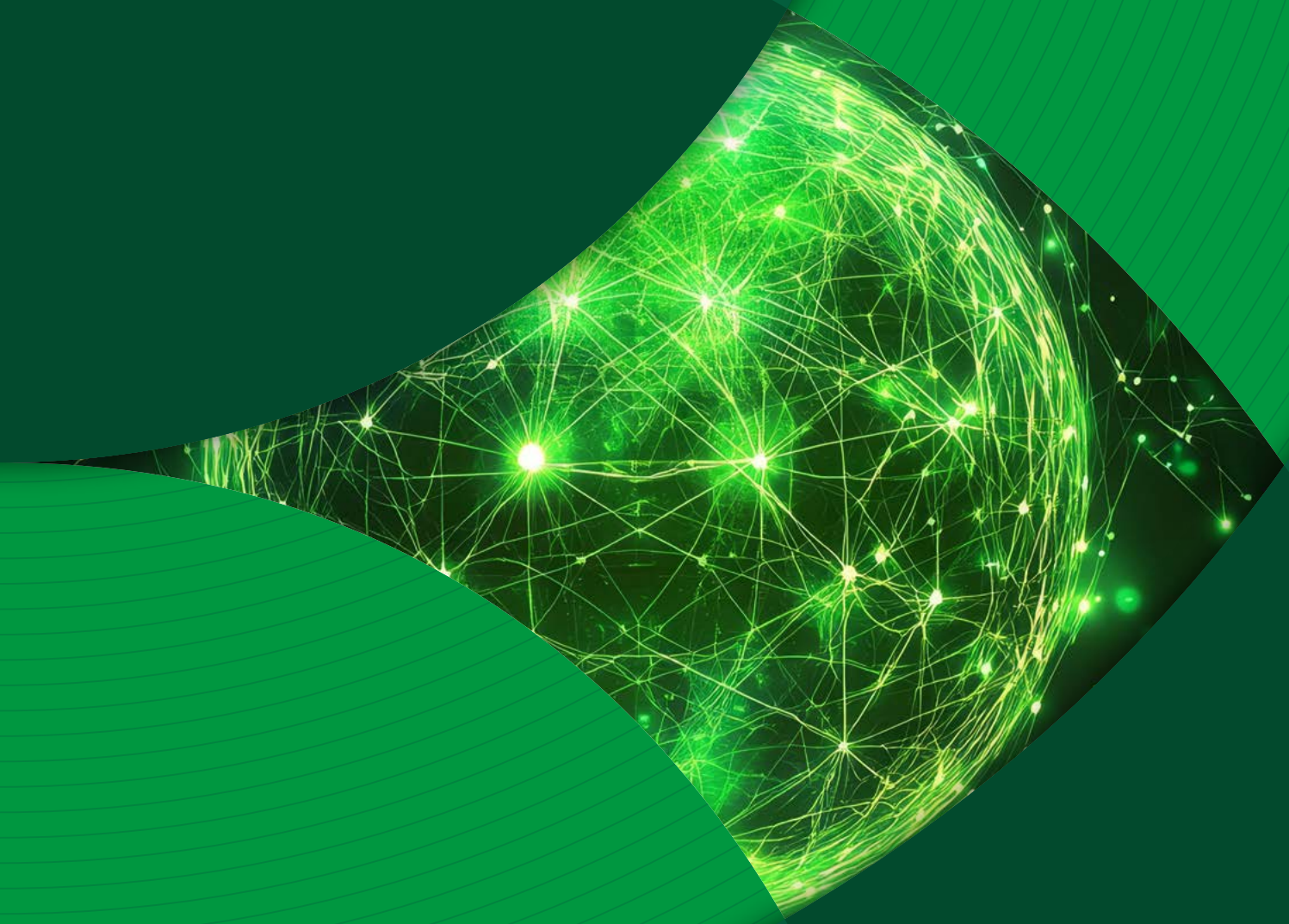
WHITE PAPER

SUPPLY CHAIN RESILIENCE

· MARCH 2025 ·



France Supply Chain by Aslog

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ABOUT FRANCE SUPPLY CHAIN

MISSIONS

1

Enable Supply Chains to contribute to a sustainable world for the people, the planet and the performance

2

Strengthen the impact of the Supply Chain in companies competitiveness

3

Promote the Supply Chain jobs and develop their attractiveness and recognition

Since 1972, the association brings together in France and internationally, 450 companies of all sizes and from all sectors of activity, including enginneering and business schools and training organizations. This network of 5000 members, professionals, educators, researchers, and students shares ideas and experiences to provide practical solutions to the players in the Supply Chain.

In january 2025, France Supply Chain by Aslog created a SUPPLY CHAIN 4 GOOD endowment fund, of which mission is to promote decarbonation and sustainability projects.

NETWORK AND COMMUNITIES: A HUB FOR SHARING, ACTION, AND SUPPORT

The association relies on its various working groups to provide members with studies such as this white paper.

100 projects

250 ressources

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In a world in upheaval, Sopra Steria Next combines business and technology to create value beyond the simple economic aspect: by giving meaning to data, innovating with artificial intelligence, and engaging all stakeholders.

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It's about giving tangible impetus to what really matters.

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PREAMBLE

The notion of resilience has demonstrated remarkable plasticity. This is not surprising: from the physical science of materials to individual psychology and political discourse, the term is now widely used, including in the conduct of economic affairs. So much so that this flexibility could sometimes be mistaken for opportunism. Let's try to redefine its limits so that we can take full advantage of it.

Resilience must avoid two pitfalls: limiting itself to an advertising slogan and, by focusing solely on the recovery, preventing us from imagining the redesign of the future of our organizations.

On the first point, **an incantatory posture** (we must/ will be resilient') **that would not be based on an action plan capable of bringing it to life, would be ineffective and logically accused of duplicity.** The difficulty lies in the fact that organizational resilience presupposes a fundamentally collective, systemic approach, shaking up the entire company's ecosystem: partners, suppliers, customers, employees and institutions. As 70 to 90% of a company's carbon impact comes from its scope 3, **dialogue with the upstream and downstream value chain is essential to set in motion a trajectory of impact reduction.**

We can even go further. The call for resilience in the world of urban planning, particularly in the aftermath of natural disasters, has given rise to much criticism, with hurricane Katrina ravaging New Orleans in 2005 serving as a paradigmatic example. **Bouncing back is necessary, but we still need to look at the ways in which this rebound can be achieved.** The reconstruction of New Orleans has resulted in greater exclusion of the city's poor populations. We must therefore ask ourselves whether 'the discourse of resilience is formulated around a collective project chosen democratically'[1].

This observation is also valid for companies, given that they are key players in the city. Have all the lessons been learnt from the pandemic crisis of 2021 about disruptions in supply chains, with all the parties concerned? Or the energy dependency of Europe and its companies, as revealed by the invasion of Ukraine?

On the second aspect of resilience, **the 'resilient subject', and the company in particular, must not limit itself to a smallest adaptation effort** which would consist of 'accepting the disastrous state of the world in which it lives'[2]. In other words, **resilience is not (just) about getting our heads above the water in a crisis, but about learning to navigate by all circumstances in the light of sustainability criteria set over a long-time horizon.** This means rethinking production, distribution and consumption models. Circularity is an obligation in a constrained world, where new competition is emerging in the face of competition for resources (material, human, etc.).

Future resilience therefore depends on a robust sustainable performance strategy that goes beyond mere regulatory compliance or cosmetic reorganization. By integrating the principles of sustainable development and responsibility into their operations, companies do not just survive to crisis, they position themselves as solid agents of change capable of contributing to society's adaptation and positive transformation.

Axelle LEMAIRE
Group Executive Director in charge of Sustainability and Corporate Social Responsibility - Sopra Steria

[1] Samuel Rufat, *Critique of resilience pure*, 2011.

[2] Reid, Julian (2012), "The disastrous and politically debased subject of resilience", *Development Dialogue,* vol. 58, p. 67-79. in Romain Felli, "Adaptation and resilience: critique of the new ethics of the environmental international", Public Ethics, vol. 16, n°1 | 2014.

THIS WHITE PAPER WAS MADE POSSIBLE
THANKS TO THE COMMITMENT OF OUR MEMBERS

STEERING COMMITTEE

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President of France Supply Chain by Aslog

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Vice President Operations, Alstom Digital & Integrated Solutions

Walid KLIBI
Professor and researcher at ISLI KEDGE, and affiliated with MIT

Arnaud DE MOISSAC
President of DCbrain

Philippe ARMANDON
Director of the Operations and Supply Chain Excellence practice, Sopra Steria Next

CONSULTANTS

Julien SAIL
Senior Consultant, Aeroline Consulting, Paris, Sopra Steria Next

Gaspard STOCKER
Consultant, Aeroline Consulting, Paris. Sopra Steria Next

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CONTENTS

INTRODUCTION

Supply Chain resilience is very likely to be on top of the list for VPs of Supply Chain and Operations around the world... But not everyone puts the same meaning behind the word Resilience.

I first heard of resilience through the work of neuropsychiatrist and ethologist Boris Cyrulnik. who developed the notion of resilience as 'a process of rebuilding after trauma'.

My operational experience has not contradicted this initial vision: restarting a production line after a breakdown, delivering 'whatever it takes' despite blockages on the road, or finding a substitute product in the face of a shortage...

In Supply Chain, as in psychology, **resilience is first and foremost a reaction** (i.e. reconstruction sometimes even in the real estate sense) **in the face of a hazard** (i.e. sometimes a very real trauma) **that we must overcome.**

The reconstruction phase can be of various duration depending on the degree of foresight, anticipation training or organization... all of which contribute to the agility of our operations. So many things we'd like to be able to measure, hence the original approach of this white paper.

It was during a debate with Axelle Lemaire that I discovered a new dimension of resilience, **that is linked to the long-term sustainability of our companies and their services.**

Our risk analysis exercises have no other 'raison d'être' to reassure our shareholders that we are taking into account internal and external factors that could affect the short- or long-term sustainability of our operations.

When we talk about the long term, we can't avoid asking the following questions: will the company still be around in 20 or 30 years from now? What has to be 'true' (or verified) for this to be the case? On the other hand, if we carry out a sort of pre-mortem, what factors that have contributed to its demise?

From this point of view, over the long term, beyond the success of of commercial strategies and innovation, it is particularly relevant to focus on ESG stakes. Indeed, a world at +4°C ('non assurable' according to a statement made by Henri de Castries in 2015) is not the same as a world at +2°C, or at +1.27°C as is the case today.

Thinking of resilience in this way means incorporating into the long-term strategy the impact that we have on our ecosystems - whether economic or environmental - but also the major impacts that the environment can or will have on our activities (scarcity of natural resources, violent meteorological events, etc.), while not forgetting the social and technological dimensions.

The CSRD is not far away, and beyond the legitimate controversies about its administrative burden, it will be a formidable tool for measuring the resilience of our businesses. As Peter Drucker said, "What gets measured gets managed."

Finally, this could be an innovative approach: after the diagnostic, using the treasures of technology that are available to serve the major transformations that we need to carry out, not so much to perform - we have to - but to be more resilient over the long term.

Yann DE FERAUDY
President of France Supply Chain by Aslog

PRESENTATION OF THE STUDY

A "NEVER NORMAL" WORLD WHICH CALLS FOR A MORE RESILIENT SUPPLY CHAIN

We are no longer in a 'new normal' world as it has often been described since the Covid crisis. We are now in a 'never normal' world, and the impact on supply chains is particularly high.

Since 2008 and the global financial crisis, companies have been hard hit. Crisis no longer come one after the other, they are superimposed, and there seems to be no end in sight. **Today's world announces disruptions, some of which could threaten their very existence:** climate change, geopolitics, health risks, major regulations, energy and raw materials shortages, technological developments, skills and cyber security.

Operations and supply chains are at the heart of these challenges. In most sectors, they account for around 70-80% of costs, and 80% of the environmental footprint. How, in these new conditions, can a company still meet its customer's promise in five or ten years' time, and how should it prepare?

Resilience is defined as an evolutionary recovery from trauma. It is the historical function of the Supply Chain to constantly adapt to unstable balances between supply and demand, in the short, medium and long term, and to all kinds of external constraints. There is no lack of processes, practices and tools to achieve this. However, short-termism, siloed functions, the absence of a global, cross-functional vision and reliable data often lead to each crisis being dealt with by a succession of reactive, localized 'Plan Bs' and urgent corrective actions or investments.

This study attempts to consider the factors that really determine the resilience of operations and Supply Chain over a longer period. **It questions how structurally, and even organically, companies develop the capacity to adapt to future shocks** – whatever they may be - so that they can continue to serve their markets. In a way, it's about regeneration. We are also convinced that **resilience also means that companies must consider their ecosystem.**

What interests us is the transformative dynamic that companies undertake. This is why we decided with France Supply Chain to create, **the Supply Chain Resilience Observatory,** the first of its kind, with the following aim:

- To regularly evaluate the state of resilience, with the help of an "index"
- To identify good practices
- To offer some feedback from experience and opinions from experts
- To provide food for thoughts with some remarkable studies and analysis
- To share this with the Supply Chain community

We are happy to share the results of this first Observatory with you.

Philippe ARMANDON
Director of the Operations and Supply Chain Excellence Practice, Sopra Steria Next

APPROACH AND METHODOLOGY

The main objective of the study is to stimulate the debate on the levers of resilience in the Supply Chain. It is not intended to propose a ranking and a 'top of the class', nor a detailed benchmark on economic and financial performance. The sectors contexts, models, strategies and operating rules are very different from one company to another. For example, a company could call itself resilient by changing its transport suppliers every year, negotiating the best cost. Another might claim to be just as resilient by putting in place long-term contracts with very few service providers and giving them maximum visibility over a long period.

THE MAJOR FUNCTIONS OF THE SUPPLY CHAIN

We have chosen to consider **the major functions of the Supply Chain** in a broad sense, as defined by the most known frameworks, and to the consider them as **"capabilities"**: planning, sourcing, converting (manufacturing), delivering, along with the "support" capabilities such as information and communication systems, human resources, financial capacity, and finally the sustainability topic.

The questionnaire includes thirty-nine questions covering these capabilities, and contextual questions. The questions cover for example:

- The consideration of the Supply Chain in company strategic planning
- The visibility that companies have on their extended Supply Chain and the resilience of their partners (suppliers, distributors)
- The level of adaptability/ substitution of the product bill of materials
- The agility in processing information, and of the organization
- The financing of resilience investments

The study consists in a self-assessment of Supply Chain resilience maturity in the broadest sense. **The scale is graded from 1 to 4 (low to high).** Each level of each question is specifically characterized, but the general scale establishes the below maturity levels.

In the case of maturity levels 3 and 4, we asked respondents to share the best practices or information that justify this choice.

Thirty-nine companies participated to this study, one of which was anonymous. They were divided into two samples. Group A contains the twenty-five companies that answered all the questions. Group B comprises all the companies participating in the questionnaire, regardless of whether they answered all the questions.

The maturity scores for each question are calculated as follows:

- NSP/N/A = 1; M1 = 1;
- M2 = 2;
- M3 = 3;
- M4 = 4;
- No answer = not included in the calculation.

MATURITY 4: HIGH
ANCHORED, ROUTINE INTEGRATED IN DECISIONS

A vision exists, resilience is taken into account at CEO/CxO level, operational routines, solutions in place, culture, and associated means.

MATURITY 3: GOOD
VISIBLE INITIATIVES, DEPLOYMENT IS ONGOING

A roadmap, structured initiatives, employees' awareness, solutions in place and deployment started.

MATURITY 2: AVERAGE
DYNAMIC IS JUST STARTING

Awareness, some initiatives inside a reduced perimeter, some basic solutions.

MATURITY 1: LOW
NO ACTION, OR VERY FEW

No initiatives nor solutions, no awareness, no culture, low interest, organisation is not ready yet.

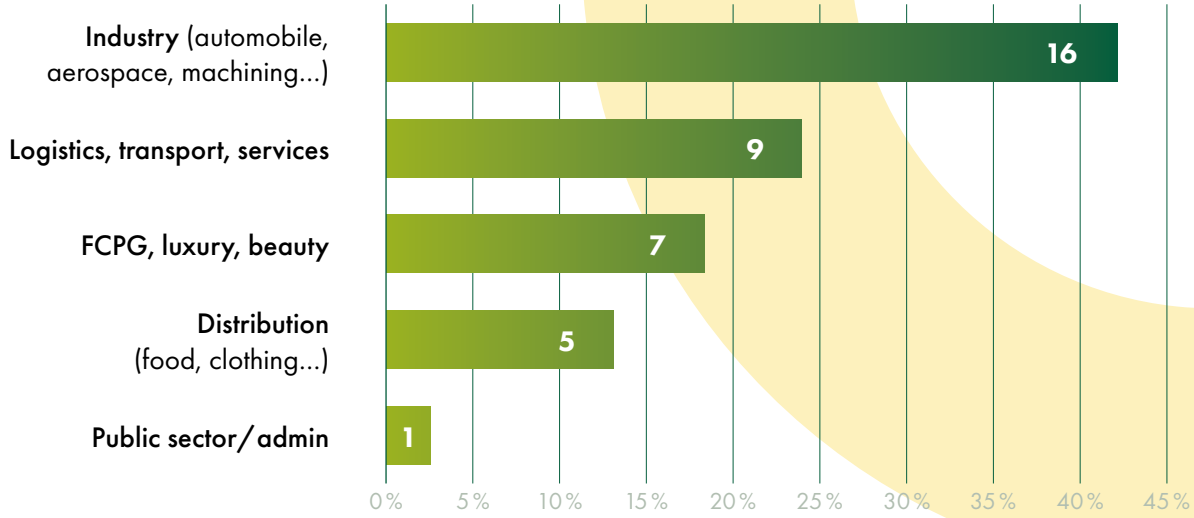
DON'T KNOW / NOT APPLICABLE

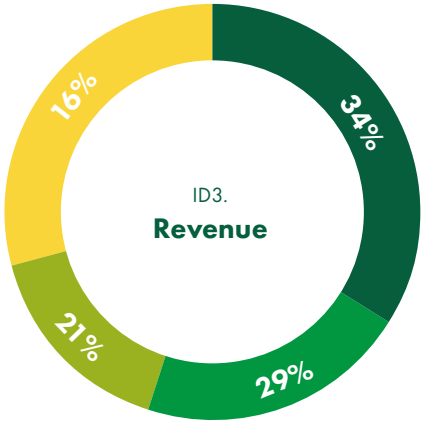
Question is not applicable to your Supply Chain or you don't know the answer.

PROFILE OF RESPONDING COMPANIES

ID2.

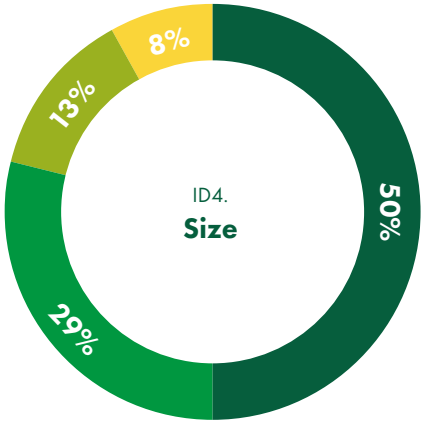
Number of companies by sector





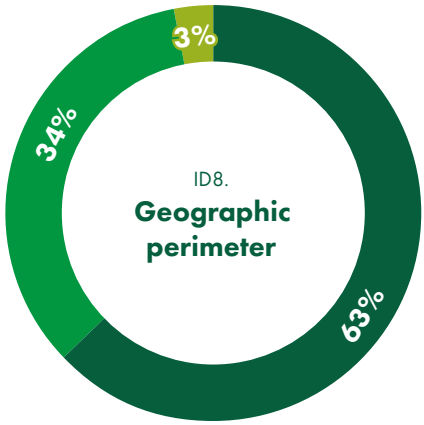
+5MD€ | 1,5 to 5MD€ | 500 to 1,5MD€ | -500M€

82%
of respondents have a Supply Chain with an international footprint



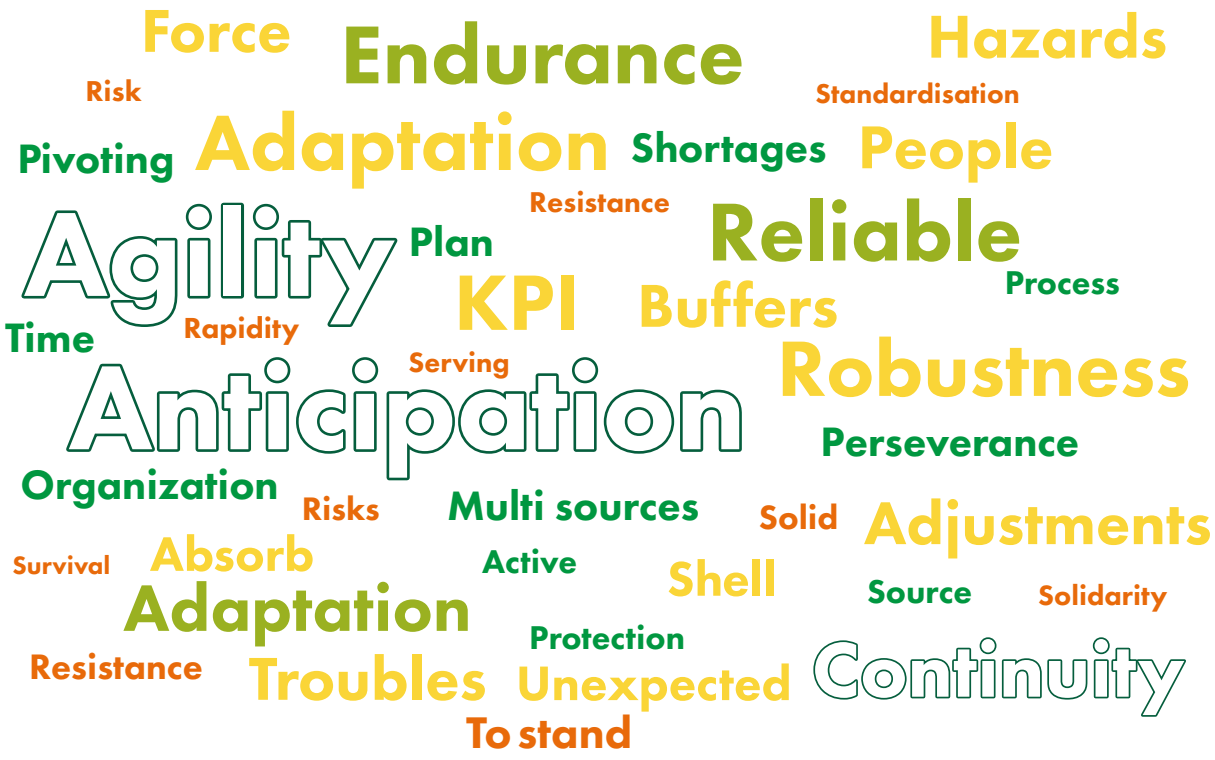
+5 000 p. | 1 500 to 5000 p. | 500 à 1 500 p. | -500 p.

Business Unit, or Subsidiary | Group



France + International | France | Group

RESULTS

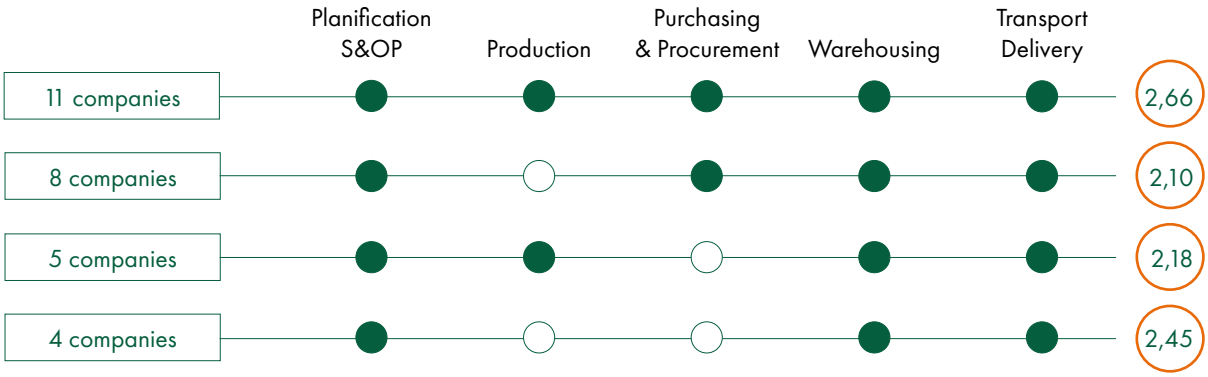


Most cited attributes of resilience

SUPPLY CHAIN PERIMETER IN YOUR COMPANY

The definition and scope of Supply Chain is not always the same, depending on the company and the position of the function within the organization. The majority adopt a broad definition of the Supply Chain.

Companies with the broadest definition report higher resilience than the rest of the sample.



The Order to Cash process in part of the Supply Chain

Industry

IS RESILIENCE PART OF YOUR OPERATING MODEL?

With this question, we would like to **appreciate the importance of Supply Chain resilience** in the company's operating model, beyond adapting to unstable balances, which is the usual function of Supply Chain. What we're interested in is how this issue is considered in long-term thinking in logistical, industrial, IT and other master plans.

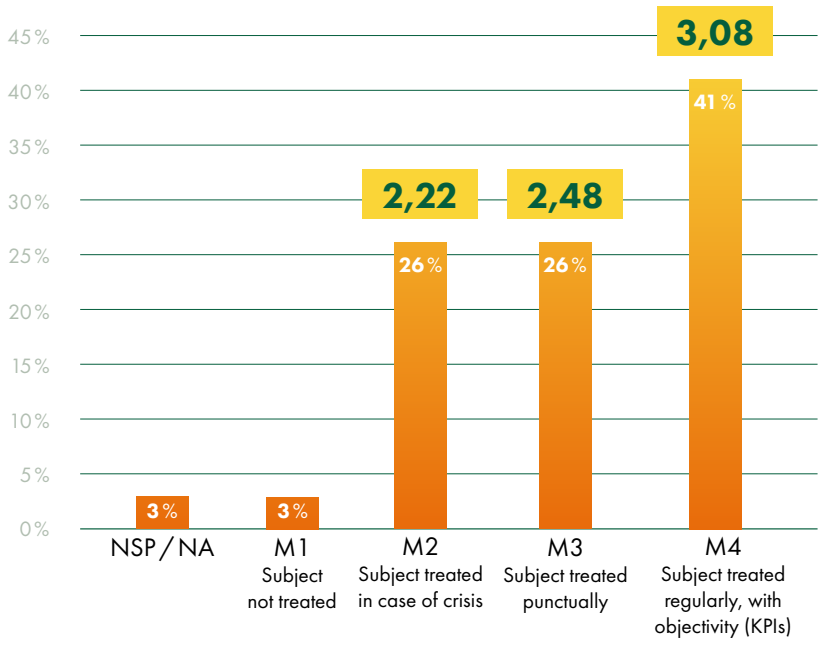
The Covid 19 crisis accelerated senior management's awareness of the importance of resilience and proactive risk management.

For some, the risk of Supply Chain disruption is "monitored by Comex, with a governance in place to address the issue in multi-disciplinary teams: purchasing, engineering, supply chain, corporate risks, etc.".

The "difficulty to forecast" affects certain teams, and leads to a reinforcement of leadership to remain agile, supportive and confident (...). Others recommend to integrate digital solutions into the design of the Supply Chain **to increase agility.**

In most cases, **resilience** is first and foremost **a matter of risk management and business continuity plans (BCP),** that are base on a more "short-term" timeframe. They lead to the implementation of safety stocks, or multi-sourcing with a "what-if? logic. These BCPs are considered in some companies as not updated and sometime even unrealistic.

Companies that deal with the Supply Chain topic regularly and at a high level in the organization obtain a higher resilience index than others.



The Supply Chain function plans for the workshop's activity, distribute product to the stores organizes the S&OP... These are sufficient reasons to be in the Comex.

FCPG / Luxury / Beauty

Our risk estimates is evaluated with regards to potential revenue loss:

Level 0:
No impact, no loss

Level 1:
Crisis is treated with additional costs

Level 2:
Production losses but recovery possible within a week via corrective measures (additional hours, etc.)

Level 3:
Permanent production loss, no possibility to recover

Industry

INTERVIEW WITH MR ÉRIC LAVAL, GENERAL IN CHARGE OF THE INTERARMED AMMUNITION SERVICE (SIMU)

Mini bio

Major General Éric Laval is a Saint Cyrien and a graduate of Sciences Po. He has devoted part of his career to the Supply Chain. Responsible for land equipment procurement in Djibouti since his first assignment in 1990, he has integrated this domain into his commands in Orléans (1994-96) and Besançon (2007-09).

In 2010, he contributed to the far-reaching reform of the armed forces' supply chain, in the "integrated logistics support" division of the French Armed Forces General Staff (EMA), then as deputy technical and logistics director of the SIMMT/land-based equipment maintenance organization. In 2018, he is the Supply Chain Manager of the General Staff (EMA).

After commanding the Land Maintenance School in Bourges, General Laval has been heading the Joint Ammunitions Service (SIMu) since 2022. This service employs 1,400 people to manage all the Defence Ministry's ammunitions (except nuclear weapons) across 14 sites in France and 9 worldwide.

Why are the armed forces concerned with the resilience of their Supply Chain(s)?

First, a definition of resilience: It's a term that comes from material mechanics, originally the return to the initial state after a shock. I retain this notion of shock, and I see resilience as the possibility, after a shock, of continuing our mission overall.

Resilience is thus seen as the ability to withstand a blow, its form defined as unexpected in both form and probability, and to carry on working. In short it's about not to be paralized, and to offer a solution, not necessarily the same. The resilience is the ability to give oneself time to react.

In our democracy, the army is the ultimate insurance policy of the government chosen by the elected President of the French Republic, whether in the event of a natural disaster or a threat against the interests of the country and its citizens.

We're among those who can't say no (and there are others). But armies are part of the country, they interact all the time and they are not totally self-sustaining or self-sufficient. So the long-term effectiveness of the armed forces depends on the Supply Chain.

What actions have been/ are being undertaken by SIMu to develop its resilience?

SIMu's mission is to store all the armed forces' non-nuclear ammunitions in total security, and to be able to make them available to the forces at the right time. This is based on a network of 24 depots, including 9 overseas and 1,400 civilian and military staff.

We are at the heart of a network in which the armed forces define their requirements and the associated level of financing. Then the French defense procurement agency (DGA) technically defines and qualifies the ammunition, and places the first order. SIMu is responsible for stocking and maintaining stock, making replenishment purchases, delivering and, if necessary, eliminating dangerous or decommissioned ammunition.

An entire program has been set up to define SIMu's areas of fragility, and to devise ways of avoiding/reducing/compensating for them.

This program led to a highly innovative Supply Chain modeling project, which then enabled us to develop scenarios for disruption, or non-compliant cases. This is done in relation tothe geography of our sites and our logistics possibilities (for example, the existence of a railroad line, an airport, etc.), as well as the possible intensity of our action (capacity to prepare a container and make it available), and regeneration ability (capacity to rebuild blocked, distributed or destroyed stock).

Significantly, the Defense Innovation Agency (DIA) has recognized this initiative as a key usage innovation and helped to finance its prototype.

From SIMu's point of view, what are the key determinants of resilience?

Our resilience means being able to guarantee that the forces will obtain the ammunition they would need within a 3 to 6 month timeframe.

This is based on:

- A certain quantity, which I have in stock, and which can be delivered immediately.
- An uncertain quantity, which is in the verification/repair stream.
- An expected quantity, corresponding to deliveries expected from suppliers.
- A planned quantity, corresponding to the suppliers' declared capacity to regenerate my stock.

Our 'certain quantity' relies on physical warehouses, transfer means, and on people. Our resilience depends on the availability we can guarantee.

Our 'uncertain quantity' depends on the volumes we have developed/contracted with our suppliers. There's an initial uncertainty here.

Our 'expected quantity' depends entirely on the supplier with which we have contracted.

Our 'planned quantity' relies totally on our suppliers' subcontractors and raw materials.

Thanks to the joint work with the DGA, we have established a kind of horizon estimates, which then can deteriorate. I remain sensitive to information about raw materials suppliers, which are often only guaranteed for 3 months in our sector.

What role do technologies, particularly digital technologies, play in these actions?

Modeling makes it easier to test hypotheses, to give a metric that speaks for itself. In the day-to-day life, I have a flow of 320 containers moving. I know how many would be needed in the case of high intensity engagement, and how many would be redistributed if one or more of my sites were blocked. I've equipped ouselves with a "crisis exit GPS" prototype, which endeavors to find a usable route when there is a traffic jam. It's an invaluable aid to decision making and command.

What are the obstacles that are encountered?

Companies are naturally reluctant to make their production capacities and subcontractor Supply Chains transparent. Strategic buffer stocks are also costly. Nevertheless, our SIMu Ops model has interactions with suppliers, and some of them, impressed by the simulation results, has started to work on its own resilience.

Resilience is a form of insurance. It requires time and bears cost in the face of a yet-to-be-defined probability. It can therefore be weakened and dented by the inevitable trade-offs.

In any case, it cannot cope with the worst, the "black swan". During COVID, for example, the internal closure of European borders was a major strategic surprise, one that no model had imagined.

However, thinking about resilience means thinking about agility, not remaining in the comfort of a process that works. Thinking about resilience means preparing ourselves mentally to absorb, and then to imagine not necessarily redundancies or buffer stocks (why not?). Above all, it's about imagining a sequel that can work out immediately to guarantee the next month, and then the next.

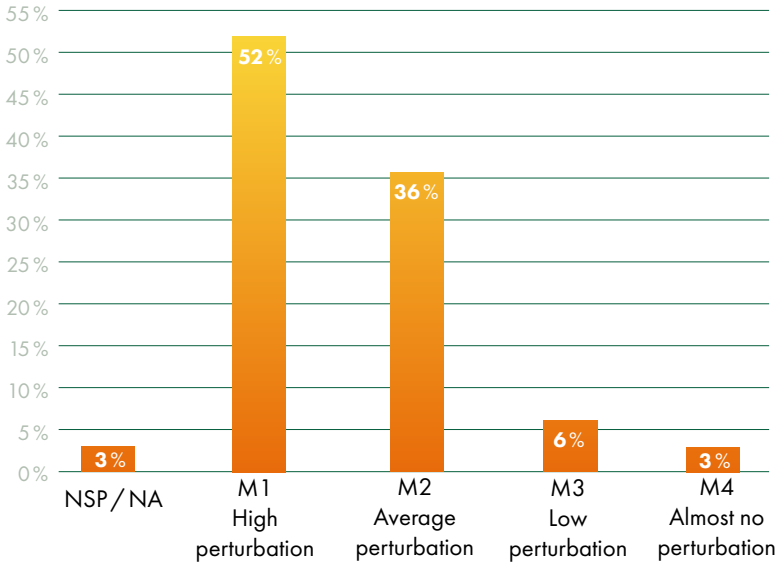
Here again, digital support is a major asset for testing, simulating and providing metrics for working around ideas. In the end, it's the knowledge of these fragility points in the logistic arteries of your business, that enables you to continue your mission.

However, the first resilience is that of the "leader", who can generate trust with customers, employees and Supply Chain partners. From then on, the entire chain is resilient. After the initial shock and pain, we can move forward because we have confidence in the chain and its leaders.

For this, the military mentality is invaluable, with its traditional adage that says that a plan is resistant until the fist contact with the enemy. In other words, nothing will happen as planned, except for one thing: we have planned to win.

WHAT WAS THE LEVEL OF DISRUPTION OF YOUR SUPPLY CHAIN IN RECENT CRISIS?

Unsurprisingly, 88% of respondents have been moderately or very disturbed by recent crises since 2020. In reality, the Covid 19 crisis made little difference. For some, **the very high degree of decentralization of decision-making has mitigated the impact of disruptions.** For others, **the diversity of activities has enabled them to take advantage of a few opportunities** to compensate for difficulties in one activity, this being more a question of portfolio than Supply Chain. There is no sector more impacted than another in the high ranges of disruption.

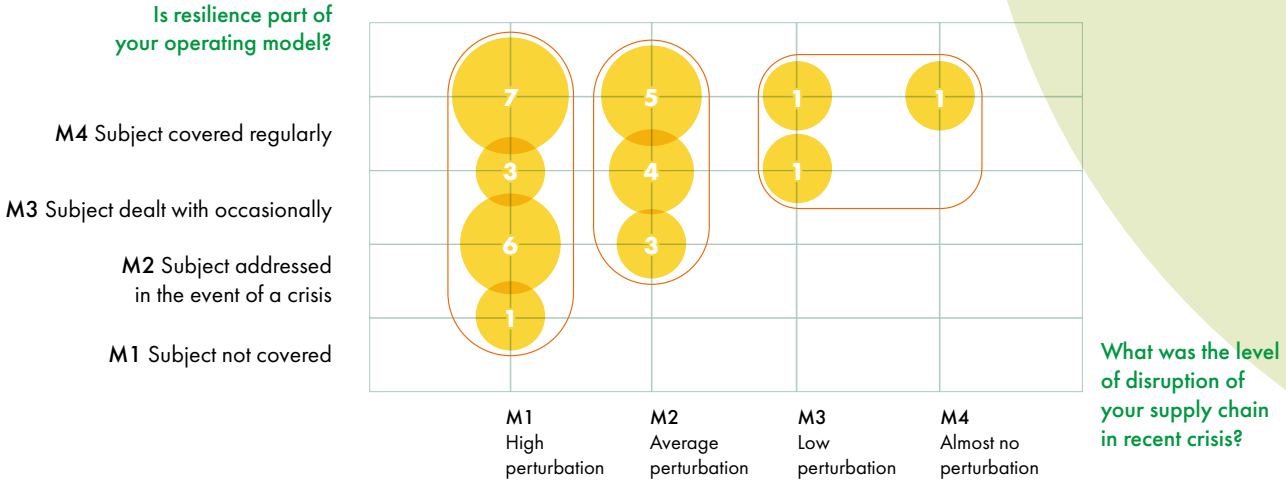


> *The absence of sales rebates is at the foundation of our business model, and the volatility of the markets forces us to be resilient (low stocks, high delivery and calculation frequencies), to reduce lead times, to reduce the number of service providers, and to have long contract duration.*

FCPG / Luxury / Beauty

> *Our approach to supply chain resiliency is three fold:*
>
> *V1 = cushioning the impact* | *V2 = manage crisis* | *V3 = return to performance*

Industrie



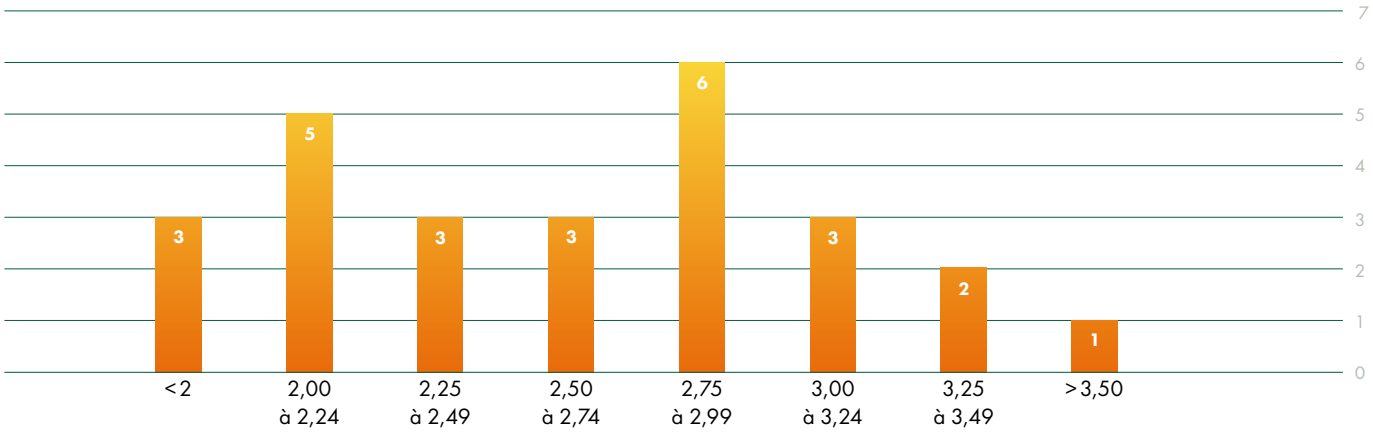
The fact that supply chain issues are regularly dealt with at a high level in the organization does not prevent companies from being heavily impacted by crises. Only three companies have suffered little or no disruption during recent crises.

A key resilience question is: how long does it take to return to "pre-crisis" normality?

GLOBAL MATURITY OF COMPANIES

The distribution of maturity levels shows that very few companies actually **pass level 3** (just six, or 23%), which is **the first level at which a supply chain can be considered resilient.** None reach the highest average level.

Maturity distribution



MATURITY OF TOP 5

Companies in the panel that declare themselves most resilient are ranking close do 3.3 on average.

TOP 1: 3,62 FCPG / Luxury / Beauty

TOP 2: 3,42 FCPG / Luxury / Beauty | Industry

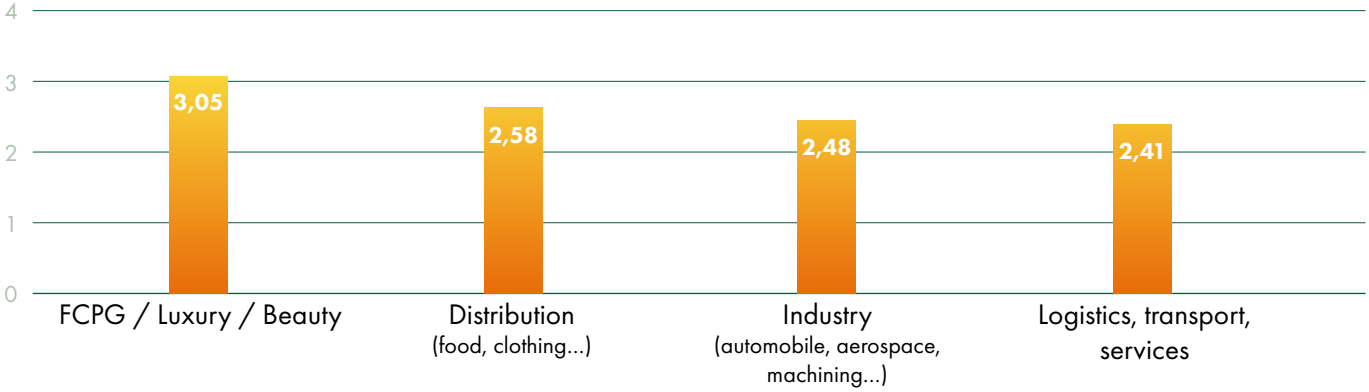
TOP 3: 3,23 Industry

TOP 4: 3,08 FCPG / Luxury / Beauty

TOP 5: 3,00 Industry

AVERAGE MATURITY BY SECTOR

There isn't really one sector more conducive to resilience than another. Adaptation strategies differ.



INTERVIEW WITH M^R PIERRE-YVES ESCARPIT, GENERAL MANAGER ITM LOGISTIQUE ALIMENTAIRE INTERNATIONAL

Mini bio

A graduate of the École Nationale des Ponts et Chaussées, Pierre- Yves Escarpit began his career in 2000 as a consultant in Supply Chain organization and management at PEA Consulting.

In 2008, he joined Groupe Casino as Deputy Director of Supply Chain and Information Systems for Franprix-Leader Price. A year later, in 2009, he became head of these 2 departments and a member of the company's Management Committee.

In 2012, he became Supply Chain Director of Cdiscount, Groupe Casino's e-commerce subsidiary, and in 2015, his duties were extended to the Information Systems Department. In 2018, he was appointed Deputy Managing Director of Cdiscount, seeing his responsibilities extended to Supply Management (Purchasing & Marketplace), and then became Managing Director of C-Logistics, Cdiscount's Supply Chain subsidiary, when it was created in 2019. He is one of the main architects of the company's strong growth in sales (from €1 to €4 billion) and of the development of B2B activities (Octopia, C-Logistics).

In 2023, Pierre-Yves joins the Les Mousquetaires Group to become Managing Director of Intermarché and Netto Food Logistics, which has 33 logistics bases and nearly 8,000 employees.

Could you describe ITM Logistique Alimentaire International for us?

ITM-LAI is responsible for the delivery of Intermarché and Netto outlets, representing a total of 2,500 outlets in France, including almost 300 recently acquired from Casino.

We have 32 logistics bases, and employ 10,000 people, including 8000 on permanent contracts. We deliver 1.5 billion parcels every year.

As far as our logistics bases are concerned, our model is based on 24 regional bases that deliver between 100 and 150 stores, including 14 so-called mixed bases, as they bring together under one roof all activities and temperatures (fast-moving dry goods, fresh produce, fruit and vegetables and frozen goods). At these bases, fresh product are managed on a just-in-time basis.

We have 5 central bases for medium- and slow-moving dry goods, which deliver to regional bases (for cross-docking to stores) and to certain stores directly, depending on their size and location. Finally, we have 3 national bases, for textile products, large products or products deemed hazardous requiring specific ICPE regulation means , one of which is for textiles, and the other for low-rotation food products.

22 warehouses are operated in-house to maintain control over our flows (80% of volumes), and 10 are subcontracted. This enables us to maintain excellent control of our flows, while at the same time enabling us to benchmark ourselves against the market by analyzing the performance of our outsourced bases. For transport, we also have 2,000 of our own trailers, and 1/3 of deliveries are made with our 800 drivers (the highest number on the market).

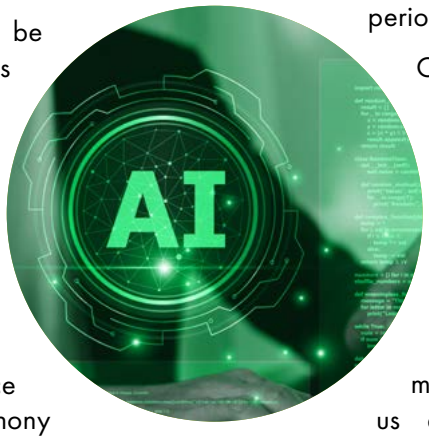
This logistics model, with its internal and external balance, is also a factor of resilience.

Let's talk about resilience from ITM-LAI's point of view?

The Supply Chain's vocation has always been to be resilient. Our mission is to deliver our outlets at the best price, and to give them the best availability and service, whatever the ups and downs in the supply chain or logistics production (storage and preparation). Our outlets are owned by members, so the logistics load must be as efficient as possible, and stock-outs avoided, right down to the shelf.

We work on the resistance of each link in the chain, with action plans and best practices. The "structural" determinants of resilience are the supply chain, logistics activities and, finally the volume of transport.

On the supply side, we work with our buyers on the ability of our national brand and private label suppliers to respond to possible fluctuations in demand, or an acceleration of flows in one region or another. One of Intermarché's particularities is to have integrated part of the supply chain via the 56 Agro-Mousquetaires production units. We work together on shared markets where there is a potential shortage, so that we have the right level of response to demand variations. This is the case, for example, on the egg market at the moment.



Then there may be more cyclical issues that could lead to shortages in stocked products. In this case, we work with highly advanced forecasting tools which today use artificial intelligence algorithms (Symphony AI tool) to enable us to recreate a cleared demand, in particular by accessing exogenous data and information (weather, special events, etc.).

For example, with BNA (non-alcoholic beverages) during hot weather periods, with very high peaks in demand, well in excess of supply. In such cases, we anticipate and prepare for peak shaving, using overflow warehouses to store tens of thousands of pallets.

We also set up 'truck kits'. In this case, our sales outlets commit to trucks made up of full pallets, generally of products with high turnover and that we supply at the start of the season for them, so as to be protected in the event of strong heat, for example.

Finaly, we work with our purchasing department and industrial suppliers to prevent supply disruptions in the event of an unexpected crisis (mustard seeds from Ukraine, for example). Working with suppliers upstream is a practice not sufficiently developed in the retail sector. At ITM, we set up a Flow Department 10 years ago, housed in the Supply Department. Around fifteen people work with suppliers to develop optimized supply solutions in terms of availability and costs, within the framework of our logistics contracts. This unit does not place supply orders but prepares the resilience of the Supply Chain in a collaborative manner in parallel with the contract for the goods. We share more sales data, inventories and forecasts, particularly during sensitive periods.

On logistics, we make the most of our extensive logistics network throughout the French territory to meet the service and cost requirements of our members. This gives us a certain degree of agility in the event of blockages or unforeseen events, such as during the 'Gilets Jaunes' crisis, or more recently with the storms in Brittany that impacted certain logistic bases; we can then reallocate/offload flows of all product categories within 12-24h to any base in France.

We have developed a Cockpit to handle these load shedding operations at national level, and our own industrial tool also has a reserve capacity to receive additional flows in the event of unforeseen circumstances.

In addition to this ability to switch flows from one base to another, we can also redirect part of the volume contingencies from "manual" bases to automated or robotized bases (this was the case during the Paris Olympics, when we had a very sharp increase in volumes in the South-West of France associated with the travel of Parisians). Conversely, in the event of an incident or maintenance on an automated base, volumes can be switched to other bases. This model was conceived several years ago by one of my predecessors, Mr. Éric Le Mignon.

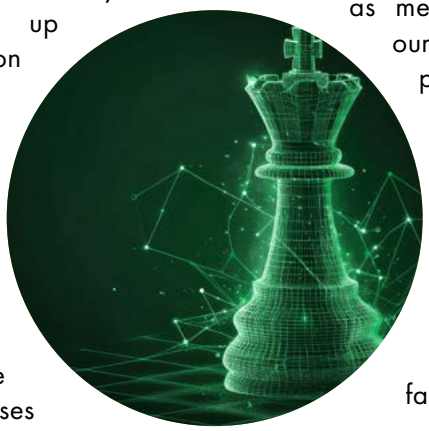
We are also developing the versatility of our logistics tool and have created a position for a multi-skilled "Logistics Agent" on our site. In our logistics tool, we are also developing multi-skilling and have created a position of "Logistics Agent" who can work on most of the logistics base's workstations. They can help out with receiving, preparation, loading, inventory, etc., in the event of absenteeism or heavy activity. This is a specific profession, recognized and remunerated as such.

Finally, in terms of transport, having our trailers and drivers available for almost a third of the flow is a choice for overall economic balance and service. We're reducing our dependence. We have 400 tractors at our disposal and rent the others from our transport partners. Our facilities for supplying diesel, LNG or biofuel, via our in-house entity managing the supply of service stations at our sales outlets, also make us more autonomous.

Your resilience seems to be more focused on the year or the next 8-10 months, less on the long term. What about the medium-to-long term?

The retail business model is to serve the end customer every day, everywhere, so in that sense, operational resilience is what we're all about "every day".

We are, of course, working on the master plan. My predecessor drew up the Transformation Plan 2014- 2025 and put in place solid, lasting foundations and principles. I'm now working on the 2025- 2028, which involves adapting to the arrival of warehouses inherited from Casino, taking into account our urban-oriented strategic plan with more Intermarché Express or Contact stores, and on the barycenter of our future warehouses according to the evolution of the geographical locations of our outlet network, on automation strategies, etc. All these decisions are aimed at maintaining or expanding our network of warehouses. All these decisions are aimed at maintaining or developing our ability to respond to our points of sale, and behind them, our end customers, and all this at the best possible cost and with the best possible agility.



When it comes to taking climate and CSR aspects into account, we are committed to the Freight21 European approach. We are also developing a fleet of electric trucks, in particular to deliver to city centers.

Let's talk a little about technology. How does it contribute to resilience?

ITM-LAI's mission is also to be a force for innovation. There is technology related to warehouse mechanization, and digital technology. In terms of mechanization, most of our fresh logistic bases are mechanized, with high-frequency sorters. For dry goods, 50% of our bases are either automated or robotized. As we have seen, all this means that we can rapidly take on additional volumes.

Regarding AI, which is a very fashionable subject, we use it, as mentioned above, in our forecasting and procurement tool. We will be keeping a close eye on the development of AI in other areas of our business, for example in the predictive maintenance of our facilities.

We also need to make progress in data processing. In other words, we need to improve our ability to capture and store data, and to carry out the analyses required to accurately manage our business. With 1.5 billion parcels, 2,500 stores, 32 bases and forty different types of flow, we have a wealth of information that we need to make the most of.

We are currently working on a project to set up a datahub to manage our business in even greater detail. We have a team of analysts working on the reliability and processing of this data. Data is at the heart of our business.

What do you see as obstacles to implementing resilience practices and tools?

In our line of business, agility is generally well established. There are undoubtedly still a few obstacles to overcome, particularly in terms of the speed with which operational decisions are implemented, and the resulting operational risks (particularly in terms of reallocating flows). Redirecting flows when a logistic base is experiencing a hazard is an opportunity to maintain a very good service for all our outlets, but it also means running the risk of creating a snowball effect by significantly increasing the volume to be processed on one or more bases that had not anticipated this. So we're weighing up the pros and cons, with the constant objective to providing the best possible service to our outlets and satisfying our members.

Of course, we have put in place BCPs (Business Continuity Plans), but we have found that the contingency that arises is rarely the one we had anticipated. In such cases, experience is very important. When we set up a crisis management unit, we don't always have all the scenarios already written down, but we know our assets, and decisions must be taken quickly.

The crisis management unit is led by General Management. Its members work and decide on the alternative solutions to be implemented, to make the best possible decisions. Importantly, Intermarché is governed by our members. Every major decision (whether strategic or in response to an unforeseen event with a significant impact on our business) is presented to our referent members, with whom we steer, hand in hand, the Groupement des Mousquetaires' food logistics in France. Ultimately, they are the decision-makers, and also our customers.

In this way, our resilience is totally customer oriented.

AVERAGE MATURITY LEVEL BY SUPPLY CHAIN FUNCTION

Planning is the function that stands out, fortunately. It is now approached with a broader vision of the scope and the players who can contribute to it (putting down silos, taking into account data from upstream and downstream partners, better tools).

This function is now considered at a higher level within organizations, and in some cases the CEO is even directly involved in the monthly S&OP meetings.

Unsurprisingly, production is the least resilient area due to the rigidity of the industrial footprint, the importance of assets, and the difficulty of rapidly changing product nomenclatures. This contrasts with purchasing, where the implementation of multi-sourcing strategies is a more affordable investment, and distribution, where the degree of sub-contracting allows for flexibility.

AVERAGE MATURITY LEVEL BY CROSS-FUNCTIONAL AREA

These functions and areas are powerful contributors to supply chain resilience, which is why we have included them in the questionnaire.

Digital technology is now an integral part of supply chain resilience, due to the increasing amount of data, parameters to be processed and their complexity (hazards, etc.). Decision-making is greatly facilitated by these tools.

The HR domain is central, at all levels. The question focused solely on the prevailing culture within the Operations and Supply Chain teams, from "command/ control" to "agility". **More than 60% of companies consider their HR maturity level to be fairly good, or even high;** human resources are one of the capabilities required for resilience.

The financial section of the study seeks **to determine the level of investment in supply chain resilience,** as a visible sign that supply chain issues are being considered at the highest level of the company. Strictly speaking, this is the lowest score. 40% of companies invest very little, and only 15% to claim to carry out structuring investments. A question arises about sustainability: from a strictly "mechanical" point of view, a supply chain doesn't really need this criterion to serve its customers.

The inclusion of environmental criteria in operational decisions is beginning to spread. On the other hand, this issue is better addressed at strategic levels.

In reality, resilience and environmental impact are not mutually exclusive. Companies are faced with numerous climatic hazards, not to mention the Global Earths Limits. A company that would not take this issue into account in its master plans and investments would not be truly resilient.

INTERVIEW WITH MR WALID KLIBI, PROFESSOR OF OPERATIONS & SUPPLY CHAIN MANAGEMENT

Mini bio

Walid Klibi is Professor of Supply Chain Management at Kedge Business School (France) and has been a lecturer at ISLI since 2011. He is a founding member of the Center of Excellence in Supply Chain (CESIT) and a Research Affiliate to the MIT Center for Transportation and Logistics - MIT CTL (USA). He has held several applied research chairs, as well as consortia and collaborative projects with international companies. He is co-author of over 40 international scientific articles and professional journals such as Harvard Business Review and Sloan Management Review, as well as a book entitled The Design of Value Creating Supply Chain Networks, which won the 2016 "coup de cœur" award from Plumes des Achats et Supply Chain. His work on supply chain resilience, which began in 2008, aims to help companies develop resilient Supply Chain networks, indicators to measure resilience, and models to justify their investments in resilience.

You say there's a difference between "risk management" and "resilience". Can you explain it?

Risk management and resilience are two complementary but distinct approaches. Risk management aims to prevent disruption by identifying potential threats and implementing measures to reduce their likelihood. It is based on anticipating events and protecting against identifided risks.

Resilience, on the other hand, is not limited to prevention; it focuses on consequences, and therefore on the ability to adapt and recover quickly from even the most unexpected crises. Rather than avoiding risks altogether, it seeks to minimize their impact and ensure business continuity. So, while risk management reduces vulnerability, resilience guarantees the ability to respond and recover from the unexpected.

Investment in resilience can therefore be massive. How do companies react?

Companies often react to the investments required for resilience, they adopt an approach known as "boom-and-bust". After a disruption, they tend to commit large sums of money to protect their operations and maintain business continuity, but these investments rapidly diminish once the impact of the crisis has disappeared. This cycle of overspending, followed by drastic retrenchment, prevents companies from maintaining a resilient long-term strategy and preparing effectively for future crises. Such an approach can also exacerbate effects such as "bullwhip", where companies over-invest when demand is high and under-invest when it falls.

What could be a new approach to financing these resilience-related investments?

A new approach to financing resilience investments could be to integrate 'real options' assessment into companies' budgeting processes. Rather than treating these expenses as reactive one-off costs after a crisis, companies could allocate funds proactively and on an ongoing basis by integrating them into employed capital, working capital and operating budgets. This method would enable investments to be optimized according to their impact on business continuity, and not just on the probability of a specific risk. The options approach is superior to traditional risk management methods, as it enables more flexible and dynamic decision-making in the face of uncertainty. It considers these investments as strategic levers that can be adjusted according to changing risks and economic conditions.

How do you see this topic evolving in the future?

I see supply chain resilience becoming a strategic priority for companies in the future, gradually replacing the reactive, cyclical boom-and-bust approach with proactive, continuous management. The integration of quantitative methods, such as option pricing, will enable companies to better justify their resilience investments by focusing on the consequences for the supply chain, rather than just the probability of risks. In addition, digitization, artificial intelligence and advanced data analysis will play a key role in anticipating and responding to disruptions. Finally, corporate culture will have to evolve towards a resilient mindset, where long-term investments will be prioritized to guarantee operational continuity in the face of increasingly frequent and unpredictable crises.

PLANNING

Planning is the critical function of the Supply Chain. The one that by essence adjusts supply and demand, before execution, taking into account a considerable number of parameters, data and stakeholders.

A majority of companies (57%, permanently or from time to time) places the Supply Chain at the top management level, but only 42% make it a recurring ExCom topic. It is included in strategic thinking, on a regular or systematic basis, in 63% of responses.

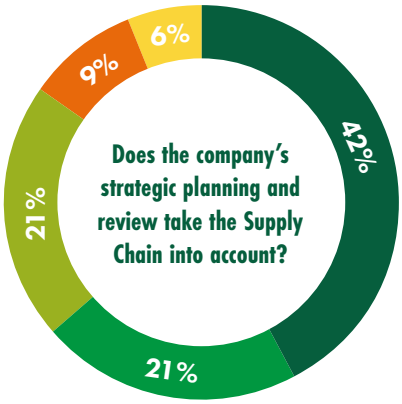
As far as S&OP is concerned, it's a subject that still requires a great deal of effort and alignment: which horizons, which frequency, which factors to consider, which players, which processes, which scenarios, etc? 48% of companies say they still have an underdeveloped process, centered on internal information, with few tools, or even none.

This undoubtedly explains why **a very large majority of companies is conscious of the investments required in this function, to be able to anticipate future crises.**

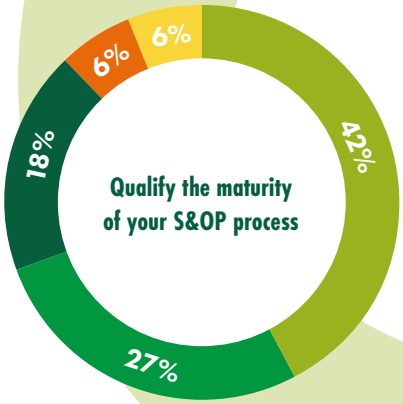
> *Each crisis is analyzed (retex), this triggers new prevention actions in the short, medium or long term. This process gradually reenforces global resilience.*
>
> Industry

> *We have a project to modernize S&OP by integrating supplier capacity planning.*
>
> Industry

> *We address resilience-related issues during our annual strategic plan (with a 5-year horizon). During these exercises, a risk ranking is carried out for each site, including in particular: climate, geopolitics, shortages. We intend to do the same for routes and ports in our next plans.*
>
> Industry



M4 Systematically and globally
M3 Regularly
M2 Partially
M1 No
Don't know / NA



M4 Systematic, collectively with partners suppliers, distributors & clients
M3 Regularly, tooled, end to end
M2 Punctually, poorly tooled, internal perimeter
M1 No S&OP
Don't know / NA

M4 At ExCom, permanently
M3 At ExCom, from time to time
M2 N-3, N-2 of CEO
M1 Stewardship function
Don't know / NA

M4 Important evolutions / investments
M3 Local evolutions / investments
M2 Marginal
M1 No change
Don't know / NA

> *The lessons learned from mega-crises have led us to attach the SCM directly to the CEO, giving him the power to arbitrate the S&OP, in an organization-neutral way.*
>
> Industry

> *In our S&OP cycles, we take into account weak signals and "what if" scenarios. The Chairman is present every month at S&OP meetings.*
>
> Industry

> *Following the COVID crisis, we set up S&OW (weekly) to adjust the S&OP framework and reinforce regional responsibility. It's available worldwide, and equipped with tools.*
>
> Industry

PROCURE

Upstream Supply Chain visibility is a key factor in resilience. The question is whether we are able to anticipate risks, crisis, or capture weak signals that could cause supply disruptions. Identifying suppliers perfectly is one thing, but "knowing" them beyond the first ranks is quite another. Quite often, especially for system manufacturers, **supply disruptions come from ranks 2 or 3 suppliers or beyond.** Only 10% of companies claim to have high visibility over several ranks of their Supply Chain.

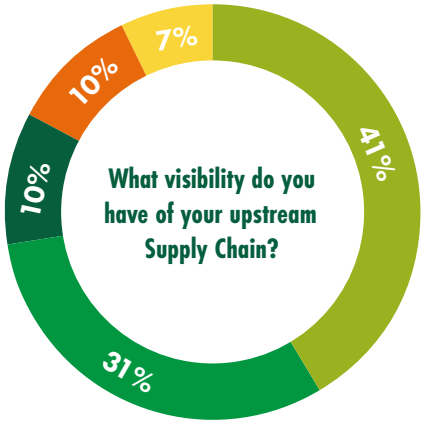
The nature of the relationship is a rather subjective notion. It could be stated as: who can you really count on?

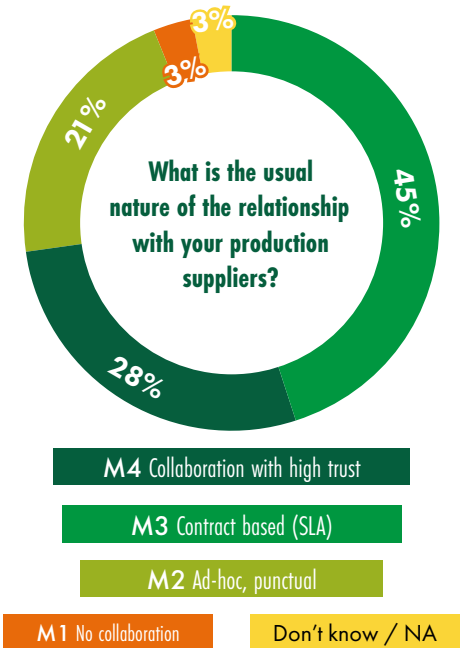
Less than 30% of respondents claim to base their relationship on a high level of trust. We refer to the comments and best practices to illustrate this point. **Long-term partnership collaboration with suppliers is an essential element of resilience,** as it is based on the sharing of mutually beneficial information to optimize as a whole, be it production, inventory or logistics requirements data, or information on events. In addition, trusting collaboration enables joint learning and retex on action plans, and allows to consider investments with greater serenity.

However, few companies consider that they have a sufficient number of resilient suppliers. **Only 14% of companies believe that more than 75% of their strategic panel is resilient.** The results are split in two, between those who consider that more than 50% of their panel is resilient, and the others.

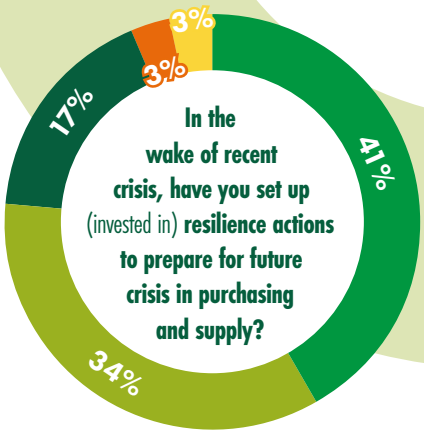
With regard to securing critical supplies, it is surprising to note that only 17% of companies have reached the M4 maturity level, even though this is a significant factor in overall resilience in some cases.

59% consider that less than half of their critical supplies are sufficiently secured, at least with a risk management/business continuity plan. There's still a lot of work to be done here. Unsurprisingly, 58% say they are implementing corrective actions and investments in this area.





> *We have never been short of supplies, even at the height of Covid. All strategic supplies are at least doubled.*
>
> FCPG / Luxury / Beauty



M4 Important evolutions / investments

M3 Local adaptations / investments

M2 Marginal

M1 No change

Don't know / NA

During the conflict in Ukraine, we suffered a major disruption, particularly with the XX material, leading to the suspension of one of our production plants. To compensate for this shortfall, we shifted our sourcing to China, re-industrializing, creating new routes... It was a major effort.

Industry

M4 76 % - 100 %

M3 51 % - 75 %

M2 26 % - 50 %

M1 0 - 25 %

Don't know / NA

During COVID, all our plants were shut down. We continued to feed the XXX (a critical material) purchasing flow to preserve our small suppliers and facilitate the resumption of activity.

Industry

M4 76 % - 100 %

M3 51 % - 75 %

M2 26 % - 50 %

M1 0 - 25 %

Don't know / NA

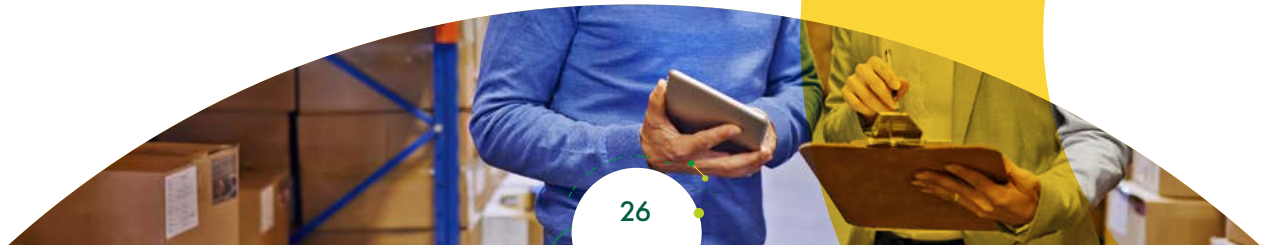
For "Top Business Impact" suppliers (40% of our products consume their parts), we take the following actions:

- *Implementation of BCP*
- *Robustness audits...*

Industry

The resilience of suppliers (direct and N-tier) is systematically assessed using dedicated resources, processes and tools. We consider our level of risk "coverage" to be satisfactory (i.e. all key suppliers are considered to have robust resilience plans in place).

Industry



MAKE

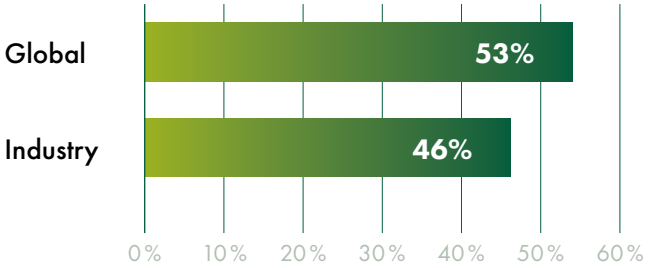
This function is less widespread among the companies in the sample, as only 16 companies belong to the industrial sector. As for all other functions of the supply chain, we wanted **to determine its capacity for deformation and reconfiguration.**

Unsurprisingly, the overall resilience score is not very high, due to the rigidity of the system: infrastructure, network of manufacturing subcontractors, specialization of production sites and product nomenclature.

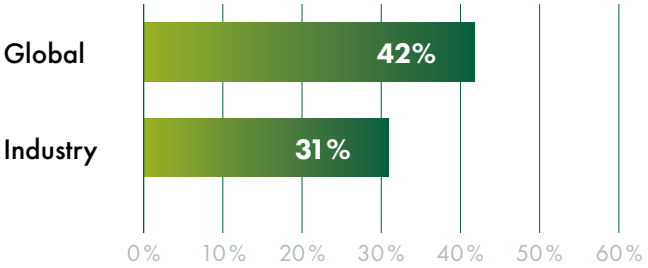
In some industries, a change of supplier can take several years, to qualify a product, its processes and tools (PMT) with regard to the company's own standards, as well as to health and safety norms, for example. Switching production from one geographical area to another, with all the associated supplier and logistics flows, is also highly complex.

The best approach is undoubtedly **to compare the M3+M4 maturity level responses of the overall sample with those of the manufacturers alone:**

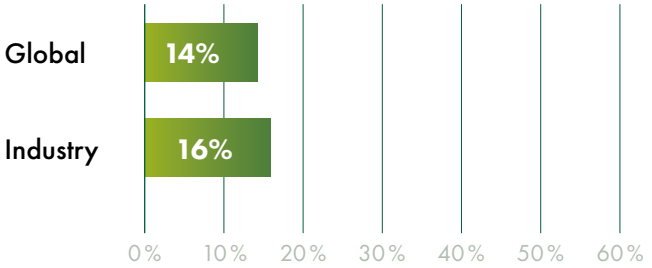
How do you rate the agility/flexibility of your production processes, including sub-contracting?



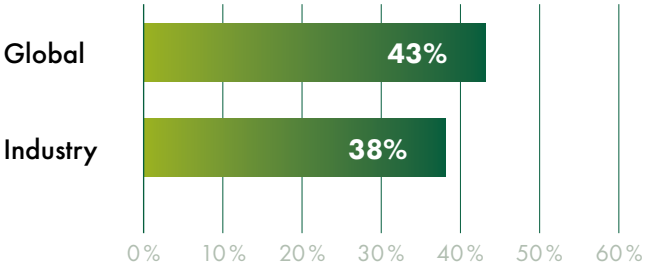
How multi-skilled is your production staff?



How adaptable/substitutable is your product Bill Of Materials?

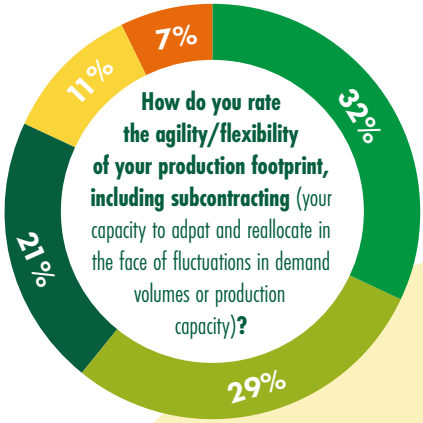


Following recent crisis, have you implemented resilience actions to prepare for future crisis?



Nevertheless, some companies are doing well:

- **Agreements with social partners** to provide flexibility in terms of working hours and volumes.
- **Long-standing commitments** with production partners, providing room for maneuvering.
- A production schedule that enables **to reallocate volumes between sites, and absorb unforeseen events.**
- **Multi-sourcing** of production materials for the best-selling products.
- **High multi-skilling of personnel** in certain key areas.



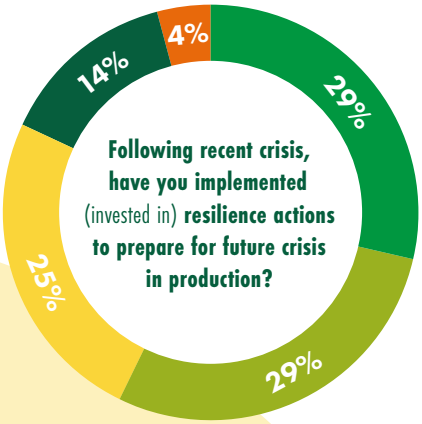
M4 High, rapid configuration in ecosystem

M3 Good, in reasonnable timeframe

M2 Average, long to implement

M1 Weak, highly complex

Don't know / NA



M4 Important evolutions / investments

M3 Local adaptations / investments

M2 Marginal

M1 No change

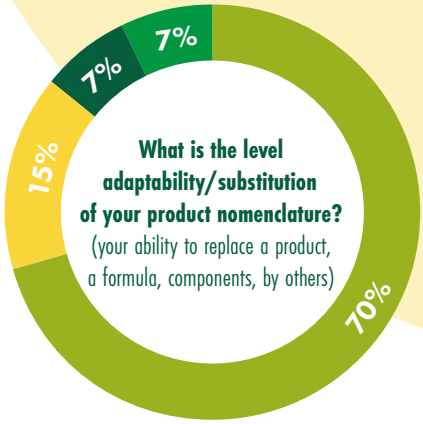
Don't know / NA

> *Our relationships with our suppliers are long-lasting, with some spanning more than 50 years. This loyalty testifies to a partnership founded on trust and excellence.*
>
> FCPG / Luxury / Beauty

> *In the event of a crisis, we have set up bridges between plants to distribute or absorb volumes.*
>
> Industry

> *In very complex crisis situations, we can sometimes re-specify components, but this takes time, even for relatively simple equipment.*
>
> Industrie

> *A significant part of the forecast (on segment X) is carried out by an AI without human intervention = "zero touch".*
>
> Industry

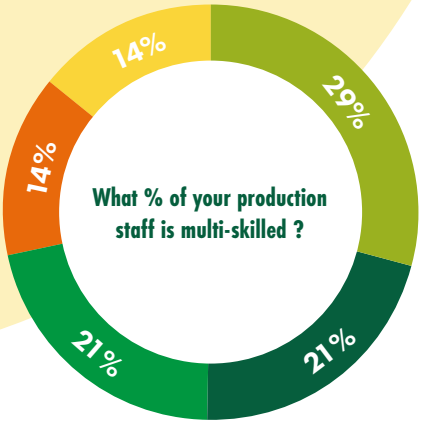


M4 High, and/or rapid implementation

M3 Easy, and/or reasonnable time frame

M2 Difficult, and/or long delays

Don't know / NA



M4 76 % - 100 %

M3 51 % - 75 %

M2 26 % - 50 %

M1 0 - 25 %

Don't know / NA

DELIVER

Distribution is understood as the storage and transportation of goods: **a function often associated with a high degree of reactivity, and a high reliance on service providers,** according to different models. For these reasons, the results are a little more complex to interpret, as delivering goods as delivering goods needs reactivity.

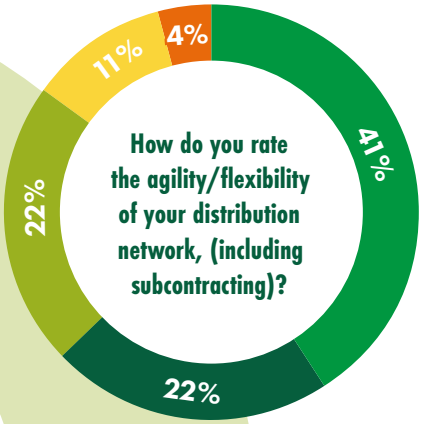
Unsurprisingly, the 2PL and 3PL are the most widespread operating models. A third of respondents do not subcontract distribution, even (27%) when logisticians are excluded from the panel.

We notice the absence of any consideration of environmental impact in response to the KPI question, and the pre-eminence of costs in decision drivers.

We observe 63% M3/ M4 responses to the question on the agility of the distribution scheme (68% when logisticians are extracted from the panel), and 48% M3 responses (contractual relations, SLA...) to the question on the nature of the relationship. These results were rather expected.

Distribution is a key area of supply chain resilience. Indeed, this function is mainly supported by service providers, who can be replaced at a higher frequency with short-term contracts. Reading some powerful best practices on the subject gives another perspective, **where long-term relationships, information sharing and common retex create the conditions for very strong mutual trust, and a commitment to get the customer 'out of the rut' when required.**

Note: The 2PL model refers to transport services and storage and warehousing on the company's premises. The 3PL model refers to the complete management of logistics, including documentation, customs, and reporting. The 4PL model refers to service companies that offer solutions integration and service providers selection and management to coordinate all routing operations.

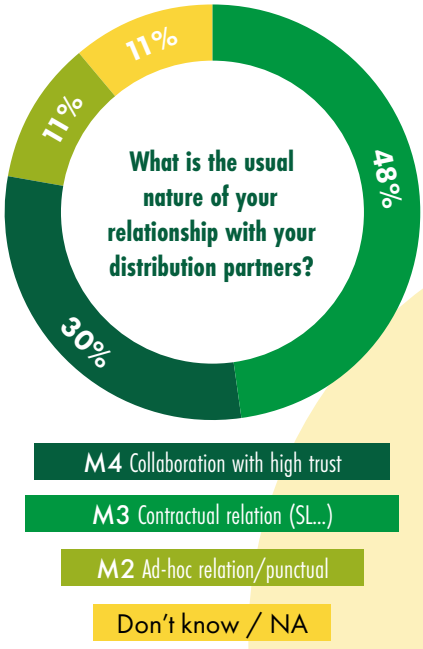


With our service providers we maintain long-term contracts, enabling us to focus solely on deadlines. We have the best lead times on the market.

FCPG / Luxury / Beauty

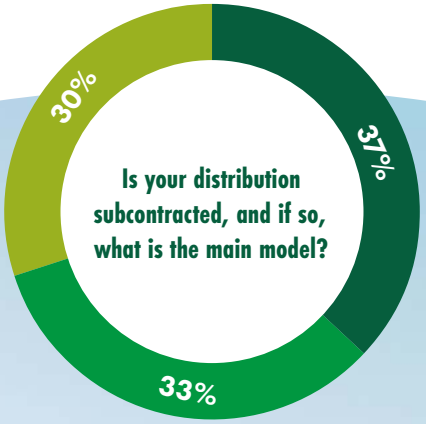
We require each service provider to complete a BCP on each destination to guarantee the resilience and continuity of our operations across all destinations.

FCPG / Luxury / Beauty



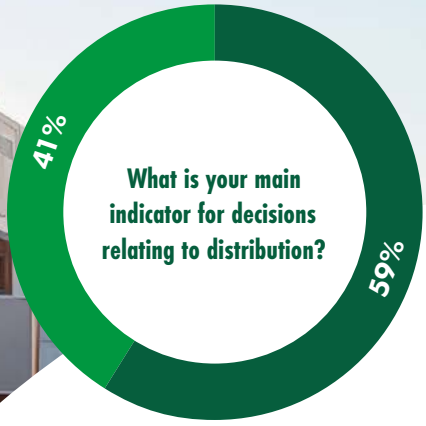
We decided to have two warehouses in each geographical area, one central and a back-up.

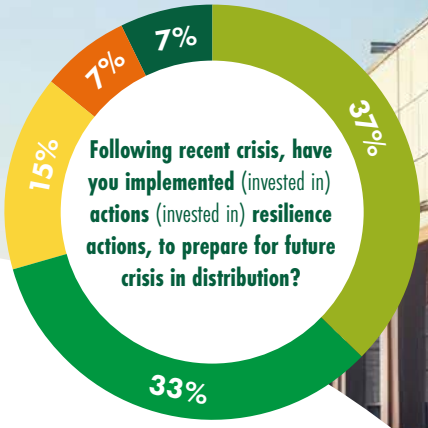
FCPG / Luxury / Beauty



We provide visibility for over 18 months so that our distribution providers can organize.

Industry





We have redefined our service offering according to the size of our distributors (deliveries by the week, by the month, etc.), i.e. we are looking to optimize and make full truck loads. We save on CO_2 and stock levels. This drives our choices and investments, and makes us more resilient.

Industry

The arrival of the Chinese on the European market will saturate transport and storage capacities for our products. We are currently evaluating our response.

Industry

SUSTAINABILITY

This theme falls somewhere in bewteen two sides. One side, 27% of companies are using dynamically in their decision making the criteria associated to the GHG footprint, while, on the other site, 23% are just starting with a limited list of criteria.

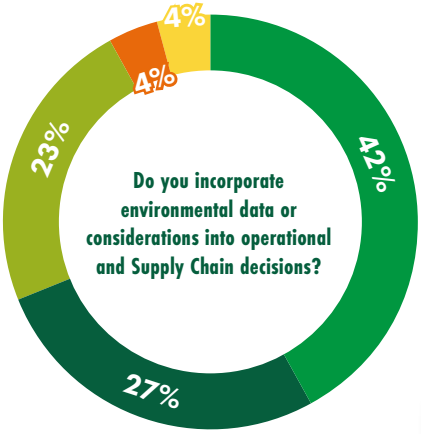
Viewpoints differ between the operational and strategic treatment of environmental impact. Awareness of these issues is high among top management for obvious regulatory reporting and insurance reasons. However the inclusion of environmental criteria in day-to-day operational decisions is more difficult to argue to argue in front of costs and service rates imperatives.

With regards to Investments, **23% of companies declare themselves to be proactive with major investments realized,** while 35% adopt a wait-and-see attitude, making marginal investments.

This is an area where companies were quite loquacious about their initiatives. Most being around the search for reliable data on their scope 1, 2 and above all 3 footprint, using various internal or external tools, or benchmarking and measurement platforms. Logistics modal report, actions on packaging, energy sources or electric transport are the main levers. **Upstream product redesign as a mean of decarbonation is also cited.**

In addition there is a need for more detailed work on planning reliability and fine-tuning the balance between supply and demand. In order to avoid material waste in production (40% of the respondent's carbon footprint) and unsold goods in distribution, **lean approaches are considered a key lever for decarbonizing operations and the supply chain.**

Are the recent discussions about excessive regulation and the geopolitical and economic context likely to slow down commitments to decarbonizing the Supply Chain?



M4 M4 Important evolutions / investments

M3 Reporting after environmental footprint

M2 We start, restricted perimeter & criteria

M1 No, not really

Don't know / NA

> CO_2 impact assessments are carried out, but never or rarely it changed our sourcing decisions.

Industry

> Preserving the environment requires rigorous Supply Chain management, where producing only what's necessary is a necessity: we minimise waste and unsold items. We sell over 99% of what we produce.

FCPG / Luxury / Beauty

M4 Important evolutions / investments

M3 Local adaptations / investments

M2 Marginal

Don't know / NA

> CO_2 costs and leadtime are taken into account when deciding on logistics routes during renegotiations. We have implemented an in house AI for transport buyers to determine the best routes regarding CO_2.

Industry

INFORMATION & COMMUNICATION SYSTEMS

Digital technology is fully part of the resilience arsenal due to the large amount of data and parameters to be processed, and their complexity (uncertainties, etc.).

These tools greatly facilitate decision-making. **Half of companies consider that they have sufficiently mature systems to provide them with quality data for the purpose of agility in the supply chain.** Only 15% have predictive and prescriptive information systems. This low score is understandable: These are recent solution, they require integration and clean data that come from old systems. The cloud makes these solutions easier to use, and progress is rapid thanks to AI.

When it comes to communication with the ecosystem and capturing weak signals, most companies (58%) are still at a low or medium level of maturity.

Among companies, the use of modern tools (APIs, platforms...) for communication and exchanges remain the exception. Yet, these data exchanges are necessary for collaboration and resilience. In the aerospace industry (not represented in the study), formats/protocols are shared and regulated (communication standards, etc.).

There is an ongoing search to reach maturity level 4 to be able to react more quickly and work within an industry wide logic.

One weak point of resilience is cyber protection.

The company may lose all or part of its ability to work and/or communicate with its ecosystem in the event of a proven risk. The detailed results show that **that large companies are more advanced in cybersecurity, which is not surprising. However, it is the weak link that poses a problem, and it comes often from SMEs.** Nevertheless, companies are in a transition phase, with a more balanced distribution across maturity levels and sizes. Large and mediatized cyberattacks in all sectors have contributed to raising awareness on this topic.

65% of companies are investing in 'Supply Chain IT resilience'. According to the comments provided, investments are focused on implementing APS (linked to S&OP), establishing security protocols and audits with suppliers, and interfacing ERP systems with Business Intelligence (BI) solutions.

It takes a maximum of four minutes between the sale of a product and its appearance in the systems. Our tools enable us to achieve accurate stock levels and discrepancies and to deal with discrepancies quickly.

FCPG / Luxury / Beauty

We have deployed a single, global WMS. Every evolution is immediately accessible across all our sites, ensuring harmonised practices.

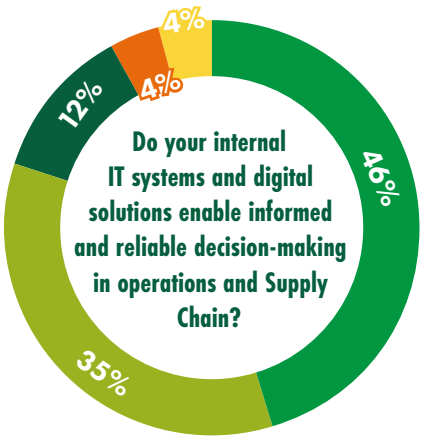
FCPG / Luxury / Beauty

M4 Important evolutions / investments

M3 Local adaptations/investments

M2 Marginal

Don't know / NA



M4 The IS predicts and prescribes (digital twin, data-driven, API, APS, AI)

M3 Decision support: governance, documented and connected data, autonomous users, ERP BI

M2 Process digitization: expert users, siloed data, business applications

M1 Artisanal approach: informal governance, users subject to constraints, basic office tools

Don't know / NA

We work with AI to facilitate third-party mapping and clean up supplier databases. We seek now to identify bottleneck suppliers.

Industry

We are regularly audited by our insurers on cyber security [...], and we are among the "top of the list" in the industry.

Industry

We use XXX (AI-based risk management solution) to map and receive alerts about our suppliers.

Industry

HUMAN RESOURCES

Human resources are part of the resilience capabilities. **HR topic obviously cut across all supply chain functions.**

The only question asked was about the culture prevailing within the Operations and Supply Chain teams; from 'command/control' to 'agility/cross-funtional culture.

As a result, more than 60% of companies consider their HR maturity level to be fairly good or even high.

The use of multi-skilled staff is one of the key drivers of resilience. It also helps to compensate partially for certain skill gaps. Training for these roles and staff retention have never been more important.

> *Staff retention rates are close to 100% and commitment rates are almost 90%. "Right people to the right place, and be able to move them around."*
>
> FCPG / Luxury / Beauty

> *We have launched a series of Supply Chain training sessions for all of the group's management and leadership teams (to be held regularly).*
>
> Industry

> *Multi-skilling: one operator can take three positions, or there are three operators for one position.*
>
> Industry

FINANCING

42% of companies invest locally. This is understandable given the difficulty of making sometimes considerable investments in areas where disruption is hypothetical. Mobilising capital for inventory, supplier prevention, product development, searching for new sources and sophisticated IT solutions is no easy task, particularly in 2024-25.

Comparing the M3 + M4 responses relating to investment in each area and function, **we obtain the following breakdown, in order of importance:**

- IT and Com.: 65%
- Plan: 63%
- Procure: 58%
- Sustainability: 58%
- Make: 43%
- Deliver: 40%

OUR RECOMMENDATIONS FOR SUPPLY CHAIN RESILIENCE

The impact on Supply Chains of a 'never normal' world has already been high in the past and will be again in the future.

The study we conducted attempts to give **an overview of companies' maturity levels of their Supply Chain resilience. It shows they seem to be in the middle of the road.** Resilience is still very often associated with operational risk management, and more rarely with building capabilities to deliver on customer promises continuously, regardless of the shocks. But the concept of long-term resilience is gaining ground.

Based on the quantitative results and associated comments, we can generate **some structural characteristics of the most resilient supply chains.** These characteristics are also recommendations:

The Supply Chain is considered at the highest level of the organization, as a critical function in charge of the major balances and trade-offs between means, needs, and safeguarding the future and financial resources. This view allows to take into account the investments needed to ensure the supply chain's resilience. Decision-makers are regularly briefed of the importance of the Supply Chain.

It has a comprehensive view of the activities and its ecosystem, both internally within the entire company and externally with suppliers and service providers. This provides visibility and "sensitivity". Collaborating with a high degree of trust is a genuine strategic objective.

The corollary is that it considers the long-term view and prepare accordingly by integrating the Supply Chain activities into their medium and long-term strategic thinking. The concept of risk is increasingly anchored and developed in all areas, but beyond business continuity plans, decision-makers are developing the ability to anticipate and to develop scenarios. This enables them, for example, to determine strategic stock levels or to diversify suppliers, or routes.

They take digital technologies seriously. The ability to process and share information quickly within their ecosystem, to detect weak signals, to streamline transactions, and to simulate the impact of a scenario or decisions is key to resilience. Beyond transactional systems and data quality, the platforms, digital twins, IoT, automation, and now artificial intelligence that most IT solutions are adopting are likely to significantly increase the agility of the overall system, the planning, and its eventual reconfiguration.

Companies Supply Chain incorporate the human dimension into the execution of their missions. This is an integral part of the organization's overall resilience: competence, versatility, adaptability, and decision-making are the characteristics of a culture that fosters a resilient, adaptive, and sustainable Supply Chain. Training in these organizations is important at all levels.

They are gradually incorporating climate considerations to adapt their industrial tools, procurement or logistics schemes, as well as those of their partners, even if day-to-day decisions are not always based on CO_2 footprint. Of course, the decision to set up a factory or warehouse is not based solely on climate data. Geopolitics and economic conditions are undoubtedly the predominant factors at the beginning of 2025.

The ability to deform after an impact and to return to the initial state, or stronger, is now a requirement for Supply Chains. Counting for at least 70% of costs and carbon footprint in most industries, the Supply Chain is at the forefront of business resilience. There is still a lot of progress to be made, however:

Set up relevant KPIs

Develop resilience financing strategies

Make collaboration with your ecosystem a strategic priority

Further integrate digital technology and AI as tools for resilience

CONCLUSION

The world has become chaotic, and it is essential to continuously improve resilience in order to manage a global Supply Chain. Our commercial activities are impacted every day by external events (currency and regulatory changes, socio-economic and political events, etc.) as well as internal events (store openings, shows, customer events, new product launches, communication campaigns, etc.).

Predicting the future is complex; reacting quickly by adapting our flows daily has become our priority.

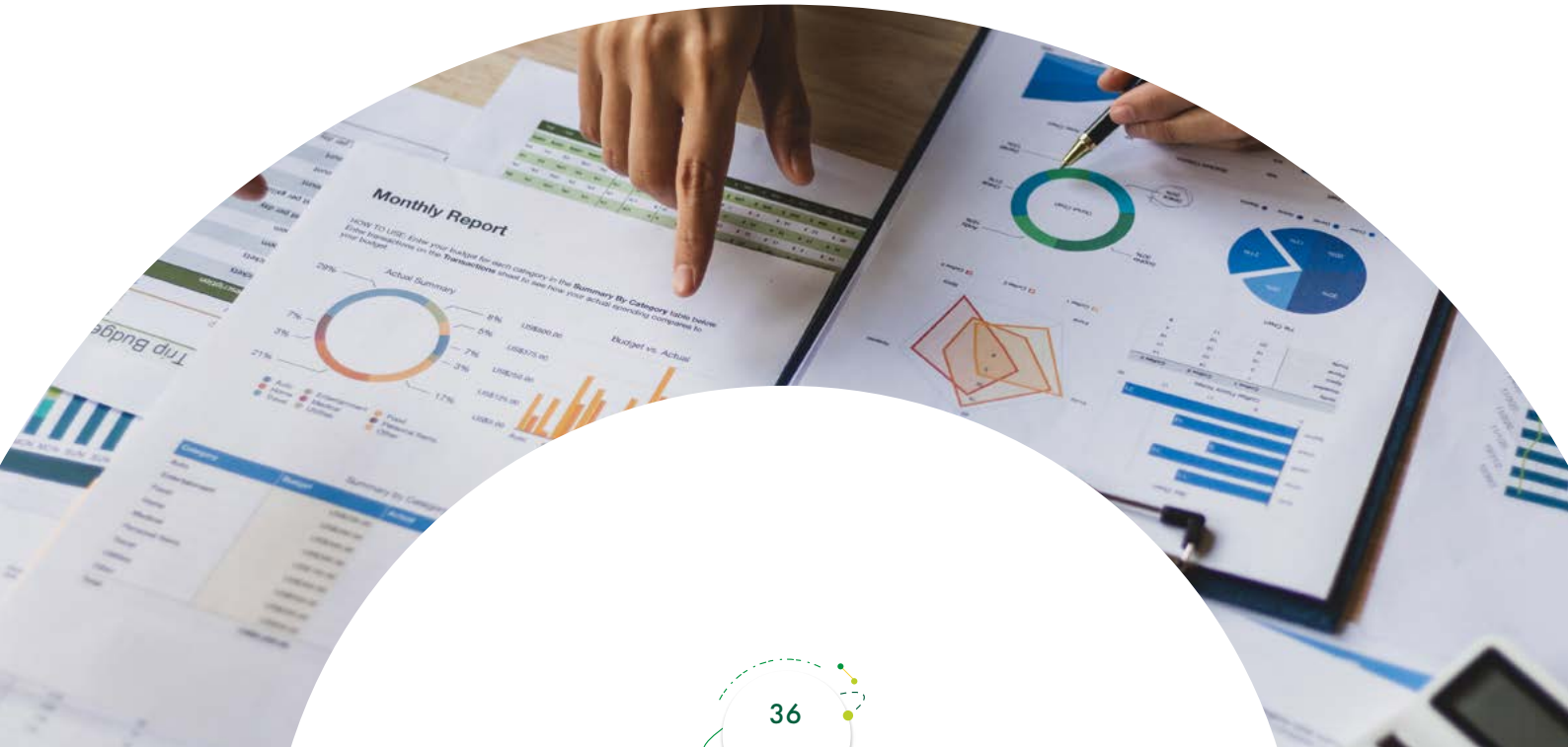
Our resilience is based on several principles that guide all our decisions:

- We owe our success also to our service providers and suppliers. We always seek to maintain long-term relationships. Our longest-standing service provider was selected in 1987! The average length of our relationships is at least 20 years. This makes Louis-Vuitton one of the preferred customers of each service provider.
- Our number one performance indicator is lead time.
- We always use the same WMS across all our 20 warehouses, regardless of the service provider. This makes our operations more robust and efficient, as we can share all our best practices.
- Our large commercial areas are supplied by at least two warehouses. If one warehouse runs out of stock, the second can takes over.
- We always separate the property/rental contract of our warehouses from the logistics services contract. If there is an issue, we change service providers (which has rarely happened) but we remain on site. We do not have to move.
- Our delivery frequencies are very high. We keep stock as upstream as possible, so that we can decide at the last minute which warehouses or stores to supply.
- Our Supply Chain management tools are developed in-house. Our information systems adapt to the business and the teams, not the other way around.
- We are 'Known Charger' to speed up airport turnaround times and AEO to ensure fast customs clearance.

Being resilient is no longer an option. Succeeding in this unpredictable world requires to constantly working on your agility, knowing that any decision made today may be changed tomorrow. This mindset requires to systematically maintaining a global view of the company and to always seeking to prevent a team or manager from optimising their subsystem at the expense of the overall result.

VINCENT BARALE

Senior Vice President
Supply Chain & Logistics, Louis Vuitton



REMARKABLE STUDIES ON SUPPLY CHAIN RESILIENCE

TITLE	LANGUAGE	AUTHOR	SOURCE	LINK
Explainable artificial intelligence and agile decision-making in supply chain cyber resilience	EN	"Kiarash Sadeghi R. a, Divesh Ojha b, Puneet Kaur c,d , Raj V. Mahto e , Amandeep Dhirf,"	Science Direct	https://www.sciencedirect.com/science/article/pii/S0167923624000277
Opérations et supply chain : les clés de la résilience	FR	Philippe Armandon, Jean-Claude Lamoureux	Sopra Steria NEXT	https://www.soprasterianext.fr/docs/librariesprovider2/soprasteria-next-exploratoire-documents/notindexdocuments-l-exploratoire/notes-analyse-operations-et-supply-chain.pdf
Comment concilier court terme et long terme dans un monde en crise permanente ?	FR	PwC	PwC	https://www.pwc.fr/fr/publications/operations/digital-supply-chain.html
Two perspectives on supply chain resilience	EN	Adreas Wieland (Copenhagen Business School) ; Christian F Durach (ESCP Business School)	Google Scholar	https://onlinelibrary.wiley.com/doi/abs/10.1111/jbl.12271
Vers des opérations plus durables et plus résilientes	FR	"Philippe Dulou Associé, Consulting, Supply Chain & Operations Leader, France Patrick Bachet Associé, Consulting, Opérations, France"	EY	https://www.ey.com/fr_fr/supply-chain/how-you-can-reframe-operations-for-resilience-and-sustainability
The Future of supply chain	EN	KPMG	KPMG	https://kpmg.com/xx/en/our-insights/operations/the-future-of-supply-chain.html
The effect of high-involvement human resource management practices on supply chain resilience and operational performance	EN	"Minhao Gu a , Yanming Zhang b, c , Dan Li a , Baofeng Huo a, University of Hong Kong"	Science Direct	https://www.sciencedirect.com/science/article/pii/S2096232023000148
Supply Chain resilience : a tertiary study	EN	Sascha Hägele (Saarland University) Eric H Grosse (Saarland University) Dmitry Ivanov (Berlin School of Economics and Law)	Inderscience Publishers	https://www.inderscienceonline.com/doi/epdf/10.1504/IJISM.2023.127660
Controverse robustesse/résilience : ce que revèlent les supply chains soumises à la crise du Covid-19	FR	Nathalie Fabbe-Costes, Yasmina Ziad	Marché et organisation ; Réseau de recherche sur l'innovation	https://www.cairn.info/revue-marche-et-organisations-2021-3-page-141.htm?contenu=article
La covid-19 et la guerre en Ukraine : Révélateurs de la vulnérabilité des supply chains internationales ?	FR	Bruno Durand Université Paris Nanterre	CRINI (Centre de recherche)	https://www.researchgate.net/publication/365610933_La_covid-19_et_le_conflit_en_Ukraine_ne_revelent-ils_pas_la_vulnerabilite_des_supply_chains_internationales_Colloque_LEA
La durabilité, nouvelle alliée pour la résilience de la supplychain	FR	Nathalie Girardin Head of Sustainability for Intelligent Supply Chain Center of Excellence	Capgemini	https://www.capgemini.com/fr-fr/perspectives/blog/supply-chain-durable/
Renforcer la résilience des chaînes d'approvisionnement face au COVID 19 : Témoignages et leçons de l'industrie automobilie	FR	Sachin Kamble Professeur de Supply Chain et membre de la Chaire Foresight, Innovation et Transformation	EDHEC Vox	https://www.edhec.edu/fr/recherche-et-faculte/edhec-vox/renforcer-la-resilience-des-chaines-dapprovisionnement-face-au-covid-19

TITLE	LANGUAGE	AUTHOR	SOURCE	LINK
Résilience: Quels sont les trous noirs de votre supply chain ? PARTIE 1	FR	Vincent Houllière (Senior Manager) François Rovere (Senior Consultant)	Bearing Point	https://www.bearingpoint.com/fr-fr/publications-evenements/blogs/blog-industry/quels-sont-les-trous-noirs-de-votre-supply-chain-12/
Résilience: Quels sont les trous noirs de votre supply chain ? PARTIE 2	FR	Vincent Houllière (Senior Manager) François Rovere (Senior Consultant)	Bearing Point	https://www.bearingpoint.com/fr-fr/publications-evenements/blogs/blog-industry/-resilience-quels-sont-les-trous-noirs-de-votre-supply-chain-22/
Résilience des Supply Chain - de quoi parlons-nous vraiment?	FR	Sacha Bouyer	EY	https://adameo.com/blog/resilience-des-supply-chain/
Reliable energy requires resilient supply chains	EN	Pardeep Sehgal Managing Director,Strategy & consulting / Rohit Singh Managing Director,Strategy & consulting	Accenture	https://www.accenture.com/fr-fr/insightsnew/energy/supply-chain-resilience
Resilience without borders	EN	Deloitte	Deloitte	https://www.deloitte.com/uk/en/Industries/financial-services/research/resilience-without-borders.html
The seven core capacities of supply chain resilience	EN	James B Rice Jr,	Supply Chain Management Review	https://www.scmr.com/article/the_seven_core_capacities_of_supply_chain_resilience
Le management des supply chains à l'épreuve de la crise sanitaire mondiale, regards croisés d'un industriel et d'un scientifique	FR	Entretien avec Joël de Rosnay et Caroline Mondon	Forum ATENA	
Revisiter la gestion du risque : mettre de la vie dans les systèmes	FR	M. Grassin	Elsevier - Clinical Key	https://www.clinicalkey.fr/#!/content/journal/1-s2.0-S1765462923001022
Le macroscope	FR	Joël de Rosnay	Seuil	
Make smarter investment in resilient supply chains	EN	Walid Klibi, Kai Trepte, James B. Rice	MIT Sloan management review	https://sloanreview.mit.edu/article/make-smarter-investments-in-resilient-supply-chains/
La méthode des scénarios, un outil d'aide à la planification stratégique	FR	Benjamin Cabanes, Mines Paris, Orso Roger, IHEIE/PSL, Liliana Doganova,	Centre de sociologie de l'innovation, Ecole des Mines Paris	https://www.polytechnique-insights.com/tribunes/societe/la-methode-des-scenarios-un-outil-daide-a-la-planification-strategique/
Pérennité, innovation et résilience des entreprises	FR	Marc Giget, Véronique Hillen	European Institude for Creative Strategies and Innovations	https://www.erudit.org/fr/revues/mi/2021-v25-n6-mi06713/1085595ar/
Attempts to make supply chains "resilient" are likely to fail	EN	The Economist	The Economist	https://www.economist.com/special-report/2023/10/02/attempts-to-make-supply-chains-resilient-are-likely-to-fail
Navigating the new normal: Operations insights for 2024	EN	Axel Karlsson , Daniel Swan, Daphne Luchtenberg	McKinsey	https://www.mckinsey.com/capabilities/operations/our-insights/navigating-the-new-normal-operations-insights-for-2024
Supply chains: Still vulnerable	EN	by Knut Alicke and Tacy Foster with Vera Trautwein	McKinsey	https://www.mckinsey.com/capabilities/operations/our-insights/supply-chain-risk-survey
BAROMÈTRE des Risques Supply Chain	FR	KYU	KYU	https://www.kyu.fr/6eme-barometre-des-risques-supply-chain-la-supply-chain-au-defi-de-la-mondialisation/
Transforming Your Supply Chain: Performing in the Age of Uncertainty and Disruption	FR	Jan SIMONS	Sopra Steria NEXT	https://www.soprasteria.com/services/consulting/insights-and-publications/integrated-supply-chain
Aerospace Supply Chain Resiliency Task Force Report to Congress	FR		US Dept of Transportation	https://www.transportation.gov/ascr

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contact@francesupplychain.org
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Philippe ARMANDON
Director of the Operations and Supply Chain Excellence practice
philippe.armandon@
soprasteria.com

sopra steria next

Rozenn BELLIARD
Marketing and Customer Experience Director - Rail Transport Consulting
rozenn.belliard@
soprasterianext.com