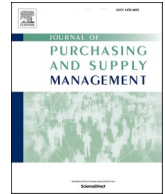




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## Agility, adaptability, and alignment: new capabilities for PSM in a post-pandemic world

## ARTICLE INFO

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## ABSTRACT

Purchasing and Supply Management (PSM) was overwhelmed by a perfect storm during the Covid-19 emergency, in both the public and private sectors. Many organizations were caught unprepared, and it became evident that they did not have the capabilities needed to quickly react and respond to changes caused by the pandemic. This poses the questions of where and how PSM systems should evolve to better contribute to organizational responsiveness to crisis events in the future. In this Editorial, which introduces the “PSM learning from the pandemic: transforming for better crisis management” Notes and Debates special issue, the six contributions included in this issue are discussed. We relate the evidence included in the contribution to three critical capabilities of supply chains in the post-Covid-19 business environment – agility, adaptability, and alignment – and, in this editorial, we discuss how they can be conceptualized from a PSM perspective. From a theoretical perspective, we provide a starting point for future studies that want to focus on how these capabilities can be deployed in PSM, and how they impact the supply network design. From a managerial perspective, these definitions provide preliminary points of discussion on what organizations can do to enhance these capabilities in the future.

## 1. Introduction

Covid-19 was a black-swan event for supply chains in almost all industries. Nearly eighteen months after the global pandemic was officially declared, we are now evaluating the disruptive shocks that this massive health emergency caused in different industrial contexts.

Disruptions have always occurred in supply chains, but they usually do so discretely, impacting different actors at different times for different reasons (Chopra and Sodhi, 2014). Previous disaster events (e.g., natural disasters and terrorist attacks) have demonstrated how resource investments are required for preparing for, managing, and responding to disruptions.

Supply chain disruptions push organizations to develop capabilities to reduce the impact of these sources of risks (Ambulkar et al., 2015), and developing new capabilities has been key to survival during Covid-19. Craighead et al. (2020) distinguish between different types of supply chain disruptions and the impact of the Covid-19 health crisis, emphasizing how the latter has impacted global supply chains and forced us “to think in new and unfamiliar ways” (Craighead et al., 2020; p.3).

In response, we saw manufacturing facilities that repurposed production in innovative ways, products and services sourced from volunteers, and donations channeled from overseas; all of these actions have shown positive behaviors and been applauded in the media. However, because Covid-19 generated several new vulnerabilities and disruptions to global supply chains, this “unfamiliar” supply chain management thinking was insufficient to mitigate the negative consequences of these risks. For example, we heard stories of food commodities held at

national borders, the disappearance of overseas personal protection equipment (PPE) cargo, the sudden shortage of critical raw materials (such as microchips in car manufacturing), and unexpected capacity constraints in novel industries (e.g., steel; Sarkis, 2020) – all events that were unprecedented in several global supply chains.

From a risk management perspective, we can discriminate between three situations to analyze how companies reacted to these extraordinary conditions (McKinsey and Company, 2020; Van Hoek, 2020; Singh et al., 2021). First, we saw organizations (and their supply chains) that evidenced better preparedness than others in mitigating the impact of the risks generated by Covid-19. Choi et al. (2020) identified that companies with better visibility into their supply chain structure were better prepared because of the investments made in mapping their supply networks before the pandemic. For example, industries such as pharmaceuticals, high-tech electronics, and semiconductors, with structured supply chain risk management strategies in place, could count on geographical diversification of suppliers to reduce the supply-side risks, the use of multiple sourcing strategies for strategic components and materials to reduce reliance on a single supplier, and a consistent inventory strategy to buffer against any potential disruption.

We saw organizations (and their supply chains) that showed better preparedness than others to respond to the impact of the risks generated by Covid-19. For example, industries such as mass retail, logistics services, and food have worked hard over the years to increase the level of agility of their supply, production, and distribution networks to be quickly reconfigured to keep supplying global demand. This is first enabled by developing solid relationships with key suppliers with whom they can work side-by-side to maximize the level of visibility across the

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supply network to catch potential risks in a timely manner and implement appropriate responses.

Finally, we saw organizations (and their supply chains) that were unprepared to respond to and/or mitigate the impacts of the risks generated by Covid-19. For example, industries such as the public sector, construction, and commodity manufacturing, characterized by an over-reliance on single geographies and/or suppliers for key goods and services, and that made limited investments to gain visibility over the supply network, have little awareness of the sources of risk they are exposed to, and their networks were too rigid and slow to efficiently react to such environmental changes. These situations placed a spotlight on Purchasing and Supply Management (PSM) systems as both private and public organizations have faced extraordinary supply challenges to meet urgent demand in a set of unprecedented business conditions (Butt, 2021).

PSM is defined as the “business management function that ensures identification, sourcing, access, and management of the external resources that an organization needs or may need to fulfill its strategic objectives” (CIPS, 2020). Thus, PSM is the primary organization responsible for defining the supply network design and strategy and sourcing items from suppliers, and so it represents the point of focus to increase supply-side responsiveness of organizations and their supply chains.

Organizations that invest in more robust PSM departments can benefit from higher supply-side resilience and responsiveness (Pereira et al., 2020). In this context, we saw that organizations characterized by interconnected and responsive supply networks had higher capabilities to minimize, monitor, and respond to supply-side risks, making them better prepared to react to the consequences of Covid-19 (Sodhi and Tang, 2021). So, beyond the immediate operational challenges that Covid-19 created, this caused organizations in different industries to take a critical look at their supply network structure and PSM characteristics, and question how they should move forward to anticipate, sense, and respond to future unexpected changes and minimize their impact (Shih, 2020). The key questions are: *how did Covid-19 rethink the meaning of “supply chain resilience”? What PSM capabilities do organizations need to grow in order to improve it?* This will prioritize PSM in companies’ strategic plans for the near future and positions the problem of “shaping” the skills and competencies of the PSM department in a post-Covid environment on top of academic and manager agendas.

In this regard, a recent article by Professor Hau Lee (2021) emphasizes that, in the post-pandemic world, global supply chains do not have to (re)invent new capabilities. To be better prepared for the challenges posed by the external environment, organizations should instead focus on revisiting the depth and strength of three well-known supply chain capabilities: agility, adaptability, and alignment (AAA). This need to revitalize and expand the scope of AAA capabilities, together with the need for the supply chain to enhance their supply-side resilience for better disaster response (as demonstrated by the effects of Covid-19) represents a call for action for PSM departments.

Following the idea that AAA capabilities are increasingly becoming the critical feature of winning supply chains in the new normal (Lee, 2021), in this Editorial we focus our attention on the meaning of AAA capabilities for PSM, discuss what can be learned about PSM from the recent Covid-19 pandemic, and identify how these capabilities can be extended to the PSM domain to obtain better responsiveness. In doing so, we rely on the theoretical and managerial evidence included in the six “Notes and Debates” articles published in this JPSM special issue entitled “PSM learning from the pandemic: transforming for better crisis management”.

**2. What do AAA capabilities mean for PSM?**

The supply chain management literature provided consolidated definitions for each of the AAA capabilities. Agility can be defined as the capability to “respond to short-term changes in demand or supply quickly and handle external disruptions smoothly” (Lee, 2004, p. 105), which

pushes supply chain partners to collaborate to rapidly respond to changes in customer demands. Adaptability can be defined as the capability to “adjust the supply chain’s design to meet structural shifts in markets and modify the supply network to reflect changes in strategies, technologies, and products” (Lee, 2004, p. 105), which allows companies to restructure their supply chains in response to long-term market and environmental changes. Finally, alignment can be defined as the capability to “align the interests of all of the firms in their supply chains with their own” (Lee, 2004, p. 104), which allows companies to integrate and coordinate supply chain processes with equitable sharing of costs and benefits between the internal and external actors.

Previous scholars have considered AAA capabilities as key features that supply chains should possess when operating in a business environment characterized by several market challenges. These challenges require the possession of one or more of these capabilities (Table 1).

The combination and impact of AAA capabilities has been primarily analyzed in the supply chain domain concerning how they contribute to the definition of the supply chain strategy and the design of a supply chain network in line with these capabilities. Originally introduced by Lee (2004), the definition of “Triple-A” supply chains characterizes those networks that are able to operate by synergistically combining the AAA capabilities which can, ultimately, achieve a superior performance (Whitten et al., 2012). In recent years, several authors have further analyzed how these AAA capabilities integrate with each other to create more competitive supply chains and, particularly, how AAA capabilities play out outside large and focal companies (e.g., Dubey and Gunasekaran, 2016; Alfalla-Luque et al., 2018; Dubey et al., 2018; Marin-Garcia et al., 2018; Gligor et al., 2020). Unfortunately, to date no study has directly addressed the meaning and the integration of AAA capabilities from a PSM perspective.

Some researchers focus their attention on the role that PSM decisions have on specific capabilities. The most extensively addressed is alignment. The capstone work by González-Benito (2007) argues that to effectively contribute to business performance (and attain strategic alignment), PSM needs to grow specific capabilities – rather than simply implementing appropriate operational practices. A year later, Baier et al. (2008) enriched this argument by ascertaining that strategic alignment in PSM is achieved through a combination of ideal purchasing competitive priorities and ideal purchasing practices. In the last decade, several other authors have focused on PSM alignment under different lenses, such as the relationship with other functional strategies (e.g., Rebolledo and Jobin, 2013; Matthyssens et al., 2016), the organizational elements and practices that favor this strategic alignment (e.g., Gobbi and Hsuan, 2015; Mikalef et al., 2015; Luzzini and Ronchi, 2016), and the relationship between alignment and performance (Hochrein et al., 2017; Rodríguez-Escobar and González-Benito, 2017).

Surprisingly, agility and adaptability are less commonly considered from a PSM perspective. A quick look at the literature reveals that only a few authors have marginally addressed PSM agility when discussing the impact of supplier characteristics on the creation of more agile supply chain networks (e.g., Kim and Chai, 2017), and PSM adaptability in the context of buyer-supplier relationship governance (e.g., Pathak et al., 2007).

**Table 1**  
Market challenges, supply chain needs, and AAA capabilities (adapted from Lee, 2004).

Market challenge	Supply chain need	Supply chain capability
High demand and supply uncertainty	Higher flexibility to manage uncertainty	Agility
Short product and technology cycles	Dynamic (and not static) and reconfigurable supply chain network	Adaptability
Interaction with multiple supply chain partners	Coordinate the different interests and priorities of multiple players	Alignment

For this reason, in Table 2, we attempt to summarize the meaning of AAA capabilities at the firm level and identify how they can be conceptualized in the PSM domain. As a note to the definitions included in Table 2, we are aware that AAA capabilities for PSM can be intended in two ways: 1) how PSM departments can demonstrate AAA within the internal organization; 2) how PSM departments can contribute to the AAA capabilities of the company’s supply chain by interacting with external suppliers. Considering that PSM learning from the pandemic largely relates to decisions and interactions with the supply network, for the purpose of this paper we assume the external perspective.

3. PSM capabilities during Covid-19: A blind spot revealed?

If we observe the evolution of PSM in multinational companies (e.g., DeCandia, 2020), we are able to notice that being “strategically aligned” (i.e., focusing on competitive priorities and implementing practices in line with the business strategy) represents a necessary but insufficient condition to contribute to organizational (and supply chain) responsiveness. The ability to be strategically aligned represents a prerequisite for PSM departments to contribute to the creation of competitive advantage; however, what happened during the Covid-19 emergency showed that alignment must be paired with other capabilities, i.e., agility and adaptability – and it is the correct balance between these three aspects that is able to guarantee the creation of PSM-responsive organizations.

Several organizations revealed a lack of agility on the PSM side. In the public domain, PSM can be slow (especially for urgently needed medical equipment). Governments realized they were dealing with outdated systems and lacked clear information and data, hindering their ability to be agile and save lives (Abutabenjeh et al., 2020). PSM specialists needed to start thinking strategically about the entire supply chain and long-term production capacity rather than concentrating solely on transactions. And even when authorities secured items, there were numerous hurdles to ensure that they were reaching hospitals and helping patients. The use of emergency decrees and rapid change in PSM policies were the first measures to be adopted, but several PSM organizations (and their suppliers) were slow to adapt to these new ways of process functioning (e.g., direct supplier award) (Handfield et al., 2021). In the private sector, PSM teams needed to play a crucial role in shoring up and strengthening the supply base. They immediately had to identify any supply risks and shortages, work together to remediate pitfalls while assessing substitute suppliers and materials, and consider shifts to local

suppliers where feasible (Scala and Lindsay, 2021). In addition, organizational structures were temporarily consolidated for quick decision-making to avoid missing out on orders in a highly competitive market, but not all the PSM teams were agile enough to respond to these challenges; this was also affected by new remote working conditions (McKinsey and Company, 2021).

Adaptability problems were also present from a PSM perspective. For several (public and private) organizations, Covid-19 was the occasion to shift toward more centralized PSM structures and to centralize the demand for strategic items and better cope with price-gouging trends (Hanfield et al., 2021). However, many companies were faced with organizational challenges due to changes in volumes and purchasing approaches, with less focus on price and prioritization on timely delivery, and adequate quality and quantity (Butt, 2021). Covid-19 suggests that significant changes (both in terms of geographical locations and ways to manage supplier relationships) to traditional supply network structures are needed (Scala and Lindsay, 2021). Even in more stable industries, PSM needs to take responsibility for assessing supply interruption risks and identifying alternative supply sources if suppliers are in high-risk regions – which could bring about a complete overhaul of the current structure that not all the PSM departments are able to accommodate (Deloitte, 2020). Finally, Covid-19 revealed the need for increased visibility across the supply network to build resiliency and higher responsiveness (Handfield et al., 2020). PSM needed to become the champion of this shift from linear supply chains to more integrated networks connecting many players but, to do this, competencies and capabilities on enabling technologies, such as IoT devices or sensors that provide valuable data on the location of goods in the chain and their condition (for example, products for which temperature monitoring may be critical, such as frozen foods, vaccines, or other medicines), are needed. Unfortunately, these competencies are not typical for PSM – which makes this process slow and complex.

Covid-19 also revealed the need for PSM alignment. The pandemic caught many companies by surprise, exposing shortcomings in their PSM practices to be able to prepare for and alleviate unexpected disruptions to supply while exposing a lack of centralized and coordinated visibility in risk monitoring (Ivanov and Dolgui, 2020). In the end, the most successful organizations invested in building strategically aligned PSM organizations, characterized by a high status, and already implemented sourcing strategies linked across departments based on a centralized view of goods and services purchased (Vecchi et al., 2020). These examples clearly suggest that PSM systems should revisit their strategies in light of all they have learned during the pandemic and prioritize the development of these capabilities to thrive in this new normal.

Table 2  
Meaning of AAA capabilities for PSM (external perspective).

	Definition at the firm level (adapted from Lee, 2004)	Definition at the PSM level (authors’ elaboration)
Agility	The organizational ability to quickly adjust supply chain operations to respond to environmental changes, opportunities, and/or threats	The PSM ability to quickly adjust purchasing practices and supplier relationship management activities to respond to environmental changes, opportunities, and/or threats
Adaptability	The organizational ability to profoundly change the supply chain’s design to respond to structural shifts in the markets	The PSM ability to profoundly modify and restructure the supply network design to respond to structural shifts in the markets by finding suitable supplier partners and establishing relational governance mechanisms
Alignment	The organizational ability to align objectives and processes within and between different functions and members in the supply chain	The PSM ability to align objectives and processes within internal functions and the supply network, as well as develop, incentivize, and monitor the suppliers

3.1. PSM issues during Covid-19: perspectives provided by the “Notes and Debates” included in the special issue

In order to analyze the evolution trajectories of PSM systems in a post-pandemic world and initiate the discussion on how PSM could contribute to improving AAA capabilities for their organization and supply chain, in August 2020 the *Journal of Purchasing and Supply Management* (JPSM) launched “PSM learning from the pandemic: transforming for better crisis management”, a call for further papers in this area. Given the exceptional nature of the special issue and the need to collect and disseminate evidence in a timely manner, the call was organized through two interrelated yet distinct types of contributions: “Notes and Debates” (N&D) and “Full Length Papers”.

For N&D, we expected shorter than usual contributions, with a theoretical/conceptual focus and/or a reflective/critical stance. During the review process, we looked for contributions clearly focused on a contemporary issue, problem, and/or challenge related to PSM and crisis management. These N&D articles had to provide a significant contribution to identifying insights for future PSM transformation.

We were fortunate to receive fifteen relevant and timely

contributions; ultimately, six were accepted for publication. These papers help to advance our field, suggesting different PSM lessons learned from the pandemic, with implications of interest for both scholars and practitioners concerning the improvement of capabilities for better crisis management. For this editorial, we present, discuss, and position the ideas reflected in these six N&D papers that compose the first part of the special issue. Table 3 provides an overview of the main contributions offered by the papers.

The paper from Finkenzstadt and Handfield (2021) uses PPE as the unit of analysis – probably the most strategic item to be purchased during the Covid-19 emergency – and, using the government perspective, they first classify the types of “hidden stock” within the PPE supply chain spectrum. Then, they discuss the requirements for building a more responsive healthcare supply chain for PPE based on the strategic principles of transparency and visibility. The authors successfully describe the government challenges related to the visibility of inventory of critical goods and lack of reliable inventory strategies – which are essential aspects in moments of crisis characterized by a shortage of strategic products. Their findings guide public PSM systems to build more adaptable and aligned supply chains of critical goods.

Furthermore, the paper from van Hoek (2021) addresses, from a broader perspective, the role of PSM in responding to the Covid-19 emergency across different industries and presents a list of short, medium, and long-term actions that PSM should put in place to increase supply-side resilience (and improve AAA capabilities). The author develops a roadmap where the contribution of PSM is positioned to create more responsive supply chains. In doing this, a prerequisite for PSM is a systematic understanding of the different sources of risks (and their drivers) that affect the supply chain and the supply network. Actions such as increased inventory buffers, the identification of flexible sources of supply, the improvement of information sharing, and the extent of collaboration initiatives all represent drivers for the design of more agile and adaptable networks; still, they can be effective only when PSM is characterized by an awareness of the level of exposure to risk factors.

Nikookar et al. (2021) build on the concept of “antifragility” and uses the Covid-19 case to elaborate on how PSM can contribute to building antifragile supply chains. Antifragility means embracing disorder and learning from it – a perspective where disruptive shocks create muscle

memory to build more robust supply chains. The authors present a series of strategies such as developing optionality, creating redundancy, weakening the links between nodes, generating eustress, adopting a barbell approach, accepting systems to fail fast, and acting following a trial-and-error approach. These strategies contribute to creating more agile systems that can “gain” from disorder rather than be damaged. In particular, flexibility and redundancy in the supply network represent the starting point in making the supply chain antifragile.

In their paper, Moretto and Caniato (2021) examine cash problems that Covid-19 put on the different actors in the supply chain and discuss how Supply Chain Finance (SCF) tools can help to relieve financial distress on the supply chain. By collecting the perspective of a panel view of supply chain and PSM experts across different industries, they elaborate on a new framework to describe how Covid-19 is changing the SCF ecosystems and what types of regulations and technologies PSM needs to consider in the context of the adoption of these tools. To make the supply chain more agile from a cash flow perspective, managers should consider introducing SCF solutions to support multiple actors in the supply chain. With Covid-19 accelerating the digitalization of supply chains, new technologies are also transforming existing SCF models.

By contrast, Melnyk et al. (2021) adopt the supplier’s perspective, focusing their attention on the impact that the pandemic had on SME organizations and their relationship with government customers. Among the most important challenges that PSM faced in the public sector is the difficulty in keeping a business-as-normal interaction with small suppliers and the lack of information about business opportunities and requirements. Interestingly, although several government measures were introduced to support SMEs in different industries, suppliers in the defense sector revealed a lack of confidence about the actual effectiveness of these measures. To build more agile and adaptable supply chains, governments should consider that the business of several SME suppliers largely depends on public sector demand. As these companies are highly exposed during crises, policy measures should be designed so that less visible suppliers (such as SMEs) could also fully benefit from them.

Finally, Glas et al. (2021) use a medical metaphor and analyze the PSM “immune system” exposed to the Covid-19 emergency and identify weaknesses and strengths that should be considered moving forward. A systematic literature review of a number of relevant contributions

**Table 3**  
Summary of contributions.

Paper	PSM challenges	PSM lessons learned	AAA capabilities addressed		
			Agility	Adaptability	Alignment
<i>Finkenzstadt and Handfield</i>	<ul style="list-style-type: none"> <li>Lack of systematic inventory strategies</li> <li>Lack of visibility of strategic stock</li> </ul>	<ul style="list-style-type: none"> <li>Increase traceability for critical items</li> <li>Increase stock flexibility for critical items</li> <li>Increase stock durability and transparency for critical items</li> </ul>		X	X
<i>Van Hoek</i>	<ul style="list-style-type: none"> <li>Understand the different sources of supply chain risks</li> <li>Understand the different drivers of supply chain risks</li> </ul>	<ul style="list-style-type: none"> <li>Reduce reliance on single sourcing</li> <li>Develop alternative sources of supply</li> <li>Consider the value of local sourcing</li> <li>Increase inventory levels of critical items</li> <li>Increase information sharing with key suppliers</li> </ul>	X	X	(X)
<i>Nikookar, Varsel, and Wieland</i>	<ul style="list-style-type: none"> <li>Uncertainty (i.e., disorder) only perceived as “negative”</li> <li>Develop alternative approaches to deal with risks</li> </ul>	<ul style="list-style-type: none"> <li>Implement strategies to move away from fragility, starting with flexibility and redundancy</li> </ul>	X	(X)	
<i>Moretto and Caniato</i>	<ul style="list-style-type: none"> <li>Increase in uncertainty changes the boundaries and elements of SCF</li> <li>Adopt a supply network perspective when coping with financial stress</li> </ul>	<ul style="list-style-type: none"> <li>Implement broader SCF solutions that are able to include multiple supply chain actors (particularly the weaker nodes)</li> <li>New models of analysis are needed</li> <li>SCF can be a driver of technological innovation</li> </ul>	X	(X)	
<i>Melnyk, Schoenherr, Verter, Evans, and Shanley</i>	<ul style="list-style-type: none"> <li>Difficult for small suppliers to interact with governments during crisis</li> <li>Lack of information clarity</li> <li>Lack of confidence in government measures</li> </ul>	<ul style="list-style-type: none"> <li>Need for policy adaptation</li> <li>Dependent suppliers are more vulnerable</li> </ul>	X	X	
<i>Glas, Meyer, and Essig</i>	<ul style="list-style-type: none"> <li>A systematic approach for PSM resilience management is missing</li> </ul>	<ul style="list-style-type: none"> <li>PSM systems need to build more memory from past events</li> <li>PSM systems could learn from immune systems how to become more agile and adaptive</li> </ul>	X	X	

focused on supply chain risk management identifies several research gaps that characterize this area in relation to PSM systems. Remarkably, the authors note that, overall, the literature seems to lack a systematic approach for building more resilient PSM systems; in the future, PSM systems need to develop muscle memory from past disaster events and be inspired by immune systems to increase their agility and adaptability capabilities.

As illustrated in Table 2, all contributions focus on agility and/or adaptability, suggesting that these should become the main priorities for PSM organizations in the aftermath of the pandemic. How is the supply network dealing with the consequences of Covid-19? How will suppliers return to business-as-normal in the post-Covid-19 world? How can PSM ensure the continuity of supply from reliable strategic suppliers? Will changes in customer demand affect supply network structure and requirements? These are all questions that PSM organizations will have to consider and try to answer. This does not mean that alignment capabilities are not (or less) important. Instead, alignment seems to have a more (positive) moderating effect in improving the agility and alignment capabilities. The redesign of PSM organizations, the introduction of new tools, and the redefinition of objectives and incentives with suppliers to deal with extraordinary and ordinary times could represent all enablers to create more agile and adaptable supply networks.

**4. Looking forward: how can PSM contribute to the creation of AAA supply chains?**

The Covid-19 pandemic showed how weaknesses in PSM systems in the private and public sectors were exposed due to the suddenly increased responsibility of ensuring supplies of critical goods and services in unprecedented volumes and time scales. To minimize the impact of such a crisis, the future of global supply chain models seems to be shaped around three capabilities – AAA (Lee, 2021). While in the past AAA capabilities were mostly limited to focal-firm dominated supply chains, in a post-pandemic world these capabilities must become peculiar features of several supply chain networks. In this sense, the SCM literature is already informative about actions that companies should implement to improve these AAA capabilities from a supply chain system perspective (e.g., Whitten et al., 2012); nevertheless, much less is known and discussed regarding their implications (and expected contribution) from a PSM perspective.

In this Editorial, we try to more comprehensively elaborate the meaning of AAA for PSM and what PSM should do to contribute to the creation of AAA supply chains, characterized by higher organizational responsiveness and supply-side resilience. Thanks to the contributions included in this JPSM N&D special issue, we can ultimately better elaborate on where companies should focus if they want to improve these capabilities through PSM. These aspects are summarized in Table 4.

Low agility was one of the most significant issues that companies faced during these months. Additionally, poor transparency and information visibility, rigid procedures, lean inventory strategies, and sourcing from multiple suppliers (often with adversarial relationships) were the main causes of slow reactions on the supply side. This is where companies need to invest more in the short-medium term: even in industries typically characterized by low environmental uncertainty, a minimum level of agile capabilities needs to be introduced to be used in extraordinary situations. PSM organizations can be the primary driver of this change; working with suppliers to understand what types of information and data need to be shared and monitored, as well as understanding where supplier relationship investments should be made to gain a preferred status, will be strategic in creating a higher awareness of supply network characteristics, risks, and opportunities. Similarly, supply chains in different industries (e.g., food, consumer, retail, automotive) revealed a lack of implementation of appropriate inventory strategies for materials and components purchased (especially for more standard items). Several PSM professionals possess strong inventory

**Table 4**  
Actions to foster AAA capabilities: contrasting supply chain and PSM perspectives.

	<i>How companies can foster AAA capabilities in the supply chain (adapted from Whitten et al., 2012)</i>	<i>How companies can foster AAA capabilities in the supply chain through PSM (authors' elaboration based on literature and N&amp;D contributions)</i>
Agility	<ul style="list-style-type: none"> <li>• Increase of real-time flow of information along the supply chain</li> <li>• Development of collaborative relationships with strategic supply chain partners</li> <li>• Introduction of postponement strategies in production</li> <li>• Stock for inventory of inexpensive key components to absorb demand variability</li> <li>• Development of dependable logistics system</li> <li>• Development of supply chain contingency plans</li> </ul>	<ul style="list-style-type: none"> <li>• Increase of visibility and transparency with strategic suppliers</li> <li>• Focused efforts to develop long-term strategic partnerships with key suppliers ("preferred status")</li> <li>• Management of safety stock inventory</li> <li>• Implementation of flexible PSM procedures at the tactical (i.e., supplier selection and evaluation) and operational (i.e., order-delivery-payment cycle) levels</li> </ul>
Adaptability	<ul style="list-style-type: none"> <li>• Scout for new supply and customer markets</li> <li>• Use of intermediaries to develop new suppliers and logistics channels</li> <li>• Assessment of the evolution of needs of immediate and ultimate customers</li> <li>• Creation of flexible product designs</li> <li>• Evaluation of product technologies and lifecycles</li> </ul>	<ul style="list-style-type: none"> <li>• Use of dual/parallel sourcing strategies</li> <li>• Development of better global and local supply market knowledge</li> <li>• Use of intermediaries to support buyer-supplier financial flows</li> </ul>
Alignment	<ul style="list-style-type: none"> <li>• Encouragement of more extensive information sharing with supply chain partners</li> <li>• Allocation of clear responsibilities to supply chain partners</li> <li>• Transparent definition of how costs and benefits are shared between supply chain partners</li> </ul>	<ul style="list-style-type: none"> <li>• Higher involvement of PSM professionals in strategic decision-making processes</li> <li>• Sharing of strategic supply chain management principles with key suppliers</li> <li>• Investment in broader SCM competencies for PSM</li> <li>• Development of appropriate contract approaches with suppliers (e.g., service level agreements, monitoring mechanisms)</li> </ul>

management competencies. Consequently, companies can design more robust and effective inventory strategies by including inventory-related decisions (e.g., safety stock) under the scope of PSM organizations – who could directly discuss them with their most critical suppliers. Last, many PSM organizations (especially in the public sector) were slow to respond to the emergency because of process and systems rigidity. Covid-19 demonstrated that, even in business-as-normal times, there is a need for PSM to rely on more flexible procedures that do not simply generate the ability to quickly respond during emergencies. All (or part) of these actions would eventually improve responsiveness thanks to higher agility in the supply network and the PSM organization.

To increase PSM's capability to adapt the supply network structure in response to permanent environmental changes, the Covid-19 setting showed that companies need to reduce their reliance on a single supplier and/or geographical area for the supply of goods and services. Although less efficient, regularly using dual or parallel sourcing strategies can be more effective to put supply network shifts in place when needed, without compromising the possibility of establishing collaborative relationships. To accomplish this, PSM professionals need to gain a more profound knowledge of global supply markets; companies must thus invest in their PSM employees by providing them with appropriate systems and resources for supply market intelligence, and by organizing training initiatives for PSM skills development. The consequences of

Covid-19 also contributed to worsening cash-flow problems that were already afflicting several industries – especially for the smaller players in the supply chain. PSM is only now understanding the value of SCF instruments and how they can help supplier financial flow (and supply) continuity, especially in moments of crisis. The smarter use of financial intermediaries to adopt these tools will make the supply chain more agile in the short-term to sudden cash-flow problems (e.g., by keeping critical suppliers afloat) and adaptable in the long run (by opening up additional supply chain design possibilities). Indirectly, SCF can also contribute to higher alignment, as it can create opportunities for new incentive structures in the supply chain network.

Finally, even though it is less prominent, Covid-19 has also exposed the need for a more substantial role for PSM to reach supply chain alignment. As a critical part of an organization, PSM must “sit at the table” together with all the other strategic departments and be able to contribute to increasing alignment with external partners (i.e., suppliers). In many industries in the private sector (especially in more traditionally stable sectors, such as packed food and beverage, cleaning, metals, and paper products), companies often faced sudden supply discontinuity because PSM was not part of the contingency plans they initially created; thus, there were no chances to perceive weak signals of disruption on the supply side ahead of time. In the public sector, too many PSM organizations became overwhelmed by the volume of activities they had to support and the supply chain problems they had to suddenly solve, simply because they were not used to be assigned such responsibilities in business-as-normal times. When appropriately involved in strategic supply chain decisions, PSM can increase the level of strategic alignment with key suppliers. PSM organizations can also discuss and convey the main strategic supply chain principles to the supply network, thus limiting misalignments during critical situations.

In summary, Covid-19 placed a spotlight on the importance of supply chains and represented a wake-up call for many companies. More than ever, organizations realized that they cannot survive and compete successfully without a supply chain network with appropriate capabilities. PSM organizations were particularly exposed to this storm, as Covid-19 contributed to highlighting many supply chain and PSM weaknesses, but also opportunities. PSM organizations in the public and private sectors have realized that PSM responsibilities and skills go beyond the simple “tactical buying”, and that effective PSM decisions also require logistics, finance, and data analysis competencies, thus necessitating significant investments in advancing the skills and knowledge of PSM professionals. Companies that develop their PSM organizations in this sense will be able to significantly impact the supply-side AAA, allowing them to be more prepared to weather future storms, whether they concern sudden market shifts, radical technological changes, or unfortunate global emergencies.

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