COURSE GEST-H-501

LOGISTICS ENGINEERING AND MANAGEMENT

Session n°12

Professor Alassane B. NDIAYE

COURSE PLAN 2024-2025 *(SESSIONS & DATES VIEW)*

- SESSION 01/M: 05/11/2024 – INTRODUCTION + BLOC 1 (THEORY & EXERCISES PLANNING & FORECASTING)
- SESSION 02/M: 09/11/2024 – BLOC 1 (THEORY & EXERCISES PLANNING & FORECASTING)
- SESSION 03/M: 12/11/2024 – BLOC 4 (THEORY & EXERCISES, WAREHOUSING & INVENTORY MANAGEMENT)
- SESSION 04/M: 16/12/2024 – **** BLOC 5 (EXPERT TALK, MAKE) + BLOC 8 (EXPERT TALK, REVERSE) ****
- SESSION 05/T: 19/11/2024 – BLOC 2 (SOURCING) + BLOC 3 (DELIVER)
- SESSION 06/T: 23/11/2024 – BLOC 9 (QUALITY)
- SESSION 07/M: 30/11/2024 – BLOC 6 (THEORY & EXERCISES, LOGISTICS NETWORK MODELLING & PLANNING)
- SESSION 08/M: 03/12/2024 – BLOC 4 (EXPERT TALK, INVENTORY) + BLOC 7 (EXPERT TALK, DISTRIBUTION)
- SESSION 09/M: 07/12/2024 – BLOC 7 (THEORY & EXERCISES, DISTRIBUTION LOGISTICS)
- SESSION 10/M: 10/12/2024 – BLOC 9 (EXPERT TALK, QUALITY)
- SESSION 11/T: 14/12/2024 – BLOC 10 (SUPPLY CHAIN INTEGRATION) + BLOC 11 (SUPPLY CHAIN STRATEGIES)
- **SESSION 12/T: 17/12/2024 – BLOC 11 (SUPPLY CHAIN STRATEGIES) + BLOC 12 (SUPPLY CHAIN PERFORMANCE)**

**** MAY BE CONVERTED TO WRAP-UP SESSION IN JANUARY BEFORE EXAM – (PREPARATION OF THE EXAM)****

BLOC 11:

SUPPLY CHAIN MANAGEMENT STRATEGIES (continued)

CONTENT OF BLOC 11

SUPPLY CHAIN MANAGEMENT STRATEGIES (continued)

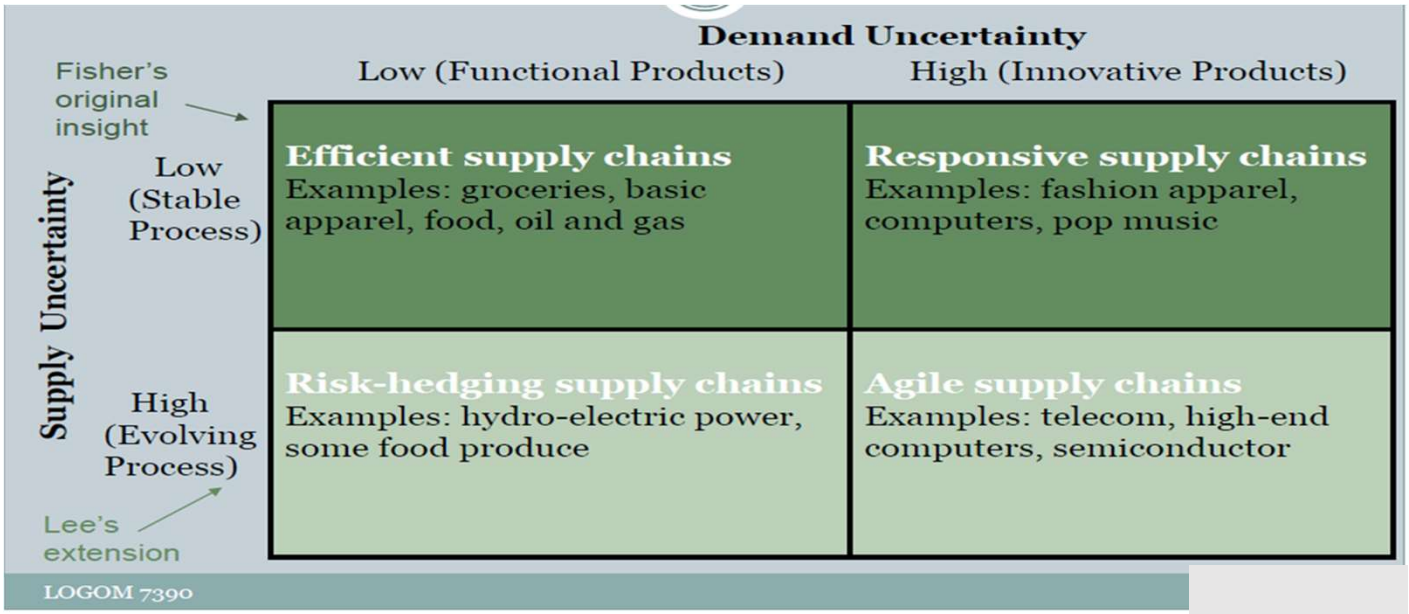
A. Focus on the AGILE Strategic Supply Chain Management Strategy

B. Additions to the AGILE Strategic Supply Chain Management Strategy

1. *The ADAPTABILITY addition*
2. *The ALIGNMENT addition*
3. *The CUSTOMER-FOCUSED addition*
4. *The GLOBAL addition*
5. *The FINANCIAL PROFIT-FOCUSED addition*
6. *The ENVIRONMENTALLY CLEAN/the GREEN addition*
7. *The CIRCULARITY addition*
8. *The SOCIALLY AND ETHICALLY RESPONSIBLE addition*
9. *The LEAN addition*
10. *The SMART / DIGITAL addition*

C. Elaborating a Strategic Supply Chain Management Strategy

THE 4 GENERIC STRATEGIC SUPPLY CHAIN MANAGEMENT STRATEGIES



Focus on the AGILE Strategic Supply Chain Management Strategy

AGILITY should be built at every link of the
Agile Strategic Supply Chain Management Strategy :
6+1* rules of thumb:

1. Quickly Provide data on changes in supply and demand to partners continuously so they can respond quickly.

2. Develop collaborative relationships with suppliers and customers so that companies work together to design or redesign processes, components, and products as well as to prepare backup plans.

3. Introduce postponement: Design products so that they share common parts and processes initially and differ substantially only by the end of the production process.

Focus on the AGILE Strategic Supply Chain Management Strategy

AGILITY should be built at every link of the

Agile Strategic Supply Chain Management Strategy :

6+1* rules of thumb:

4. Keep a small inventory of inexpensive, nonbulky components that are often the cause of bottlenecks.

5. Build a dependable logistics system that can enable your company to regroup quickly in response to unexpected needs

6. Put together a team that knows how to invoke backup plans, contingency plans.

7*. Seek additions that can strenghten the AGILE Strategic SCM Strategy

CONTENT OF BLOC 11

SUPPLY CHAIN MANAGEMENT STRATEGIES (continured)

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B. Additions to the AGILE Strategic Supply Chain Management Strategy

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2. *The ALIGNMENT addition*
3. *The CUSTOMER-FOCUSED addition*
4. *The GLOBAL addition*
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6. *The ENVIRONMENTALLY CLEAN/the GREEN addition*
7. *The CIRCULARITY addition*
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9. *The LEAN addition*
10. *The SMART / DIGITAL addition*

C. Elaborating a Strategic Supply Chain Management Strategy

i. The ADAPTABILITY Addition

- Structural shifts in markets occur because of economic progress, political and social change, demographic trends, and technological advances.
- To stay competitive, companies must adapt their supply chains (relocate facilities, change sources of supplies, outsource manufacturing, etc.)
- Adaptation needn't be just a defensive tactic
- Companies that adapt supply chains often succeed in launching new products or breaking into new markets.

i. The ADAPTABILITY Addition

Objectives:

Adjust supply chain design to meet structural shifts in markets; modify and adapt supply network to strategies, products, and technologies.

Methods:

- Monitor economies all over the world to spot new supply bases and markets changes.
- Use intermediaries to develop fresh/new suppliers to complement existing ones.
- Evaluate needs of ultimate consumers—not just immediate customers.
- Create flexible product designs. *(There is an implication of design on supply chains!)*
- Determine where companies' products are on technology cycles and product life cycles.

ii. The ALIGNMENT addition

Everyone in the chain has the same objective: to deliver the best service to consumers.

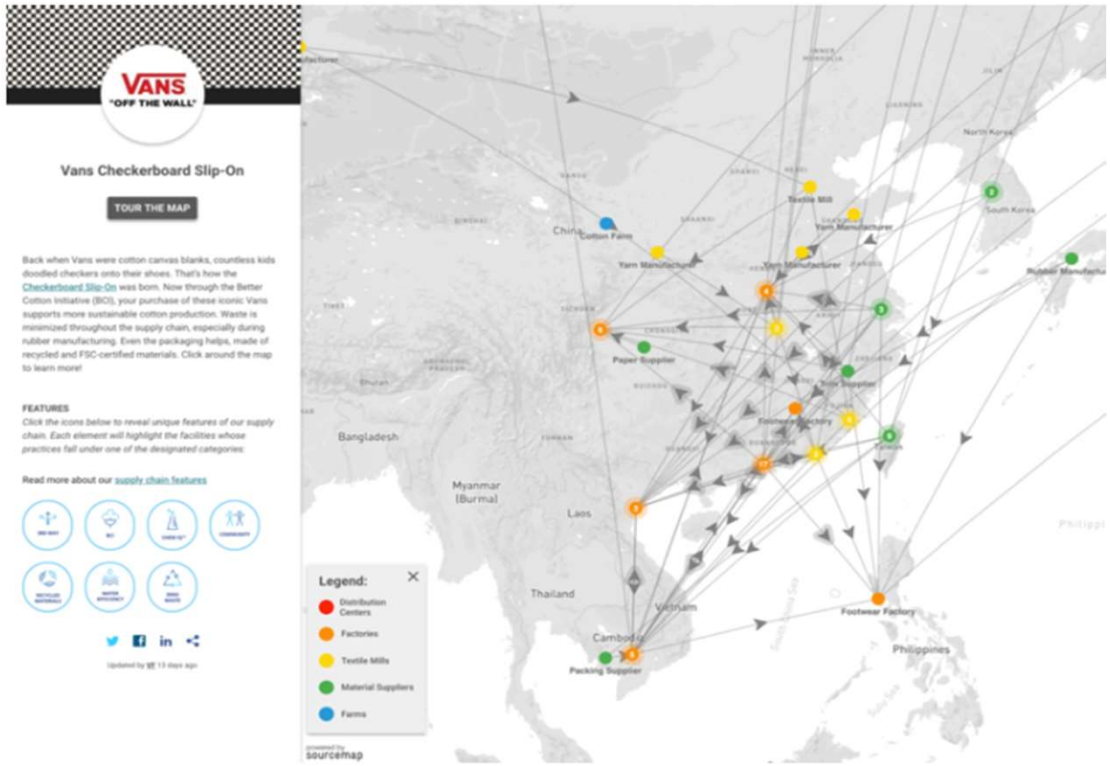
Some Alignment actions:

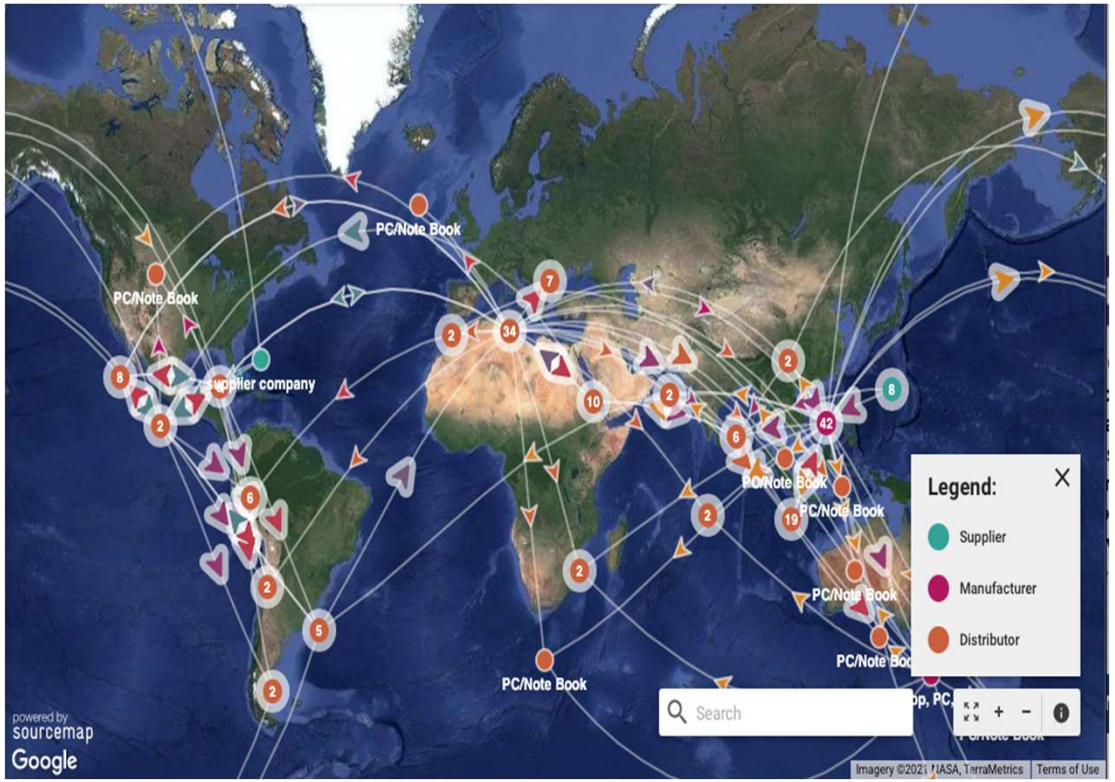
- Redefine relationships so that all stakeholders share risks, costs, and rewards equitably.
- Align information, so that all stakeholders have equal access to forecasts, sales data, and plan.
- Define roles and responsibilities of each partner so that there is no scope for conflict.
- Align incentives, so that when stakeholders maximize returns, they also maximize performance.

Requires trust and commitment on the part of suppliers, financial intermediaries, manufacturers and all other stakeholders to build competitive advantage.

iii. The CUSTOMER-FOCUSED Addition

iv. The GLOBAL addition





iv. The GLOBAL addition

Advantages to Globalisation of Supply Chains

- *Competitive sourcing costs*
- *Competitive production costs*
- *Access to large markets*
- *Etc.*

Obstacles to Globalisation of Supply Chains

- *Politico-economical tensions, Trade wars*
- *Rising number of environmental disasters*
- *Pandemics (i.e., COVID-19)*
- *anti-globalization movements*
- *Trade restrictions*
- *Conterfeiting*
- *Can render circularity complex/impossible*
- *Etc.*

iv. The GLOBAL addition

v. The FINANCIAL PROFIT-FOCUSED Addition:

The following values MUST BE satisfactory:

- Net Profit Margin
- Gross Profit Margin
- Operating Profit Margin
- EBITDA
- Revenue Growth Rate
- Total Shareholder Return (TSR)
- Economic Value Added (EVA)
- Price/Earnings Ratio (P/E ratio)
- Return On Investment (ROI)
- Return On Capital Employed (ROCE)
- Return On Assets (ROA)
- Return On Equity (ROE)
- Debt-to-Equity (D/E) Ratio
- Cash Conversion Cycle (CCC)
- Working Capital Ratio
- Operating Expense Ratio (OER),

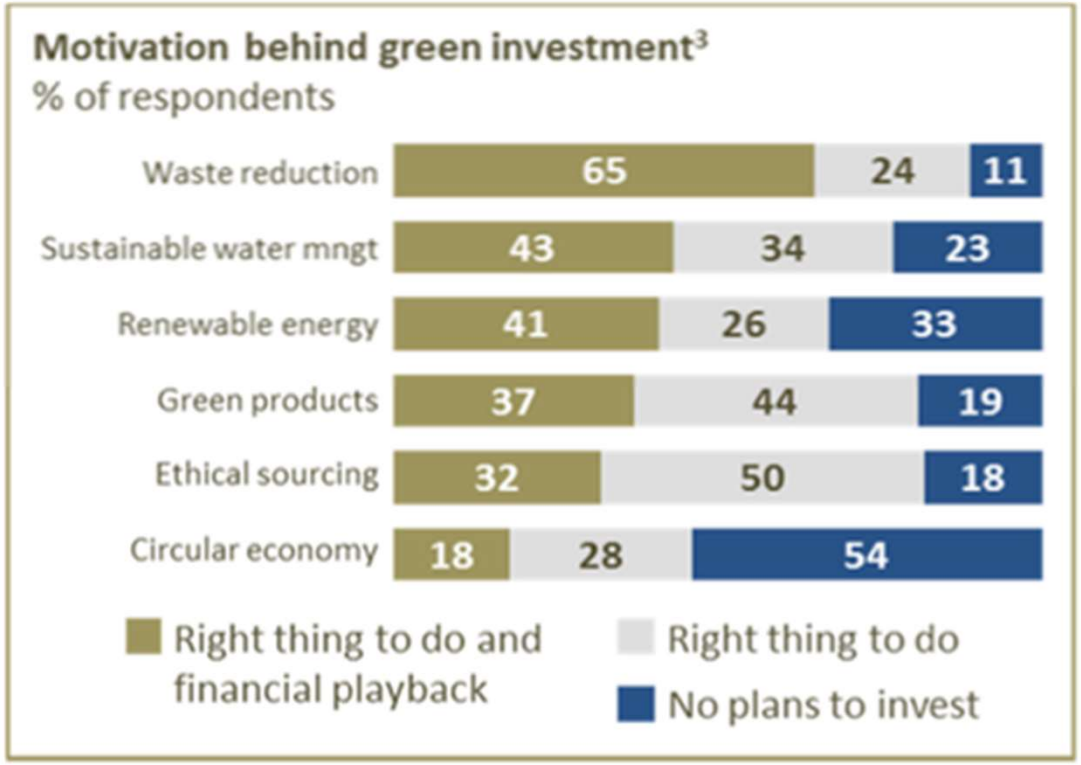
vi. The ENVIRONMENTALLY CLEAN / THE GREEN addition

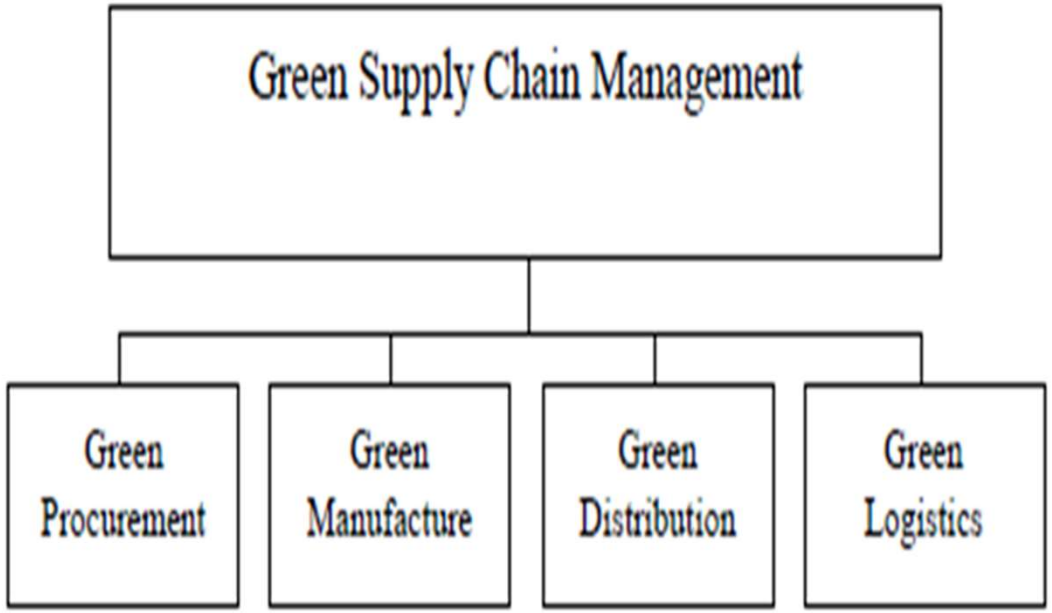
- **Green Supply Chain addition** refers to efforts to minimize the negative impact of supply chains on the natural environment.

(basically in the wake of concerns regarding climate change, pollution, and non-renewable resource constraints)

- **A Green Supply Chain focus requires** working with suppliers and customers, analysis of internal operations and processes, environmental considerations in the product development process, and extended stewardship across products' life-cycles.

vi. The ENVIRONMENTALLY CLEAN / THE GREEN addition





Source: Future of Supply Chains, SCM World, 2015

vi. The ENVIRONMENTALLY CLEAN / THE GREEN addition

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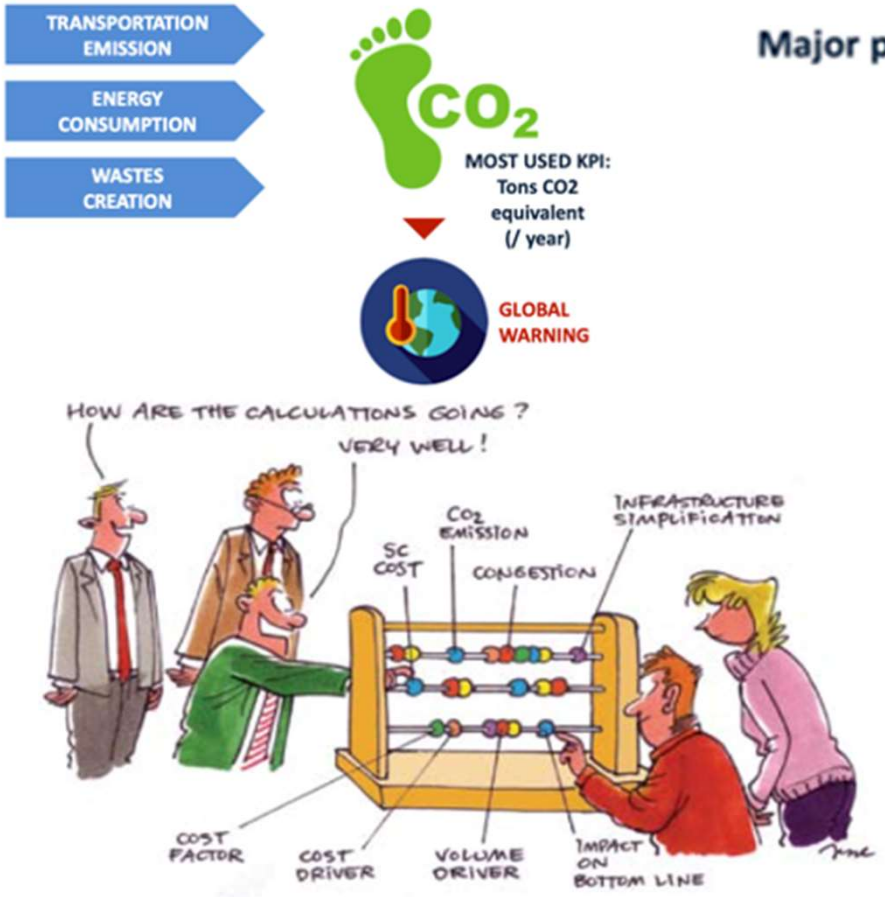
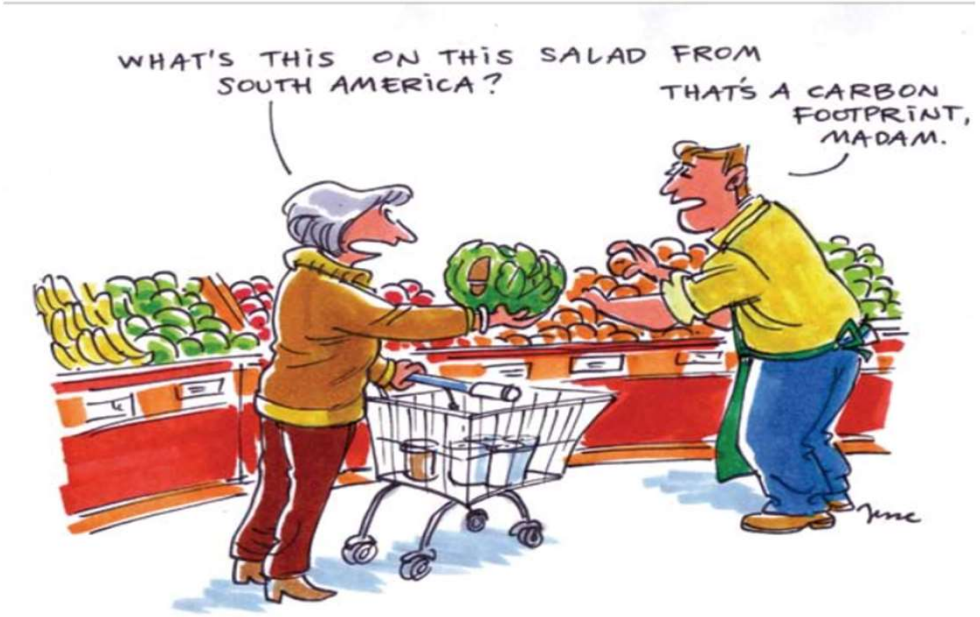
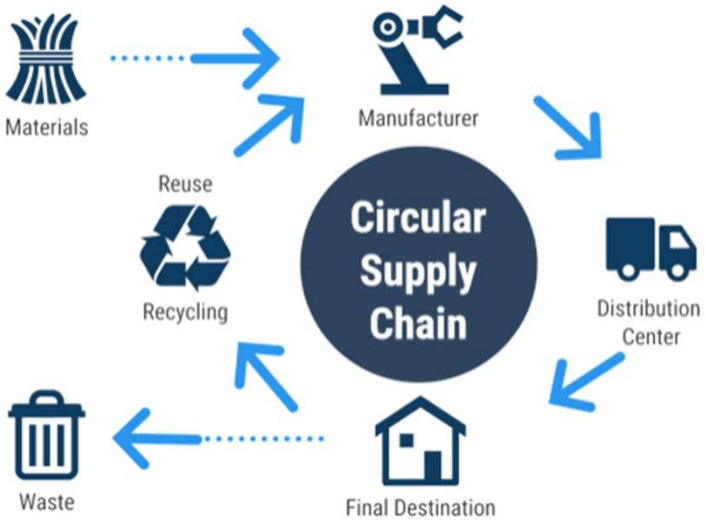


Major part of initiatives led aim to reduce the Carbon Footprint of companies



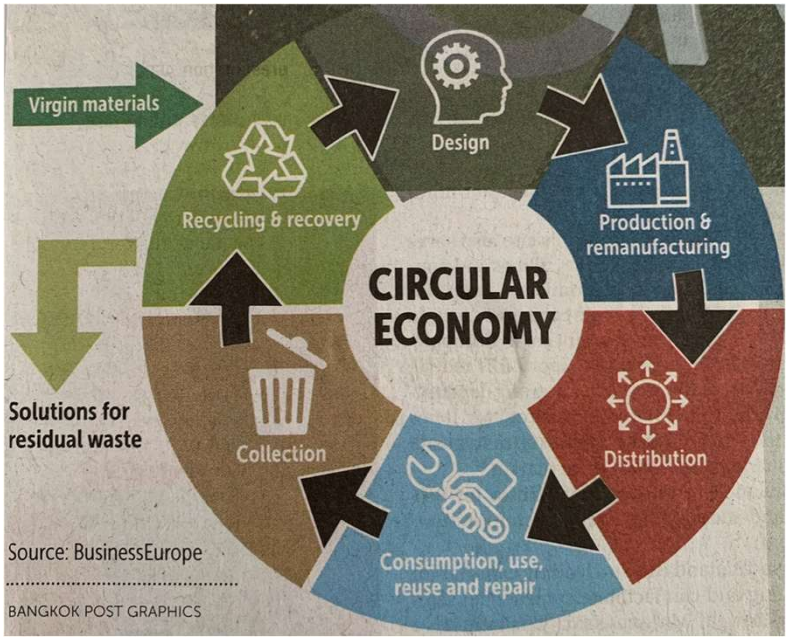
(Capgemini, 2016)

vii. The CIRCULARITY addition



(supplychain247.com)

Looping the Supply Chain can help companies cut down spending on raw materials.



Many regulations are pushing companies to adopt the circular supply chains:

- EU Packaging Directive
- Japanese Recycling Laws
- California Recycled Content Laws
- UK Landfill Directive
- Etc.
- *New ISO14000x norms required*

viii. The SOCIALLY AND ETHICALLY RESPONSIBLE addition

Ultimate Objective : Contribution to societal welfare, justice and prosperity

Corporate social responsibility' (CSR) or 'Responsible Business Conduct' (RBC) is an approach used for.

CSR IS A MANAGEMENT APPROACH AIMING TO INTEGRATE SOCIAL AND ENVIRONMENTAL PROBLEMATICS WITHIN DEFINITION OF BUSINESS MODEL

4 axis to cover within a CSR action plan

SOCIAL	ENVIRONMENTAL	SOCIETAL	HUMAN RIGHTS
• STAFF	• GENERAL POLICY	• EQUALITY IN TREATMENT	• PROMOTION AND RESPECT OF UNIVERSAL DECLARATION
• WORKING ORGANIZATION	• POLLUTION	• SOCIETAL COMMITMENT	
• HEALTH & SAFETY AT WORK.	• CIRCULAR ECONOMY	• POLICY AGAINST CORRUPTION	
• SOCIAL DIALOG	• CLIMATE CHANGE		
• TRAININGS	• BIODIVERSITY PROTECTION		

viii. The SOCIALLY AND ETHICALLY RESPONSIBLE addition

2 examples of CSR application for 2 major groups from pharmaceutical and logistics sector

SANOFI

- STRONG FOCUS ON HEALTHCARE ACCESSIBILITY AND ETHICS
- CLARITY ON VALUE DISTRIBUTION
- SUPPLY CHAIN INTEGRITY
- INTERNAL SKILLS DEVELOPMENT
- HUMANITARIAN PROJECTS

XPO LOGISTICS

- RESPECT OF HUMAN RIGHTS
- MANAGEMENT OF SOCIAL FACTOR
- REDUCTION OF IMPACT ON ENVIRONMENT
- ANTI CORRUPTION MEASURES

In France, every company with more than 500 employees need to edit a CSR report each year

the case for the 6 000 largest companies in Europe after Jan 2018

Others countries in the world have various policies

6

viii. The SOCIALLY AND ETHICALLY RESPONSIBLE addition

One approach is to collaborate within industry coalitions: Nike, for one, has worked with the *Sustainable Apparel Coalition*, the *Fair Labor Association*, and other groups in the footwear and apparel industry to identify standards for factories and workers.

There is a need to review, extend, and update constantly this critical feature! [Discuss cases recently revealed and ethics]

ix. The LEAN addition

Lean addition focuses on waste reduction, helping firms eliminate non-value adding activities related to excess time, labor, equipment, space, and inventories across the supply chain.

Such strategy enables firms to improve quality, reduce costs, and improve service to customers as traditional batch and queue mass production and supply chain approaches are transformed.

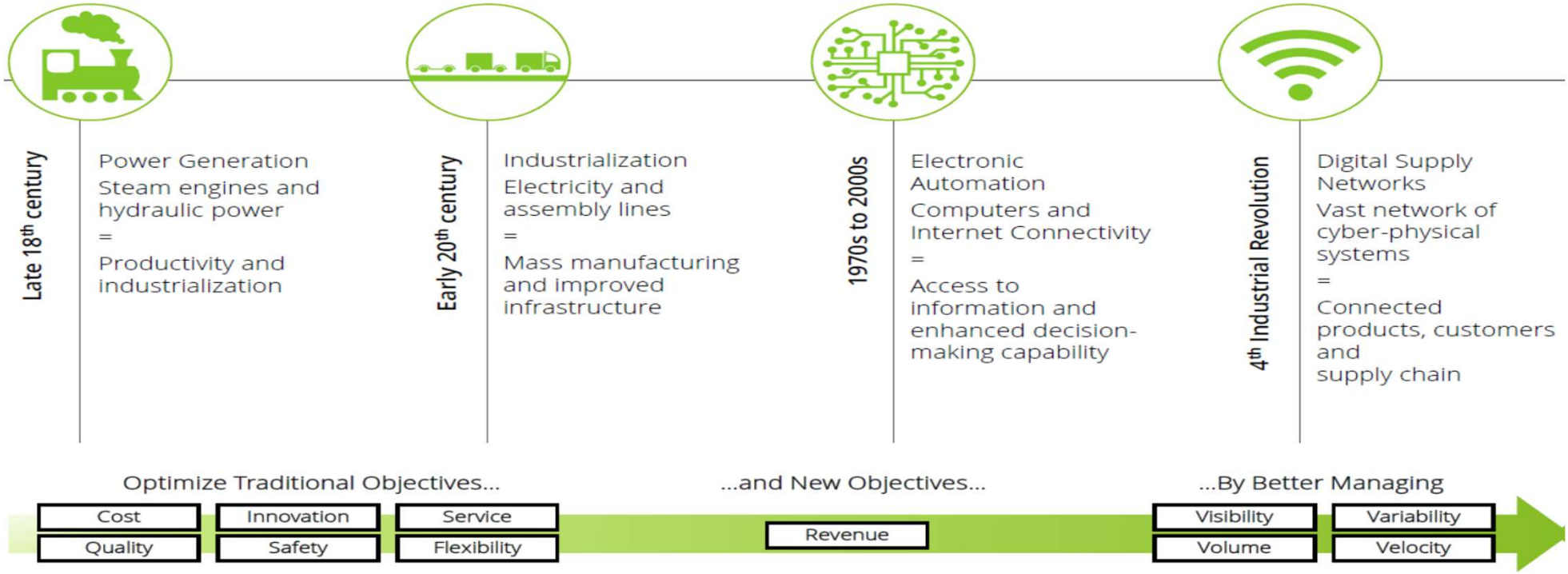
Lean practices are becoming increasingly difficult to implement and sustain as supply chains increase in complexity and length.

IT IS ALSO ABOUT COMPLEXITY REDUCTION!!!

x. The SMART/DIGITAL addition

Digital Supply Networks

In the 4th industrial revolution, leading companies are combining information technology and operations technology to create value in new and different ways



Deloitte's Point of View on Supply Chain Analytics

x. The SMART/DIGITAL addition

Major innovations are already on track, more should come (1/2)

BLOCK CHAIN

WHAT IS IT?

Alternative IT protocol aiming to reinforce security through new approach for data storing and processing

HOW DOES IT SUPPORT SCM

Risk mitigation for critical sectors
Support of main transactional processes (at interfaces with external actors)
Reduction of IT costs and needs for investments (removal of servers)

SOFTWARE AS A SERVICE / CLOUD

WHAT IS IT?

All IT solutions accessible through internet (no server needed, licence leasing)

HOW DOES IT SUPPORT SCM

Reduction of IT costs and needs for investments (removal of servers)
Flexibility of solutions used
Dematerialization of information (e-catalog, e-sourcing, EDI)

STATISTICS / ANALYTICS

WHAT IS IT?

Introduction of advanced statitsical concepts and models for Business Management

HOW DOES IT SUPPORT SCM

Extended capacity to run analysis of current activities and run modeling exercises
Democratization of parametrical tools

5

Major innovations are already on track, more should come(2/2)

ARTIFICIAL INTELLIGENCE

WHAT IS IT?

Capacity for the machine to learn, to think and develop thoughts out of initial algorithms pre-defined

HOW DOES IT SUPPORT SCM

Human limits overtaking (+1st gen of IS)
Replacement of human intervention for key strategic arbitrations including SCM and Mngt rule definition process

BIG DATA

WHAT IS IT?

Capacity of storing then using unlimited amount of data leading to an extension of data processing capacities and scope

HOW DOES IT SUPPORT SCM

Human limits overtaking (+1st gen of IS)
Reinforcement of calculation accuracy
Optimization of decision making process

INTERNET OF THINGS

WHAT IS IT?

All smart and connected items able to collect then share information regarding themselves and their near environment

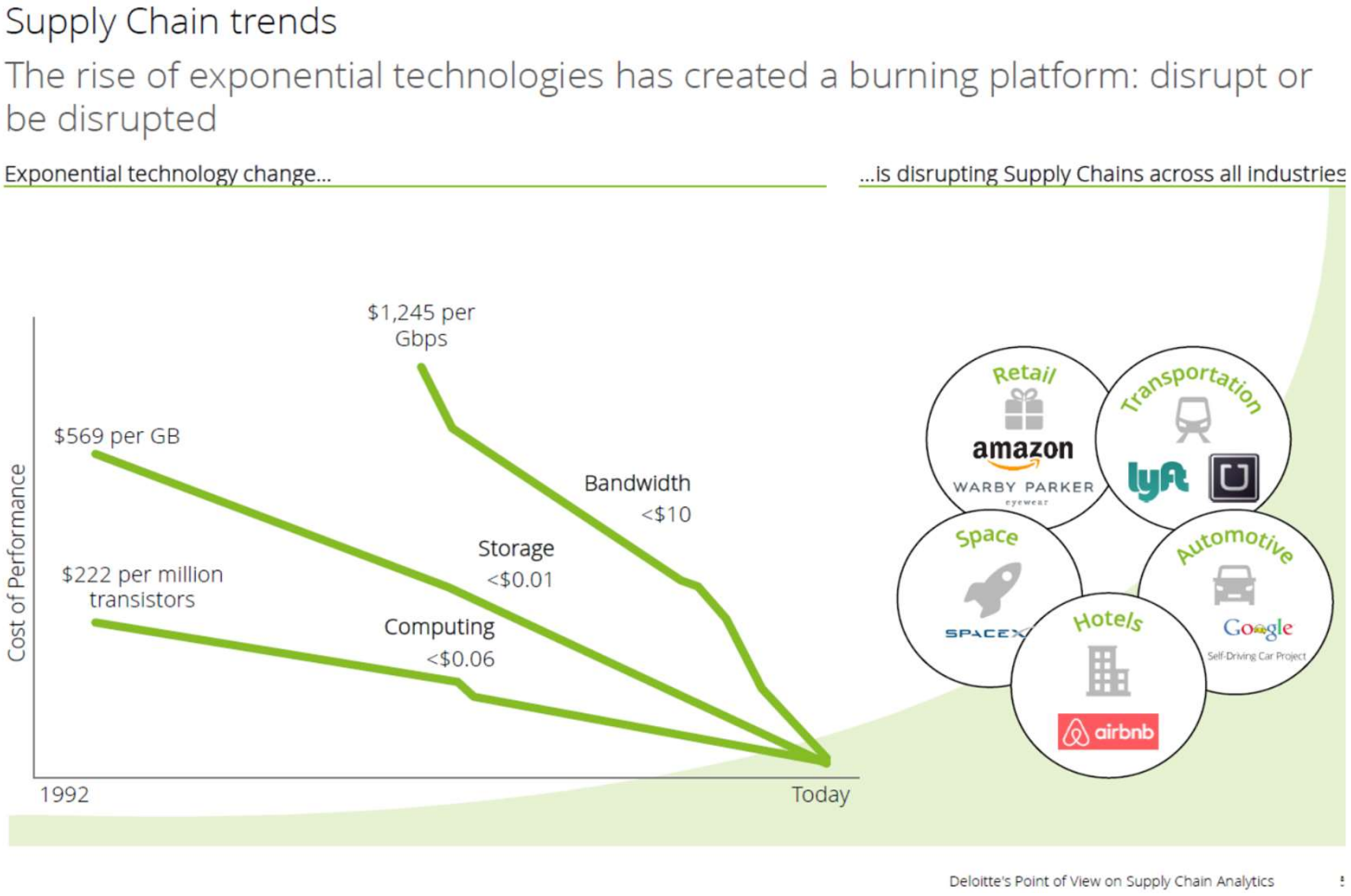
HOW DOES IT SUPPORT SCM

Real time data collection
Continuous display

5

A. Garnier, Supply Chain Trends

x. The SMART/DIGITAL addition



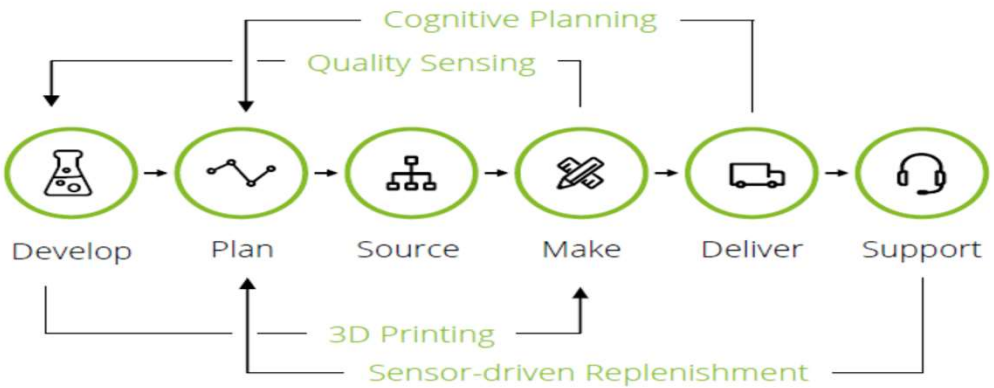
- The advent of digital technologies is transforming supply chains.
- New ways to harness data and automation are enabling organisations:
  - ✓ *to extract greater efficiencies,*
  - ✓ *drive top-line growth,*
  - ✓ *reduce risk,*
  - ✓ *act with increased agility,*
  - ✓ *gain greater control,*
  - ✓ *gain visibility of the end-to-end supply chain.*

x. The SMART/DIGITAL addition

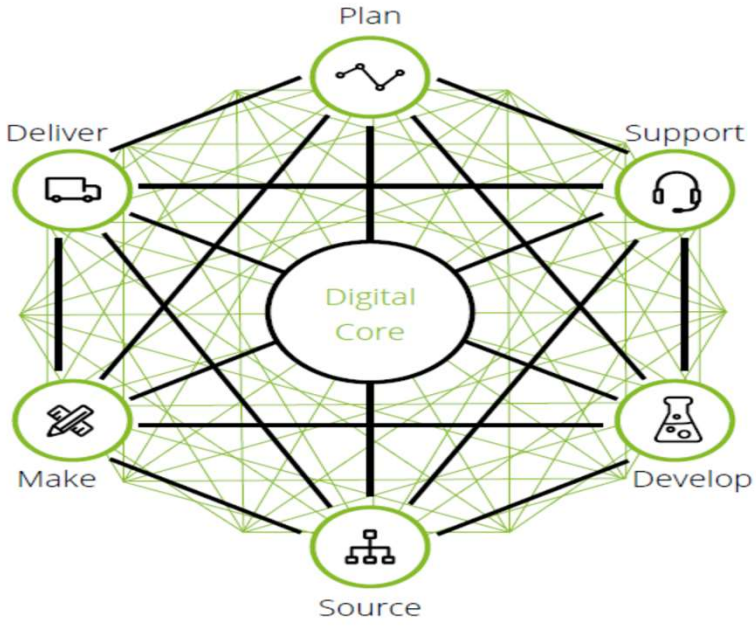
Digital Supply Networks

It transforms the traditional, linear Supply Chain nodes into a set of dynamic networks, allowing dramatically increased differentiation

Traditional Supply Chain

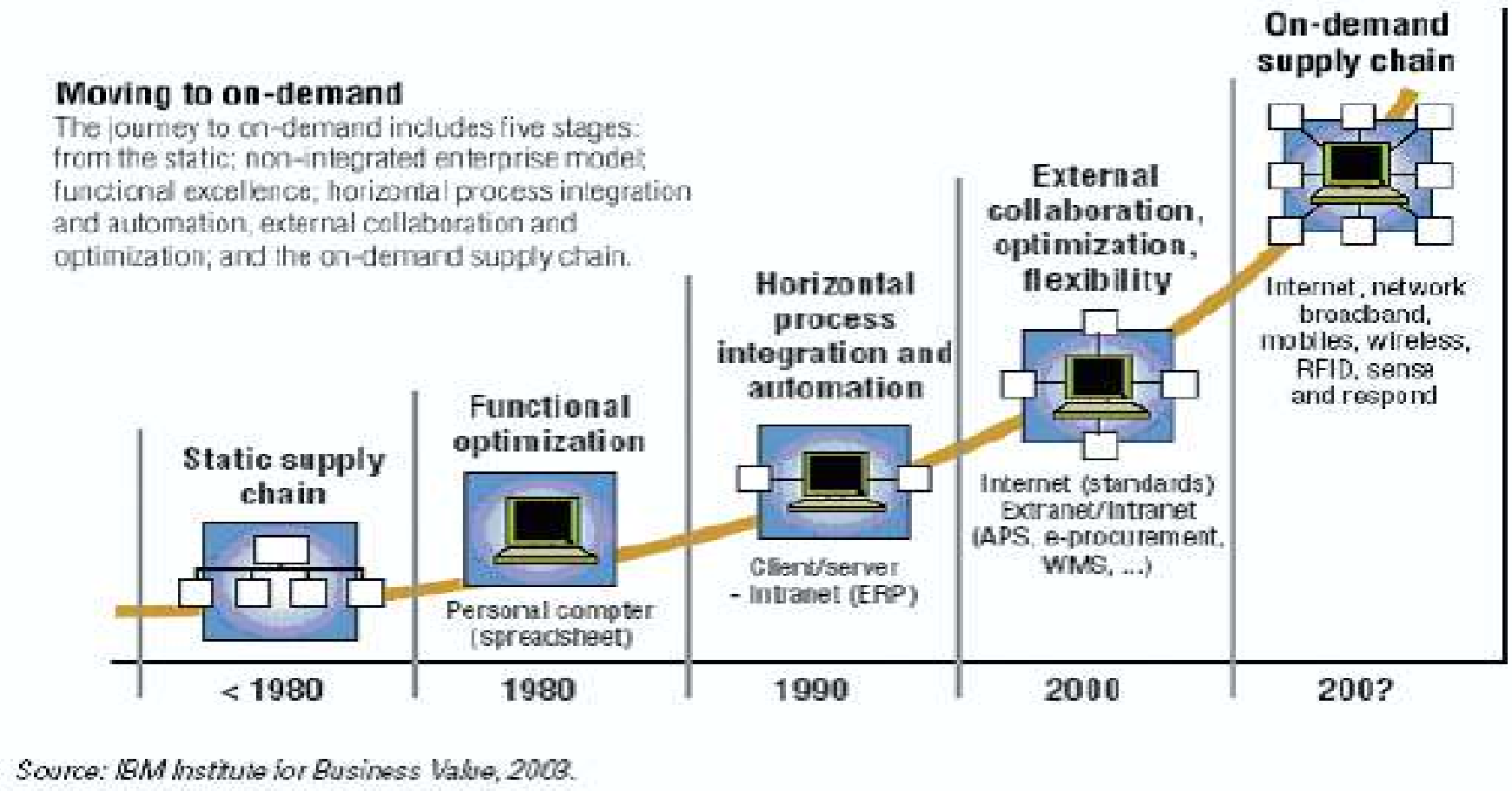


Digital Supply Network



Deloitte's Point of View on Supply Chain Analytics

x. The SMART/DIGITAL addition



Source: IBM Institute for Business Value, 2003.

x. The SMART/DIGITAL addition

What's driving the shift to smart supply chains?

Survey of over 100 global supply chain leaders across life sciences, industrial, manufacturing, automotive, consumer goods, aerospace and defense organisations. Multiple answers per respondent.

74%

Cost pressures

For most organisations, the push to digital is driven by the search for new ways to reduce costs. Increasing globalisation, lower barriers to entry and greater competition, combined with deteriorating margins driven by market micro-segmentation, all make cost reduction an imperative.

51%

New business models

Integrated supply chain systems are becoming the foundation for new business models. For instance, businesses are exploring servitisation models through connected products to deliver customer-centric services, or deploying e-commerce platforms to better connect with both consumers and customers and achieve alternative revenue streams.

59%

Advances in technology

Technology such as cloud computing, mobile devices and automation enable the supply chain to connect with other parts of the organisation. They facilitate streamlined processes, support data-driven decision-making and reveal new cross-functional opportunities.

56%

Changes in consumer or customer behaviour

Customers move in a digital world where they want sustainable products supplied with immediacy and personalisation. At the same time, brand loyalty is declining and customers are getting more savvy on price.

41%

Fear of being left behind

Four in 10 organisations are motivated by fear of being left behind as their competitors start making digital moves. Failing to keep pace risks losing market share, driving away vital talent and neglecting customer demand for new products and services. Leaders should replace the fear factor with a view of the upside, and embrace the opportunity and the value waiting for them.

(PA Consulting, 2019)

x. The SMART/DIGITAL addition

What benefits are organisations looking to achieve?

Likely benefits

Survey of over 100 global supply chain leaders across life sciences, industrial, manufacturing, automotive, consumer goods, aerospace and defense organisations. Multiple answers per respondent.

54%

Enhanced visibility and transparency

Data from digital systems reduces errors by removing data collection and manual reporting processes. Data visualisation and analytics are enabling supply chain leaders to make effective decisions on managing inventory, reducing overall cost and lead time. They also improve risk management by helping organisations identify and address risks earlier, and support the sustainability agenda by enabling organisations to trace materials back to their source.

49%

Cost reduction

Improved visibility of supply and monitoring of process status is enabling reductions in inventory, improving the balance between supply with demand, and enabling predictive maintenance and real-time process interventions. In combination, this is supporting greater asset utilisation and end-to-end cost reduction. An unprecedented degree of precision helps some organisations achieve a reduction in baseline operational costs of more than 15 per cent, and free up time and energy for growth.

43%

Enhanced customer focus and service

Data from smart supply chains helps organisations understand how customers buy and use their products and services. This greater intimacy can be a springboard for developing new offerings that meet customer needs and preferences, opening up new revenue streams. Furthermore, digital enables organisations to provide customers/consumers with the immediacy and personalisation they're beginning to expect, supporting customer satisfaction, service levels and retention.

43%

Support for agile and dynamic operating models

In fast-changing markets, organisations must stay agile to compete successfully. That includes being able to adapt their operating models to respond to new demands, and to identify and seize new opportunities.

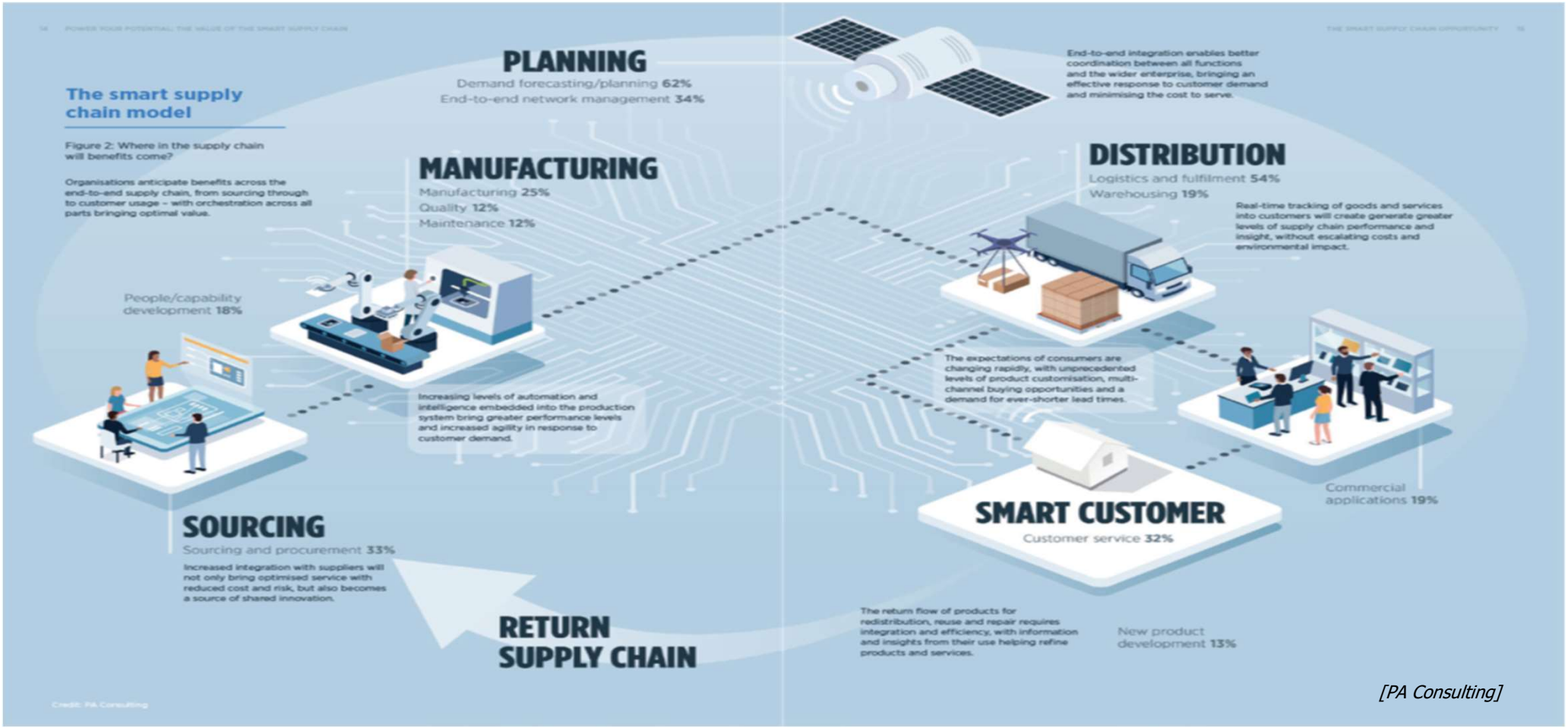
42%

Performance improvements

Performance improvements stem from a combination of cost reductions, quality improvements and increased capacity for growth. Digital technologies in the supply chain can help deliver all of these. For example, using artificial intelligence (AI) and machine learning can optimise production lines to improve yield. Further opportunities will stem from organisations using the same insights with their suppliers to optimise their products and supply.

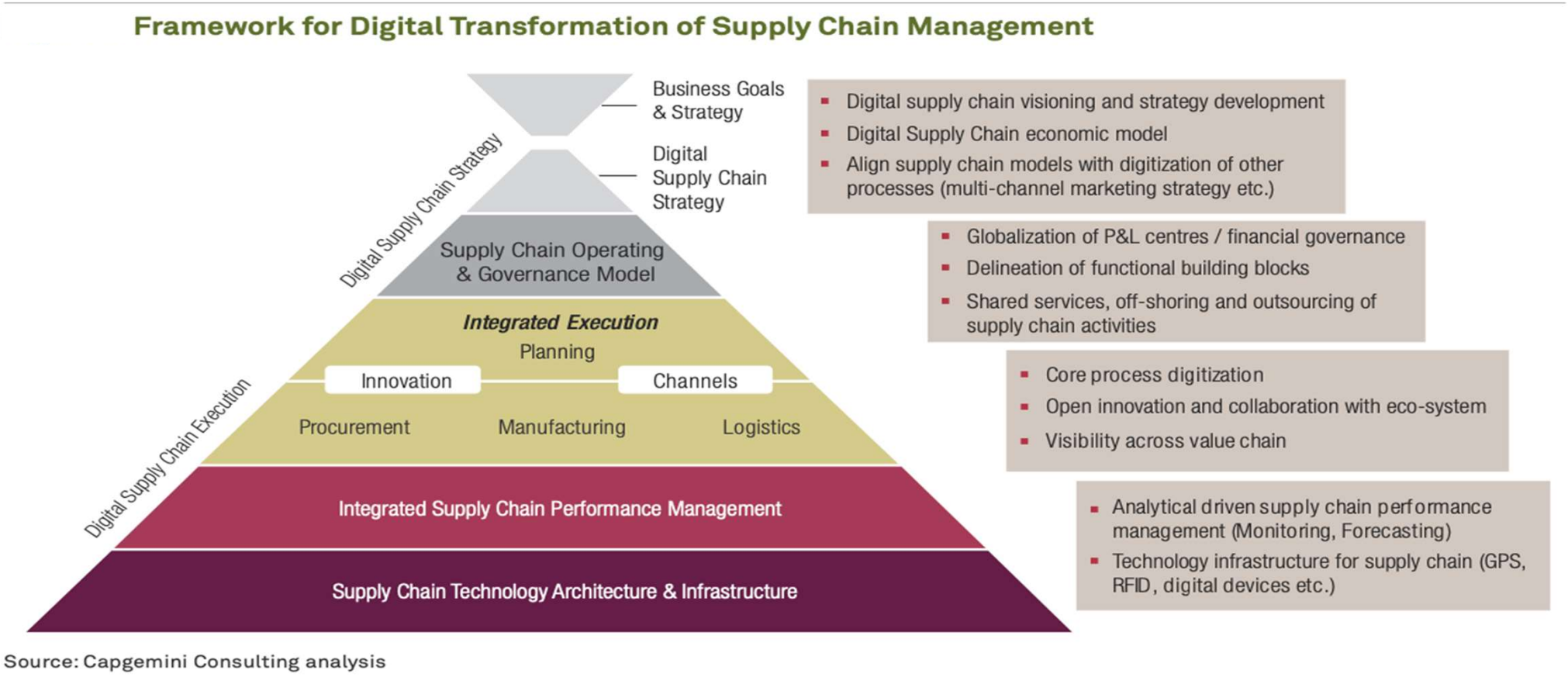
(PA Consulting, 2019)

x. The SMART/DIGITAL addition



[PA Consulting]

x. The SMART/DIGITAL addition



https://youtu.be/M7aEeTUaGOw

CONTENT OF BLOC 11

SUPPLY CHAIN MANAGEMENT STRATEGIES (continued)

A. Focus on the AGILE Strategic Supply Chain Management Strategy

B. Additions to the AGILE Strategic Supply Chain Management Strategy

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2. *The ALIGNMENT addition*
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C. Elaborating a Strategic Supply Chain Management Strategy

1. *Which Strategic Supply Chain Management Strategy is right?*
2. *A particular Strategic Supply Chain Management Strategy: The TRIPLE-A Strategy*
3. *Discussing the trade-offs paradigms in elaborating a SSCM Strategy*

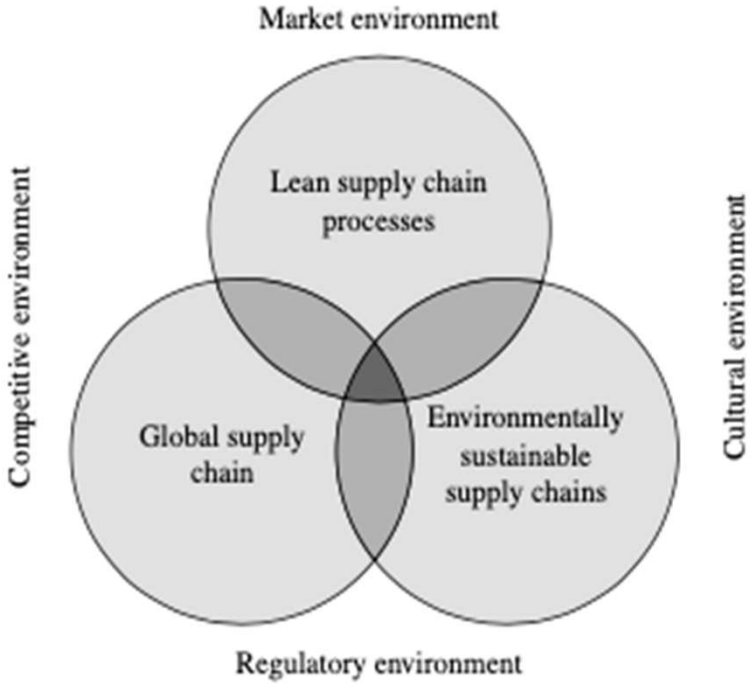
C1). Which Strategic Supply Chain Management Strategy is right?

WHICH BASIC STRATEGY OR EXTENDED STRATEGY IS RIGHT?

- A single supply chain with a basic strategy and no additions?
- A single supply chain with a basic strategy plus addition(s)?
- Multiple supply chains with a basic strategy and no additions?
- Multiple supply chains with a basic strategy plus addition(s)?

C1). Which Strategic Supply Chain Management Strategy is right?

Simultaneous capabilities or multiple parallel additions?



- **Silo perspectives impede the cross-functional scope needed to gain a holistic perspective.**
- **Stepwise simultaneous implementation makes it possible to understand the synergies available and to make appropriate trade-offs.**
- **A Systems approach helps to encapsulate the complexity and tackle supply chain strategy and decisions from a systems perspective.**

NEED TO DEVELOP SYSTEMS APPROACH AND TRADE-OFFS

Mollenkopf, Stolze, Tate, Ueltschy, (2010), "Green, lean, and global supply chains", IJPDLM, Vol. 40 Iss: 1 pp. 14 - 41

C2). A particular combination: "The Triple-A" Strategic Supply Chain Management Strategy

Nowadays, top-performing Supply Chains possess 3 very different qualities - 3 essentials :

Agile: they react speedily to sudden change in demand or supply

Adaptable: because over time as market structures and strategies evolve

Aligned: the interests of all participants in the supply chain are aligned

C2). A particular combination: The "Triple-A" Strategic Supply Chain Management Strategy

Agility

Objectives:

Quickly respond to short-term changes in demand or supply; handle external disruptions smoothly.

Methods:

- Promote flow of information with suppliers and customers.
- Develop collaborative relationships with suppliers.
- Design for postponement.
- Build inventory buffers.
- Have a dependable logistics system or partner.
- Draw up contingency plans and develop crisis management teams.

Adaptability

Objectives:

Adjust supply chain's design to meet structural shifts in markets; modify supply network to strategies, products, and technologies.

Methods:

- Monitor economies all over the world to spot new supply bases and markets.
- Use intermediaries to develop fresh suppliers and logistics infrastructure.
- Evaluate needs of ultimate consumers—not just immediate customers.
- Create flexible product designs.
- Determine where companies' products stand in terms of technology cycles and product life cycles.

Alignment

Objective:

Create incentives for better performance.

Methods:

- Exchange information and knowledge freely with vendors and customers.
- Lay down roles, tasks, and responsibilities clearly for suppliers and customers.
- Equitably share risks, costs, and gains of improvement initiatives.

C3). The necessary HOLISTIC APPROACH to supply chain management

Leading companies manage adaptatively their supply chain by focusing on 2 important dimensions:

- First, they **holistically** define the scope: supply chains as interactive systems, not as functional silos.
- Second, they are **proactive**: continuously achieve improvements through a focus on preventing fires, not on fighting them.

many organizations still suffer from 3 common pitfalls in managing supply chain.

C3). The necessary HOLISTIC APPROACH to supply chain management

Solution scope for resolving issues

	Reactive	Proactive
Holistic	***Zig Zag Organization*** Pitfall: Focusing on the right things, but in a serial and unbalanced way. Example: Apparel-maker L.A. Gear tried a series of radical transitions, e.g. shifts from fashion to performance to children's shoes. Characteristics: The entire organization marshals forces to the new goal *de jour*. Over time, customers, suppliers, and employees become confused about true value drivers.	***Adaptive Organization*** Secret: Ensuring continued focus on the right things through responsiveness and balance. Example: GE leads in a wide range of industries through innovation and continuous achievement. Characteristics: The entire organization is performance-driven. It sets goals, addresses root causes, and capitalizes on competitive opportunities.
Silo-based	***Factious Organization*** Pitfall: Focusing on the parts and sub-optimizing the whole. Example: Zenith was unable to cohesively respond to challenge of lower-priced Japanese TVs. Characteristics: Uncoordinated tactical responses driven by conflicts with internal groups, suppliers, and customers. Managers seek to justify their actions and assign blame for consequences.	***Steadfast Organization*** Pitfall: Focusing on the right things until they become the wrong things. Example: DEC focused on minicomputers, not on the emerging markets for PCs or workstations. Characteristics: Perhaps heralded as industry leaders, these companies don't easily adapt to change. Functional relationships are rigidly defined and organizations execute to static plans.

Bias toward action

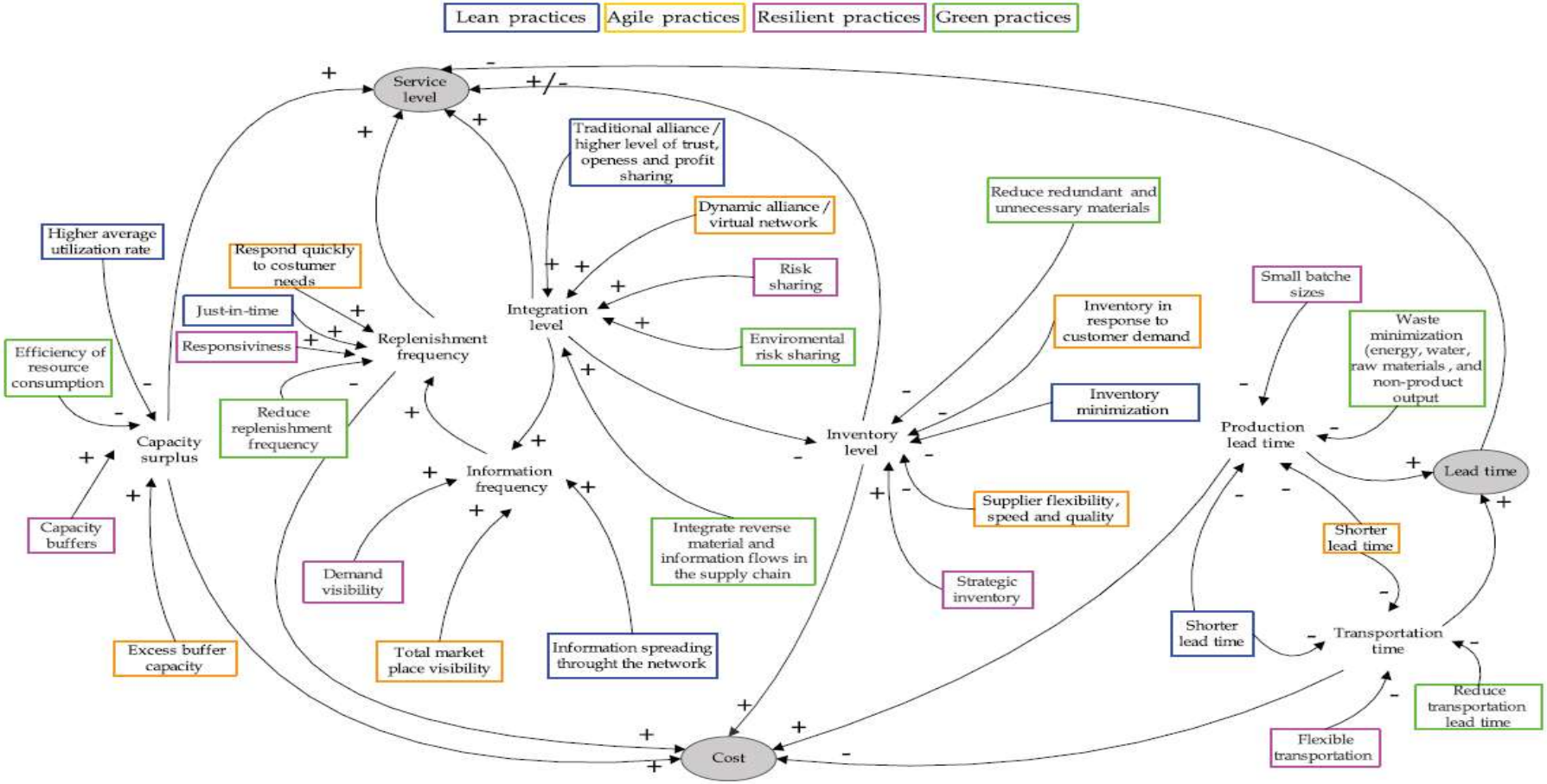
COMMON PITFALLS OF SUPPLY CHAIN MANAGEMENT. Source: H. Lee & J. Amaral, University of Stanford.

C3). Discussing the necessary trade-offs paradigms…

SOME TRADE-OFFS PARADIGMS IN SUPPLY CHAIN MANAGEMENT

- How to combine green addition with an agile basic strategy ?
- How to combine green addition with other additions when organizations are subject to disruptions and cannot be strong enough to recover competitiveness?
- How compatible are environmentally clean and global additions?
- How to ensure financial viability while staying customer-oriented and green?
- How far the smart addition is to be pushed forward?
- How to ensure a socially and ethically responsible addition while staying global?
- Etc.?

C3). Discussing the necessary trade-offs paradigms…



Conceptual model with lean, agile, resilient and green practices and supply chain Performance; Source: H. Carvalho & V. Machado

C3). Discussing the necessary trade-offs paradigms …

- **Actual market competition is very aggressive and supply chains must be designed to be robust.**

- **The challenge in today's business environment, where organizations need to answer to the market volatility, is to combine additions and to integrate them in their supply chain strategy.**

- **Building the right supply chain strategy – one that can ensure quick response to evolving market and supply conditions, and that functions well during both a short-term disruption and a years-long crisis, is a business challenge.**

C3). Discussing the necessary trade-offs paradigms …

- **Building the right supply chain strategy is of critical urgency as globalization increases and the world faces unpredictable events brought on by climate change, geopolitical upheaval, economic uncertainty, and etc.**
- **The understanding of major trade-offs between additions in a holistic perspective contributes to a more efficient and competitive supply chain strategy.**

But, which framework can help in making these trade-offs wthin a holistic perspective ?

PERFORMANCE MANAGEMENT SCIENCE offers a suitable framework for making these trade-offs possible through the assessment of supply chain management strategies.

BLOC 12:

SUPPLY CHAIN PERFORMANCE MANAGEMENT

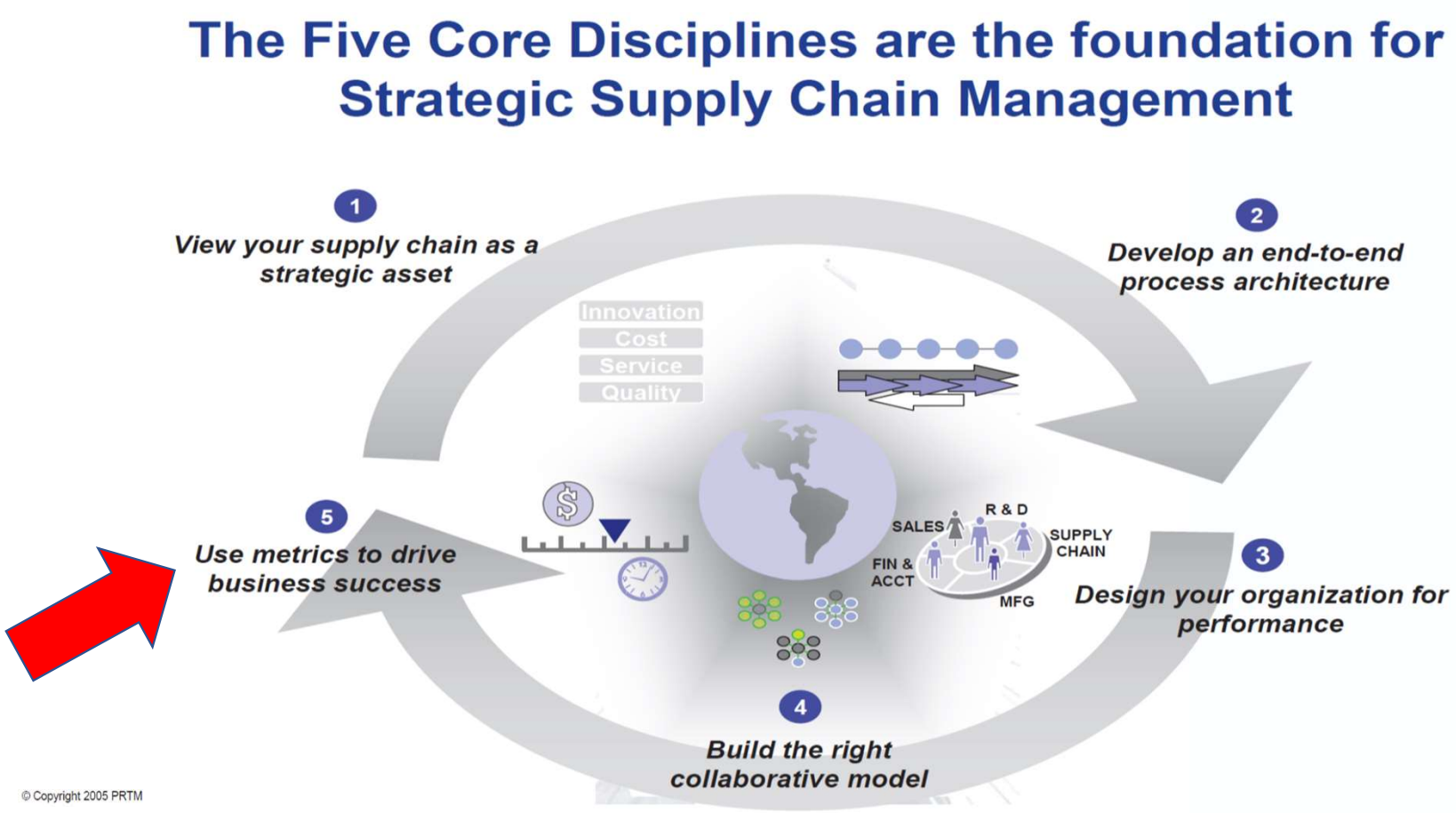
CONTENT OF BLOC 12

SUPPLY CHAIN PERFORMANCE MANAGEMENT

1. **Assessing the performance of Supply Chain Management Strategies**
   - *i. Recalling the fifth core discipline of Strategic Supply Chain Management*
   - *ii. Performance Management Science as an assessment framework*

2. **BUILDING OF A SUPPLY CHAIN PERFORMANCE MANAGEMENT MODEL**

i. Recalling the fifth core discipline of Strategic Supply Chain Management



i. Recalling the fifth core discipline of Strategic Supply Chain Management

Discipline 5: Use Metrics to Drive Business Success

Use metrics to measure the health of each core supply chain process and identify problem areas

Measurement is the only way to understand whether process performance is improving or worsening and whether action is required.

Effective supply chain metrics are:

- Linked to the business strategy
- Both balanced and comprehensive
- Used as a continuous improvement tool
- Implemented via a formal implementation plan
- Highly visible and monitored at all levels of the company
- Based on both internal and external benchmarks
- Based on targets that are aggressive but achievable

SCOR Level 1 Metrics Provide A Starting Point For A Balanced Strategic Supply Chain Scorecard

Key Supply Chain Management Metrics	Delivery Performance/ Responsiveness	Flexibility	Cost	Asset Management
Delivery Performance	✓			
Order Fulfillment Lead Time	✓			
Production Flexibility		✓		
Total Supply Chain Management Cost			✓	
Value-Added Productivity			✓	
Inventory Days of Supply				✓
Cash-to-Cash Cycle Time				✓
Net Asset Turns				✓

ii. Performance Management Science as an assessment framework

PERFORMANCE MANAGEMENT

A continuous process (*not a one-shot*) that identifies opportunities for bringing improvements that can lead to industrial and business excellence through the continuous analysis of measures such as standards and indicators.

Solistica

ii. Performance Management Science as an assessment framework

PERFORMANCE MANAGEMENT

It is built around 4 pillars each containing specific approaches, tools and technologies to:

(1) Select Key Indicators and Best Standards of a business*

[Pillar 1: Key Indicators and Best Standards Selection]

(2) Gather relevant information

[Pillar 2: Data Collection and Data Cleaning]

(3) Quantify and Measure them

[Pillar 3: Performance Measurement]

(4) Report, Benchmark and Monitor them

[Pillar 4: Performance Reporting & Monitoring]

Solistica

ii. Performance Management Science as an assessment framework

PERFORMANCE MANAGEMENT

Pillar 1: Key Indicators and Best Standard Values Selection:

Indicators should provide a holistic perspective of quality, service, productivity, profitability and competitiveness.

Example of indicators: picking accuracy, shipment accuracy, proper labeling, lead time, lost sales, fill rates, throughput, asset turns, inventory turns, days on hand, revenue, return on investment, distribution excellence, operational excellence, output, staff productivity, customer satisfaction, cost of inventory, etc.

ii. Performance Management Science as an assessment framework

PERFORMANCE MANAGEMENT

Pillar 1: Key Indicators and Best Standards Values Selection:

Key Characteristics of indicators

- **Congruent with the mission, vision, strategic goals**
- **Focus on accomplishable activities that lead towards a better performance.**
- **Accessible and easy to understand** (complex indicators do not necessarily translate into effective results)**.**
- **Convey relevant information for decision making and strategic planning.**
- **Allow comparison against competitors.**
- **Best standards relate to best industry standards or benchmarks**

ii. Performance Management Science as an assessment framework

PERFORMANCE MANAGEMENT

***Pillar 1:* Key Indicators and Best Standards Selection:**
Key Characteristics of indicators

- **Pertinence** (related to the objective, the targeted item)
- **Quantifiable** (from the available information/data)
- **Perennity** (in time)
- **Unchallengeable**, « ***uncontestable*** » by the users
- **Sensibility** (to cope with the level of detail defined)
- **Unbiased** (no possibility of multiple interpretations)

ii. Performance Management Science as an assessment framework

PERFORMANCE MANAGEMENT

***Pillar 1:* Key Indicators and Best Standards Selection:**

Five Dimensions of indicators

- **Dimension 1: Effectiveness**
(results obtained)
- **Dimension 2: Efficiency**
(link between decisions taken and results obtained)
- **Dimension 3: Ratio productivity/cost**
(ratio between results obtained and resources used)
- **Dimension 4: Internal targets**
(internal reference values, targets and benchmarks)
- **Dimension 5: External targets**
(external/industry reference values and benchmarks)

ii. Performance Management Science as an assessment framework

PERFORMANCE MANAGEMENT

Pillar 1: Key Indicators and Best Standard Values Selection:

Towards KEY PERFORMANCE INDICATORS

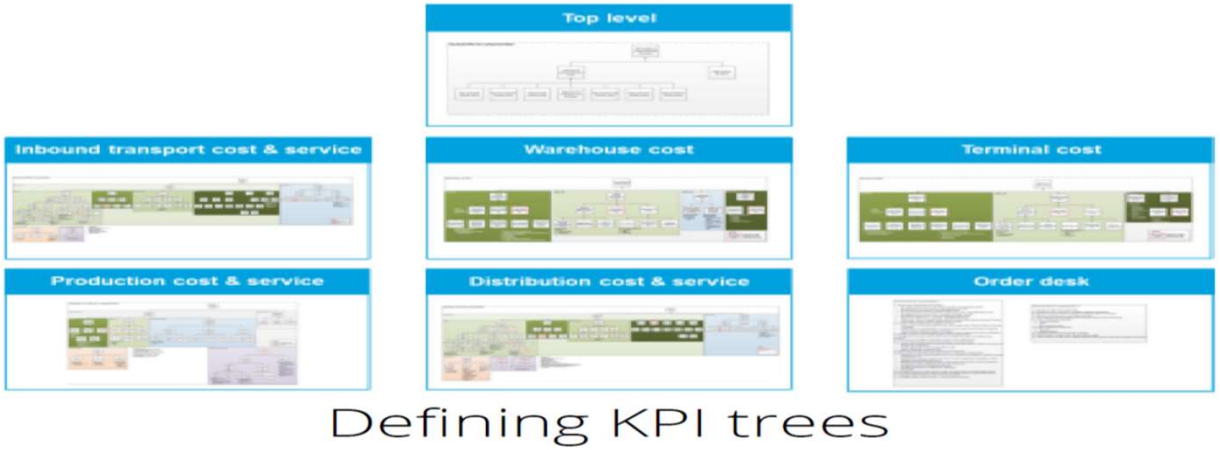
- **Some indicators roll-up and aggregate to become Key Performance Indicators (KPI).**
- **Key Performance Indicators (KPIs) are process indicators and cross-functional in nature** *(they measure the total effect of a process).*
- ***Example: a KPI which relates to the process "Perfect Order".***
  - *Individual processes of the "Perfect Order" are on-time, complete, correct documentation, and damage free.*
    - *Each individual process has its own set of indicators:*
      - ✓ *Indicators of on-time individual process: on-time order management, on-time order fill, on-time transportation.*

ii. Performance Management Science as an assessment framework

PERFORMANCE MANAGEMENT

***Pillar 1:* Key Indicators and Best Standard Values Selection:**

Towards KEY PERFORMANCE INDICATORS



Deloitte, Supply Chain Analytics, 2016

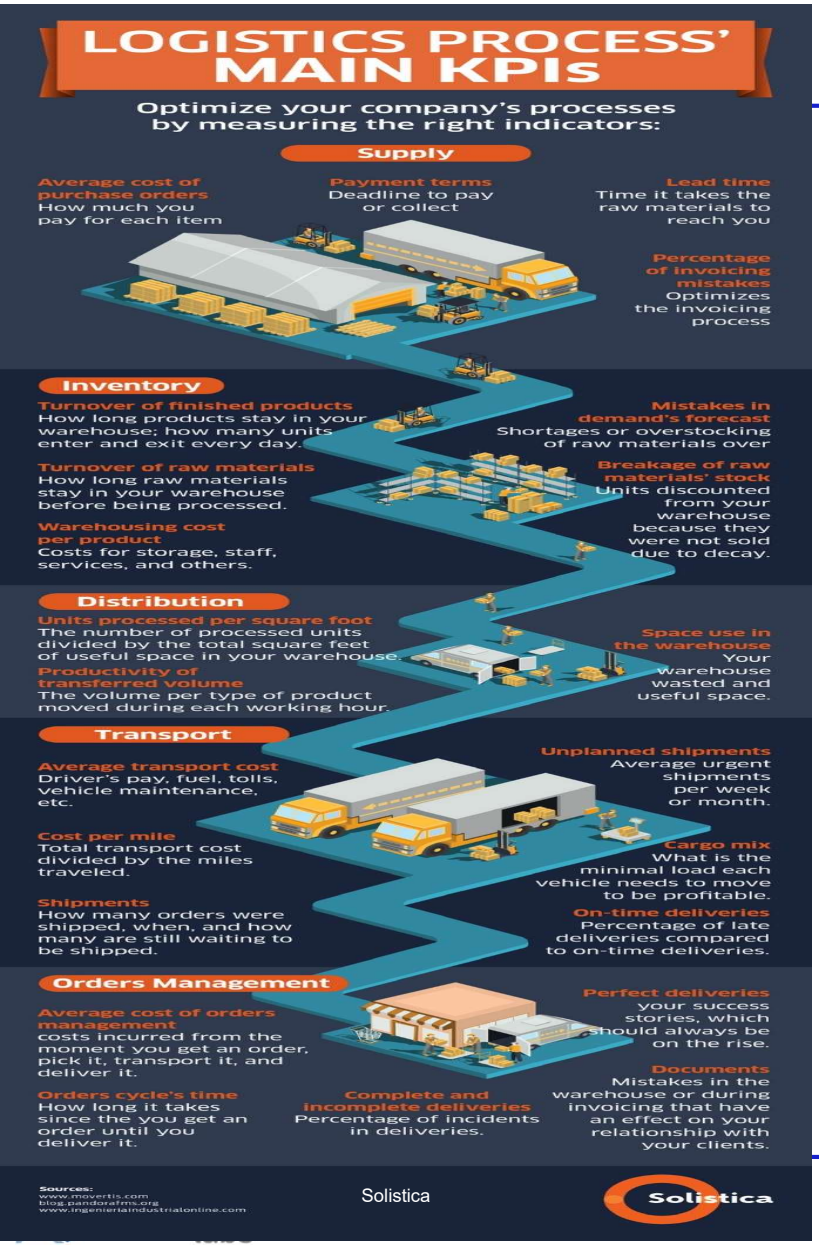
Defining KPIs – KPI trees – Meta KPI – Aggregation – Decision Making

ii. Performance Management Science as an assessment framework

PERFORMANCE MANAGEMENT

Pillar 1: Key Indicators and Best Standard Values Selection:

Towards KEY PERFORMANCE INDICATORS



ii. Performance Management Science as an assessment framework

PERFORMANCE MANAGEMENT

***Pillar 1:* Key Indicators and Best Standard Values Selection:**

Towards KEY PERFORMANCE INDICATORS

Solistica

ii. Performance Management Science as an assessment framework

PERFORMANCE MANAGEMENT

Pillar 2: Data Collection and Data Cleaning:

- Manual, semi-automatized or fully automatized data collection.
- Use of advanced IT tools and programs
- Cleaning to isolate wrong records and inconsistent data.

Solistica

ii. Performance Management Science as an assessment framework

PERFORMANCE MANAGEMENT

Pillar 3: Performance Measurement:

- Performance measurement system
  - Have all the appropriate elements (internal, external, financial, non-financial) been covered?
  - Have measures which relate to the rate of improvement been introduced?
  - Have measures which relate to the long-term and short-term objectives of the business been introduced?
  - Have the measures been integrated, both vertically and horizontally?
  - Do any of the measures conflict with any other?

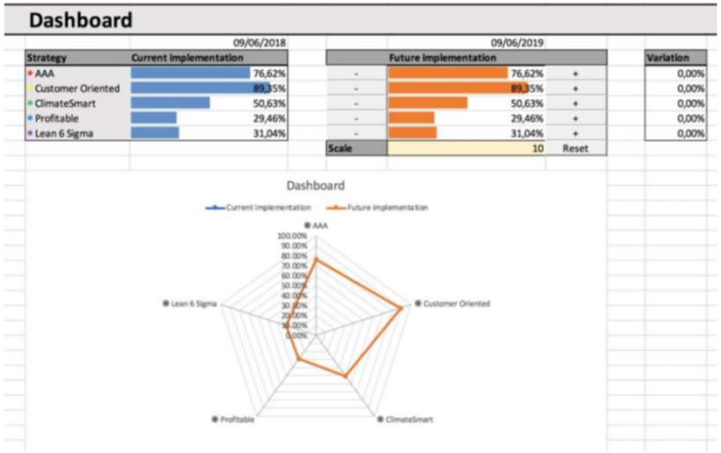
ii. Performance Management Science as an assessment framework

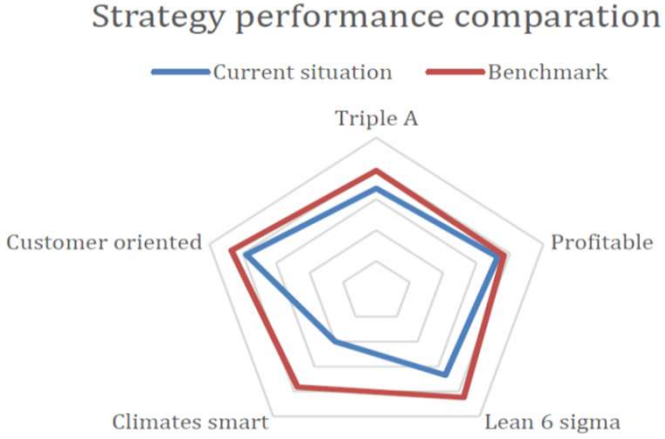
PERFORMANCE MANAGEMENT

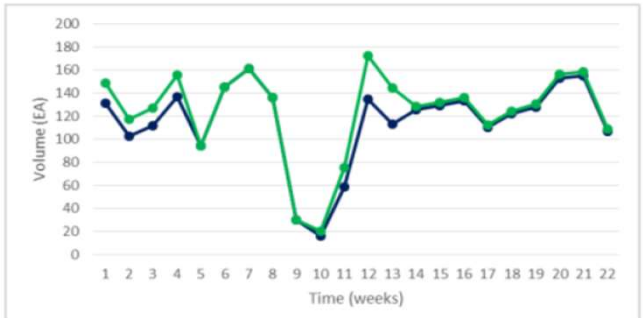
Pillar 4: Performance Reporting and Monitoring:

(1) Reporting & displaying the key indicators values using **Business Intelligence** tools

(2) Continuously **benchmarking & monitoring** these values to allow tracking the attainment of corporate goals.







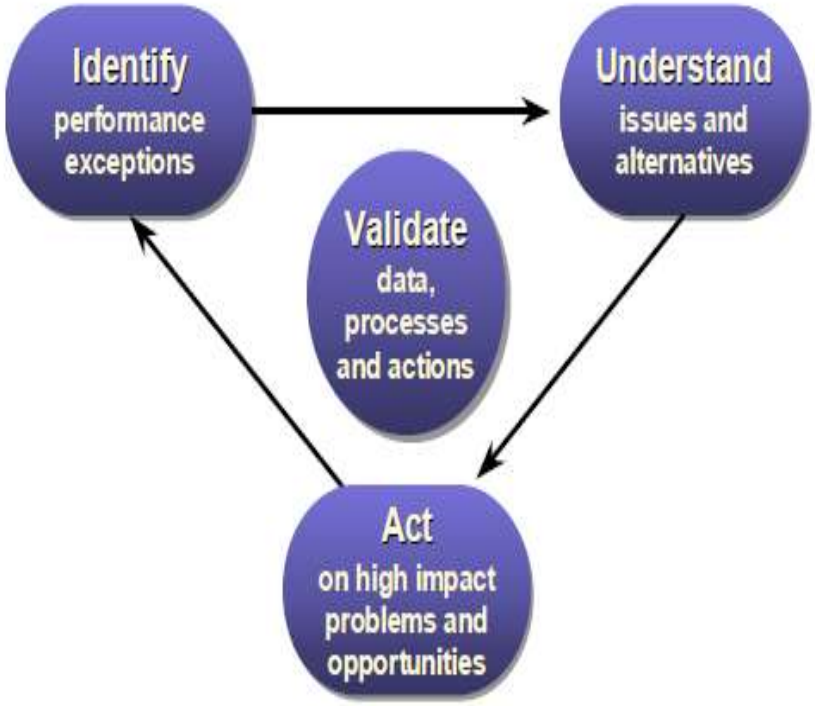
Deloitte's Point of View on Supply Chain Analytics

ii. Performance Management Science as an assessment framework

PERFORMANCE MANAGEMENT

- is about using the data to drive future actions, not only to respond to past observations.

- Is supported by a *Culture of Measure and Improve:*
  1. *Have a measurement process in place.*
  2. *Ensure frequent, constructive reviews of the indicators.*
  3. *Hold regular performance discussion sessions.*
  4. *Track performance problems and correct poor performance.*
  5. *Reinforce good performance.*



The Supply Chain Performance Management Cycle

Source: H. Lee & J. Amaral, Continuous and Sustianable Improvement through SCPM, University of Stanford.

CONTENT OF BLOC 12

SUPPLY CHAIN PERFORMANCE MANAGEMENT

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2. **BUILDING OF A SUPPLY CHAIN PERFORMANCE MANAGEMENT MODEL**

Building of a Supply Chain Performance Management Model

OBJECTIVE

- **Assess the performances of the company's supply chain strategies.**
- **Determine the appropriateness of the company's supply chain strategies.**
- **Highlight the potential for performance improvement, for progress.**
- **Determine the decisions/plans to be deployed in order to reach a higher level of performance.**

Building of a Supply Chain Performance Management Model

Table 6
Supply chain performance metrics framework

Supply chain activity/ process	Strategic	Tactical	Operational
Plan	Level of customer perceived value of product, Variances against budget, Order lead time, Information processing cost, Net profit Vs productivity ratio, Total cycle time, Total cash flow time, Product development cycle time	Customer query time, Product development cycle time, Accuracy of forecasting techniques, Planning process cycle time, Order entry methods, Human resource productivity	Order entry methods, Human resource productivity
Source		Supplier delivery performance, supplier leadtime against industry norm, supplier pricing against market, Efficiency of purchase order cycle time, Efficiency of cash flow method, Supplier booking in procedures	Efficiency of purchase order cycle time, Supplier pricing against market
Make/ Assemble	Range of products and services	Percentage of defects, Cost per operation hour, Capacity utilization, Utilization of economic order quantity	Percentage of Defects, Cost per operation hour, Human resource productivity index
Deliver	Flexibility of service system to meet customer needs, Effectiveness of enterprise distribution planning schedule	Flexibility of service system to meet customer needs, Effectiveness of enterprise distribution planning schedule, Effectiveness of delivery invoice methods, Percentage of finished goods in transit, Delivery reliability performance	Quality of delivered goods, On time delivery of goods, Effectiveness of delivery invoice methods, Number of faultless delivery notes invoiced, Percentage of urgent deliveries, Information richness in carrying out delivery, Delivery reliability performance

Model's framework and indicators

- **Distinguish** the strategic, tactical and operational levels.
- **Use the SCOR framework** to cope with supply chain processes
- **Define indicators and KPIs** with clarity.

Building of a Supply Chain Performance Management Model

Model's framework and indicators

Select indicators and group them into categories

	Measures	*Indicators*
Operational Performance	Quality	Customer reject rate
		In plant defect fallow rate
		Increment products quality
	Customer satisfaction	After-sales service efficiency
		Rates of customer complaints
		Out-of-stock ratio
	Delivery	On time delivery
		Delivery reliability
		Responsiveness to urgent deliveries
	Time	Lead time
		Cycle times
		Delivery lead time
	Inventory levels	Finished goods equivalent units
		Level of safety stocks
		Order-to-ship

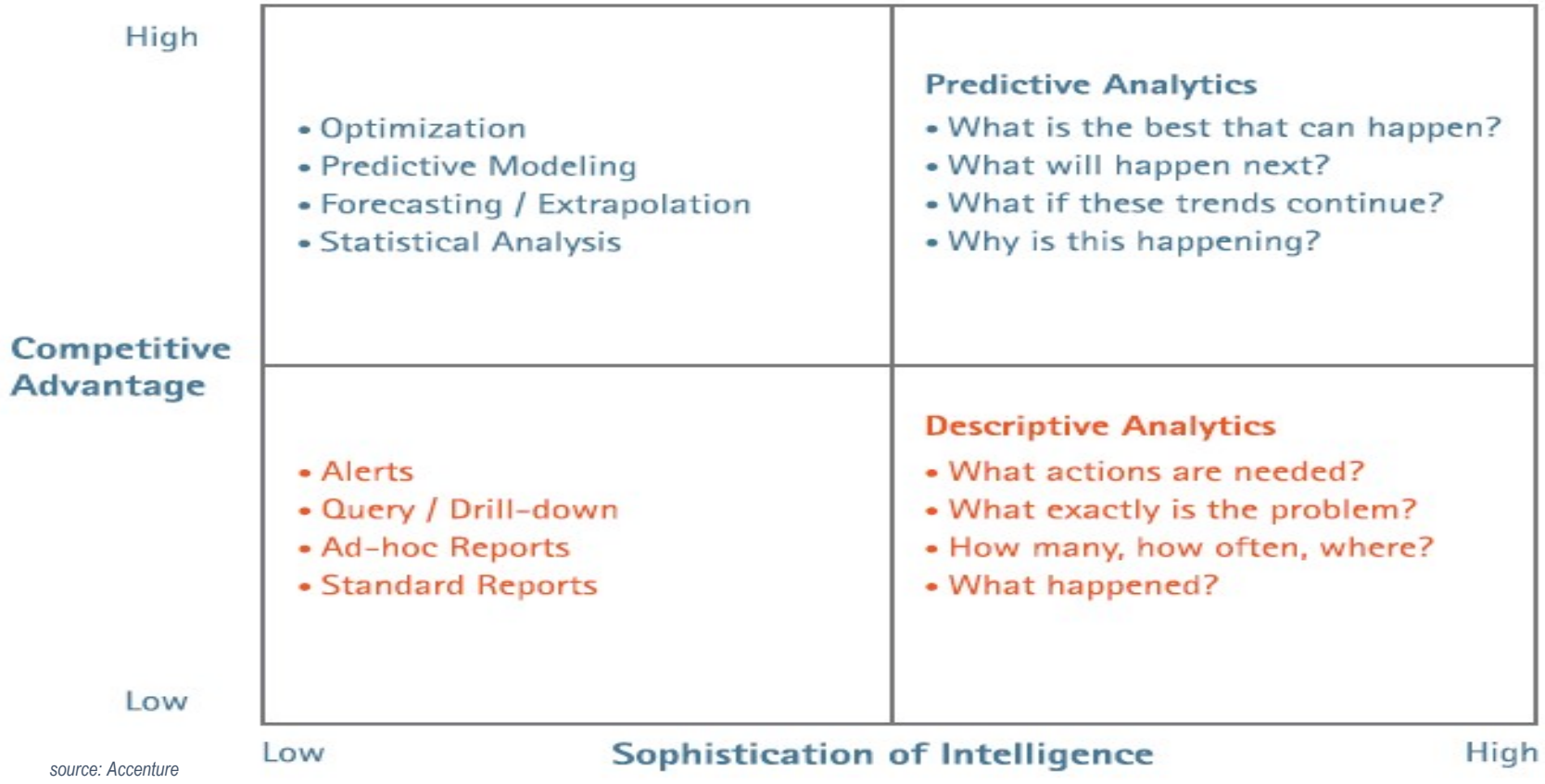
	Measures	*Indicators*
Economic Performance	Cost	New product flexibility
		Manufacturing cost
		Cost per operating hour
	Efficiency	Overhead expense
		Operating expenses
	Environmental revenues	Revenues from 'green' products
		Recycling revenues
		Cost avoidance from environmental action
	Environmental costs	Cost of scrap/rework
		Fines and penalties
		Costs for purchasing environmentally friendly materials
		Disposal costs
		Recycling cost = transport + storage costs
		R & D expenses ratio

	Measures	*Indicators*
Environmental Performance	Green image	Number of fairs/symposiums related to environmentally conscious manufacturing the organization participate
	Business wastage	Total flow quantity of scrap
		Percentage of materials remanufactured
		Percentage of materials recycled /re-used
		Hazardous and toxic material output
		Solid and liquid wastes
	Emissions	Energy consumption
		Green house gas emissions
		Air emission

Building of a Supply Chain Performance Management Model

Building of a Supply Chain Performance Management Model

NEED TO CONSIDER THE INCREASING POWER AND SCOPE OF ANALYTICS



source: Accenture

Building of a Supply Chain Performance Management Model

NEW METRICS AND PERFORMANCE SYSTEM HIGH 5'S

1. A new driver-based metrics framework that seriously considers the right cross-functional accountabilities and trade-offs.

2. Stable data with few unexplainable swings

3. Capable of drill-down analysis to search for root causes and to anticipate future (simulation)

4. Easily accessible to and accepted by relevant parties

5. Supported by a disciplined and documented governance process

Source: Terra Tech, University of Tenessee and Ernst & Young, 2013

Building of a Supply Chain Performance Management Model

PAY ATTENTION TO

- Data availability and data collection methods
- IT integration level
- Link to Maturity Level and SCOR Matrix
- Redundant or conflicting indicators
- Aggregation towards metaindicators
- Globalisation issues
- Internal (Company) and External (Competition) issues
- Benchmarking
- Adaptability/Transferability to other contexts
- Future updates and extensions
- Visualization and reporting: Radar Charts or Dashboards or Cockpit Screens

Building of a Supply Chain Performance Management Model

MODELS THAT PREDICT, SIMULATE, ANTICIPATE, MONITOR & HELP MANAGE

Merging practice assessment and data analytics

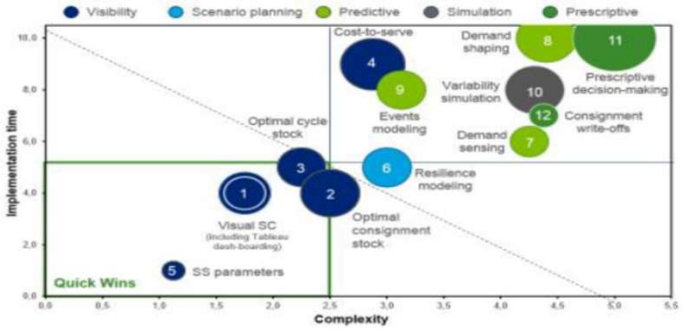
Defining strategy, initiatives portfolio and road map

Establishing program governance, execution and monitoring

source: Ernst & Young

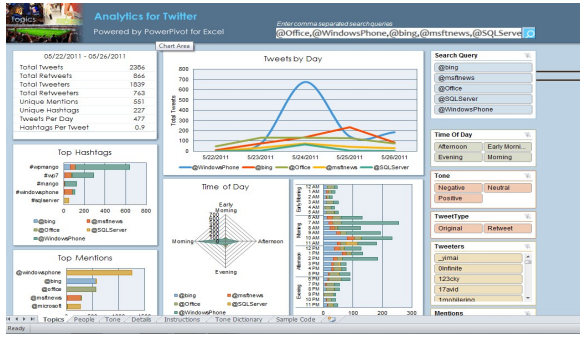
Building of a Supply Chain Performance Management Model

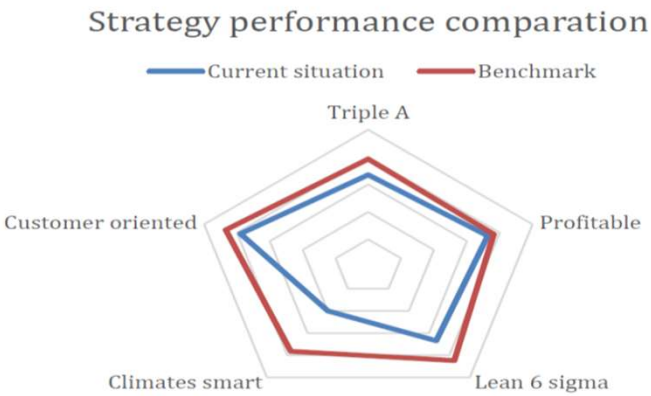
MODELS THAT PREDICT, SIMULATE, ANTICIPATE, MONITOR & HELP MANAGE

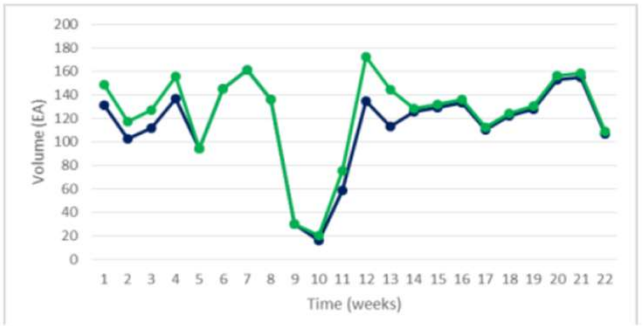


Mapping of analytics priorities

Supply Chain visualization

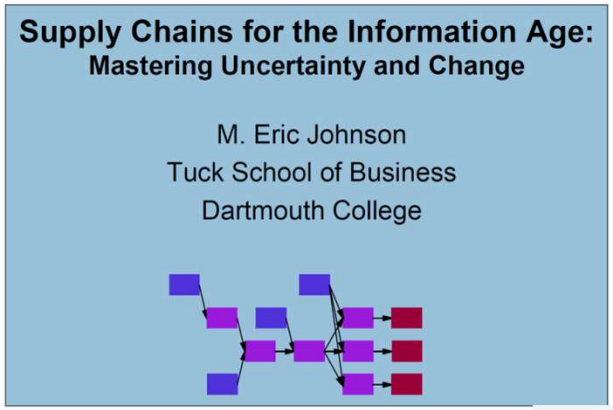


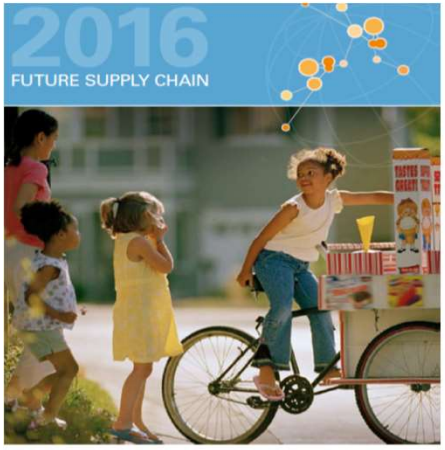


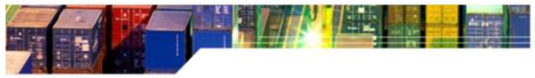


Predictive analytics

Deloitte's Point of View on Supply Chain Analytics







SUPPLY CHAIN WHITE PAPER

10 KEY TRENDS TO UNDERSTAND SUPPLY CHAIN MANAGEMENT

ALEXANDRE GARNIER | APRIL 2017


Northeast Supply Chain Conference
PRTM Management Consultants
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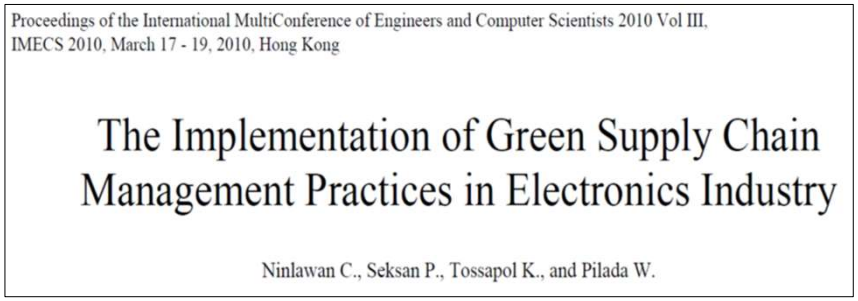
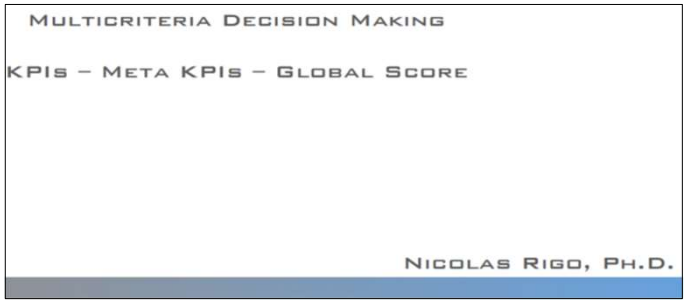
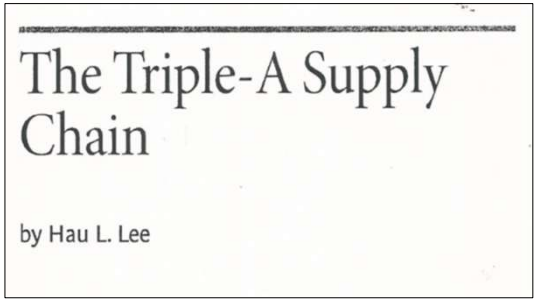
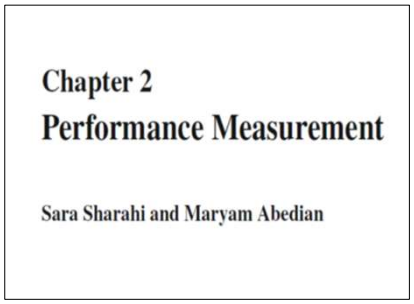
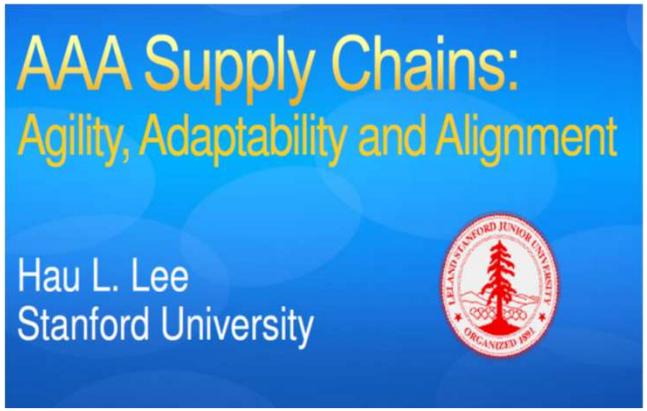
bhouseholder@prtm.com
Strategic Supply Chain Management:
The Five Disciplines for Top Performance
September 20, 2005
Leading thinking for lasting results


Proceedings of the International MultiConference of Engineers and Computer Scientists 2010 Vol III,
IMECS 2010, March 17 - 19, 2010, Hong Kong
The Implementation of Green Supply Chain Management Practices in Electronics Industry
Ninlawan C., Seksan P., Tossapol K., and Pilada W.

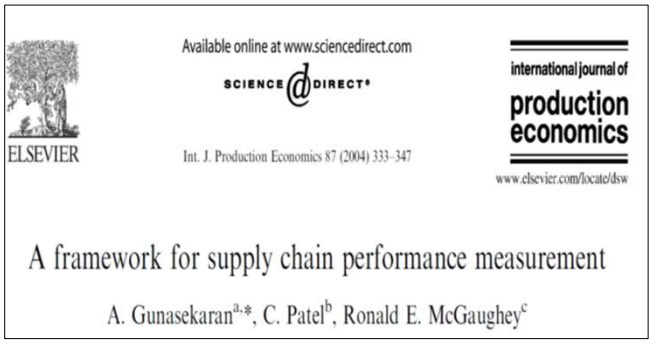

MULTICRITERIA DECISION MAKING
KPIs – META KPIs – GLOBAL SCORE
NICOLAS RIGO, PH.D.


The Triple-A Supply Chain
by Hau L. Lee


Chapter 2
Performance Measurement
Sara Sharahi and Maryam Abedian


AAA Supply Chains:
Agility, Adaptability and Alignment
Hau L. Lee
Stanford University


SUPPLY CHAIN WHITE PAPER
10 KEY TRENDS TO UNDERSTAND SUPPLY CHAIN MANAGEMENT
ALEXANDRE GARNIER
APRIL 2017


ELSEVIER
Available online at www.sciencedirect.com
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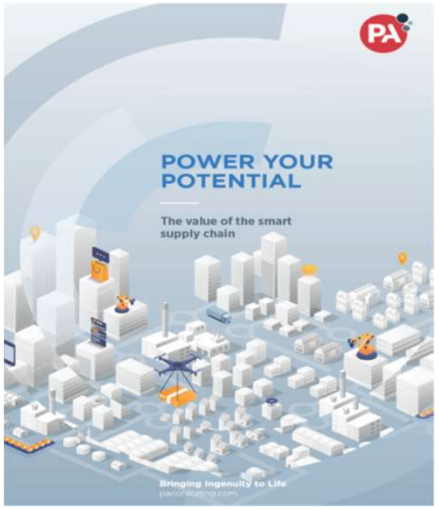
Int. J. Production Economics 87 (2004) 333–347
international journal of production economics
www.elsevier.com/locate/dsw
A framework for supply chain performance measurement
A. Gunasekaran[a,*], C. Patel[b], Ronald E. McGaughey[c]


POWER YOUR POTENTIAL
The value of the smart supply chain
Bringing ingenuity to life

ENJOY LIFE AND HAVE FUN !

BEST WISHES !