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Global supply chain resilience with the flexible partnership

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Abstract

Purpose – This paper aims to examine how multinational corporations respond to environmental turbulence by adopting a flexible supply chain (SC).

Design/methodology/approach – This study adopts a case study in the medical industry to identify effective strategic approaches by taking advantage of new business opportunities and navigating complex business partnerships. This study focuses on medical diagnostic equipment, including computed tomography, magnetic resonance imaging and X-ray, that involves the suppliers, channel partners and medical users.

Findings – (1) The market turbulence brought the SC leaders to adopt multiple partnership approaches, i.e. funnel-based and area-based partnerships. (2) Adopting a funnel-based partnership allows the SC to seize new market opportunities. Still, it brought a risk element of SC failure from the flawed selection process and professional misconduct. (3) SC leaders adopted flexible partnerships to help address the risk of professional misconduct and select partners for long-term collaboration.

Originality/value – This paper contributes to emergent literature on social exchange theory by exposing the global SC when the SC leaders set up agility approaches. This paper also extends the discussion on the industrial marketing and purchasing theory, which seeks to promote an active buyer–seller relationship.

Keywords Resilience, Global supply chain, COVID-19, Medical equipment

Paper type Research paper

Introduction

COVID-19 has significantly shaped the global supply chain (SC) by magnifying the existing problems in the upstream and downstream business networks. Multinational companies continuously seek to restructure their business practices to respond to the business environment turbulence by focusing on how the companies work with their SC members (Song *et al.*, 2023; Khan *et al.*, 2022). The SC networks face various types of partnerships that mainly unbalance power or competitive partnerships (Li *et al.*, 2021). Despite this, firms' responses to business-to-business (B2B) settings remain understudies. Hence, there is a need to examine how to support decision-making in the B2B context (Lasrado *et al.*, 2022). Previous studies highlight the research gap on what strategies are appropriate for enhancing resilience



during the pandemic and how resilience strategies can best handle the impacts of the pandemic (Chowdhury *et al.*, 2021).

SC leaders seek to sustain their position inevitably by establishing a new channel to deal with overreliance on B2B partners. The selection process at the frontline involves assessment, which acknowledges the financial performance at a particular time frame (Stevens and Johnson, 2016). Furthermore, the dynamic business environment is crucial to the SC players since the leaders demand numerous specific capabilities of coordinating the partners (Kano *et al.*, 2020). Paul and Chowdhury (2021) generate a model which argues that accommodating various actions such as hiring machinery, sourcing and collaborating with partners present a recovery plan (Paul and Chowdhury, 2021). Hence, multiple channels offer an opportunity to broaden the market and increase its profit but pose a complicated and uncertain SC, which calls for expanded capacity to deal with supply channel conflict and consumer network acceptance (Liu *et al.*, 2021).

Supply chain flexibility (SCF) has become one of the emerging issues in research on SC management. Previous literature examines the key SC strategy in various contexts during COVID-19, such as facemasks (Rahman *et al.*, 2021), toilet papers and the garment industry (Paul and Chowdhury, 2021). Dynamism, uncertainty and unpredictability present the current business environment, which calls for a dynamic approach to the SC plan (Burin *et al.*, 2020). On the other hand, social exchange theory confirms that long-term partnerships in the SC can help buyers achieve their performance and also generate opportunistic behaviour (Tran *et al.*, 2022). Hence, it is essential to explore the dynamic relationships in the SC driven by social constructivism that seeks the phenomenon of business uniqueness context (Möller and Halinen, 2022).

Accordingly, this article aims to examine how multinational corporations respond to environmental turbulence by adopting a flexible SC. This study adopts a case study in the medical industry to identify effective strategic approaches by taking advantage of new business opportunities and navigating complex business partnerships. Hence, significant demand variations present possible scenarios for relevant strategies. The scenario approaches allow the company to respond to all demand fluctuation scenarios by scheduling the production capability accordingly. The last section discusses theoretical contributions, managerial practices and research limitations.

Literature review

Turbulence and flexible supply chain

Initially, SC management focuses on integrating between upstream suppliers and downstream customers by enhancing inventory, production process and transportation system. Hence, evolution has been moving from Japanese lean management, six sigma to core competence within firms by outsourcing non-core activities (Stevens and Johnson, 2016; Agyabeng-Mensah *et al.*, 2021). Managers seek to develop reconfigurable networks by enhancing adaptable, flexible and reconfigurable SC networks to deal with unknown risks (Paul and Chowdhury, 2021). After that, the industrial marketing and purchasing (IMP) approach offers research opportunities to explore the phenomenon and managerial reality a business's unique context by adopting social constructivism (Möller and Halinen, 2022).

IMP proposes an interaction approach to examine functional buyer–seller relationships, including long-term contracts, multiple sourcing, supplier development and market orientation (Turnbull, 1990). Hence, the SC adopts flexible approaches to multidimensional practices ranging from relationship and design to inter-organisation information systems (Stevenson and Spring, 2007). The IMP group has emerged and highlights three elements: interactions, dyads or relationships and networks (Wuehrer and Smejkal, 2012). The enormous market turbulence exerts pressure on the networks, which implies marketing and logistics practices to meet on-time product delivery (Dadzie *et al.*, 2022).

Value chain conflict

The SC leaders seek to balance the global value chains by adopting multiple distributors and accessing information to achieve sustainable competitive advantage (van Hoek, 2020). The approach complements resource orchestration theory, which seeks efficient allocation of firm resources to retain productivity by establishing a flexible and adaptable organisational culture to deal with uncertainties (Li *et al.*, 2020). On the one hand, the middleman has sufficient raw material inventory and is in a strong position. In order to obtain more profit, the middleman will increase the supply and the price, so that the supply level will be more significant, and it will cause overstock and a high cost of supply. Hence, the manufacturer faces random market demand and thus it is difficult to adjust the order strategy timely (Fan *et al.*, 2019).

A firm prefers to establish a single or few suppliers, while others seek multiple suppliers for some reasons. The just-in-time and total quality approaches suggest firms select a few SC partners with long-term relationships (Minner, 2003). Even if the demand does not fluctuate, the retailer can accurately forecast the market demand and then share this accurate information with the suppliers. As a result, the suppliers can straightforwardly reduce unnecessary inventory. When the demand variance increases, the retailer can still forecast the market demand with relatively less accuracy (Huang *et al.*, 2017). However, it becomes difficult for firms to predict sales and forecast demand fluctuations, leading to decreasing levels of SC collaboration and transformation (Arora *et al.*, 2022).

Firms demonstrate their ability to adapt to dynamic markets by adopting alternate resources in the physical distribution system to respond to consumer, transportation and facility cost (Liao, 2020). Flexibility decisively contributes to firm competitive advantages by outsourcing multiple suppliers with manufacturing flexibility (Hülsmann *et al.*, 2008). This approach requires flexibility-enhancing capabilities in production and agility-enhancing capabilities in time delivery and after-sale service (Shekarian *et al.*, 2020). Although a market-oriented firm still performs better in markets with more significant turbulence than those that are more stable, this incremental benefit decreases over time (Kumar *et al.*, 2011).

Research method

This study adopts a qualitative method to address the research question of how strategic sourcing decisions in the SC quickly respond to the demand for critical medical equipment. The “how” and “why” research questions are the relevant questions for the qualitative method, which allows the researchers to explore deep insight (Hamilton and Finley, 2019). The unique setting for this study is the strategic sourcing decisions during the pandemic, which provides insights into the characteristics of respondents and how they identify, exploit and maintain the business opportunities in the medical device market. In particular, we advance the flexible SC by addressing the following research questions.

RQ1. How are strategic sourcing decisions in the SC quickly respond to the

RQ2. What risk arises from the agile approaches in the SC?

RQ3. How does the SC address the risk?

The qualitative data leads to a rich text analysis that provides an excellent possibility for a new theoretical understanding. We expect that the unique case of the medical equipment during COVID-19 will yield insight into a phenomenon for further inquiry. Hence, this study seeks common ground across different SC players to understand how they differ concerning the phenomenon under investigation (Ulin *et al.*, 2016). Previous studies highlight that the health economy often utilised the qualitative method to explore the intersectionality theory with various critical inquiries (Abrams *et al.*, 2020).

Case study approach

The qualitative method describes the phenomena to generate value for science. More specifically, this study adopts a case study approach, allowing the researchers to understand multiple quantifiable (Hancock and Algozzine, 2006). This study chooses the case study approach to provide a more substantial base for explaining the underdeveloped topic of strategic sourcing decisions during the new normal. Case studies frequently focus on meaning and discover the meaning of a particular term or idea among members of a culture (Bartlett and Vavrus, 2017).

A case study approach is an optimal research strategy to provide explanatory problems on a micro-level, which entails social science theories (Swanborn, 2010). This approach allows the researchers to explore specific behaviour among the players in situations where the pandemic occurs, accompanied by adopting a systematic analysis of perception and acting in their nature and complexity phenomena. This approach does not generalise the phenomenon but provides detailed descriptions of findings within the study setting by determining the transferability of the results to other contexts (Pedersen *et al.*, 2019).

The inductive and interpretative approaches highlight practice and problem-solving, which are suitable for theory building. Qualitative research seeks common sense by exploring the experiences of working with and studying entrepreneurs (Gartner and Birley, 2002). Moreover, this averaging process is curious since the study of the partnership in procurement involves identifying and understanding the behaviour of the unique entrepreneur.

The research participants

This study focuses on medical diagnostic equipment, including computed tomography (CT), magnetic resonance imaging (MRI) and X-ray, that involves the four suppliers, three local channel partners, three medical users and two policymakers (Table 1). We interviewed three respondents representing manufacturers that supply major diagnostic products, such as ultrasound, MRI, CT and X-ray. The organisations are legal entities that are wholly foreign ownership with some local restriction regulation, limiting direct selling of their products in the public procurement system. However, the products are available in an e-catalogue under the Indonesia Agency for Public Procurement under local channel partners.

The local distributor partners play a pivotal role in the public procurement process since the manufacturing supplies have their products listed in the e-catalogue that must register under the name of their local partners. The three research participants informed that their companies belonged to a group where foreign investors owned 40% of equity. Hence, their organisations do not become subject to strict requirements and limits like foreign firms. We also interviewed three managerial staff in a COVID-19 referral hospital. One respondent works in national-level hospitals, while the other two are staff in district-level hospitals. The government has provided financial resources to the national-level hospitals, while the district-level hospitals have gained support from the local governments.

Research participants	Number of respondents	Interview types	Average time of interview	Average work experiences
Principal companies	4	Online and offline	30 min	14 years
Policy makers	2	Online	27 min	22 years
Local distributors	3	Offline	55 min	18 years
Local end users	3	Online	30 min	20 years

Table 1.
Research participants

Analysis

The analysis concerns grouping similar text segments following the research questions, which we call axial codes. Hence, we examined how these themes and patterns aligned with each player's capability and the user who expected the most valuable products. This analysis process involves the interaction of the ground researcher and a series of discussions among the research team in continuous consultation (Shelton and Minniti, 2017). After examining the data with identified nodes, the researchers revisited the literature review to uncover consistent themes and recognise the phenomena by understanding the meaning and sense-making of research participants. Hence, the researchers independently compared the codes to identify the selective principles. Finally, after coding all transcripts, we discussed the codes, determined sub-themes and placed the themes.

Context

The government of Indonesia has issued Presidential Regulation 16/2018 to set out the policies for the public procurement system. The approach decentralises the bulk of public procurement activities in Indonesia to individual ministries and local governments. All companies that attempt to sell a product to the governments should offer their product listed in the e-catalogue under a local firm's registration. The authority to manage the e-catalogue goes to the National Agency for Public Procurement (LKPP), promoting the six procurement principles: transparency, open and fair competition, efficiency, effectiveness, non-discrimination and accountability. To respond to COVID-19, the government revised the national public budget to fund the procurement of USD57m to provide medical equipment.

Despite the fact that Indonesia experienced an increased rank on the Transparency International Corruption Perceptions Index, the establishment of e-government presents challenges to improving the transparency of the public procurement process. The Indonesia Corruption Watch highlights that the Indonesia Ministry of Health set 430 procurement plans to respond to the COVID-19 pandemic. The procurement activities are under the national government budget that allocates most healthcare products and equipment. Among those activities, 74 plans adopt direct procurement methods in which the regulation mandates that actions with less than IDR 200m can skip the open tender process.

The government also issued a regulation to relax the licencing requirement and encouraged the business to support the procurement of medical equipment to prevent the spread of COVID-19. For example, the Ministry of Health (MOH) accelerated certification services for distribution certificates by offering a one-day-service program for marketing authorisation. The ministry also simplified the required document. Hence, the local distributors can submit their business registered number, a statement letter and information about the engineer for the aftersales service. In addition, MOH Regulation 7/2020 only requires importers to have a recommendation letter from the National Disaster Management Agency, and they could apply through the online system.

Finding

Preposition 1. The market turbulence brought the SC leaders to adopt multiple partnership approaches, i.e. funnel-based and area-based partnerships.

The SC used to rely on the area-based partnership, where our firm pointed to a local firm that was responsible for meeting a specific sale target for a certain area, e.g. Medan, Palembang, Surabaya, Semarang, Makassar, Denpasar and Manado. The area-based partnership agreement has been working for more than five years. The local distributors achieved their performance by allocating valuable resources to manage the customer relationship,

especially with the hospitals owned by the local governments. However, the area-based partnership could not respond to the emerging demand from the central government in Jakarta and meet the end users at local hospitals.

It is mandatory that the global supply chain that supplied products for public hospitals should involve a local company. Our company appointed a local firm to resell our product for government market in a certain area. We adopted an area-based partnership agreement to meet the public procurement's requirement.

We need some local partners with a larger authority to deal with the ministry of health in Jakarta and local hospitals in some provinces. Unfortunately, those partners focused on a specific product at a specific project, such as a CT scan for a hospital in Surabaya and Medan. Each project came with a different funnel level. The context motivated us to adopt funnel-based partnership.

The demand for medical equipment dramatically increased due to the central government's intervention in addressing the pandemic. The MOH intended to buy medical equipment for numerous hospitals in the main cities, which became the pandemic centre. Hence, the purchase funnel presents at least three customer journey stages. The first step focuses on highlighting customer awareness where the products or services offered solutions, followed by identifying customers' interests. Hence, the last stage presents how the SC meets commitment and sales.

The local firms came to me with a proposal that offers various levels of the purchase funnel. Some brought proposals and convinced their relationship with the decision maker at the ministry of health would help the product meets the customers' expectation. Others provided a vital piece of information but had no track record in the medical business.

My company selected the partners based on the level of the purchase funnel. Therefore, I continuously identify a partner that meets the end-users with a high probability of sale commitment. Hence, we sent the purchasing order to our factory in Germany that produced a specific product following the accomplished procurement.

Preposition 2. Adopting a funnel-based partnership allows the SC to seize new market opportunities but it brought a risk element of SC failure from the flawed selection process and professional misconduct.

Adopting the funnel-based partnership for each product involved multiple and flexible partnerships. Each supplier focused on one product with various stakeholders, from the MOH with a specific budget, the ministry of finance with a procurement system, the local hospital managers with a maintenance budget for aftersales service, to the local medical staff, who focused their medical interest. A wide range of partnership approaches allowed the SC leader to have more opportunities to select the best partner with a high possibility of achieving the target than a single type of partnership, such as the area-based approach. However, the SC leaders carefully designated the relevant partners by allocating more time and resources.

Our company no longer depends on a single partner in each sales area. Instead, I have encouraged the local partners to seize the new opportunities which arise from the Ministry of Health.

Our company closed the order for this year at the end of September. Otherwise, the products will arrive next year.

The government approved the budget in June and began announcing the offered product list in July–August.

A SC leader with a solid network for the specific project will choose a partner that can support the networks to seize the targeted market opportunities. On the other hand, a project where an SC leader has an unreliable network needs local partners with a solid network that will lead the business process. Therefore, an SC leader with a reliable network will not select a local

partner with a solid network. Otherwise, the value chain conflict will occur since both parties attempt to take the lead.

A track record also becomes a critical issue for an SC leader that found a potential partner. A local partner with an excellent track record typically established a long-term partnership with the supplier. A newcomer strived to achieve the performance and provide an excellent track record. Hence, the latest market offered an opportunity for a local company to seek a partnership with the producer.

The funnel-based partnership raises a risk of a blank spot in marketing areas that call for the principle companies to support the new distributors to build their capacity in handling the end-user customers.

Preposition 3. SC leaders adopted flexible partnerships to help address the risk of professional misconduct and develop more comprehensive assessments for long-term collaboration.

The emerging demand from the MOH has encouraged SC players to quickly seize the opportunities by seeking a new funnel-based partnership. Typically, the procurement process takes one to three months. However, during the pandemic, the local hospitals expected that the medical equipment would arrive less than one month after the procurement process. Hence, the SC leaders needed to make sure that their products arrived on time to the customers. As a result, there is fierce competition between the local distributors to seize the business opportunity from the emerging demand for medical equipment.

The principle encouraged the distributors to order the product even though the procurement has not yet come to a final decision.

For local distributors, a funnel-based partnership offers opportunities to local distributors to become part of the SC. As a result, they aggressively sought options that provide a stronger bargaining position than their direct competitors. For example, those who had ties at the MOH attempted to convince the SC leader that their organisations provided the most reliable channel for the specific products. On the contrary, those who had ties at the local hospitals argue that their organisation has a bargaining position with the end-users.

I have a solid network with the local hospitals and their end-users. They favoured our firm to provide their equipment. They will reject other products that come from different suppliers.

I have a solid network with the decision-makers. (He showed his pictures with the ministry of health, the decision makers at the central government, and the hospital directors).

I carefully manage the relationship with our business partners. I prefer to delegate the day-to-day activities to my manager. I will not establish a personal relationship with the local partners. I never take a picture with them.

Figure 1 summarises the three actions with each consequence. The first step shows how SC leaders adopt multiple partnership approaches, which implies the risk of SC failure. Hence, the companies seek new distributors. However, the action entails an overwhelming selection process. Furthermore, the companies decide to make a short-term agreement, which poses the risk of rent-seeking behaviour. After that, the companies choose to make the deal to adopt a more flexible chain.

Discussion

Theoretical contribution

This article highlights the IMP theory, which seeks to promote an active buyer–seller relationship by proposing long-term contracts, multiple sourcing and market orientation

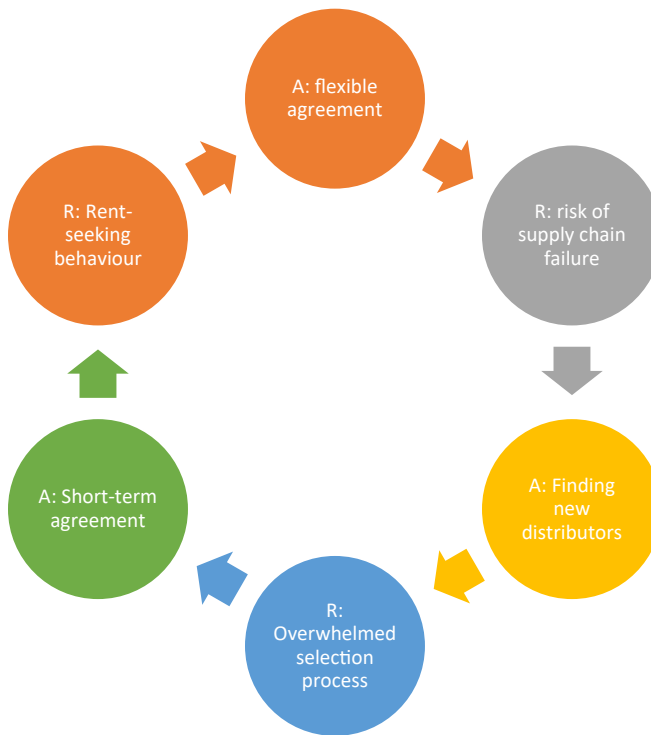


Figure 1.
Supply chain resilience
with the flexible
partnership

(Turnbull, 1990). Moreover, the SC adopts flexible approaches to multidimensional practices ranging from relationship design to inter-organisation information systems (Stevenson and Spring, 2007). Hence, the resource-dependent approach encourages SC partnerships to engage in long-term partnerships by adopting collaborative planning and decision-making (Ramanathan and Gunasekaran, 2014).

On the contrary, our findings indicate that market turbulence has driven the SC leaders to endorse multiple partnerships by finding new local partners with short-term partnership contracts. The short-term partnership contract presents a response to the new markets during the pandemic in which the MOH called for support to respond to the pandemic. We argue that the short-term partnership presents SC agility. The SC leaders will enhance the relationship into long-term strategy after the local partners demonstrate their capability and credibility by developing a fundamental structure (Bidhandi and Valmohammadi, 2017; Dubey *et al.*, 2018).

Secondly, a flexible approach encourages the SC to address the risks arising from professional misconduct. The results extend the discussion over dynamic relationships in SC driven that social constructivism seeks the phenomenon at business uniqueness context (Möller and Halinen, 2022). This study indicates that adopting a funnel-based partnership allows the SC to seize a new market opportunity which also contains a risk element of SC failure. Furthermore, having multiple partners help the SC leaders to deal with a disruption risk (Huma *et al.*, 2020). Hence, this article argues that embracing a flexible SC in the short term allows firms to reject partners with professional misconduct and lack of performance.

This study explores how the medical equipment industry adopts a flexible SC to avoid the risk of a turbulent business environment. We highlight how SC leaders adopt the purchasing

funnel to seize business opportunities instead of adopting long-term and area-based partnership that has been working during the normal environment. The results extend the current literature on a flexible SC to maintain a sustained competitive advantage (Burin *et al.*, 2020). Moreover, this article also highlights opportunism behaviour in which social exchange theory argues that opportunism behaviour appears during the long-term partnership in the SC (Tran *et al.*, 2022).

Lastly, this article contributes to the context of health service in Indonesia where the policy attempts to support local companies in the global value chain. The results indicate that local participation presents political ties, especially the MOH which decided to become the main buyer during the pandemic. However, the policy intervention implies the dynamic SC, which involves value chain conflict that arises from stiff competition between the local suppliers. Moreover, the government's initiative to impose local content requirements in the medical industry seems to miss the target since the local companies focus on distribution activities.

Managerial implication

Firstly, this article highlights how the SC leaders promote an agile SC by adopting multiple partners, flexible contracts and a responsive service to deal with the market turbulence. Hence, the SC leaders should adjust their relationship function, partnership approaches and contract negotiation that support the agile SC. The agile SC embraces the competition tension by generating a flexible relationship with the best suppliers. Hence, the firms should consider the gaps which spring from multiple partnerships. The agile SC should effectively address changing market needs while becoming faster in responding to and recovering from potential bottlenecks by adopting a more holistic selection framework.

Secondly, this study encourages firms to promote risk awareness by adopting multiple partnerships in the SC. Given the SC failure during COVID-19, it is unsurprising that SC leaders seek to find different partnership approaches with their networks. Some focal firms may experience a weak bargaining position with local partners. Hence, the SC leaders should examine a specific context in which they bargain with local distributors. Otherwise, they should find another supplier with a lack of capability but great credibility.

Lastly, the funnel-based agreement poses some potential risk of SC failure. Multiple partnerships lack trust-based relationships, posing possible mismatches between supply and demand. Hence, SC leaders need to develop a contingency plan for a short-term collaboration to respond and acknowledge the front-line divisions should manage their agile services network. On the other hand, local companies need to allocate resources to build trust with customers to fulfil the demand for after-market service.

Research limitation

This article focuses on how SC leaders manage the front-line market by partnering with local distributors in Indonesia. This study found only three multinational companies that supply the medical devices which support the local hospitals' fight against the pandemic. The local companies merely contribute as authorised distributors, and the local industry transformation is still a long journey. Hence, there is an opportunity for future studies to provide a quantitative approach to exploring the dynamic relationship between the medical device industry in developed countries and the local distributor partners in emerging economic countries.

Secondly, this study adopts interpretative approaches, which use deep information from a few key informants in the medical-device business. Theoretical generalisation pertains to the processes and the context where the individual and organisation decide by comparing

qualitative evidence to the existing theories. The qualitative method facilitates the analysis of informants' subjective data to understand a specific patterned decision-making process. Future studies should compare different industries with various technology levels, which concerns dynamic partnerships between manufacturers and distributors.

Conclusion

This article illustrates the dynamic partnership to the agile SC by drawing on qualitative evidence on the medical equipment in response to COVID-19. This study interprets research findings in light of the industrial marketing and purchasing approach as a property of complex systems. Once the company introduces a solution, another challenging issue arises and calls for the robust capability to redeploy the functional competencies toward a dynamic business environment. Overall, this article contributes to emergent literature on social exchange theory by exposing the global SC when the supply chain leaders set up agility approaches.

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