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in Business



SUPPLY CHAINS: A FINANCE PROFESSIONAL'S PERSPECTIVE

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It is the worldwide centre of excellence on purchasing and supply management issues. The activities of procurement and supply chain professionals have a major impact on the profitability and efficiency of all types of organisations. CIPS offers corporate solutions packages to improve business profitability.

Find out more about us at www.cips.org, @CIPSnews



SUPPLY CHAINS: A FINANCE PROFESSIONAL'S PERSPECTIVE

This report considers the current issues in supply chains from the perspective of the finance professional. The report has been developed from a series of interviews and roundtables conducted by ACCA, the Institute of Management Accountants (IMA®) and the Chartered Institute of Procurement and Supply (CIPS). The roundtables and interviews involved both finance and supply chain professionals on a global basis and were designed to explore the current and future issues that entities face. The report considers how supply chains are developing and confirms that the combination of the finance and supply chain professions is greater than the sum of the component parts in addressing the challenges that entities face.

Foreword

‘Disruption’ is a key word of our time. The years 2020 and 2021 will go down as pivotal points of change in the way that businesses operate. Not only has the pandemic challenged many of our traditional ways of working but so have the technological and data advances, which have in many cases been accelerated by the pandemic. The new world is one of collaboration: one in which professionals work together to address problems and execute plans.

This report focuses on the relationship between finance and supply chain professionals. As society strives towards a more ethical and sustainable model, so the two professions have greater opportunities to work together and to collaborate. In this report we set out how supply chains are evolving and how collaboration across the two disciplines can benefit both parties, improve organisational capability, manage business and consumer disruption by reducing uncertainty, and benefit society.

The vision for both the finance and supply chain professionals is built upon how we can add value to the entities in which we work. Ethics and trust are fundamentals for both. With increased scrutiny of the activities of those in the supply chains, as well as of the entities themselves, these values could not be more relevant.

Working together effectively requires understanding of each other’s perspectives. Using the respective qualifications and continuing education programmes will help the members and future members of each professional body to collaborate in ever more effective ways.



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Executive summary

'THE SUPPLY CHAIN IS THE LIFELINE OF A COMPANY LIKE [A] BLOOD VESSEL [IS] TO THE HUMAN BODY, AND FINANCE IS THE BRAIN OF A COMPANY. THE HEALTHY AND EFFECTIVE COOPERATION OF THE TWO CAN ENSURE THE SUSTAINABLE DEVELOPMENT OF COMPANY'.

FINANCE MANAGER BASED IN MAINLAND CHINA

The importance of supply chains has been highlighted by the COVID-19 pandemic. In 2021 considerable media attention was paid to supply chain disruptions from delays at key ports, shortages of semiconductors, energy supply issues and increasing costs. Supply chains became topical.

Finance teams and supply chain functions have long had a history of collaboration and cooperation. The disrupted world that entities face is one that is unlikely to improve in the immediate term. Both finance teams and their supply chain colleagues face changes brought about not only by the pandemic and changes in the patterns of consumer demand, but also from their joint contribution to helping entities address ethical challenges and sustainability goals. Their technology challenges are integrated, as both play a role in driving data-driven organisations built upon collaborative structures.

This report offers a new charter for increased collaboration: one that focuses on the achievement of organisational purpose and value to society, one that is far broader than the traditional profit motive.

The nature of supply chains in the post-pandemic world is changing (Chapter 1). While the pandemic may have highlighted some of the fault lines in society's increasing globalisation (as explored in Chapter 3), the rebalancing of supply chains and the impact of Industry 4.0 on the way entities interact with their customers and deliver their services mean that there are several key decisions facing many entities in the months and years to come. Enabling finance and supply chain professionals to work collaboratively will strengthen to address these issues successfully (Chapter 2).

While some may suggest that an end to the pandemic may bring a return to 2019 norms, it seems likely that the continuing impact of COVID-19 and the necessary restrictions on human activity will be experienced for a few years to come. The world will have changed by then and new realities will have emerged. While supply chains are essentially a human activity, technology and data are playing an increasing role, whether through the visibility of data across the networks to assist in understanding how demand and supply can be matched, or using technologies such as blockchain to create trust and traceability in the supply chain. These transitions are explored in Chapter 4.

Risk management and governance play an important role in supply-chain management. With an increasing emphasis on non-financial disclosures and policy interventions to help address human rights and other issues, supply chain and finance professionals need to work together to address these objectives and ensure that the appropriate due diligence now needed is in place, not least of which is how carbon reduction can be understood across supply chains. Chapter 5 discusses the trends in this area.

COLLABORATION IS KEY TO THE SUCCESS OF BOTH GROUPS.

A charter for collaboration

At the end of each chapter of this report several actions are suggested for finance professionals, enabling them to increase their level of collaboration with their supply chain colleagues. This charter represents a summary of these recommendations.

	VISION Establish shared challenges and future vision that support the purpose of the entity and align to the strategic objectives in delivering products and services to the customer in an effective and efficient manner.
	TRUSTED FINANCE BUSINESS PARTNER Provide relevant, accurate and informed advice to support decision making, including understanding the cost base and Cost-to-Serve, thereby strengthening the relationship between supply chains and finance.
	PLANNING AND FORECASTING Change planning, budgeting and forecasting horizons in response to the evolving nature of the entity and the environment in which it operates, accepting that traditional cycles may no longer apply.
	DATA AND TECHNOLOGY Work together to ensure that technology and data developments address collective requirements. Appreciating the importance of predictive analytics and ensuring that the relevant data is available; understand how digital supply chains are making business models evolve.
	ESG AGENDA Recognise the importance of the environment, social and governance (ESG) agenda, ethical supply chains and non-financial reporting, especially as regards suppliers across the supply chain network relationships and how these can be understood.
	MANAGING DISRUPTION Prepare the entity to weather the next round of disruption and ensure that the modelling capabilities are available to allow understanding of the opportunities that appear.
	COLLABORATIVE MINDSET Recognise that collaboration is key – respecting the differences, maximising the commonality; approaching with a project-centric and collaborative mindset.
	VISIBILITY End-to-end visibility is key across supply chains as entities look to enact strategies that will drive sustainability goals. Understanding the full nature of supply chains is essential in this.
	ETHICAL LENS Use the ethical lens in common to assess the challenges in supply chains and the behaviours of entities, especially as these lead to regulatory challenges.
	RISK AND DUE DILIGENCE Jointly engage in risk management and supplier due diligence activities as the challenges continue to evolve.

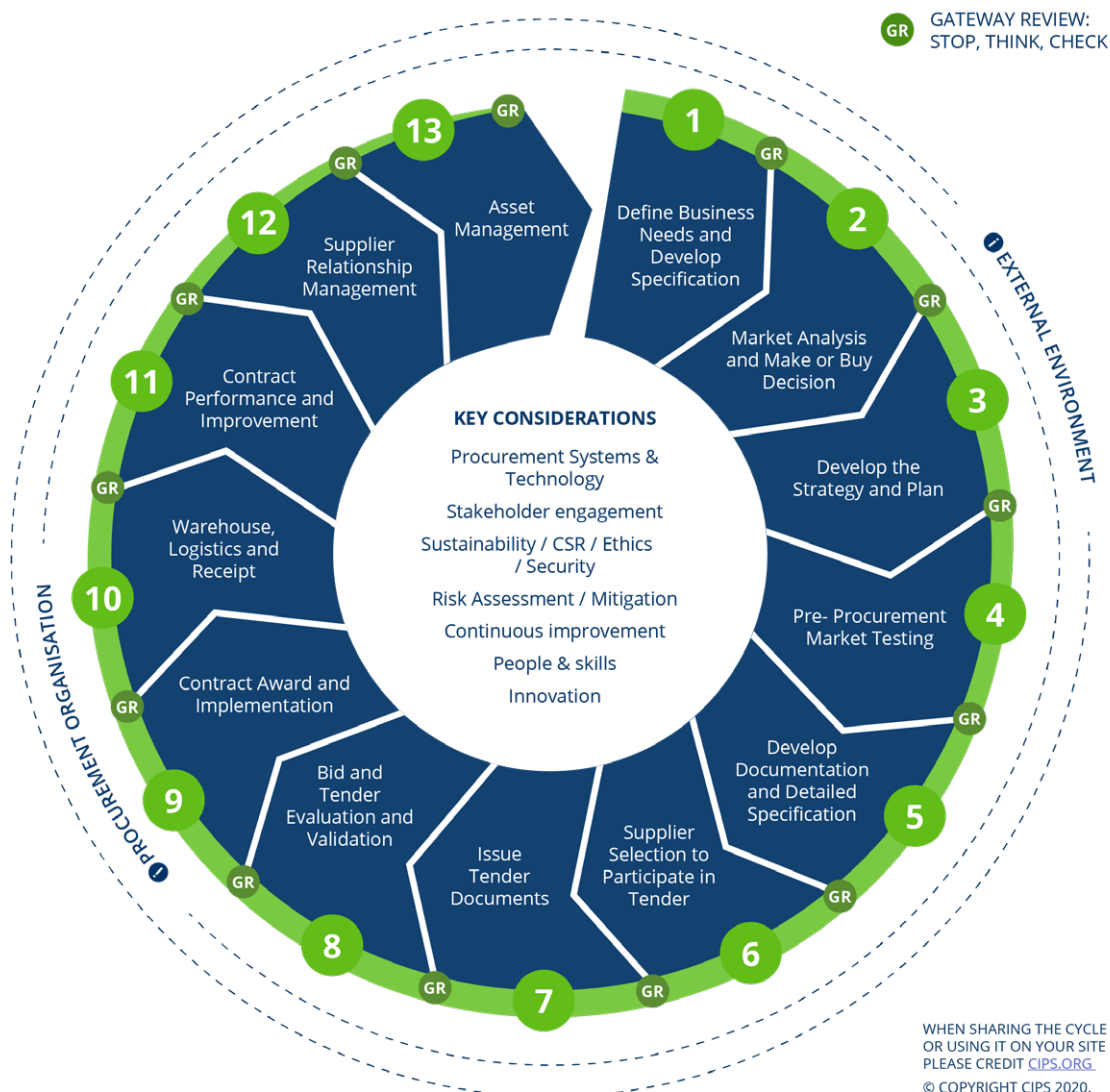
A photograph of a white wall with two dark shadows cast upon it. The shadow on the left is of a person holding a shopping cart. The shadow on the right is of a person pushing a shopping cart. The foreground is a paved area with a pattern of interlocking stones. A concrete curb separates the pavement from a bed of small, light-colored pebbles. A vertical red line is positioned to the left of the text block.

**THIS REPORT OFFERS A NEW CHARTER
FOR INCREASED COLLABORATION:
ONE THAT FOCUSES ON THE
ACHIEVEMENT OF ORGANISATIONAL
PURPOSE AND VALUE TO SOCIETY,
ONE THAT IS FAR BROADER THAN THE
TRADITIONAL PROFIT MOTIVE.**

1. Procurement and supply

'THE FINANCIAL EFFECTS OF [THE] SUPPLY CHAIN ARE TREMENDOUS. AND BECAUSE OF THIS, WHAT I REALISE IS IN TERMS OF PROCESSES AND ORGANISATIONAL SETUP, THERE NEEDS TO BE MUCH CLOSER LINKAGE BETWEEN THE TWO OPERATING FUNCTIONS, SUCH THAT THE DECISION MAKING CONSIDERS THE WHOLE STRATEGIC ASPECT OF SUPPLY CHAIN FINANCE AND THE FINANCE EFFECT ON [THE] SUPPLY CHAIN.'
SINGAPORE-BASED ROUNDTABLE PARTICIPANT

FIGURE 1.1: CIPS Procurement and Supply Cycle



1.1 What is procurement and supply?

The CIPS Procurement and Supply Cycle¹ (Figure 1.1) (CIPS 2020) outlines the complexity and breadth of activities carried out by procurement teams. Procurement teams are responsible for overseeing the steps of the procurement cycle, covering core department activities such as market analysis, sourcing, negotiation, contracting and supplier-relationship management for goods, works and services, covering both acquisitions from third parties and in-house providers. The process spans the whole procurement cycle from the identification of needs, through to the end of a services contract or the end of the useful life of an asset. It involves options appraisal and the critical 'make or buy' decisions.

Procurement teams analyse and manage risk throughout the supply chain from availability of supply, price fluctuations and the continuous monitoring of the micro and macro-economic environment for potential impact.

Sustainability sits at the heart of procurement, with approximately 80% of an organisation's sustainability impact sitting in the supply chain. Procurement supports the sustainability goals of the organisation and optimises the environmental, social and economic impacts over the life cycle of products and services.

Supply chain management

Supply chain management is the management of the flow of goods, services and suppliers from raw materials to the consumption by the consumer, requiring a network of suppliers that link the supply chain together.

IMA has published a 'Statement on Management Accounting' titled The Tools and Techniques for Implementing Integrated Supply Chain Management (IMA 1999). This provides guidance on establishing an integrated supply chain management function and the interactions from a management accounting perspective.

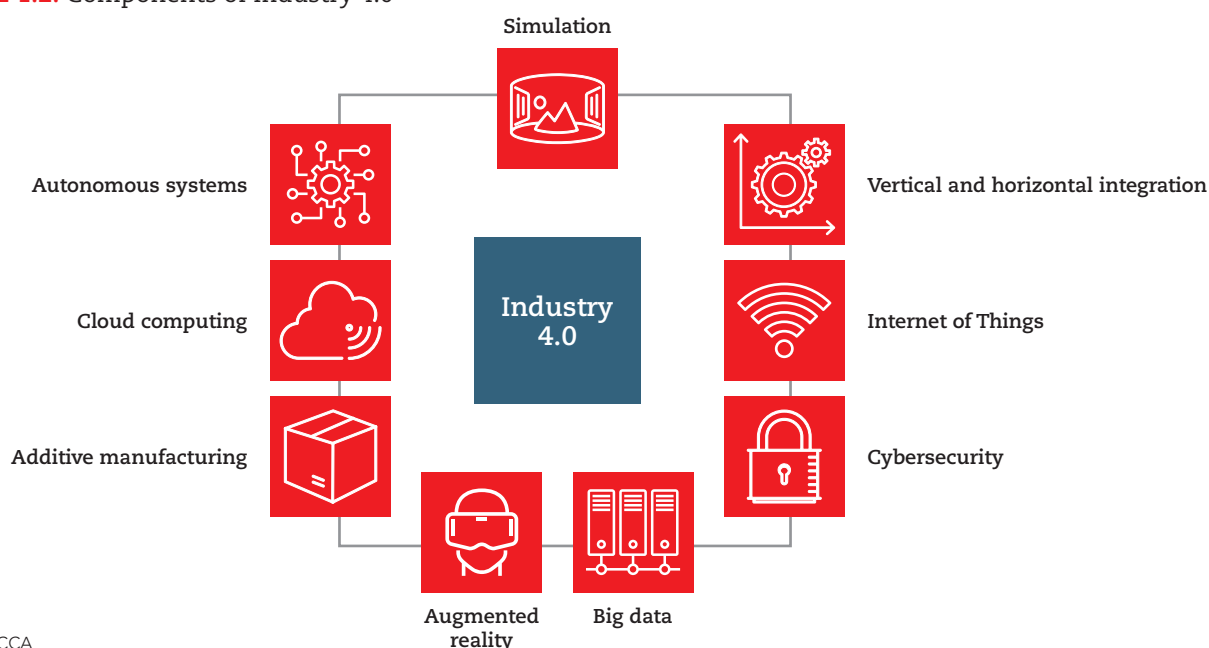
1.2 Future of supply chains and supply chain management

The nature of supply chains is not static. For many entities, the progress is driven by taking a more holistic view of their supply chains. In so doing, entities need to embrace the technology and data revolution to enable them to generate greater insights. As explored in section 4.2, it is data that may well drive some of the next iteration of efficiencies in supply chains but will also direct a focus onto entities' need for optimal processes that facilitate rapid decision making. This creates greater visibility up and down the supply chains. The roundtable participants stressed two important realities about the future of supply chains to them: it depends, firstly, on data and secondly on people who can work with that data.

What does Industry 4.0 mean to the supply chain?

The components of Industry 4.0 can be seen in Figure 1.2. They relate to how technology and data are benefiting entities by facilitating the development of smart factories and enabling the use of more automated processes with greater use of preventative and predictive management techniques, creating a cyber-physical system.

FIGURE 1.2: Components of Industry 4.0



¹ A detailed explanation of this cycle is available at CIPS (n.d.)

The pandemic has accelerated much of the Industry 4.0 implementation in entities. The phrase 'five years in five months' has been one of those used in the pandemic to reflect the rapid adoption of some of, or all, these technologies across entities. The reality for entities, and for the finance and supply chain teams working within them, is that the entities themselves are progressing from a pre-pandemic state where 80% of the effort could be expended in activities that focused on predictability, using lean manufacturing techniques, for example, to one where the emphasis is on exploration and agility using fail-fast approaches as customer demand changes. This is a different view of planning for both key teams in the entity and requires greater collaboration across the tool sets and activities.

1.3 Sustainable development goals and supply chains

Supply chains have a significant impact on the planet, often through transportation by sea freight or air freight, both of which can be significant polluters.

According to Mike Scott, writing in *Forbes* magazine in 2019, 'Shipping accounts for up to 3% of global emissions and 10% of transport emissions – roughly the same as aviation – and is an integral part of the global economy, transporting around 80% of the world's trade in physical goods. Marine freight is the least emissions intensive way of moving cargo' (Scott 2019). An International Maritime Organisation (IMO) study in 2020 concluded that 'under a voyage-based allocation method² the share of international shipping represented 740 million tonnes of CO₂ in 2018. According to a range of plausible long-term economic and energy business-as-usual scenarios, emissions could represent 90–130% of 2008 emissions by 2050' (IMO 2020). Fourteen countries, led by the Danish government, issued a 'Declaration on Zero Emission Shipping by 2050' (Danish Government 2021) in which they commit to focusing on shipping to achieve zero emissions by 2050.

But sustainability is a question of not just emissions, but also workforce conditions. Consideration of these conditions is also an imperative across the broader ESG agenda.

UN SDGs and supply chains

The sustainability agenda is a significant element of the future strategies for many entities as the world charts its path to reducing emissions and improving working conditions, as articulated in the UN Sustainable Development Goals (SDGs). Supply chains are a significant element of these activities as it is not just within the entity

but up and down the supply chains that the impact, and hence the progress towards the targets, will be experienced.

The UN Global Compact asserts that: 'When supply chains are done wrong – by not taking into consideration the environmental, social and governance performance of suppliers – companies leave themselves open to significant operational and reputational risks. Impacts on people and the environment can be substantial and severe' (UN Global Compact 2016).

The Global Compact identifies the following:

'key trends and practices in addressing supply chain challenges, which are often interconnected,

- Collaborative relationships, including with suppliers and industry collaboration.
 - See how to collaborate successfully [SDG 17], and how collaboration can help tackle climate change [SDG 13], transform labour conditions [SDG 8], and help make supply chains more sustainable [SDG 15].
- Traceability, for Small and Medium Sized Enterprises (SMEs), to advance sustainability in the supply chain.
 - Learn more about the world's first guide on traceability, and how traceability can be used for sustainable fishing [SDG 14], and to solve deforestation concerns in the palm oil and paper industries [SDG 15].
- Building more inclusive supply chains, by sourcing from previously underused suppliers such as SMEs, minorities, women-owned businesses, indigenous peoples etc.
 - Supplier diversity enhances resilient, sustainable and adaptive supply chains [SDG 12], improving the competitive advantage of your company and adding to the bottom line [SDG 17].³
- Being better prepared to address critical issues such as forced and child labour, and meeting emerging standards and legislation.
 - Legislation for stopping human trafficking and forced labour [SDG 12].
- Digitization of supply chain processes.
 - Digitization can enhance performance, tackle potential risks and increase transparency [SDG 9].

² The voyage-based allocation method was introduced by IMO in its fourth study. It allocates the emissions on a voyage between locations and international legs on a more realistic basis than previous approaches and reflects the quantity of emissions allocated to a voyage that individual governments can influence and that are expended in international transit.

³ ACCA / CA ANZ (2021) includes guidance on supply chain analysis for SMEs.

Scope 1, 2 and 3 emissions and supply chains

With intensifying focus on the impact of supply chains, greenhouse gas emissions are classified into three 'scopes' in the Greenhouse Gas Protocol (World Resources Institute and World Business Council for Sustainable Development 2011) as shown in Table 1.1.

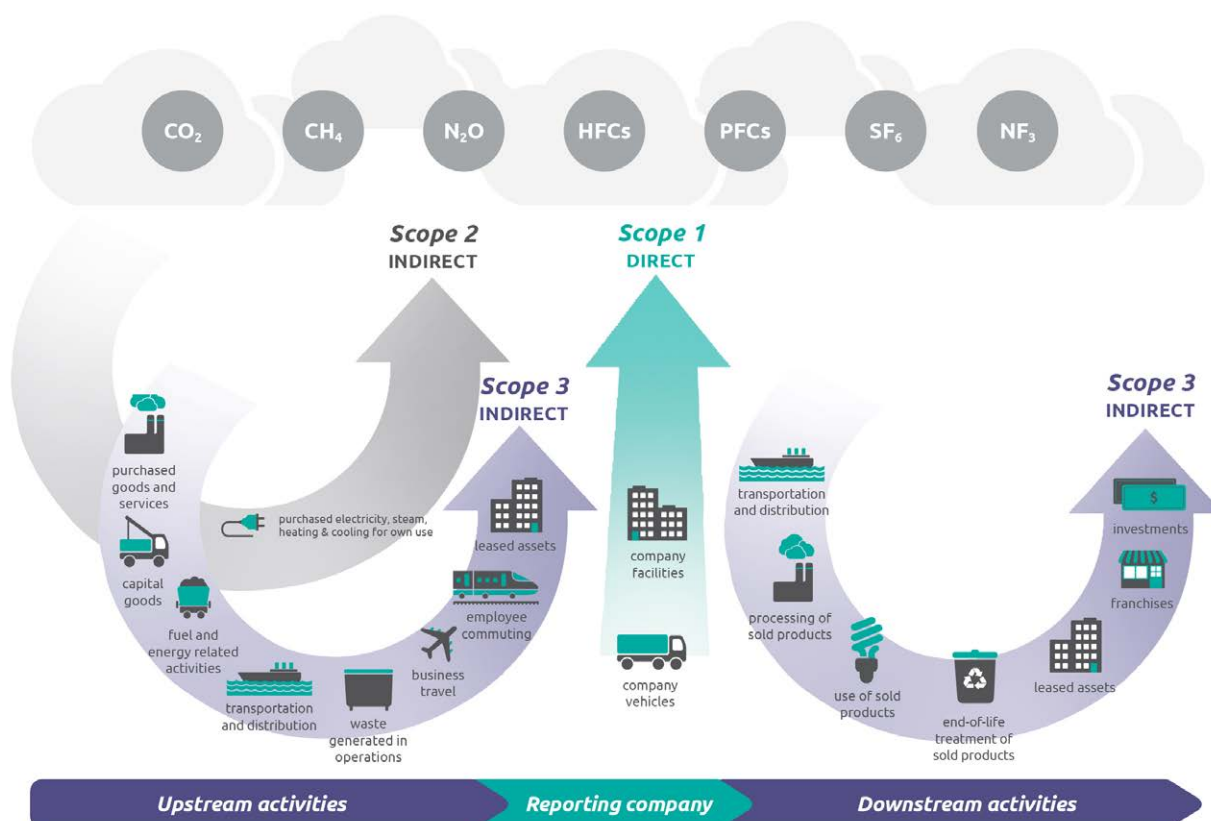
The complexity of the relationships of emissions across a supply chain can further be illustrated from the following figure from the Accounting Reporting Standard (World Resources Institute and World Business Council for Sustainable Development 2011), Figure 1.3.

TABLE 1.1: Definitions of Scope 1, 2 and 3 emissions

EMISSIONS TYPE	SCOPE	DEFINITION	EXAMPLES
Direct emissions	Scope 1	Emissions from operations that are owned or controlled by the reporting company	Emissions from combustion in owned or controlled boilers, furnaces, vehicles etc; emissions from chemical production in owned or controlled process equipment
Indirect emissions	Scope 2	Emissions from the generation of purchased or acquired electricity, steam, heating, or cooling consumed by the reporting company	Use of purchased electricity, steam, heating or cooling
	Scope 3	All direct emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions	Production of purchased products, transportation of products, or use of sold products

Source: World Resources Institute and World Business Council for Sustainable Development (2011)

FIGURE 1.3: Overview of Greenhouse Gas (GHG) Protocol scopes and emissions across the value chain



Source: World Resources Institute and World Business Council for Sustainable Development (2011)

As will be discussed in section 5.2, across the supply chain there is an increasing demand for due diligence on emissions and other elements of the ESG agenda.

The International Labour Organisation (ILO) comments that: 'in many countries, in particular in developing countries, [due diligence has] created employment opportunities for economic and social development. There is also evidence, however, that the dynamics of production and employment relations within the global economy and in some supply chains can have negative implications for decent working conditions' (ILO n.d. a). In the assessment of the ILO, supply chains affect the UN SDGs shown in Table 1.2.

TABLE 1.2: UN Sustainable Development Goals identified as relevant to supply chains by the International Labour Organisation

GOAL	TARGET
 8 DECENT WORK AND ECONOMIC GROWTH	8.a Increase Aid for Trade support for developing countries, particularly Least Developed Countries (LDCs), including through the Enhanced Integrated Framework for LDCs.
 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	9.3 Increase the access of small-scale industrial and other enterprises, particularly in developing countries, to financial services including affordable credit and their integration into value chains and markets. 9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending. 9.b Support domestic technology development, research and innovation in developing countries including by ensuring a conducive policy environment for inter alia industrial diversification and value addition to commodities.
 16 PEACE, JUSTICE AND STRONG INSTITUTIONS	16.3 Promote the rule of law at the national and international levels, and ensure equal access to justice for all.
 17 PARTNERSHIPS FOR THE GOALS	17.11 Increase significantly the exports of developing countries, in particular with a view to doubling the LDC share of global exports by 2020.

Source: ILO (n.d. b)

The MIT Center for Transportation and Logistics undertakes an annual survey to determine the extent of supply chain sustainability. In its 2021 survey, it reported that 83% of the executives interviewed said that the pandemic had accelerated their supply chain sustainability activities. Nonetheless, it cautions: 'that the momentum appears to come primarily from large (1,000 – 10,000 employees) and very large (10,000+ employees) companies. Small- and medium-sized companies were more likely to pull back, with more enterprises in this category indicating they were not engaged before the pandemic and even less so during the crisis likely due to strained financial resources' (Bateman et al. 2021).

1.4 ISO 20400:2017 Sustainable procurement

To further the holistic sustainability agenda, ISO 20400, which was published in 2017, provides a non-certifiable standard for sustainable procurement. It provides 'guidance to organizations, independent of their activity or size, on integrating sustainability within procurement' (ISO 2017). The standard provides guidance in three areas:

- integrating sustainability into the organisation's procurement policy and strategy
- organising the procurement function towards sustainability
- integrating sustainability into the procurement process.

As it is not a certifiable standard it is not possible to undertake certifications against it. It is, however, possible to use it as the basis for assessments, and the UK construction company Balfour Beatty is the first to undertake such an assessment (Action Sustainability 2021).

Such a standard can provide the basis for an informed conversation, especially to enable entities from different locations or sectors to have a common understanding of what is included in a sustainable procurement agenda.

1.5 Organisational structures

The importance of closer collaboration between functions across entities has been one of the lessons of the pandemic. Traditional operating models have been challenged and problems solved by greater degrees of cooperation and collaboration. This is especially the case for the decisions that entities have needed to take across their supply chains and appreciating the financial impact of these. As planning and budgeting cycles were challenged, so entities focused on shorter planning horizons.

This brings to the fore a desire for collaboration across teams. In smaller entities, the chief financial officer (CFO) often has board responsibility for supply chain issues.

One chief procurement officer expressed the view that: 'it's fundamental that operations' procurement functions and finance actually have to come together to make it work, because otherwise you probably missed some really important parts in that supply chain'.

The current challenges in supply chains, arising not only from logistics disruption, but also because supply chains are fundamental to enabling organisations to address climate-related challenges, necessitate an increased awareness at board level. ACCA and IMA have commented on the expanding role of the CFO in their report *The CFO of the Future* (ACCA / IMA 2020), which highlights this accountability as a key dimension.

THE IMPORTANCE OF CLOSER COLLABORATION BETWEEN FUNCTIONS ACROSS ENTITIES HAS BEEN ONE OF THE LESSONS OF THE PANDEMIC. TRADITIONAL OPERATING MODELS HAVE BEEN CHALLENGED AND PROBLEMS SOLVED BY GREATER DEGREES OF COOPERATION AND COLLABORATION.



So, what should the finance professional do?

- CFOs need to appreciate how their role links to, or encompasses, the supply chain agenda.
- Identify the true costs of supply and focus on appropriate measures of product and / or customer profitability.
- Understand the implications of the UN SDGs for supply chains and for finance.
- Identify and collect the data necessary to support non-financial disclosure requirements across tiers in supply chains.
- Understand how guidance such as ISO 20400 can be used to improve supplier engagement.

PROCUREMENT SUPPORTS THE SUSTAINABILITY GOALS OF THE ORGANISATION AND OPTIMISES THE ENVIRONMENTAL, SOCIAL AND ECONOMIC IMPACTS OVER THE LIFE CYCLE OF PRODUCTS AND SERVICES.

2. Finance functions and supply chains

'IN THE CURRENT COMPLEX ENVIRONMENT OF GLOBAL PANDEMIC COMBINED WITH CHANGE IN DOMESTIC AND INTERNATIONAL POLICIES, ECONOMY, AND TECHNOLOGY, [THE] FINANCE AND SUPPLY CHAIN TEAM[S] SHOULD WORK TOGETHER TO COPE WITH CHANGES'.

A SENIOR FINANCE MANAGER, BASED IN MAINLAND CHINA

2.1 Breadth of collaboration

There are several areas where finance and supply chain teams can benefit from working together (Figure 2.1). These focus around a strong business partnering relationship.

FIGURE 2.1: Areas of collaboration



Several of these areas have already been explored in this report, but more are considered in the following sections.

2.2 Role of finance and the finance business partner

Finance functions are changing. As explored in a series of reports by ACCA and PricewaterhouseCoopers (PwC), the role of the finance function is becoming more insight driven (ACCA / PwC 2020), using data from across the organisation to support decision making. One of the key tenets of the function is to be more collaborative across the entity, reflecting the fact that increasingly finance teams are looking to both financial and non-financial performance measures. This trend has been heightened by the pandemic (ACCA / PwC 2021) where finance teams have taken a more proactive role in forecasting and modelling to enable entities to chart an effective course.

The role of the finance business partner is fundamental in a successful relationship between supply chains and finance functions. One interviewee, a supply chain director, commented that: 'my finance business partner works extraordinarily close[ly] with me. She challenges me, but she works really close[ly] with me. We identify financial risks really early. She will then have the conversation with [for example] Treasury to help me work through some of those challenges'. The interviewee continued that their finance business partner sits on the supply chain leadership team so that the interviewee can provide advice and ensure that actions are taken in finance where needed.

A mainland China roundtable participant expressed the view that: 'supply chain and finance are the core functions of business. [Finding] how to break through the barriers of the two functions is crucial for the company to achieve core competitiveness. Supply chain innovation has two directions: technological innovation and financial innovation. Technological innovation makes supply chain management more robust, while financial innovation adds leverage to supply chain management'.

A CFO from Singapore commented: 'to me the finance team in the past used to be more [in] a supporting role. But now, if we are going to be the real business partner, there is so much to do, such as asking the right questions. Have we looked at alternative sources, is the just-in-time model that we are operating on still valid? What are the costs? What are the compliance issues? What are the issues facing the counterparty and is there something that you can do to assist? There is much that finance can do by getting involved'.

In 2017 IMA conducted a survey of supply chain professionals and their perceptions of finance (Lawson 2017). At that time, the respondents were predominantly neutral in their perception of finance (Figure 2.2).

Many of the roundtable participants reflected upon the current macro-economic situation and the likelihood, or otherwise, of more inflationary times ahead. One commented that in troubled times, 'there is a dash to thinking that reduction in cost is easier. Basically, that is what is going to help the business. However, there's probably more scope now with the way things have happened to look more about value in the supply chain rather than just costs'.

Another roundtable participant commented that: 'when it was efficient and not drawing on working capital, finance really was not terribly bothered about [the] supply chain and let them do their own thing. Now, given the issues and [concepts such as] nearshoring (see section 3.5) and putting some risk management into it, [there is a] requirement, possibly in most companies, to put some working capital back into the supply chain and that might be margin effect. This is where it will start coming from and the finance needing to understand'.

A CFO based in Singapore reflected upon the integration of supply chain and financial data, and how it had helped with planning and financing during the pandemic: 'we are now on a rolling monthly forecast plan where we revisit every single number for 12 months for planning. We brought supplier financial data onto our platform, and we shared it with the banks. We managed to get the bank funding, based upon the financials, to support us through this period, so that we are able to sustain the business without running out of cash'.

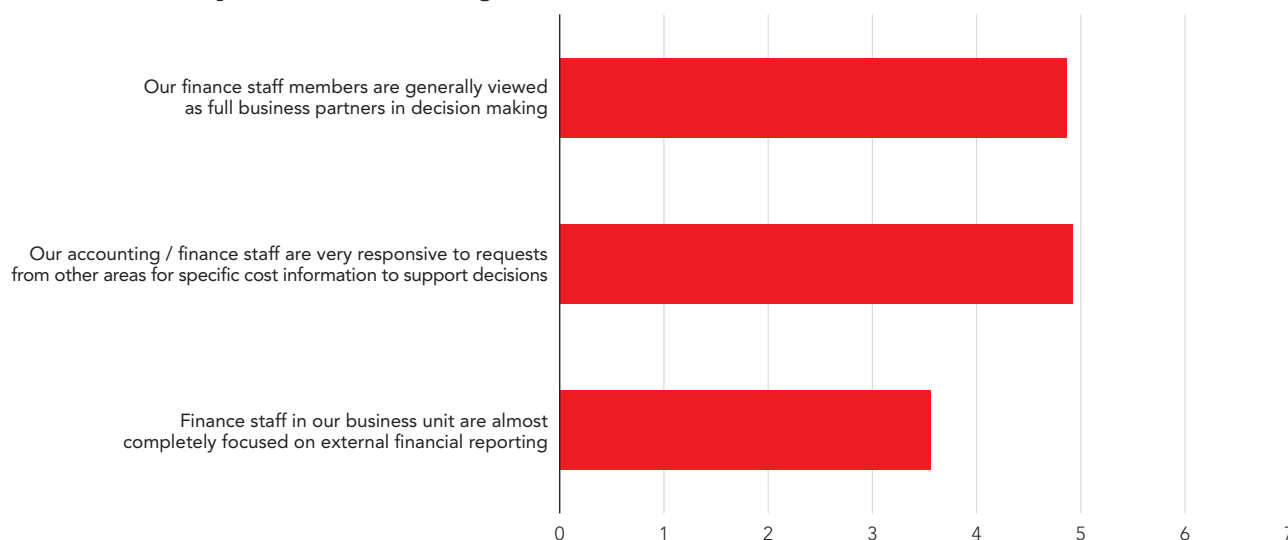
The finance business partner, especially those working with supply chains, needs to be fully conversant with the current risks and opportunities but also to be innovative in considering how to manage issues. The challenge will be to think of new solutions, as the problem is often not falling demand but a scarcity of resources, especially human capital, and this will define the coming few years.

2.3 Understanding the business model

The assessment of one Australian roundtable participant was: 'there is a lot of room for improvement [in] the communication [between] the two groups'. One of the first fundamentals is to ensure that finance professionals fully understand the business model. The fourth Industrial Revolution and the impact of the pandemic are changing the way that entities operate. The need to adapt quickly to changing circumstances is becoming paramount if entities wish to survive. Only by understanding the business model and the supply chains can the finance professional be an effective contributor.

An African interviewee highlighted her experiences in one of her first roles in business, as an example of this. For them: 'understanding what it means from a sort

FIGURE 2.2: Perception of the accounting and finance function



Source: Lawson 2017. Note: 1 – strongly disagree; 4 – neither agree nor disagree; 7 – strongly agree

of supply–demand perspective is essential for finance professionals'. They had found that the engineers in the entity in which she was working were holding excess stores of spare parts as they had had experiences of not being able to secure replacement parts immediately. This had led the engineers to order two replacement items and holding secret stores, and some of these parts might, on average, not be needed for five years. The interviewee needed to explain to the engineers the balance sheet and profit and loss implications of this, 'so by actually going around the business, understanding what was going on inside [and] speaking to these people who work on the shop floor to understand what they were doing I could help them appreciate that we were actually spending a lot unnecessarily'.

A mainland China roundtable participant explained that: 'as an important part of the supply chain, finance creates value for the supply chain by solving problems and promoting operation[al] efficiency. Quality, cost, delivery, service, technology, assets and people [QCDSTAP] are used to manage [the] supply chain from the macro and micro perspective. Given the uncertainties amid new trade regulations, energy restrictions, pandemics, and other situations, enterprises need to pay close attention to the external environment, adjust in time and enhance their ability to cope with uncertainty. Pursuing only short-term interests will damage the health of [the] supply chain'.

2.4 Product profitability

Product profitability is a key area of collaboration between finance and supply chain teams. The pandemic has seen changes in the ways in which consumers place orders for goods, with an increased emphasis on online ordering. Small customers can be expensive to serve and

have expectations of rapid delivery times. According to estimates by the World Economic Forum published in January 2020, 'last-mile delivery accounts for 53% of the total cost of shipping – and 41% of total supply chain costs' (Deloison et al. 2020). They further estimate that without intervention there will be a 32% increase in carbon emissions in urban areas globally by 2030. It should be noted that these estimates do not take into account the rise in online ordering that has resulted from the pandemic. This raises questions about the profitability of products and whether entities really understand the actual costs, especially in the light of the ethical supply chain issues suggested by the analysis referred to above (see also section 4.5).

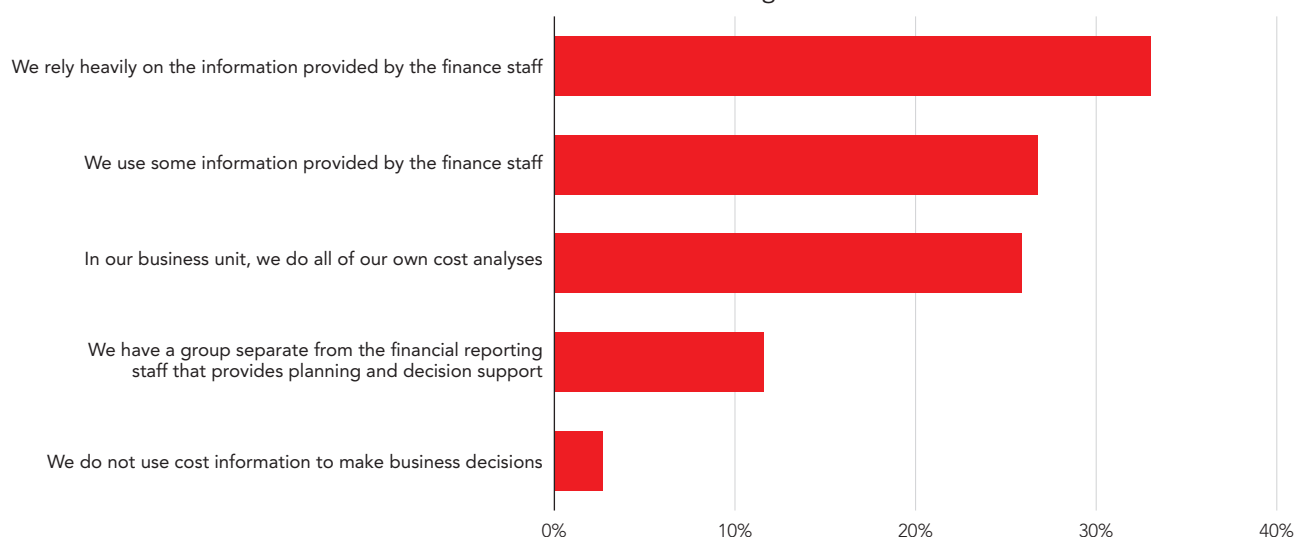
A virtual CFO based in Australia reflected that: 'the whole pressure of the price of getting goods is impacting [not only] our own costings, but also what we do in terms of passing that on to consumers. And the pricing of the pressure on working capital is huge'.

A 2017 survey conducted by IMA makes clear that supply chain team members see finance teams as a key source of costing information (Lawson 2017). As shown in Figure 2.3, approximately one-third of the respondents considered that they were reliant upon information provided by finance staff while just over one-quarter used some finance information.

Lawson's research indicated that there was a need for improved costing practices. He identified the following causes of this issue:

- an overreliance on external reporting systems
- use of outdated costing models
- accounting and finance's resistance to change.

FIGURE 2.3: Sources of Information for business decision making



Source: Lawson 2017

Cost-to-Serve

Finance professionals have, for a long time, worked to understand the profitability of products, services and customers to enable entities to understand which they should prioritise. Cost allocation methodologies have long been debated and, while there is no perfect attribution, this area plays an important contribution. Finance teams tend to provide reports that show allocated costs against product lines. Professor Richard Wilding OBE, Professor of Supply Chain Strategy at Cranfield School of Management, interviewed for this research, commented: 'if [finance and supply chain teams] use different lenses to really understand what's going on it will be challenging. As a supply chain manager, I need information basically being presented in a very different format now'. He argued that there is a need for data that not only has a greater level of granularity, but that also represents the true cost of the provision of the product or service. He continued that, from his perspective, what the supply chain leader needs is: 'information which is 80% correct, we need to avoid the paralysis of analysis. So, it needs to be like a quick and dirty process, which everybody in the in the business agrees with'.

The challenge of allocation can be considered by using the 'Cost-to-Serve'⁴ approach, which analyses the costs in a supply chain and shows how each product and customer combination involves a different series of activities and as a result has a different cost and profitability profile. Unlike Activity Based Costing, Cost-to-Serve⁵ is not resource-intensive and focuses on aggregate analyses of a blend of cost drivers. The approach gives an integrated view of costs at each stage of the supply chain, providing a fact-based view to see through the complexity of multiple supply chains and channels to market. It enables a focus on both long-term decisions and the prioritisation of short-term actions. Professor Seifert comments that 'Cost-to-Serve is one of those supply chain ideas that is so intuitive and the benefits so clear, yet in speaking to supply chain executives we have seen that in fact it is rarely applied in a sustainable, repeatable way' (Seifert 2018). There is a need for finance teams to support such approaches and to provide relevant data to make comparisons feasible. In an increasingly online consumer experience Cost-to-Serve is not only about the cost of shipment, but also the costs of managing the returns, as explored in Eccles 2022.

There are variants in the approach to the calculation of the Cost-to-Serve, not least for allocation methods. The overall approach is to identify the relevant costs related to serving a customer. These may include the following categories:

- order management overheads
- customer service overheads
- factory planning overheads
- materials planning overheads
- cost of goods sold and carrying costs, including workforce costs
- sourcing and procurement overheads
- transportation, warehouse and delivery costs
- product returns and repair
- cost of quality management.

Each of the overheads is apportioned across the product volumes. This can be a complex process and as a result several software packages have been developed that integrate with enterprise resource planning (ERP) solutions that can perform the calculation.

2.5 Payment terms

At a time where liquidity is a key focus of entities, a closer collaboration between the respective teams is advantageous.

One interviewee, a CFO in a global logistics entity, summed up his experience by saying that CFOs need to act in a different way. They need to recognise that lower-margin products will not survive, and it is important to understand the relationship between the customer and the recoverability of the accounts receivable. They had instructed their entity's accounts receivable team to focus on collection of debts but not to allocate them; liquidity was more important than individual allocations.

Another interviewee commented that in their experience the supply chain teams took payment terms as fixed. Instead, compared with other uses of funds, there could be benefits in paying earlier, such as strengthening the relationship between the suppliers and the entity.

Having an informed conversation can be beneficial.

2.6 Acquisition or disposals of entities

A supply chain executive interviewed commented that one often-forgotten area of collaboration between the two teams was the due diligence process in the acquisition or disposal of entities. They noted that '[finance teams] tend to perform it in isolation and what you find when you finish the transaction is that due diligence done at this high level has not really looked at the stuff that really matters operationally or day-to-day'. They continued that

⁴ 'Cost-to-Serve' is trademark of LCP Consulting Limited, now part of BearingPoint.

⁵ An explanation of how to calculate 'Cost-to-Serve' can be found in Easy Metrics 2021.

from their perspective it was important in this process to: 'know what contracts you have. It is possible that finance teams sign deals that mean that we've automatically got a contractual dispute going on because it may conflict with clauses with other suppliers. When you merge the company, you've got two contracts that are in dispute of each other'.

This is not just a story about an entity acquiring and disposing of operations. One supply chain leader participating in a roundtable commented that: 'a supply chain director gave an example of how he went to his board a couple of months ago and he saw one particular supplier being acquired by another one. He said what is going to happen is that markets [are] going to consolidate and our cost prices in this category are going up in three years' time. Based upon that the board agreed and they said, [do you] know if we can redesign [the] process to take that category out? It is a really good example of a very proactive director using...foresight'.

The nature of the supply network should never be assumed to be static and the implications of strategic advantage via consolidation, as seen in Industry 4.0, should not be ignored. Finance professionals need to have a dialogue with their colleagues to consider these risks and how they affect strategic and detailed planning models.

2.7 Advising smaller entities

Smaller entities have distinct challenges in supply chains. As they often lack finance functions with the necessary breadth and depth of expertise, their external advisers can fill some of that void. One such external adviser rang a warning bell from experience: 'I have had to spend quite a lot of time explaining to others what "supply chain" means. They do not really understand, so I think it really needs to come down to...what it means, so they understand...the challenges they are going to be faced with or have been faced with already'. The adviser continued, 'it is that people don't really understand the whole impact, the cycle, they just know where they buy their stuff from and...they don't understand where it originally came from'.

Yet in every supply chain there is a constituency of smaller entities. The level of understanding of the issues that they face, and how the developments in other parts of the supply chain affects them must be a cause for concern.

With the growing emphasis on larger companies' understanding of their tier 2 and tier 3 suppliers, there is a growing problem of requiring voluminous disclosures to different standards by entities that lack the resources to formulate or implement the necessary policies.⁶

2.8 Finance and logistics 4.0

Industry 4.0 (see section 1.2 and Figure 1.2) is changing many processes in entities. The digital nature of the interactions between the various parties in the chains and networks is increasingly facilitating transparency at many levels of the process. Applying the techniques of Industry 4.0 can lead to efficiencies in processes and hence cost reductions. The use of smart contracts, which will be discussed in section 4.4, is one example of this trend, as is the use of blockchain more generally.

The adoption of Industry 4.0 leads to opportunities to optimise the working capital requirements by using techniques such as supply chain financing. For some time, factoring has been used by entities to manage their debt burden. The use of supply chain finance is a more recent evolution of this. While factoring, or invoice finance, is used to discount the accounts receivable portfolio to achieve a more rapid payment, supply chain finance also brings into consideration the use of the credit ratings of the organisations in the supply chain into consideration. Supply chain finance works like this:

- the supplier issues an invoice to a customer
- the buyer notifies the lender that the invoice has been approved for payment
- the supplier immediately receives the money, less the lender's small fee
- when payment is due, the buyer pays the lender.

This transactional flow has advantages because the supplier receives the funds almost immediately, while the buyer takes full payment terms without upsetting the supplier.

YET IN EVERY SUPPLY CHAIN THERE IS A CONSTITUENCY OF SMALLER ENTITIES. THE LEVEL OF UNDERSTANDING OF THE ISSUES THAT THEY FACE, AND HOW THE DEVELOPMENTS IN OTHER PARTS OF THE SUPPLY CHAIN AFFECTS THEM MUST BE A CAUSE FOR CONCERN.

⁶ This is discussed in ACCA / International Chamber of Commerce / Sage 2021.

In Industry 4.0 digital interactions give greater visibility across the supply chain, so the overall working capital requirements can be reduced.

In 2016, Kesheng Wang defined the evolution pathway to Logistics 4.0 as shown in Figure 2.4.

There are clearly opportunities for finance and supply chain teams to use the data available to them, and to use the technological developments available to access different forms of finance and reduce working capital constraints on their entities.

2.9 Treasury management and supply chains

Historically, there has been limited engagement between treasury functions and supply chain teams. The overall financing of the cash position was regarded as a strategic operation while the collection and payment processes were part of the finance function. With the increased globalisation of treasury functions in large corporates, the ability to manage the cash and liquidity on a more holistic and timelier basis offered more opportunities for engagement. The advent of Logistics 4.0, with an increased capability for the capture of real time data and the use of more predictive analytics (as discussed

in section 4.2), permits a greater clarity on positions and allows the treasury team to take a more active role in managing cash positions in the light of expected funding requirements.

A mainland China roundtable participant commented that: 'cash is vital in supply chain management. The finance team can use foreign exchange hedging tools and trade financing to mitigate the fund risks associated with international trade in the supply chain'.

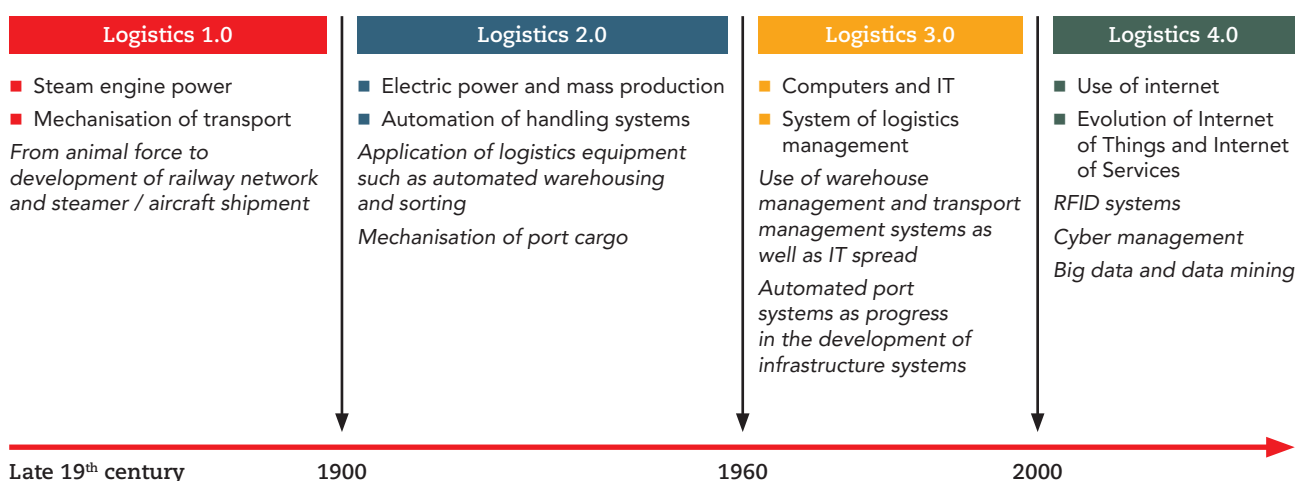
2.10 Opportunities for collaboration

The similarity to the mission of the supply chain teams is clear: to have one integrated view of the organisation based upon a common set of data.

A director from Singapore commented: 'based on my observation and my sort of communication with peers generally there is a lot of room for improvement [in] the communication [between] the two groups, namely the supply chain group, and the finance group, because historically the relationship is very functional'.

Yet, the events of mid-2021 have caused further disruption to entities and their supply chains: disruption that may yet have a course to run.

FIGURE 2.4: Evolution to Logistics 4.0



Source: Wang 2016



So, what should the finance professional do?

- Ensure that the finance business partner plays an effective role in supporting the activities of the supply chain team, including participating in leadership meetings where appropriate.
- Understand the business model and how supply chain objectives are relevant to the activities of finance.
- Ensure that finance and supply chain teams are connected and collaborative and each appreciates the language of the other.
- Explore how data can be used to the advantage of the entity and allow the more effective management of working capital and treasury.
- Ensure that data is organised and available to support techniques such as predictive analytics and scenario modelling.
- Fully involve both teams in planning and forecasting activities.
- Collaborate on strategic initiatives that develop the business model.



3. Disrupted supply chains

'JUST THINK THROUGH...HOW YOU STORE THE INVENTORY, THE SYSTEMS, HOW YOU SHIP IT, THE PEOPLE, THE TRUCKS. IT IS JUST THE MULTIPLIER EFFECT IS REALLY HUGE THAT COVID HAS HAD'.

SUPPLY CHAIN FINANCE LEAD BASED IN NORTH AMERICA

3.1 Disruption is a fact of life

Disruptions in supply chains have always occurred. While it may be possible to see the coverage of the disruptions of 2021 as unique, they are just another set of events that have challenged the operation of supply chains. The ash cloud from the Eyjafjallajökull, Iceland eruption in 2010 disrupted air freight for several months. What we are seeing is a combination of disruptions, perhaps with increasing frequency. One interviewee expressed the view that the situation that the world experienced in mid-2021 was a 'perfect storm' of factors that had been building over a period. A CFO commented that: 'it is not just the pandemic and Brexit, but there's been a perfect storm, I think, of things from factors such as cyberattacks, [and] the tanker that got stuck in the Suez Canal that held up things for weeks. So, if there are many things that hit in the last 18 months or so, they have disrupted global supply chains and effectively...really brought this home...I think it elevates the continuity planning aspect of supply chain management'. Another CFO, this time from the Caribbean, commented: 'So where I could say a transit time used to take a month, now that transit time is taking me seven months. So, [there] is a risk of not having that chemical to put into my product'.

Another CFO in the Caribbean related this disruption to its financial impact, 'you have to factor in an extra cost of the cost of the commodity that you're importing...So that means that you need more cash if you want if you plan to for a loss of stock or loss of product that comes in'.

Each disruption will lead entities to review the lessons that can be gathered from the disruption. The challenge is that it is impossible to foresee the next disruption. This leads entities to consider how they manage their supply chain risks and establish resilience (as discussed in Chapter 5). As consumers, are we tolerant of the impacts of these disruptions?

Whilst the pandemic has seen changes in and challenges to the ways in which we live, the majority of the supply

chains for fundamental items have continued to operate effectively. Before rushing to focus on the inevitable disruptions, it is important to reflect upon what has worked as normal.⁷

The nature of the recovery from the pandemic is proving to be variable. The world continues to experience random flare-ups with consequential government actions. This in turn disrupts supply chain systems, with closures, or reductions in capacity, in factories, ports or within logistics operations. A sense of certainty has been replaced by one of uncertainty and contingency.

A CFO working in the food industry noted that nitrogen, one of the key raw materials, had increased in cost by 90% in the year, commenting on the nature of forecasting in this scenario and that as soon as a forecast was prepared and submitted it was out of date. 'We get another email from a supplier and then another one'. The impact was that the budget was 'probably about 50 – 60% likely [to be accurate] at this stage, because [there is so much] that we don't know...This year, for example, cardboard as a raw material has increased four to five times [in price] ...and there is no guarantee that our suppliers will not come back in a few months' time saying "bye, bye"'.

3.2 Causes of disruption

There are many causes of disruption. The overall picture is that there is increased disruption from climate-related events, such as extreme weather (including climatic events in the West Coast of North America or in Texas, the latter shutting down semiconductor production there) but it is issues such as factory fires (in part due to compromised standards during the pandemic) and both labour and supply shortages that stand out among the data. Port disruption, such as that in mainland China, the east and west coasts of the US and, perhaps to a lesser extent, within Europe, has led to delays in the shipment of goods.

There is a strong human element in the supply chain disruption. Supply chains are a human business, from

⁷ A review of the effectiveness of supply chains during the pandemic can be found in Sheffi 2020.

creating the good or service to its shipment, its storage and its delivery; despite levels of automation in each step, there is still significant human intervention. The 'great retirement', as it has been termed, has seen significant changes in the workforce in some locations and hence has damaged supply chains. One CFO commented: 'the workforce is finally saying "what you are asking me to do for the money [is too much]; I am not prepared to sell my labour for that cost. And what is more, you just made all the admin really difficult. You made my life a burden, an affliction". And [given] the amount of regulation [such as] Brexit in the UK and the worker is certainly not happy. What you end up with...in these very just-in-time supply chains is logjams all over the world'.

3.3 Container disruption

The starkest reflection of the level of global supply chain disruption can be measured through the Global Container Freight Rate⁸ Index (Figure 3.1). While there has been some easing of freight rates, indices such as the Shanghai Containerized Freight Index (as calculated by the Shanghai Shipping Exchange⁹) showed a level of 5046.66 as of 31 December 2021 compared with just over 1,000 at the start of 2020.

Global container demand has increased by 5.5% compared with the same period in 2019 (data from CTS as quoted by Chambers (2021)), while the median time

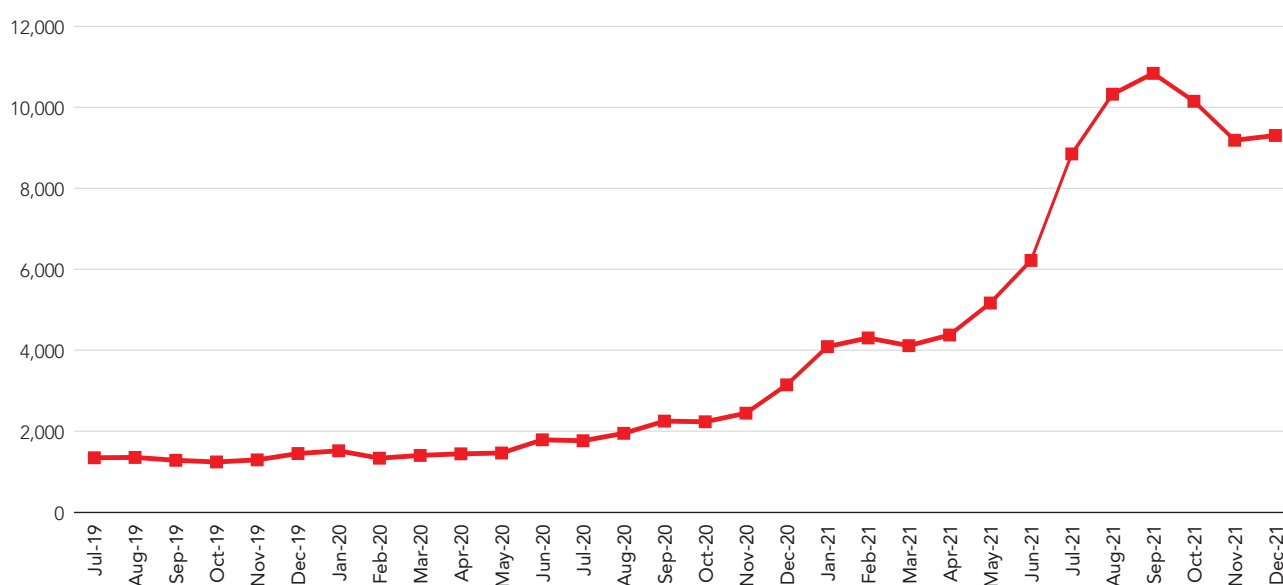
spent in port was 11% greater when comparing the same numbers (Chambers 2021). There has not been a significant increase in the overall volume of shipments, but port congestion caused by delays in being able to ship goods onwards from ports and COVID restrictions have led to increased 'dwell' times at key ports, further slowing down the shipment rates.

A CFO in the Caribbean commented: 'I think what most businesses have learned in 2020 is that we were hoping that shipping rates would decrease every month and they never did and instead went the other way and started increasing. To make matters worse, vessels were not available. Some goods that are manufactured with short shelf lives were lost. So, some of the factories were not operating as they should'.

A CFO in North America commented that the delays in shipping also translated into increased inventory holdings. He noted, 'we have to pay premiums to secure space to take care of the logistic side of the issues'.

A supply chain expert commented that the issues in ports were a combination of circumstances: 'you have got ports [that] are only operating in many cases at half capacity and you are trying to ship product from China into Europe. You are probably taking two or three pit stops on the way and you have to lay in each sector one as a knock-on impacts'.

FIGURE 3.1: Global Container Freight Rate Index (USD)



Source: <https://www.statista.com/statistics/1250636/global-container-freight-index/> accessed 8 November 2021 and updated from Drewry 23 December 2021.

⁸ The Global Container Freight Rate is calculated by Drewry (www.drewry.co.uk) and the latest index can be found on their website.

⁹ The latest figures for the Index can be obtained at www.en.sse.net.cn

There has been a change in consumer demand, with a shift from services to products in consumer expenditure. This depressed service expenditure due to pandemic lockdowns has led to increased consumer savings and to changes in demand for products. Hence there has been an increase in the demand side of the economy for goods, with delays in the supply of those goods.

A South East Asian CFO working in the fast-moving consumer goods (FMCG) industry commented: 'the surge in e-commerce during the pandemic has shifted much of the market share to the online stores and has significantly shifted the fulfilment angle from the business-to-business [model used] before, which is very cost effective and [has] economies of scale, to a B2C [business to consumer] set-up...therefore there are a lot of costs that we are incurring in the process because the people who used to pick and pack 20 items before in just one activity are now pick and packing one or two items for a certain order because of the shift to e-commerce'.

3.4 Trade tariffs and sanctions

While the pandemic may have exacerbated the manifestation of the disruptions, during 2019 there were changes in the tariff arrangements for various goods between some locations. The focus of the entity's leadership was now supply-chain issues. The complex nature of the world's trading system and demands for the protection of domestic production capabilities have aligned with the political trends of the time. While there has been some progress in addressing some of the barriers that were created, some of these tensions have yet to be fully resolved. A roundtable participant commented: 'Supply chain management is increasingly become an instrument of public policy by governments and those who are impacted have a very large amount of procurement and have a huge supply chain challenge'.

Governments are considering where strategic goods should be manufactured. The world economy, for example, has relied upon the manufacture of semiconductors from a few Asian economies. As an example, as the world becomes increasingly connected and as consumer behaviour changes as a result of the pandemic, so the demand for semiconductors has increased. Car production, as an example, has been slowed. The cost of a microcontroller chip rose from USD0.20 to USD1.00 during 2020 (Ting-Fang 2021) with further increases expected in 2022.

One example of the political and trade impact on supply chains is given by Malcolm Wheatley, writing in the online magazine *Board Agenda*. He comments that: 'Brexit – and

also the COVID-19 pandemic – have prompted businesses to review their sourcing decisions. Prior to Brexit taking place, much of the talk was of hold-ups to trucks at Dover. Now, with actual experience of being outside the European Union (EU), businesses are realising that exports too can be subject to lengthy delays, sometimes of weeks. The costs of the various certificates that exports may now require has also made smaller export shipments uneconomic. Again, in response, supply chains are changing, with factories and warehouses positioned inside the EU being considered as an option' (Wheatley 2021). A CEO of a small business in the UK confirmed this from their practical experience.

Clearly, tariffs imposed have financial impacts and decisions must be made about whether the levels of tariffs can be passed onto the customer or whether margins are squeezed. Nonetheless, this is part of a broader discussion on other issues, such as workforce conditions and sustainability considerations.

3.5 Impact of the disruption

In many cases, supply chains have been resilient during the pandemic. As consumers, we have changed habits, but in context there were few shortages, especially for those who were willing to accept substitutes. Many of the shortages were caused by human reactions to situations, the so-called 'bull whip' effect, which in turn leads to a shortage of the right goods in the right place and emphasises the important role of logistics.

A roundtable participant from the Caribbean underlined the importance of global supply chains for economies such as those in CARICOM.¹⁰ He noted how critical are supply chains. His raw materials have to be sourced from outside and in some cases as far away as the Middle East and Asia. 'Without a shadow of a doubt, [the] supply chain is very important for the local manufacturers' key risks. One of the main risks is that we [are] very much dependent on externalities or external factors', continued to explain that, for the developing nations, businesses, particularly smaller ones, are price takers in this system. The prices have been forced upon them by customers in larger countries who could afford to squeeze the producers' margins. This has left little room to absorb cost increases and this has made supply chains increasingly fragile.

Another roundtable participant, from West Africa, commented that one of the pandemic challenges seen in supply chains was the access to foreign exchange. If the goods were not being exported, the hard currency was not returning, and hence paying dollar-denominated bills was increasingly challenging.

10 The Caribbean Community (CARICOM) is a grouping of 20 countries: 15 Member States and 5 Associate Members, <<https://caricom.org/>>.

Just-in-time?

Before the pandemic the accepted norm was the just-in-time supply chain model, also known as TPS (the Toyota Production System). This works on minimum inventory and assumes a free flow of unencumbered goods. Entities typically work with cycle stocks (normal inventories) and buffer stocks (contingencies). This results in being able to respond to challenges as it ties the business and its suppliers together so that the business can respond much faster. Low inventories typically encourage high quality as the need to focus on realising all the available product is paramount. From a financial perspective, increased inventory leads to a greater draw on working capital but can result in lower-quality goods as more is produced at the expense of a focus upon quality.

This model is being challenged because the certainty of supply times is being questioned. Entities are looking to create a more 'just-in-case' model where sufficient inventory for critical items is maintained, accepting the unpredictability of the supply chain at present. In his book, *The New (Ab)Normal*, Yossi Sheffi, professor of engineering systems at the Massachusetts Institute of Technology and a director of the Center for Transportation & Logistics, considers that: 'the essence of the [future] strategy is to continue all aspects of [just-in-time] while maintaining sufficient inventories of finished goods and parts. The secret is first to ensure that the inventory keeps turning and therefore remains fresh and current, and second, that the inventory cannot be used to cover for ordinary production and supply chain failures by requiring authorization for use' (Sheffi 2020).

Whether this is a longer-term position was debated by many of those who participated in the roundtables. Some argued that it was more transitory while others saw fundamental shifts starting to occur. Time will tell, but the need to challenge previous assumptions and improve risk management is a lesson that has been learnt by many (and is further discussed in Chapter 5).

Reshoring or nearshoring?

The vulnerabilities in the global supply chain systems have led to questions about the overall strategy that assumes advantages in the production of many consumer items in the lower-cost economies of East Asia. The concept of 'reshoring', that is, bringing production closer to the customer and reducing dependency on long shipping lines is gaining ground.

Reshoring is a challenge, as it depends on what you can reshore. Not all items can be reshored and there is a question of whether the consumer is willing to pay for the changes in the supply chains that will result. Lacroix comments, 'Experts at the Boston Consulting Group have calculated that the total production costs of a standard

Chinese factory are now almost equivalent to those of its Polish counterpart. Major groups are now thinking in terms of geographical zones, seeking regional low cost within each of these. Re-regionalization movements, therefore, the multiplication of customs disputes, increased transport costs linked to the consideration of the price of carbon and, above all, satisfying the desire of buyers to "consume locally" may force many companies to readjust their score' (Lacroix 2020). Clearly, this is a key question for many organisations. Those in more regulated industries may have different views or requirements to those in regulated ones, for example.

A CFO based in mainland China discussed the reshoring debate in this way. 'The answer is [a] combination of both. Just rewind a little bit before COVID. Most of the companies were talking about globalisation [by] saying that "this country is actually meant for manufacturing, and that country will focus on something else". Globalisation is realistic because of technology availability and so on. Right, now, what happens subsequently when COVID hit first then [we saw] all the protectionism that each country is trying to [impose]? It has derailed from globalisation. Right now, everyone is saying that everyone had to reprioritise. Which country will maybe have to make [this]? What are the things that they need to have in each country? Will this work?'

A supply chain expert commented that: 'I think [about] one or two examples where an entity used to produce everything in China. Now they are putting some production into Portugal for that reason, to give a bit more security of supply. There [are] a whole lot of factors around. It is not just [the] pandemic: it is about increased supply chain flexibility. For example, if we were having a conversation 5 to 10 years ago...you might have a lot of companies with just one supplier. That one supplier tried to minimise inventory. I think what's happening now is they're looking at nearshoring roles [and] at more flexibility in supply'.

The reshoring debate is also a technology debate. As the flow of data is becoming ever more essential across supply chains, so the importance of a technology infrastructure at the country level as well as the entity level becomes important. One CFO interviewed commented that in some quarters there was a discussion as to whether the experience of mainland China in the 1990s and 2000s as the powerhouse of production could be replicated in Africa, for example, as the next low-cost zone. In any discussion, it is important to recognise that replicating infrastructure, both physical and digital, would be hard to achieve. That may mean that entities adopt a 'China +1' strategy with more diversification of supply. An alternative to this is 'late customisation' where entities complete the mass production part of the cycle in a low-cost economy and finish the goods nearer to the consumer.

Nearshoring suggests, for example, moving from suppliers in the East Asian economies to suppliers located in Eastern Europe, North Africa or Turkey. While this may not carry as much risk as reshoring, it does mean that some of the risks associated with long distances in supply chains can be mitigated.

For finance professionals, interacting with their supply chain colleagues, these are interesting discussions as they change the core assumptions of many business models. Forward planning into the next decade is becoming essential from a climate perspective, yet the nature of the uncertainties means that many scenarios will be developed in the coming years. Finance professionals need to develop the skill sets not only of understanding how business models are changing and the opportunities that these changes create, but also the appreciation of the data flows necessary to model the entity. Forward planning, especially that involving climate-related assessments, involves modelling of many data variables which cannot readily be accommodated in spreadsheets. The assessment of probability and likelihood of certain outcomes within defined scenarios and the ability to communicate these is key.

One CFO commented that the low-cost economy had gone, and that finance and supply chain teams need to adapt to a new reality of inflationary costs, caused initially by fuel shortages but exacerbated by workforce constraints in the medium term. One supply chain lead commented, however, that they would, 'take 3% inflation over 10X container costs or 5X or whatever it is'.

The pandemic impact

The impact of the pandemic will continue to be with us for some time to come. The political and health imperative of keeping people safe remains an issue, with spikes in COVID-19 infections likely to continue. The response of

closing borders and imposing restrictions will continue to disrupt supply chains. As an example, EU states temporarily reimposed border controls to address local situations, in contrast to the open borders of the decades before. This in turn caused delays at border crossings.

Many of the interviewees and roundtable participants argued that things would 'return to normal' (that is, a pre-2020 normal) once vaccination rates had reached sufficient levels across the world. Although others challenged this.

3.6 An end in sight?

The reality is that a return to pre-2020 normality may well not occur. Disruptions will continue and, as they are not all pandemic related, the changes will mean that entities need to adapt to different operating models. Any assumption that a new reality will stabilise by 2023 seems optimistic. By then, the imperative to adapt business models to address ESG issues will have increased. There is probably yet more change to come.

A supply chain finance lead commented: 'that's what I am hearing, as well: that it is not going to go away anytime soon. I am hoping [that it will] by the end of 2022 [but] I am not hearing [this]. Too many people [are] talking about a trickling into 2023, but it is hard to predict the future and the biggest issue in the supply chain is people. You can think about the machines and the ships and everything, but people drive the trucks. People operate the cranes. People unload the ships...It is a big part of this ...I think ... that is not going to unwind anytime soon'.

In his book, Yossi Sheffi concludes, 'although COVID-19 may have exposed the fragile links lurking in the global economy, it has also accelerated a great many technologies and practices that will make the global economy more robust over time' (Sheffi 2020).



So, what should the finance professional do?

- Ensure that planning and forecasts reflect potential disruptive scenarios; use predictive analytics and machine learning where possible and relevant.
- Identify the impact of alternative strategies to address key business objectives and how these strategies may themselves be affected by potential disruptions.
- Model potential scenarios and support strategic decision making.
- Understand the impact on trade of border and tariff issues and how sudden changes can disrupt planned scenarios.

DISRUPTIONS WILL CONTINUE AND, AS THEY ARE NOT ALL PANDEMIC RELATED, THE CHANGES WILL MEAN THAT ENTITIES NEED TO ADAPT TO DIFFERENT OPERATING MODELS.



4. Supply chain trends

'I THINK THE ROLE FINANCE PLAYS...IS AT THE FRONT END OF THESE DECISIONS. IT IS NOT TALKING ABOUT THE ACCOUNTING AND HOW WE ACCOUNT FOR THESE THINGS BUT ARE WE MAKING THE RIGHT DECISIONS [THAT ARE] ALIGNED WITH [BOTH] SUSTAINABILITY AND PROFITABILITY OBJECTIVES? AND THAT IS PROBABLY NOT GOING TO BE AN EASY DECISION AT TIMES'.

NORTH AMERICAN CFO

4.1 The evolution of supply chains

There are three key drivers for the future of supply chains. Firstly, as discussed in the previous chapter, disruption will be a reality for some time to come. Entities need to focus on establishing supply chains that are resilient, not just cost effective. Secondly, as society increasingly focuses on the ESG agenda, so the ethical aspect of supply chains is going to become ever more relevant. Thirdly, digitalisation is facilitating the move away from transactional procurement to strategic. The data-driven society has arrived.

These are the trends to which entities need to respond to maintain the effectiveness of their supply chains. Each of these has an impact on the whole entity, including finance, and the close collaboration between the two functions will help entities maximise the benefit of such trends.

Collaborative sourcing

Collaborative sourcing offers entities another potential next step in the development of supply chains. Collaborative sourcing is a procurement method by which entities can engage with each other to enhance effectiveness and add value within the supply chain, with the common goal of achieving more through working collaboratively than if they had worked independently.

These are VUCA (vulnerable, uncertain, complex and ambiguous) times and there is a need to find effective solutions and opportunities to meet these challenges. Collaboration is a way of doing this through:

- enhancing the collective performance as measured by value (total cost)
- more effective risk management
- collective ownership for quality and timely delivery/execution
- a supportive environment for innovation
- a collective ethos that supports ethical, sustainable, and responsible business.

4.2 Importance of data

Data is a fundamental part of how entities operate. Ever-increasing amounts of data are being generated from the activities that we, as humans, undertake. Being able to use that data in meaningful ways is becoming essential to an entity's competitive advantage, for example, by analysing customer performance or product trends. Supply chains are no exceptions to this. Creating open, transparent data flows across supply chains and networks has become essential. This requires an investment in technologies at all levels of the supply chain to ensure that data flows in both directions as required.

With the increased use of data to create value and competitive advantage, the value of this intangible asset both to the entity and its competitors is also increasing. Protecting the data in appropriate ways is essential and cyber risks continue to be key risks for business leaders to address. As with many operational aspects of smaller entities, technology specialists may also report to the CFO at an executive level strengthening the interest of both finance and supply chain in the protection of data¹¹.

A Singapore CFO spoke on the B2C aspect of supply chains: 'if you look at the whole distribution channel, there could be 7 to 10 different stops, or entities:... the prime producer, the manufacturer, the aggregator, the distributor, the outlet and the consumer. If you look at that whole thing, it is still so analogue, everything is manual, it is still carbon based...whether that's actual paper being printed out, or our emails... And if we look at how we're going to make the biggest impact... that is actually [by] digitisation of the entire supply chain'. He continued, 'we are able to digitise that, we eliminate the double handling, we eliminate dirty data, which means higher quality of information that can be disseminated much quicker, which then...comes back to the sustainability of the supply chain, which means lower electricity bills, [fewer] carbon-based printouts, more efficiencies, so less need of delivery,

¹¹ Cyber risks and protection are discussed in ACCA / CA ANZ / Macquarie University 2019.

because then you can start to do route optimisation and have delivery and containers, [and] the ability to track every single data event, which means that IoT devices on shipping containers or RFID tags on packaging. This starts to eliminate all of that manual behaviour and non-value-added tasks, which then allows the finance team to be a lot more engaged in those softer skills, the communication, the negotiations, the relationship building, and alternative routes to delivery, alternative routes from suppliers’.

Supply chain analytics

As with any data, it is how it is used, analysed and interpreted that turns it from raw data into information. Supply chain analytics, as with financial analytics, is the use of the data collected to identify possible actions and then, once these are agreed, to monitor the outcome.

The importance of supply chain analytics was highlighted by a CFO contributing to a roundtable: ‘things like data or forecasting become essential in advance and you have to ...be on the ball in terms of things like seasonality and things like that. So, when it comes to our supply chain, we are having to think...at least six months in advance’.

The concept of analytics, in the context of the finance function, is discussed in ACCA / CA ANZ *Analytics in Finance and Accountancy* (ACCA / CA ANZ 2020). The principles outlined therein apply to analytics in the supply-chain context.

It is important to emphasise that for analytics to add value to an entity it needs to be more forward looking and to embrace predictive and prescriptive analytics, as shown in Figure 4.1.

Any analysis clearly has value for both the supply chain and finance communities and is another area of collaboration, especially when linked to forward planning and forecasting. Understanding the signs of potential demand has become essential, as the pandemic has caused entities to flex business models. Those entities that have access to, and ability to use, big data for

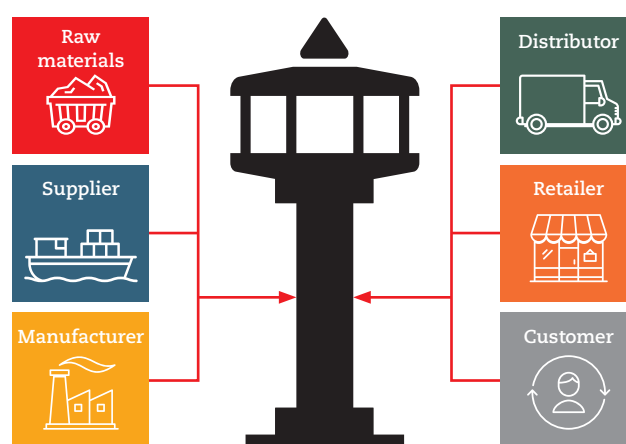
predictive purposes have demonstrated distinct advantages. They have been able to develop strategies that enable them to focus on customers of higher value, or critical need, or to anticipate relaxation in public health measures, for example.

4.3 Control Towers – improving the visibility

Having visibility of the end-to-end supply chain from a data perspective is becoming increasingly important. One roundtable participant highlighted that those entities that had achieved this before or during the pandemic had seen benefits and been able to cope far more easily. In practice, however, obtaining the necessary visibility can be a challenge, as discussed in Chapter 5. This end-to-end view is presented through an application known as a Control Tower (Figure 4.2). IBM define it as follows:

‘A Supply Chain Control Tower is traditionally defined as a connected, personalized dashboard of data, key business metrics and events across the supply chain. A Supply Chain Control Tower enables organizations to more fully understand, prioritize and resolve critical issues in real time’ (IBM n.d).

FIGURE 4.2: Control Tower



Source: ACCA

FIGURE 4.1: Four types of analytics



Source: ACCA

The technology has advantages in enabling organisations to increase resilience through increased visibility, often using technological advances of the fourth Industrial Revolution (see Figure 1.2). The Control Tower aggregates data from disparate, and often siloed, systems to give a holistic view of the real-time status of the supply chain. Activities that use traditional data aggregation techniques would be more time consuming.

To be effective, the Control Tower¹² needs visibility across all systems. Without the ability to link sales orders to inventory to logistics it can lose value in addressing the customer imperative. One of the starting points is clearly the ERP solution.

The value is enhanced if the Control Tower can aggregate data across the supply chain, including by drawing on feeds that are external to the entity. This requires a greater degree of trust among the various tiers, and the members of each tier having themselves invested in the appropriate technologies to give visibility. As has been commented earlier in this report, this has implications for both SMEs and developing economies.

4.4 Technology and supply chains

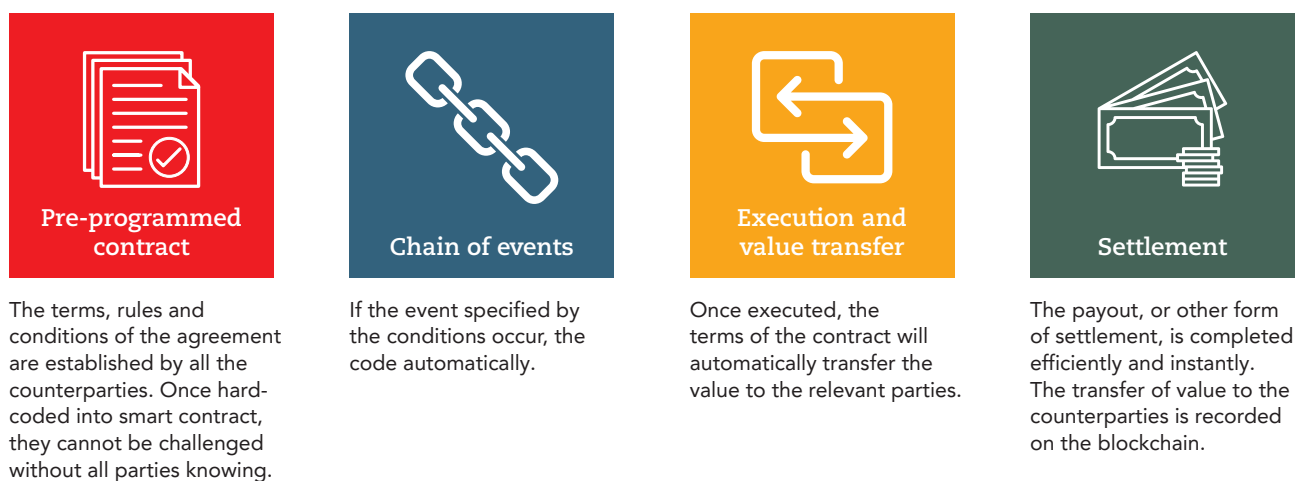
A mainland China roundtable participant commented: 'in [the] VUCA era, we should promote independent research and pay more attention to the development of core technologies and its suppliers. Companies need to establish a finance ecosphere with upstream and downstream [suppliers] to support and grow in sync with them'.

Smart contracts and blockchain

One method for creating visibility across the supply chain, and assisting in establishing traceability, is the use of smart contracts (Figure 4.3).

Jake Frankenfield, writing in *Investopedia*, defines smart contracts as: 'a self-executing contract with the terms of the agreement between buyer and seller being directly written into lines of code. The code and the agreements contained therein exist across a distributed, decentralized blockchain network. The code controls the execution, and transactions are trackable and irreversible.'

FIGURE 4.3: Smart contracts



Source: ACCA

¹² There are several Control Tower solutions that are available. Some of these are embedded into ERP solutions, such as SAP or Microsoft Dynamics 365 Supply Chain Insights, whilst some are standalone, such as One Network Enterprises and Blue Yonder.

'Smart contracts permit trusted transactions and agreements to be carried out among disparate, anonymous parties without the need for a central authority, legal system, or external enforcement mechanism' (Frankenfield 2021).

Lokman Kantar argues that: 'the use of big data, the use of blockchain technology, and the payment options via the Internet are extremely important in the supply chain, which consists of important building blocks such as customer relations, customer service management, demand management, order, production flow, purchasing, product development, and product commercialization' (Kantar 2022). Each of these, he contends, leads to opportunities for the finance function.

An Australian technology leader in this field explained: 'Blockchain is like a sort of a trust layer that can be owned by more than one body. And that point is particularly important. Instead of having it using current technology, we might have a series of disparate IT systems between different parties in the supply chain. Then we have various random points of correspondence, some of which would be quite formalised between two parts of the supply chain; the next group along might use something completely different. So, there is not really anything cohesive and all encompassing. That is one of the issues in supply chain, in terms of the technology implementation side...you have got this patchwork quilt of systems that is preventing things from becoming more cohesive and slows things down generally. Where blockchain could potentially help is that it [is possible to] construct the concept of a supply chain where all of the data is co-owned by all of the entities who participate in that particular supply chain'.

Digital innovations

There are several other digital developments that support trade and supply chains. Several roundtable participants focused on the need to have more seamless information flows with government bodies as well as between organisations.

The first innovation is Digital Economy Agreements. These establish digital trade rules and digital economy collaborations between two or more countries. They have been pioneered by Singapore, which currently has several agreements in place and is negotiating more.

The government of Singapore outlines the advantages of these agreements as:

- aligning digital rules and standards, and facilitating interoperability between digital systems
- supporting cross-border data flows and safeguarding personal data and consumer rights, and
- encouraging cooperation between Singapore's economic partners in nascent areas such as digital identities, artificial intelligence (AI) and data innovation. This gives organisations the scope to trial use-cases and technologies across different countries.

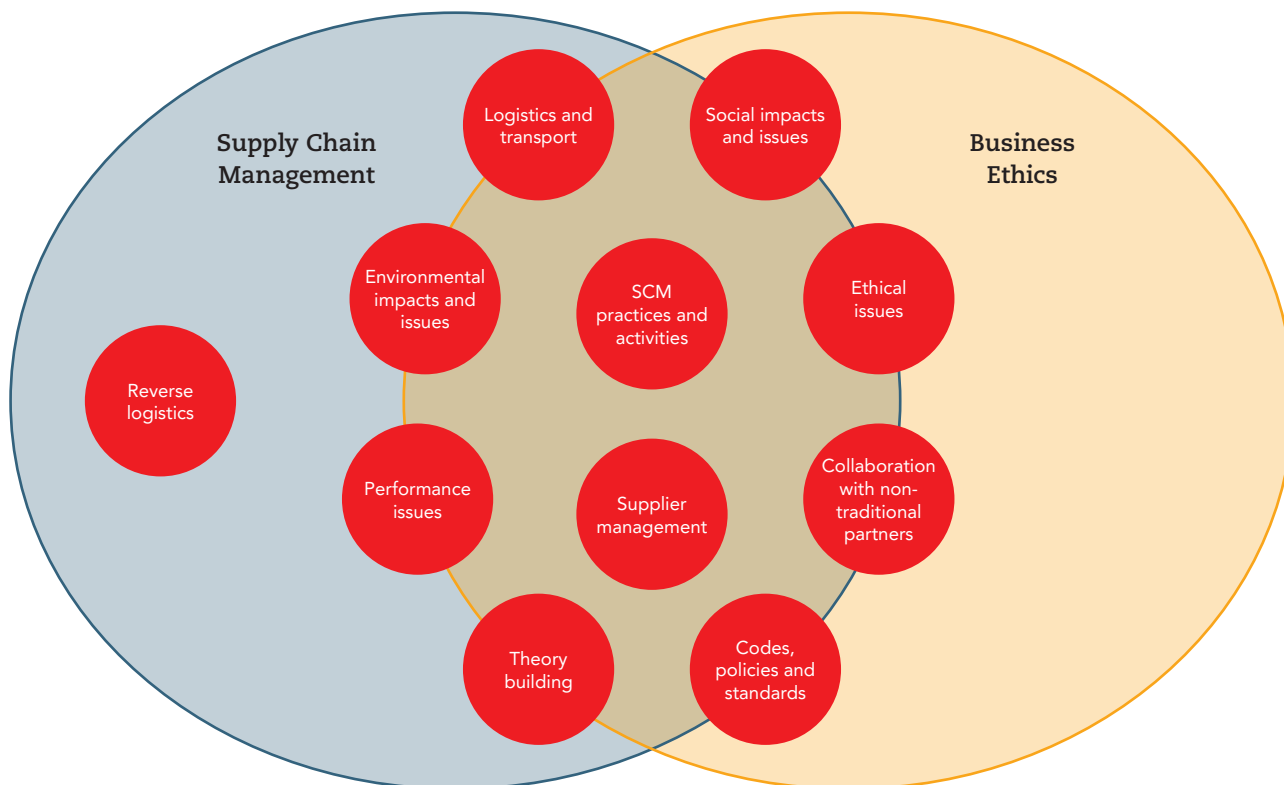
The second innovation is Trade Trust. This is 'a digital utility that comprises a set of globally-accepted standards and frameworks that connects governments and businesses to a public blockchain to enable trusted interoperability and exchanges of electronic trade documents across digital platforms' (Trade Trust n.d.).

4.5 Ethical supply chains

Jean Pisani-Ferry, a former adviser to President Macron and a senior fellow at the European think-tank Bruegel, wrote in April 2020, 'Die-hard green militants regard it as obvious: the COVID-19 crisis only strengthens the urgent need for climate action. But die-hard industrialists are equally convinced: there should be no higher priority than to repair a ravaged economy, postponing stricter environmental regulations if necessary. The battle has started. Its outcome will define the post-pandemic world' (Pisani-Ferry 2020). Finance professions are at the core of this dilemma.

'How ethical is your supply chain?' This will be one of the leading questions in the coming years as entities and governments look to achieve both climate and sustainability goals within agreed timescales. Investors are increasingly taking an interest in the ethical component of supply chains and this in turn is leading major entities to ask more of those in their supply chains. Consumers, too, are asking more about the provenance of their purchases. An Accenture Strategy survey in 2018 of nearly 30,000 consumers in 35 countries found that '62 percent of customers want companies to take a stand on current and broadly relevant issues like sustainability, transparency or fair employment practices' (Barton et al. 2018).

There are many aspects to ethical supply chains, and some are highlighted in Figure 4.4.

FIGURE 4.4: Intersection of supply chain management and business ethics

Source: Quarshie et al. 2016

Becoming ethical and matching this to the green agenda can of itself be problematic. Victoria Gamma, writing for Verisk Maplecroft in 2020, used the example of the move to electronic vehicles. While the drive to reduce carbon emissions has led to an increase in battery-powered vehicles, the raw materials for those batteries, she asserts, come from the Democratic Republic of Congo (DRC), Argentina and Chile. Child labour is used to extract the cobalt in the DRC, but especially in instances of artisanal mining where the mine worker is paid by product (Gamma 2020).

The key in managing ethical supply chains is to know your supplier. An understanding of their behaviours is not only a nice to have but, as disclosure requirements and other non-financial reporting become increasingly relevant to entities, so finance teams need to take an increasing interest in suppliers' policies.

One CFO commented that there needed to be clear advantages to the customer in adopting ethical processes. They used the example of going to a restaurant. If you were offered two options of paying USD50 for a meal or USD100 for an organic version of the meal the price differential is substantial. If that difference was

between USD50 and USD60 respectively, then there may be a different view. From a finance perspective they commented that 'there a cost limit to some of these initiatives. It is important to look at it and understand what the cost drivers are and understand to what extent that is going to create additional margin and revenue for you. It is about understanding to what extent that impacts your business'.

A CFO based in Singapore commented during a roundtable that: 'in negotiation or contract, I think the finance team and the supply chain team should work much closer together. Because you need to [put] a lot of consideration and provision into a contract'.

The sentiment of many roundtable participants was summed up in the dichotomy expressed by one interviewee, 'do you let go your business go out of business and file for bankruptcy just because you want to put an ethical lens to your procurement? This decision becomes more difficult when the economic realities do not support putting in more money'.

One mechanism for establishing expected norms with your suppliers is through having a supply chain code of conduct.

Supply chain code of conduct

One technique that is increasingly used to help entities address some of the ethical risks is a code of conduct for suppliers. Lucy Patchett, writing in *Supplier Management*, states that: 'the overarching goal of a supplier code of conduct is to instil financial and social transparency in the supply chain, with the intention of creating accountability and full disclosure around issues such as human rights, health and safety and environmental impacts' (Patchett 2020).

Patchett identifies seven key points for designing a supplier code of conduct.

- Research the UN's Guiding Principles on Business and Human Rights to understand how your organisation can uphold ethical responsibilities.
- Use the four key categories of human rights, labour, the environment and anti-corruption, outlined by the United Nations Global Compact, as the main foundation of your code of conduct, and consider your company's approach to whistle-blowing.
- Tailor it to your market and explore sector-specific areas such as science and technology, competition, taxation and consumer interest.
- Choose the correct person to draft the guidelines, ideally senior leadership employees who can be accountable for the code of conduct, and incorporate 'company values, awareness of current problems, and intentions to address them'. Ensure the draft is reviewed and confirmed by legal counsel and senior leadership.

- Keep your code realistic and honest – do not add requirements that are impractical or cannot be measured, and back up anything with an understanding of minimum requirements, context and examples.
- Ensure regular monitoring through audits, risks assessments, or conversations with suppliers.
- Outline how you will respond to violations by developing solutions, rather than terminating business relationships as a first response.

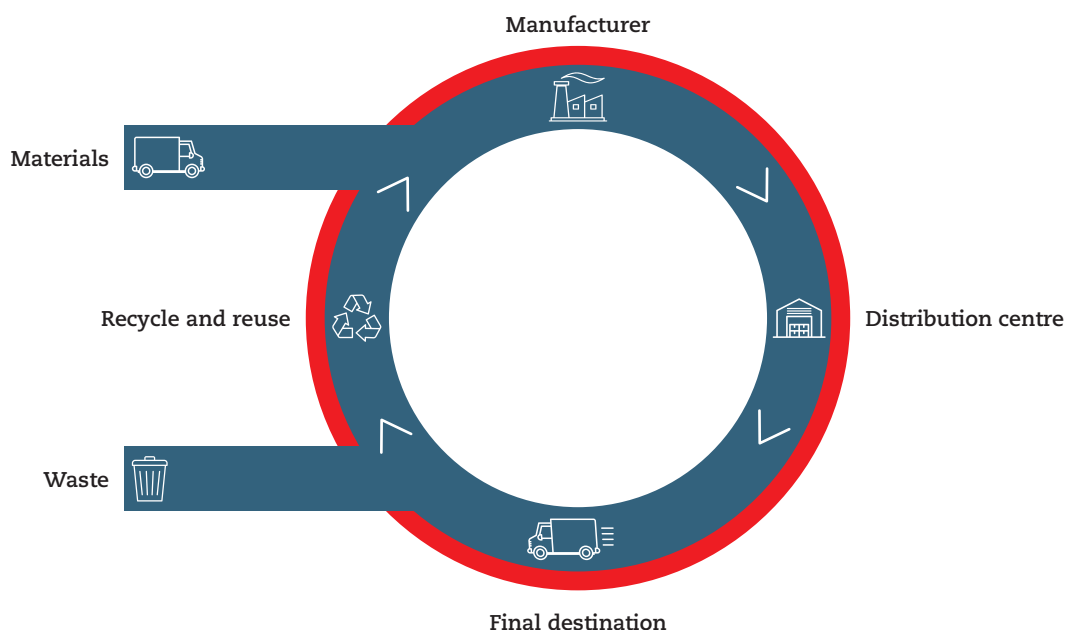
The OECD has also published guidance for organisations (OECD n.d).

Circular supply chains

The traditional model of a supply chain is essentially linear. Raw materials enter the supply chain at the start and progress through the value chain to deliver finished products to the consumers at the end. It is a model where items are thrown away once they are finished with. This has led to many issues of disposal and waste accumulation of various forms in many parts of the world.

Instead of throwing away, entities are increasingly focusing on the ability to recycle products and components. Once the processes are in place, entities can gain maximum benefit from the raw materials that they purchase and often take advantage of government grants. In so doing they have the potential to reduce volatility in their supply chains. This is the concept of the circular supply chain (Figure 4.5).

FIGURE 4.5: Circular supply chain



Source: ACCA

The advancement of circular supply chains is more prevalent in some industries than others. Aluminium and glass are more readily recycled than other products. Because most supply chains are optimised for the linear approach, transforming them into a circular one can be expensive. As Soufani and Loch point out in the *Harvard Business Review*: 'to recycle and remanufacture products or components, the collection systems would have to stretch over vast distances in order to get back from the locus of use to the locus of manufacturing. In addition, because of parts specialization, it is very difficult to amass enough volumes of the parts to make recycling worthwhile (or it would require very deep stripping down to the basic metals, the basic silicon, or the basic hydrocarbons that make up the thousands of different plastic variants)' (Soufani and Loch 2021).

The adoption of more circular supply chains may challenge entities to invest and remodel their structures. As the world increasingly focuses on its 2030 targets, so these investments may well become more critical.

Finance and the ethical supply chain

Ethical supply chains will increasingly form an essential part of the achievement of emission targets and the broader UN SDGs. As reporting increasingly encompasses these areas it is important to understand the implications of these trends for the business model and the associated data model. Not all investments achieve immediate returns, and it is important for finance professionals to focus on the concept of value over return (as discussed in ACCA / CA ANZ / Generation CFO 2021).

4.6 Innovating supply chain systems

Supply-chain-as-a-service

As entities increasingly focus on their core activities, so there has been a rise in 'as-a-service' opportunities and supply chains are no exception to this. Supply-chain-as-a-service offers entities a flexible and scalable model which does not require capital investment upfront.

The method works by providing a virtual supply chain team enabled by Cloud-based software that supports all or part of an entity's supply chain operations. A virtual 'supply chain as a service' team partners with an entity's existing team to execute procurement, production control, manufacturing, quality, warehousing and logistics projects or daily operations.

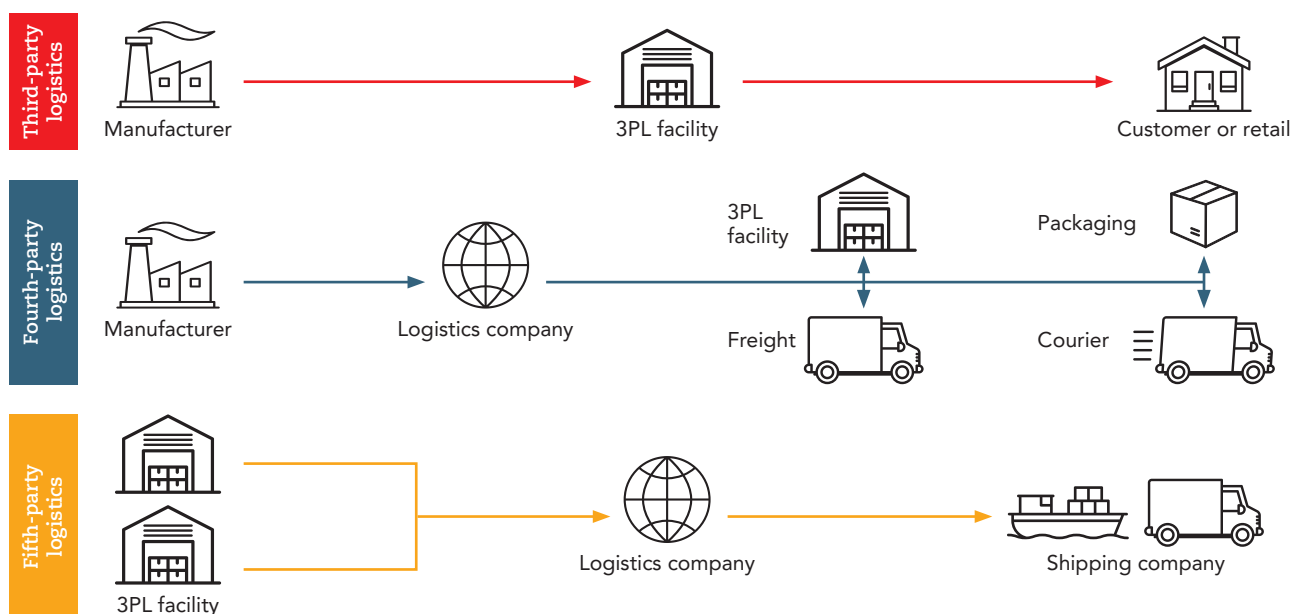
Supply chain functional experts at third-party service partners are leveraged on the basis of an entity's individual needs, scaling with the entity as it grows. This scalability can allow access to specialist expertise that would otherwise not be affordable. Therefore, it can appeal to medium-sized and smaller entities.

Third-, fourth- and fifth-party logistics

Other trends that finance professionals should be aware of include third-, fourth- and fifth-party logistics (Figure 4.6).

These can be summarised as follows (Table 4.1).

FIGURE 4.6: Overview of third-, fourth- and fifth-party logistics



Source: ACCA

TABLE 4.1: Third-, fourth- and fifth-party logistics

FIRST-PARTY LOGISTICS	An entity that transports products directly from one location to another – or which needs cargo to be delivered between two locations.
SECOND-PARTY LOGISTICS	An entity that owns assets such as container ships, aircraft or trucks, and uses them to transport goods for other entities (ie its clients). Shipping lines, airlines and haulage companies fall into this category, likewise entities that operate warehouse and storage facilities.
THIRD-PARTY LOGISTICS	An entity that provides outsourcing of logistics for a third party. A third-party logistics provider, manages all (or part) of an entity's logistics operations, effectively acting as an intermediary between first and second parties.
FOURTH-PARTY LOGISTICS	This is a more advanced form of supply chain management, focusing on the optimisation of the whole logistics function, rather than the delivery of individual parts. While some fourth-party logistics entities perform similar functions to third-party ones, they are usually non-asset based, meaning they don't own any vehicles or storage facilities themselves. Their overall brief is typically more strategic and consultative; they offer advice and solutions on how a company's supply chain can be enhanced to deliver better results. A fourth-party logistics provider may coordinate the activities of the third parties that handle specific parts of the supply chain.
FIFTH-PARTY LOGISTICS	A fifth-party logistics provider will plan, arrange and implement a client's logistics systems, taking all elements of supply chain management out of the client's hands. The provider's focus on supply networks means that it will oversee every single supply chain within an entity. With most fifth-party logistics providers specialising in big data and leveraging technology to drive efficiency, they tend to be more valuable to e-commerce businesses than to companies with a bricks-and-mortar presence. Other technologies that fifth-party providers may look to harness include robotics, blockchain, AI and Bluetooth beacons.



So, what should the finance professional do?

- Understand how supply chain data should be used in business partnering and decision-making objectives.
- Work with supply chain teams to ensure that all necessary data feeds are captured completely and accurately.
- Participate in data governance activities, including those focusing on relevant financial and non-financial data.
- Provide input into supply chain codes of conduct, ensuring that financial and operational requirements are addressed.
- Understand the link between supply chain activities and non-financial reporting objectives.
- Provide input into individual supplier due diligence and on-boarding procedures.
- Be aware of developments in supply chain approaches and how these may affect the business and the data model, especially in relation to those developments that focus on ethical objectives.



**ETHICAL SUPPLY CHAINS WILL
INCREASINGLY FORM AN ESSENTIAL PART
OF THE ACHIEVEMENT OF EMISSION
TARGETS AND THE BROADER UN SDGs.**

5. Supply chain risk management and governance

'AN ANALYSIS OF THE RISKS ASSOCIATED WITH SUPPLY CHAIN MANAGEMENT HAS BEEN SADLY NEGLECTED. THERE WILL BE A MUCH GREATER FOCUS ON IT, BUT AS WITH ALL ASPECTS OF HUMAN LIFE AND CERTAINLY BUSINESS LIFE, WE WILL OVERREACT'.

UK-BASED ROUNDTABLE PARTICIPANT

5.1 Importance of risk management

The pandemic has caused entities to recognise the importance of risk management across all aspects of their activities.¹³ Supply chain risk is becoming a more important issue in the overall risk-management framework of an entity. Entities with mature enterprise-wide risk frameworks realised the sheer lack of alignment when COVID-19 struck. The level of disruptions is likely to continue to increase and entities need to be more prepared for potential eventualities.

A mainland China CFO commented that the 'international and domestic economic situation is changing rapidly, and companies need to establish a dynamic response mechanism to adjust the supply chain strategy in real time. Companies should look for partners with strong supply capacity and stable sales channels and form strategic alliances and resist risks jointly. Integrating business and finance can effectively deal with supply chain risks and leverage their respective advantages'.

Another CFO argued that: 'the risk assessment techniques failed because they underrated the risk of the length of the supply chains'.

A roundtable participant commented: 'understanding the risks associated with supply chain management and an overreaction to those risks... is the natural order of the human behaviour...at some stage, balance will come back into the system. When the [shipping] containers are released and back in the system, it will collapse transportation prices. I think there is a huge role for the

finance function in getting underneath the skin of the risk associated with supply-chain management and helping businesses to define and mitigate those risks in the best possible way in the current circumstances'.

A roundtable participant based in the UK commented: 'One of the risks...in many environments is that [those in] the supply chain do not know what is coming down the track from a customer, and if they don't know what's coming down the track in two to four years' time they are not going to invest or they are going to invest in the wrong things, and therefore the whole...supply chain starts to become cost ineffective'.

A McKinsey survey in the second quarter of 2021 suggested that 59% of respondents had implemented new supply chain risk-management practices in the previous 12 months (Alicke et al. 2021).

Supply chain risk management can be hard to achieve for several reasons.

- It is hard to obtain a transparent picture of the whole supply chain. Supply chains are complex, are networks, and many suppliers at different levels of the chain can contribute to the finished product. As with other elements of business, working collaboratively across the networks is becoming essential.
- The scope and scale of the risks involved may appear daunting. Some risks, such as those associated with natural events, may be hard to foresee. Yet identifying

13 ACCA discussed the importance of risk management in the post-pandemic environment in ACCA 2021.

their potential impact and the consequences is perhaps one lesson that should be learned from the pandemic.

- Confidentiality, especially among tier 1 or tier 2 suppliers, may reduce transparency, particularly as suppliers fear a loss of commercial positioning.

It is not to say that these barriers cannot be managed. Entities need to have an enterprise-wide approach to identifying potential risks, and then plan how to mitigate them and turn them into opportunities to innovate and create more value for the organisation and its stakeholders. Risk culture is important in addressing the interconnectedness of risks that the pandemic proved was largely unrecognised by boards and senior management. Around these activities needs to sit an effective risk management culture across the entity, but one that especially recognises supply chain risks.

Supply chain resilience

One activity that can assist in mitigating supply chain risk is establishing resilience by embedding risk sensors and having countermeasures in place that are regularly reviewed and understood by all stakeholders involved. Entities must think about how they can adapt, and stakeholder mapping helps them understand how they can achieve this and do so in a timely manner when disruption occurs. Senior managers must ask themselves and their stakeholders questions they might not have done before when assessing risks and planning for them, such as what the cost benefits are of setting up duplicate facilities or relocating, and what appropriate risk governance frameworks and due diligence processes are needed. The lessons learned about building resiliency are that estimating risk impact and probability is not enough, and that was especially true for supply chains during 2020. In today's world, resilience arises from having the foresight to deal with risks before they materialise. This 'risk driver' approach is critical for post-pandemic supply-chain management.

Studying unexpected risk is key to adaptability and, as mentioned above, new technologies are transforming supply chain resiliency. The pandemic forced many companies to remap their supply chains and take advantage of information technologies that reduce risk and increase efficiency. Addressing this relies upon having appropriate data and systems to make visible what is happening across the whole supply chain. Only by understanding where the problems caused by a specific disruption occur are you able to understand the impact and to take appropriate action. Well-informed decision making is the cornerstone of resilient, effective supply chains.

A chief procurement officer commented that: '[the] analysis that comes with finance's different viewpoint to a

supply chain or procurement person's viewpoint is really important... it's having that diversity of thought [and applying it to] some of those challenges'.

An interviewee commented that: 'the most important factor within our supply chain is keeping [the] costs of the raw material [low] and in that we are secure. Yes, we are open to looking at alternative suppliers. We are looking at how secure those things [are]'.

Some of the steps that can be taken to enhance the resilience of the supply chain include:

- equipping the entity early against supply chain shortages
- evaluating critical components and their supply route
- understanding the risks with each supplier, including geopolitical, environmental and human risks
- using scenario-based exercises to evaluate and improve your resilience
- building in flexibility where possible to mitigate disruption by diversifying suppliers and adopting technology-led methods to identify risks
- avoiding rushed decisions that can lead to the creation of vulnerabilities
- preparing for increased costs, for example from additional compliance requirements
- being vigilant.

The need to establish business resilience and to test the plans for dealing with problems is a key lesson from the pandemic. While, perhaps reasonably, few entities would have expected a pandemic, the importance of such planning, which includes that by the finance, risk management and supply chain, as well as other, teams, has been reinforced. Only through thorough testing will vulnerabilities in such plans be identified and further improvements made. Silo-based plans are not effective tools in today's connected world.

Supply chain corruption and fraud

In 2018 the UN estimated that the annual costs of corruption and bribery totalled USD3.6 trillion (Johnson 2018). At the time, this would have been equivalent to the world's fifth largest economy, larger than the UK or France. At the same time, research by Ecovadis in association with CIPS and Supply Chain Insider, suggested that 'most companies are taking a reactive, unstructured and partial approach to fighting corruption' (Ecovadis 2018). Vigilance and a strong ethical lens are essential in managing supply chains.¹⁴

14 CIPS offers annual ethics courses to its members, for example.

In addition, supply chains are vulnerable to fraud for several reasons.

- Their global nature means that visibility can be obscured.
- Their complexity means that it is hard to obtain a complete picture, especially when third parties are involved.
- The volume and nature of transactions means that detecting issues can be time consuming and is often seen as not cost effective.

Anecdotal evidence (such as that highlighted by Alexander Geschonneck in his article 'The supply chain fraud pandemic' [Geschonneck 2020]) suggests that the amount of such fraud has increased during the pandemic. This represents a risk for supply chain teams and their finance counterparts as workforces have been reduced, disruption of supply chains themselves and desperation for goods and services among customers are all increasing opportunities. As one commentator suggested: 'panic and strategic sourcing do not mix well' (Govojean 2021).

Supply chain fraud can be hard to detect as its opportunistic nature means that it may evade traditional fraud-management techniques. Understanding the potential risks is a first step in identifying potential issues.

5.2 Increasing demand for due diligence

There is an intensified regulatory focus on supply chains. As has been discussed in earlier sections, not only is there a focus on the sustainability of supply chains and the impact that they have in addressing the world's carbon emission targets, but also looking through the ethical lens raises questions on the impact on working conditions, slavery and other social issues. This has drawn the attention of governments and regulators. A McKinsey survey in the second quarter of 2021 suggested that only 2% of those surveyed had visibility of their supply chain beyond the second tier, and only 21% had visibility of their second tier (Alicke et al. 2021).

In June 2021, the German parliament passed a supply chain act that brings in stricter regulations and the potential for fines of up to 2% of global turnover for companies. As a supply chain director commented, you can be accountable for the nature of, and activities in, your supply chains.

The German legislation requires that from 2023 companies with more than 3,000 employees will be required to undertake due diligence on their supply chains. From 2024 this threshold is lowered to those with 1,000 employees and it is expected that the legislation will affect about 4,800 companies. One commentator noted that: 'We are still a long way from reaching our goal in the fight against human rights violations and environmental degradation in global value chains, but with the new law, we are finally off to a good start' (Initiative Lieferkettengesetz 2021). The legislation focuses on human rights and requires that the companies concerned must make reasonable efforts to ensure that there are no violations of human rights in their own business operations and in the supply chain. It should be noted that the expectation is a duty of effort, not a requirement to succeed. The requirement is for each company to review:

- Its own business operations, and
- Its supply chain, and while this is principally for direct suppliers it should 'carry out a risk analysis and [apply] preventive and remedial measures for indirect suppliers, if it gains substantiated knowledge of possible human rights violations or violations of environmental obligations' (Rünz and Herman 2021).

The European Commission is preparing similar legislation. Both the EU and the US have enacted controls on imports from areas where they believe that there are exploitative practices.

This increasing trend for governance to focus on supply chains and the clear financial implications mean that this is not just a supply chain issue. Due diligence will become an ever more important aspect of supply chain management.



So, what should the finance professional do?

- Ensure that finance teams are aware of, and play an active role in, supplier due diligence matters.
- Liaise with supply chain teams on legislative frameworks and ensure that the link to non-financial reporting disclosures is made.
- Review fraud procedures to ensure that the enhanced risk of supply chain fraud is monitored and evaluated.
- Include supply chain risks in all enterprise risk management assessments.
- Conduct and test resilience-planning exercises.
- Be informed of developments in non-financial disclosure requirements as they affect suppliers and collaborate with supply chain teams on addressing these issues.

A man with a beard, wearing a white long-sleeved shirt, an orange safety vest with reflective stripes, and a white hairnet, is crouching in a food processing facility. He is holding a black clipboard and looking down at it. In the foreground, there is a white plastic tub filled with yellow apples. To the right, a black plastic crate also contains yellow apples. The background shows industrial equipment and metal structures, slightly out of focus.

THIS INCREASING TREND FOR GOVERNANCE TO FOCUS ON SUPPLY CHAINS AND THE CLEAR FINANCIAL IMPLICATIONS MEAN THAT THIS IS NOT JUST A SUPPLY CHAIN ISSUE. DUE DILIGENCE WILL BECOME AN EVER MORE IMPORTANT ASPECT OF SUPPLY CHAIN MANAGEMENT.

Conclusion

'FINANCE PROFESSIONALS WILL HAVE TO TAKE A GREATER INTEREST AND GREATER INVOLVEMENT IN SUPPLY CHAIN MANAGEMENT'.

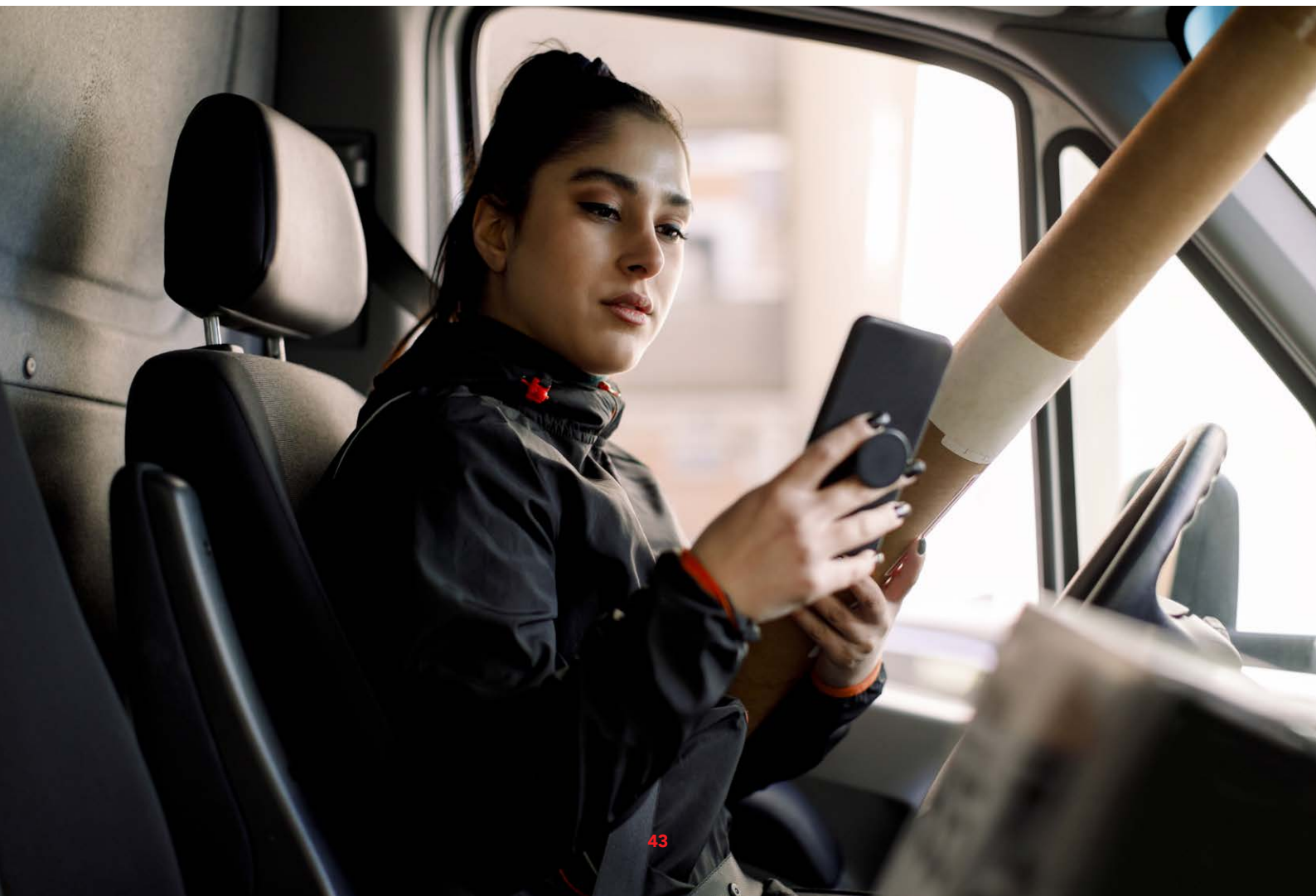
ROUNDTABLE PARTICIPANT BASED IN THE UK

Entities continue to face disruption. This comes from many angles, from the rapid evolution of technology, from changing consumer demand and shopping preferences, from the impact of health and climate emergencies. Each of these disruptions has an impact on business models, which in turn leads to changes in supply chains and the ways regulators and other stakeholders seek assurance over these key issues.

Collaboration is a key tool in managing constant change and, as has been demonstrated throughout this report,

the effective partnership between finance and supply chain professionals is becoming ever more important to ensure the success of the entities in which they work. Each has not only a unique set of skills from which the other can benefit, but also a consistent view of ethics and trust that are at the core of any profession. Be this in the planning process, the management of working capital, the development of ethical supply chains or in managing the enterprise risks, there are many touch points.

'One plus one' can sometimes equal three.



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