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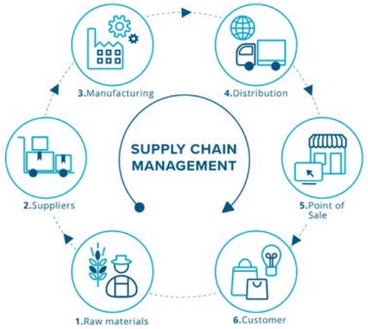
INNOVATION DESIGN MANAGEMENT M.A.

Master Thesis:

"Role of Innovation Design Management in Integrating Digital Solutions to the Food Supply Chain"

Presentation by :

EDUARDO OYUELA



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Content

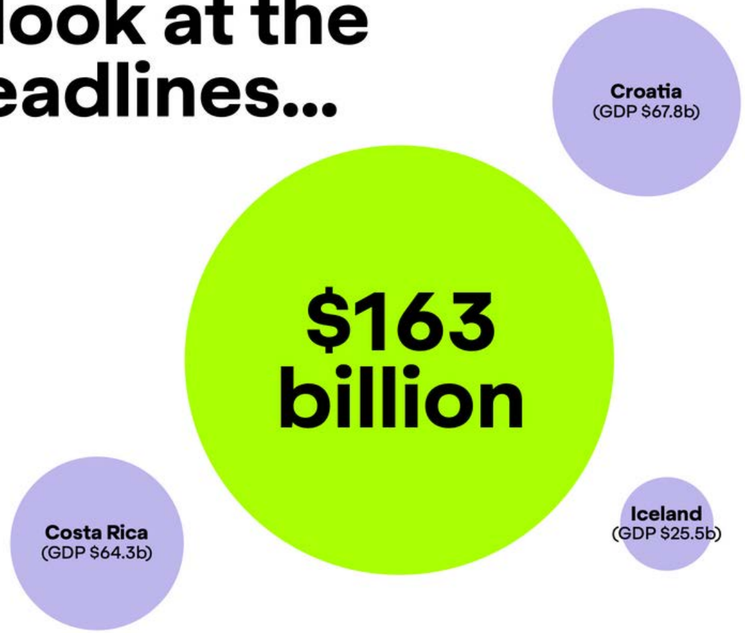
Introduction

Food waste represents a global challenge throughout the supply chain, with almost 50% of produced food being lost or wasted annually.

Avery Dennison

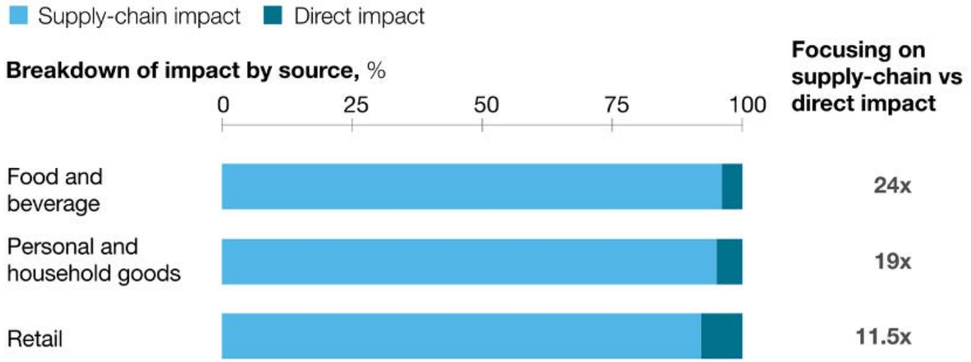
The Missing Billions

Let's take a look at the headlines...



Most of the environmental impact associated with the consumer sector is embedded in supply chains.

>90% of natural capital impact (eg, affecting air, soil, land) of consumer sector is in supply chains



>80% of greenhouse-gas (GHG) emissions in most consumer-goods categories are in supply chains[1]

Problem

Average % of technology budgets being dedicated to supply chain sustainability

Organizations in China are investing significantly more into **supply chain sustainability** than other markets

... but only 4.4% of technology budgets on average are being dedicated to supply chain sustainability.

[AD Global Supply Chain Research, 2022]

PROBLEMS

The main problem to solve in this thesis is the absence of a tool capable of bridging the substantial gap between the existing technologies and applications designed to mitigate environmental impact and at same time lead a bottom-line positive change in the Food Supply Chain.

RESEARCH QUESTION

How can the integration of digital solutions within the food supply chain be strategically orchestrated to lead the implementation and foster overall sustainability?

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Objectives

OBJECTIVES 01

Analyze the current overall status within a specific organization to determine weak points and specific factors that can limit a digital transformation in the food supply chain.

OBJECTIVES 02

Implement an iterative process for continues improvement and refinement, based on insights and participation from stakeholders.

OBJECTIVES 03

Develop a tool that can be replicated and adjusted to different kind of strategies and size of the organization.

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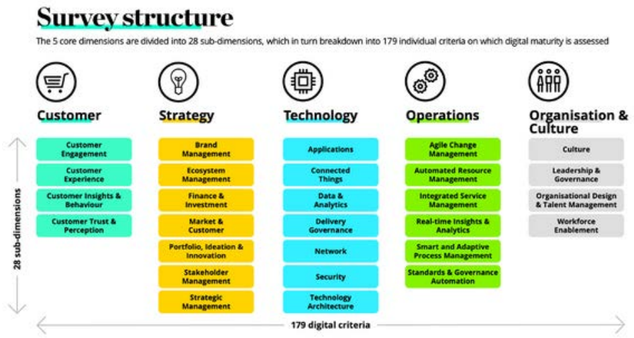
Inspiration

THE DESIGN LEADERSHIP FRAMEWORK ASPECTS

OPERATIONS	EXPERIENCE	STRATEGY	ENTERPRISE	TEAM
Define Organizational Structure	Develop Design Principles	Assess Current Situation	Align with Business Strategy	Develop Team Culture
Define Design Workflow	Define Design Language	Define Vision & Goals	Build Stakeholder Alliances	Provide Feedback & Guidance
Manage Work Streams	Advocate User Perspective	Develop Strategy & Roadmap	Develop Design Culture	Plan and Scale Staffing Demand
Facilitate Collaborative Design	Promote End-to-End Experience	Drive Change	Promote Design Capabilities	Manage Recruiting & Onboarding
Define Work Environment	Drive Innovation	Manage Program Initiatives	Support Enterprise Challenges	Foster Talent Growth
Ensure Design Coherence	Provide Creative Guidance	Measure Practice & Performance	Build Design Reputation	Reflect Leadership Skills
Enable Knowledge Exchange				Manage External Partners
Assure Quality and Compliance				



There are many existing models for a digitization process, but no efforts so far for Food Industry

- Digital Maturity assessment models.
- Interoperability frameworks.
- Digital Operations models.
- Digital Compass analysis.
- Process models.
- And many more...

The McKinsey Digital Supply Chain Compass maps Supply Chain 4.0 improvement levers to 6 main value drivers

The digital walkthrough leads to a maturity assessment along the major SC 4.0 dimensions and concrete recommendations going forward

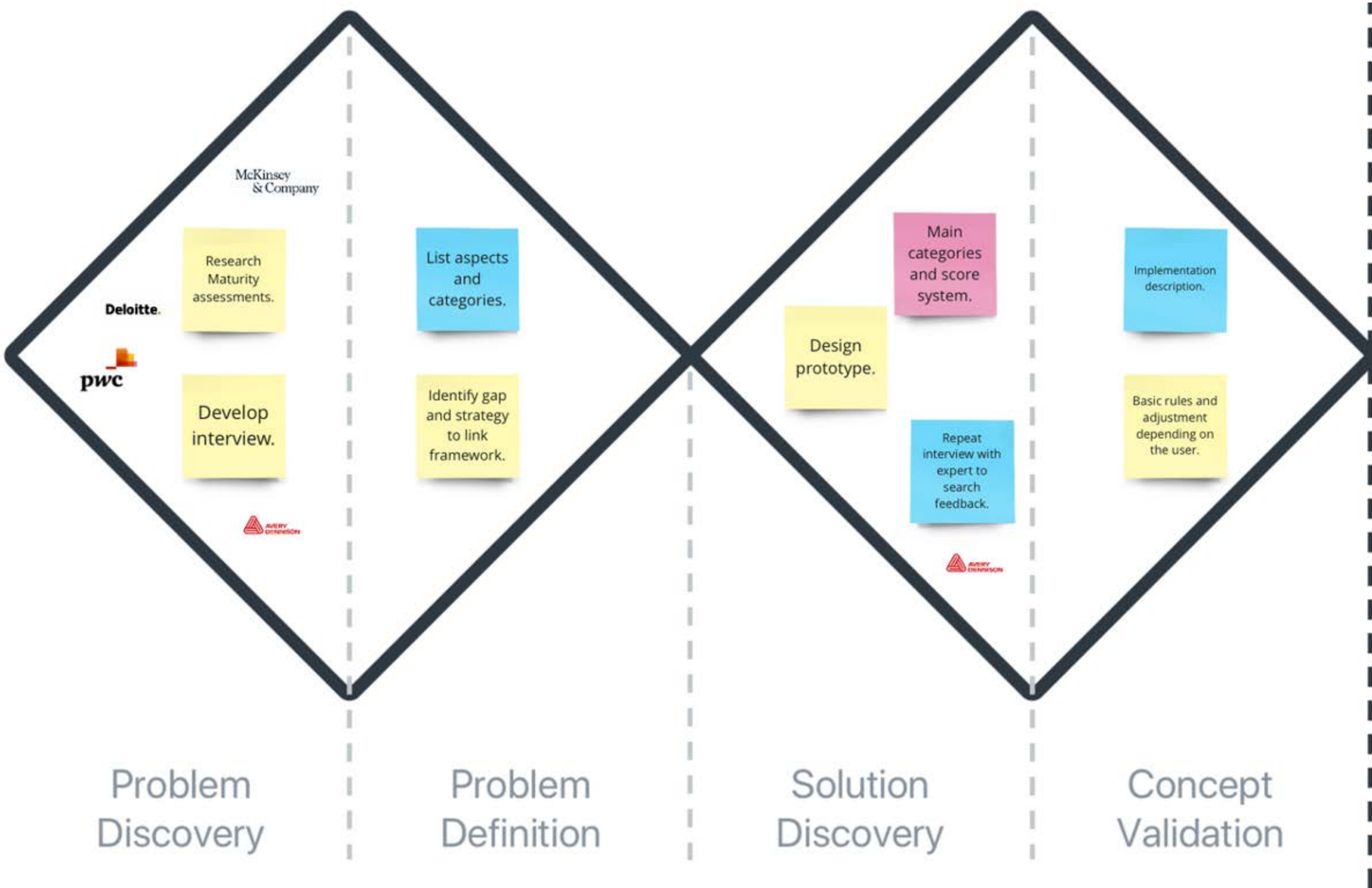
Approach

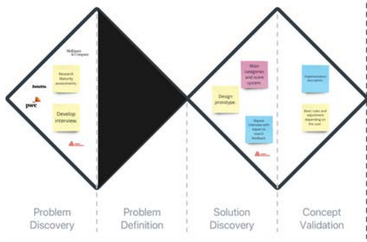
PRIMARY RESEARCH

Interviews with a leader in a senior role in an organization that servs digital solutions to the food industry to understand their challenges, and to gain feedback once the design process is ready.

SECONDARY RESEARCH

Analysis of different models, maturity assessments, interoperability frameworks, to collect aspects of use cases that can provide insights of the change process.



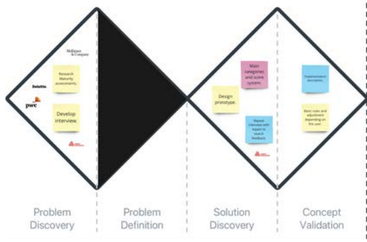


Design Process

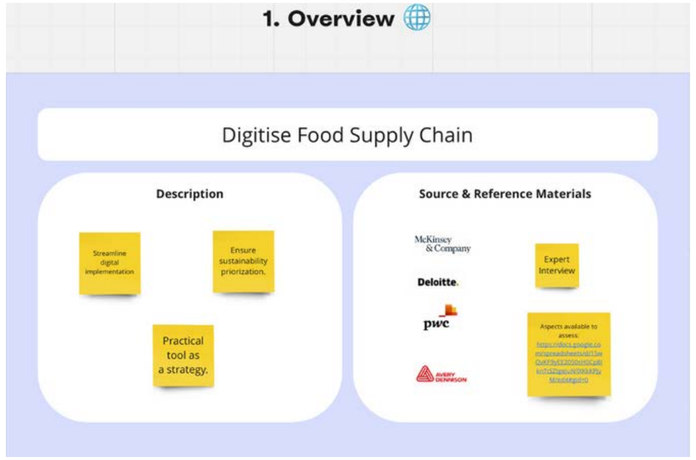
4	1	Network design	SC Strategy	Supply Chain level
5	2	SC segmentation	SC Strategy	Supply Chain level
6	3	Demand planning	Planning	Supply Chain level
7	4	Inventory management	Planning	Supply Chain level
8	5	SOP	Planning	Supply Chain level
9				
10				
11				
12				
13	10	Assessment and tender of logistics	Physical Flow	Supply C
14	11	Order management	Physical Flow	Supply
15	12	Collaboration	Physical Flow	Supply Chain le
16	13	Performance management	Physical Flow	Supply Chain level
17	14	Applications	Technology	Technology level
18	15	Connected Things	Technology	Technology level
19	16	Data & Analytics	Technology	Technology level

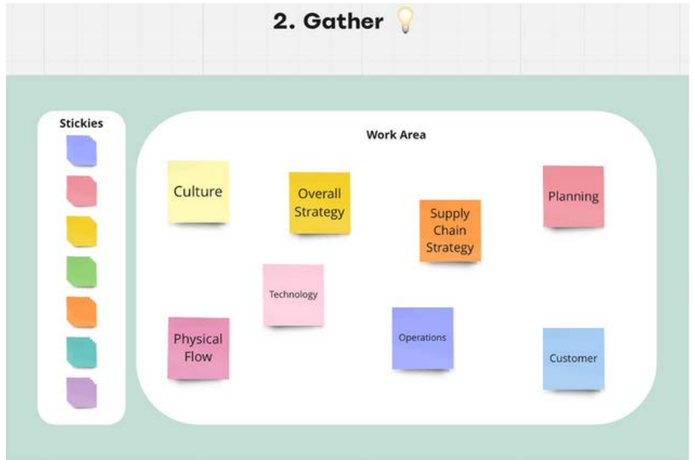
- 43 different aspects were identified and listed for analysis.

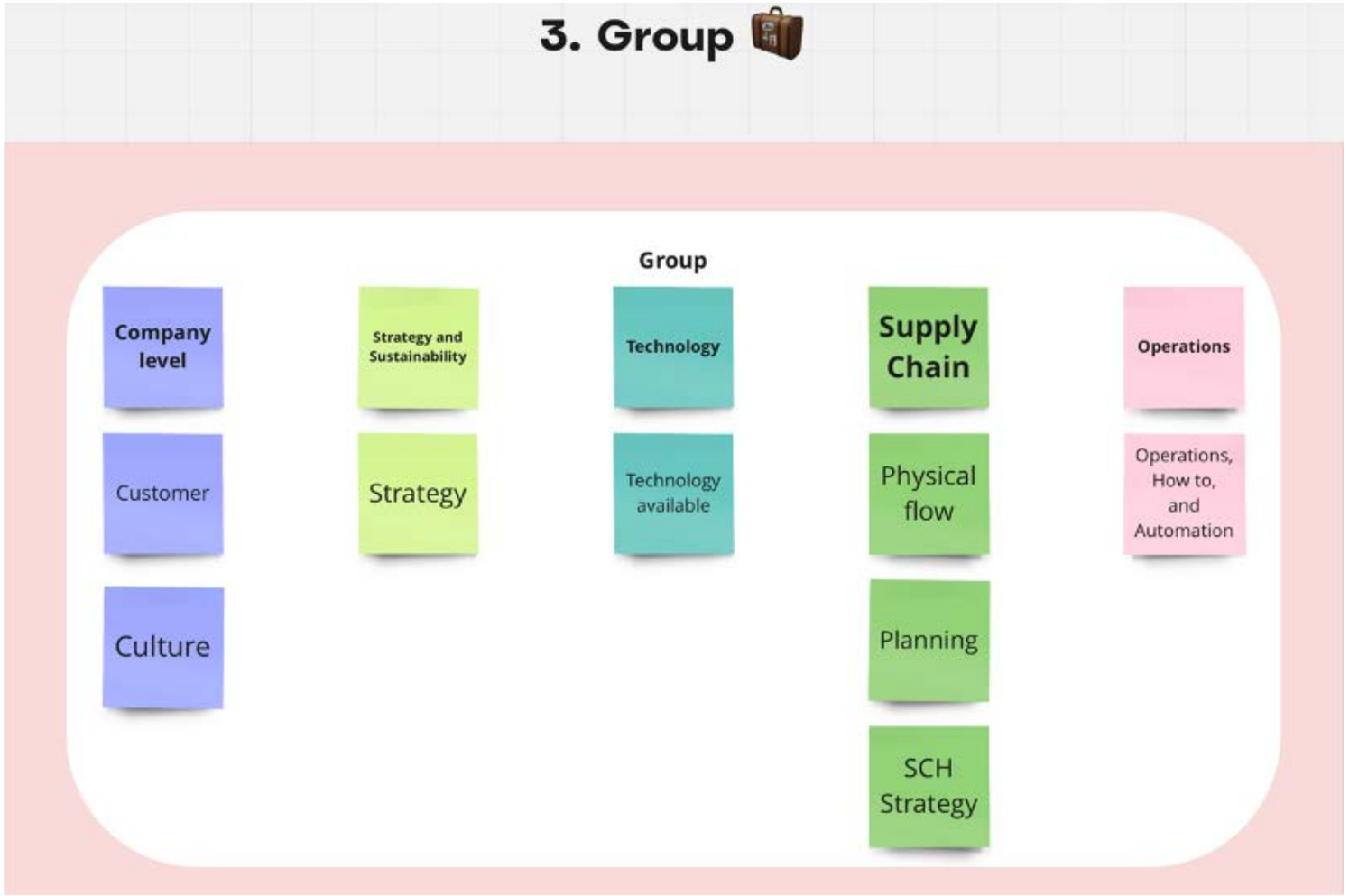
5 different models
1 interview
+60 activities



Aifnity Diagram







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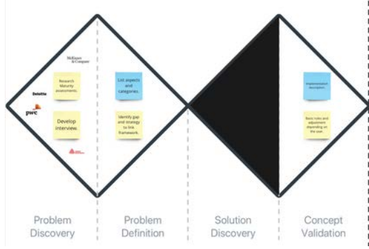


Framework

Company Level

Operations Level

Strategy and Sustainability Level

Technology Level

Supply Chain Level

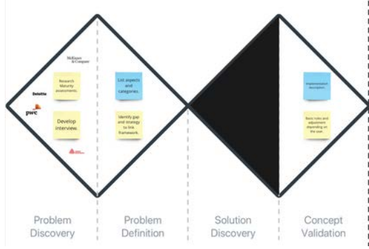
Goals of the Solution:

- Create an **Overview** and **Framework** that shows all relevant areas of a **Digital Transformation of the Food Supply Chain.**
- Structure the **existing knowledge** and tools.
- **Foster sustainable** practices and set them as a target.
- Help organizations to **focus on the right things.**

Mission:

Serve as a practical compass for the food industry leaders and stakeholders in the digital era to integrate technologies into their supply chain operations, by fostering interoperability, collaboration, and ensuring that businesses of all sizes can harness the benefits of sustainable digital solutions.

Digital Integration Framework for the Food Supply Chain



Level	Categories			
Company Level	**Develop Digital Leadership.**	Leadership	**Customer management**	Customer insights & behaviour
		Organization design	Customer engagement	Customer trust & perperception
		Workforce enablement		Customer experience
Operations Level	**Develop optimized operations**	Agile change management		Real time insights
		Integrated service management	Standards and automation	
		Automated resource management		Smart and adaptive process
Strategy and Sustainability	**Create the strategy**	Brand management	Market & customer	Strategic management
		Ecosystem management	Finance & investment	Sustainability assessment
		Stakeholder management		Portfolio ideation & innovation
Technology Level	**Improve through technology**	Interoperability performance	Network	Security
		Data & analytics	Applications	Delivery governance
		Connected things		Technology architecture
Supply Chain	**Supply chain design**	Network design	**Develop a planning structure**	SOP
				Master planning
				Scheduling
		Supply chain segmentation		Demand planning
				Inventory management
	Design a physical flow	Collaboration		
		Transport operations		
		Warehouse operations		

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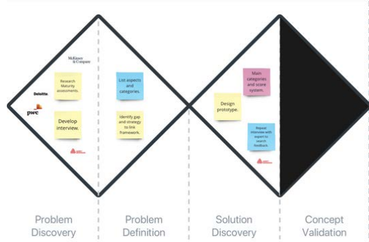
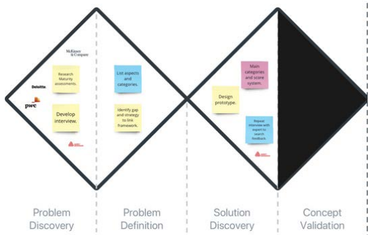


Application

Deep Dive

Organizational Assessment

Digital Integration Framework for the Food Supply Chain



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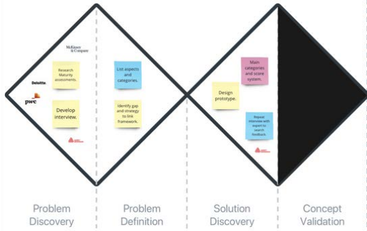
Digital Integration Framework for the Food Supply Chain



Operations Level

Category:	Aspect:
Develop optimized operations.	Agile change management.

Description.

What is it about and why is included in the framework?

Method and Tools.

How is applied, what methods can be used?

Content related.

Where can I continue learning?

Assessment Example

Categories

Develop Digital Leadership.

- Leadership
- Organization design
- Workforce enablement

Customer management

- Customer insights & behaviour
- Customer engagement
- Customer trust & perperception
- Customer experience

Develop optimized operations

- Agile change management
- Integrated service management
- Automated resource management
- Standards and automation
- Real time insights
- Smart and adaptive process

Create the strategy

- Brand management
- Ecosystem management
- Stakeholder management
- Market & customer
- Finance & investment
- Strategic management
- Sustainability assessment
- Portfolio ideation & innovation

Improve through technology

- Interoperability performance
- Data & analytics
- Connected things
- Network
- Applications
- Security
- Delivery governance
- Technology architecture

SCH design

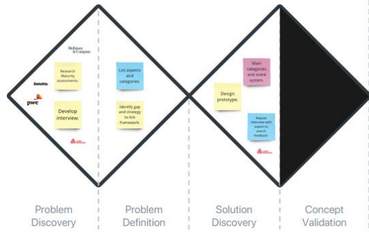
- Network design
- Supply chain segmentation

Develop a planning structure

- SOP
- Scheduling
- Demand planning
- Master planning
- Inventory management

Physical flow

- Collaboration
- Transport operations
- Warehouse operations



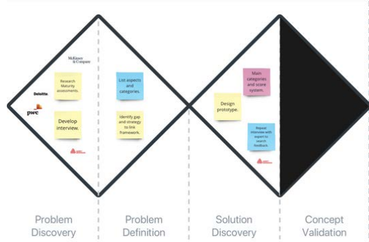
No performance:

Low performance:

Medium performance:

High performance:

Assessment Example



Technology Level

Category:

Improve through technology

Interoperability performance ■□□□	Network ■■□□	Security ■□□□
Data & analytics ■■□□	Applications ■□□□	Delivery governance ■■□□
Connected things ■□□□		Technology architecture ■□□□

No performance: ■□□□ Low performance: ■■□□ Medium performance: ■■■□ High performance: ■■■■

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Conclusions

CONCLUSIONS 01

The integration of digital solutions within the food supply can strategically be orchestrated to lead the implementation and foster the overall sustainability using a Framework.

CONCLUSIONS 02

The overall status within an organization to determine weak points and factors that limit a digital transformation in the food supply chain can be able analyzed by creating a systematic approach that include relevant aspects of a Digitization process based on models, assessments, technologies, and methodologies that have being already developed.

CONCLUSIONS 03

An iterative process for continues improvement and refinement based on insights and participation from stakeholders, can be done once a landscape that enables a mapping and strategically sort the needs and critical factors of the food supply chain.

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Recommendations

RECOMMENDATIONS 01

There are several steps going forward once The Digital Integration Framework for Food Supply Chain is already done, but the crucial one is to train interdisciplinary teams on the practical tool.

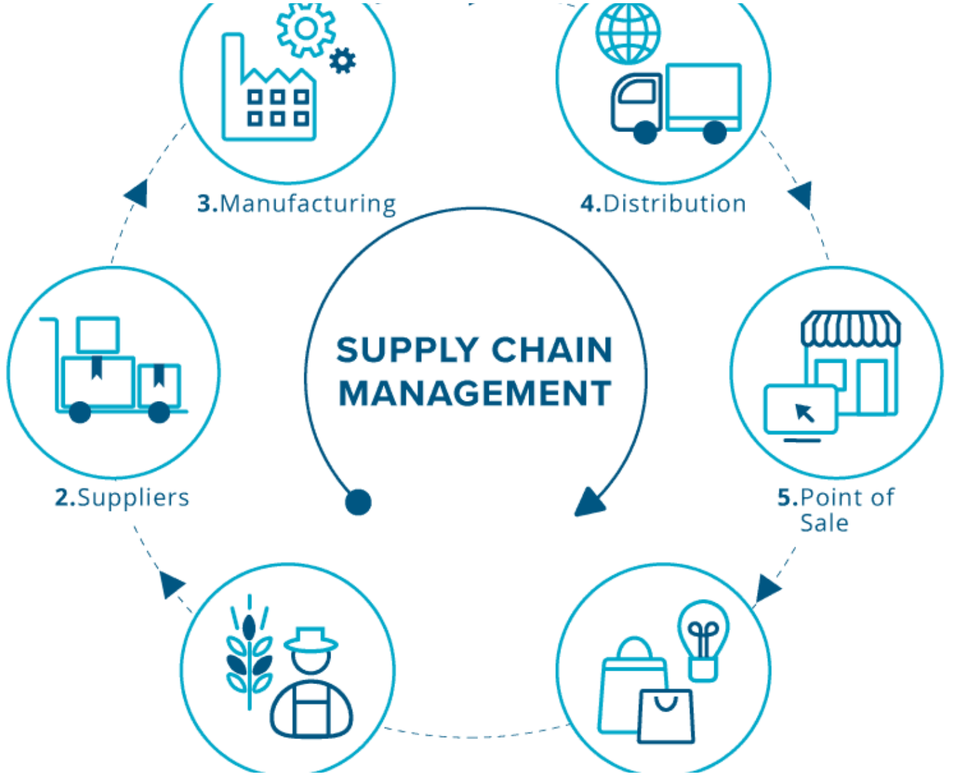
RECOMMENDATIONS 02

Build the ecosystem with the technologies that the different stakeholders are already using or implementing new ones, but always start at the source.

RECOMMENDATIONS 03

An innovation environment to foster the correct culture must be created very related to a startup environment to provide a high degree of organizational freedom and flexibility as well as state of the art IT systems.

Thank You So Much!



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Sources:

1.- Deloitte-Digital-Maturity-Model.Pdf, n.d.

2.- Supply Chain 4.0 – the next-Generation Digital Supply Chain | McKinsey, n.d.

3.- Book – Design Leadership Framework, n.d.

4.- Avery Dennison Report: Supply-Chain-Waste-Report-the-Missing-Billions.Pdf, n.d.

5.- IDEO Design Thinking, n.d.-b