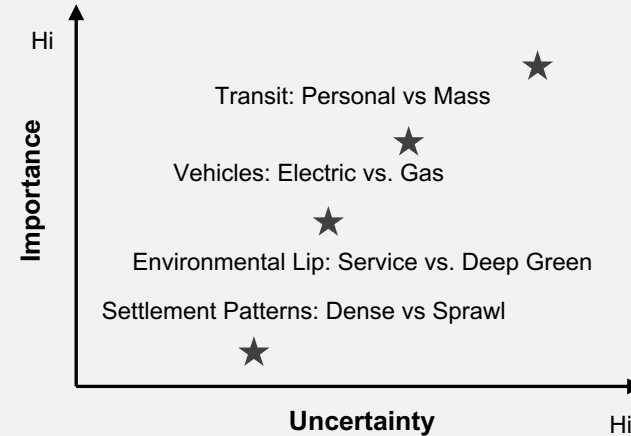
Step 3 and 4: Identify local factors & specify critical uncertainties

3. Identify local factors that might influence the focal company's future direction (e.g.) resources such capital, labor, technology, assets, etc..



Example: Company A wants to locate their R&D facility in a country with access to quality engineers & IPR protection

4. List the key uncertainties that would impact the focal firm's supply chain operations and estimate levels of uncertainty & importance.



Example: Personal vs mass transportation for the Helsinki metropolitan area in 2030.

Step 5 and 6: Develop alternative scenarios and prepare the organization for these scenario options

5. Development of alternative future scenarios based on the drivers, uncertainties, impacts, and outcomes of these scenarios.



Example: In 2035 road congestion becomes so acute that flying taxis could become a transport option

6. Embed organizational learning based on preparing the key stakeholders on the various alternative futures



Example: Technology company's C-level suite are scanning disruptive technologies that could make their business extinct.

Applying Strategic Foresight to the Course Case Companies



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Case Companies

The logo for Posti, featuring the word "posti" in white lowercase letters on an orange background. A small white crown icon is positioned above the letter "i".

posti

The logo for Kemira, featuring the word "kemira" in blue lowercase letters on a white background.

kemira

The logo for Reima, featuring the word "reima" in red lowercase letters on a white background, with a registered trademark symbol (®) to the upper right of the "a".

reima®

Posti

Case Company #1



Focal Decision

Global Driving Forces

Local Factors

Uncertainties

Case Posti

Company background

(for more info, see: <https://www.posti.com/en/group-information/>)
Posti Group is a public limited company owned entirely by the Finnish state. Posti Group's net sales in 2022 amounted to EUR 1.65 billion and the adjusted EBITDA amounted to EUR 183.8 million. EUR 31.7 million dividends were paid to the owner in 2022. The group employs approximately 20,000 people. The business is divided into 4 areas: 1) eCommerce and Delivery Services, 2) Transval, 3) Aditro Logistics and 4) Postal Services. This case will focus on the Postal services.

The Postal services in Finland have a unique distribution network covering whole of Finland. They serve both homes and businesses. The postal services are subject to the Postal act, which can be found here: <https://www.finlex.fi/en/laki/kaannokset/2011/en20110415>. Posti communications about the act and recent changes to are available e.g. here: <https://www.posti.com/en/media/media-news/2023/postilaki-ja-jaklututki-en/>

The case assignment: Forecasting and planning for Postal services 2030

The assignment is focused on the postal services business, which entails the following services/products:

- Newspaper and magazine delivery
- Letters & cards
- Ads

The demand for postal services has been both in Finland and globally on decline given e.g. increased digitalization of mail, bills and magazines. Yet postal services will continue to be needed also in the future, and their provision is mandated by law. Posti must plan how to provide sufficient service levels in a profitable manner also in the future in this challenging environment of declining demand.

Your case assignment is to:

1. Form an understanding of the current demand for postal services and the service offering and the business model and logistics operations, and what are the key change drivers impacting the industry and its players.
2. Forecast the demand for the different types of postal services in 2030. Consider what is the best method to forecast, including both quantitative methods as well as qualitative methods (such as scenario considerations). You may also look to outside of Finland to see what is happening with postal services in other countries. Consider not only what is happening but why it might (or might not) happen.
3. Given your forecasts in step 2 above, describe what kinds of measures will Posti postal services need to take in order to remain profitable as a business by 2030?
Aspects to consider include:
 - a. Changes in the product/service offering?
 - b. How will the pricing of their offerings develop / what would the consumer be willing to pay?

Kemira

Case Company #2

Kemira

Focal Decision

Global Driving Forces

Local Factors

Uncertainties

Case Kemira

Kemira is a global chemicals manufacturing company with over 60 production sites in North and South America, Europe and Asia. We are among the leading providers of pulp & paper chemicals in the world helping our customers to achieve efficient production processes with best-in-class expertise, a complete chemistry portfolio, and digital services. We are also a very strong player in water treatment chemicals (for example municipal wastewater purification) and provide solutions to increase energy efficiency in water intensive industries. Kemira also has a strong sustainability focus and over 40% of purchased raw materials come from renewable sources. Kemira's annual revenue is approximately 3.6 billion € (2022).

For more company info, see: <https://www.kemira.com/>

The case assignment: supply network optimization for resilience

The assignment is focused on Kemira's supply network optimization for the Dry Polymer product line and the Americas region for the Pulp & Paper business segment. There are 3 production sites for these products, which are located in Asia and Europe, from which goods are shipped to more than 15 distribution centers in North and South America. There are close to 100 customers for these products and they typically order goods with a short lead time requirement directly from these distribution centers.

Your case assignment is to:

1. Evaluate the current supply network structure. Form an understanding of the costs, inventory service levels, lead times and other relevance performance metrics. Consider the network structure against Kemira's strategic objectives and the market in which Kemira operates.
2. Evaluate how well this supply network is equipped to withstand volatility and uncertainty. Consider different potential sources of volatility and uncertainty that could impact supply, demand or both, keeping in mind the most important customers and their business environment as well. Identify and evaluate potential changes in network structure that could:
 - a) improve the resilience of their network structure, and / or
 - b) provide cost saving opportunities in the chain without sacrificing customer availability
 - c) improve performance on one or more performance indicators without notable performance reductions in any other indicators. You can consider customer service metrics, costs as well as sustainability measures such as emissions.
3. Based on the above analysis provide your recommendations to Kemira on how they can continue to operate a resilient network in the future as well as suggested savings opportunities. Justify your suggested changes and discuss the impact related to their implementation. You can divide your analysis into a short horizon (0-2 years) and longer horizon (3-5 years).

Reima

Case Company #3

reima®

Focal Decision

Global Driving Forces

Local Factors

Uncertainties

Case Reima

Company background (for more info, see: <https://company.reima.com/en>)

Reima's mission is to gear up the next generation of happy, active kids, preparing them for the world to come. Reima offers a wide range of clothing, footwear and accessories suitable for all seasons and climates for kids aged 0 to 12 years.

Founded in Finland in 1944, Reima employs over 400 people. Reima's products are available in over 50 countries across the world. In 2021, Reima's net sales were €147 million, of which close to 90% was generated outside of Finland.

The case assignment: Reverse logistics for product return

The assignment is focused on Reima product returns related to:

- Returns from campaigns and/or e-commerce outlet sales
- Returns and unsold items after the season
- Returns within the season and/or continuing items

Your case assignment is to:

1. Form an understanding of the product returns and their role and impact in Reima's distribution, warehousing and sales. This includes an understanding of what works well in their current reverse logistics and product returns operating model and what are the areas that need changes and improvement in the future. The analysis should include the operative/logistics perspective, processing time, the cost/profit perspective and possible sustainability considerations. This step includes analysis of data provided by Reima on product returns and unsold inventory.
2. Benchmark reverse logistics and circular supply chain models in the (children's) clothing industry in Europe. Consider both the business model and the reverse logistics operations when benchmarking. You can pick the benchmark companies yourself, but please pay particular attention to relevance in comparison to Reima:
 - a. Consider size similarity (this has an impact on resources and existing infrastructure)
 - b. Consider product similarity in terms of e.g. seasonality
 - c. Consider market similarity
 - d. Consider any other relevant aspects that can impact adoption of operating models
3. Review possible alternatives for reverse logistics models provided by service providers. These could include logistics and warehouse operations providers (incl. companies focusing on the returns process) or for example companies that specialize in liquidation of old inventory.
4. Based on the work carried out for steps 1-3, outline 3 alternative reverse logistics models for Reima to handle their product returns and unsold products. The models should consider the following aspects:

Group Work

Break up into your groups & identify relevant info sources, history, forces of change, uncertainties that are relevant for your case company.

30 minutes



Thank you!



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