

IPS Forum on Rethink and Refocus Value in the Economy: Future of Supply Chain and Logistics

By Faizal Bin Yahya

Introduction

The forum on “Rethink and Refocus Value in the Economy: Future of Supply Chain and Logistics” was convened on 4 August 2020 by Dr Faizal Bin Yahya at the Institute of Policy Studies (IPS) in partnership with Lancia Consult. It was co-moderated by Dr Faizal and Ms Si Nghah Leong from Lancia Consult and attended by over 60 participants from industry, policy making, academia, education and think-tanks. The aim of the web discussion is to briefly examine the state of the supply chain and logistics sector in Singapore today and in the future. It contextualises this sector among global trends while examining what that means for Singapore’s logistics sector and its role in the regional and global supply chain network. Some of the key themes include Industry 4.0, digitisation, strategic workforce planning, and the future of work.

The global logistics market reached a value of US\$4.73 trillion in 2018. In Singapore, the logistics and transportation industry is a cornerstone of our economy, contributing S\$27.9 billion, or 6.9% of GDP in 2017. In 2019, the sector employed 260,000 workers. Under the Industry Transformation Map (ITM), the plan is to have a value-add of S\$8.3 billion and an additional 2,000 jobs by end 2020.

The logistics and transport industry even during COVID-19 has proven to be crucial to keeping our economy functioning and connected to larger global trading networks, especially to our major and emerging trading partners. In 2018, the International Logistics Performance Index (LPI) ranked Singapore seventh among 160 other countries in terms of the relative ease and efficiency of logistics operations into and within a country. While the supply chain has been massively disrupted by the pandemic, the demand for a seamless flow of good and supplies has never been higher. The World Trade Organization (WTO) has predicted that global trade could contract as much as 30 per cent by end 2020 from 2019 figures but for Singapore, contraction will be more than 40 per cent. Therefore, Singapore needs to address a critical question — how can it master the supply chain and logistics evolution while future-proofing its workforce to create a distinctive competitive advantage in the global economy?

Executive Summary

Key topics highlighting supply chain vulnerabilities and disruption due to COVID-19 were discussed, where some of the measures to increase their robustness and resilience included,

leveraging technology such as digitalisation. The panellist from the Economic Development Board (EDB) highlighted the pandemic's blow to the nation's entire supply chain, which has led to difficulties in sourcing, procurement and connectivity for the logistics sector. Changing consumer habits due to the impact of the pandemic has also disrupted the balance of demand and supply. Therefore, there is a need to ensure that the future of supply chain management is resilient, responsive and circular. The panellist from DHL emphasised the important role of supply chain digitalisation in meeting evolving customer expectations and labour constraints. He shared about his organisation's commitment to prioritising the scalability of their technology investments and the end goal of industrialisation and commercialisation for their new technologies.

Disruptions are also opportunities, and the panellist from Savills offered insights to the hidden value of real estate in creating demand in the supply chain. However, last mile delivery is a concern because manufacturers usually keep track of the first mile, have some visibility in the middle mile but are usually not involved in the last-mile delivery. He raised the point that the optimal value of the last-mile stage is relatively low, but this stage in the supply chain holds the most potential in terms of market value. In this context, the panellist from Versafleet shared how transport management software can transform companies' last-mile delivery into an efficient and seamless experience. He gave various use cases which have led to huge increases in his clients' operational efficiency and productivity in last-mile delivery.

The panellist from Opentext shared ways by which companies can build supply chain resilience as a prepared response to future crises and black swan events. For example, nearshoring production by shortening logistics networks, introducing dual sourcing by quickly identifying alternative suppliers, establishing a global plant floors, developing a supply chain map to identify and address points of weakness across the supply chain. With regard to the future of the supply chain and logistics workforce, the panellists agreed that the impact of Industry 4.0 on various segments of the industry's labour force will be varied. Transactional labour tasks will be automated, while roles involving planning and forecasting will be augmented to a degree. Ultimately, all panellists supported the importance of change management in driving successful transformation in an organisation.

Disruption to the Supply Chain

A poll was conducted during the webinar to find out the audience's views towards supply chain and logistics disruptions in Singapore.



In the poll responses, 55 per cent of respondents included global and regional developments as a cause for supply chain and logistics disruption in Singapore. Emergence of new business models and Industry 4.0 also came in as perceived top causes for the disruption to the sector.



Next, 52 per cent of poll responses cited the ability to stay ahead in technology adoption as one of their greatest concerns about the logistics and supply chain sector. The cost of running a business in Singapore and adapting the workforce to offer the right skills to businesses also came in as top concerns.

“When we look at the future of supply chain and logistics, a key question for us is how can we grow our supply chains out of Singapore?” – EDB panellist

The panellist from EDB highlighted the difficulties in sourcing for and procuring goods and services along the entire supply chain. Growth of businesses has been impeded due to difficulties in securing external partnerships due to travel restrictions. The pandemic has also restricted movement and access of workers to factories and workplaces, which has resulted in delays and shortages in obtaining the necessary raw materials. This has highlighted the problems over poor freight connectivity, the need to implement public health safeguards to resume production and the “fallout” due to legal contractual obligations if orders are unable to be completed. The impact of the pandemic has also changed consumer habits because of shortages in inventory that has resulted in cancellation of orders and losses. In addition, consumers are likely to place more emphasis on groceries and medical supplies, which will disrupt the balance of demand, and supply.

Supply chain management of the future needs to transform to become more resilient, responsive and circular. Within VUCA conditions (i.e., volatility, uncertainty, complexity and ambiguity) and rising business costs, the supply chain has to ensure business continuity as well as cost and operational efficiency. In the realm of the digital economy — especially in emerging economies and trends such as hyper-personalisation — companies need supply chain models that are able to respond to growth opportunities to create new value. Moreover, the added dimension of a circular supply chain model had taken on board commitments for sustainability and in conjunction with simplifying sourcing procedures to gain a competitive edge while satisfying demands to be environmentally and socially responsible. The driving forces that are shaping current and future trends of supply chains included Industry 4.0, increasing collaborations vertically and horizontally and shifts in Asian markets.

Digital Transformation

“Supply chains are changing faster than ever before. We cannot continue simply operating the way we have operated for a long time.” – DHL panellist

The speaker from DHL highlighted the important role of digitisation in meeting customer demands and labour constraints. The adoption of new technology such as data-based offerings, automation and robotics have become commonplace due to a need for lower costs and higher flexibility in operations. With the rise of e-commerce, the “Amazon” effect has shaped consumer behaviour to desire faster delivery and put pressure on suppliers to provide reduced order lines and more SKUs. In tandem, the labour required has to move with greater speed and flexibility as well as acquiring industry-relevant digital skills to offset the rapid increase of manpower costs.

For a well-known brand, DHL has always placed an emphasis on achieving scalability with their technological investments. The process of innovative research has to deliver a proof of concept that will then be tested for production that will eventually lead to industrialisation and commercialisation. DHL has highlighted the following technologies for accelerated deployment:

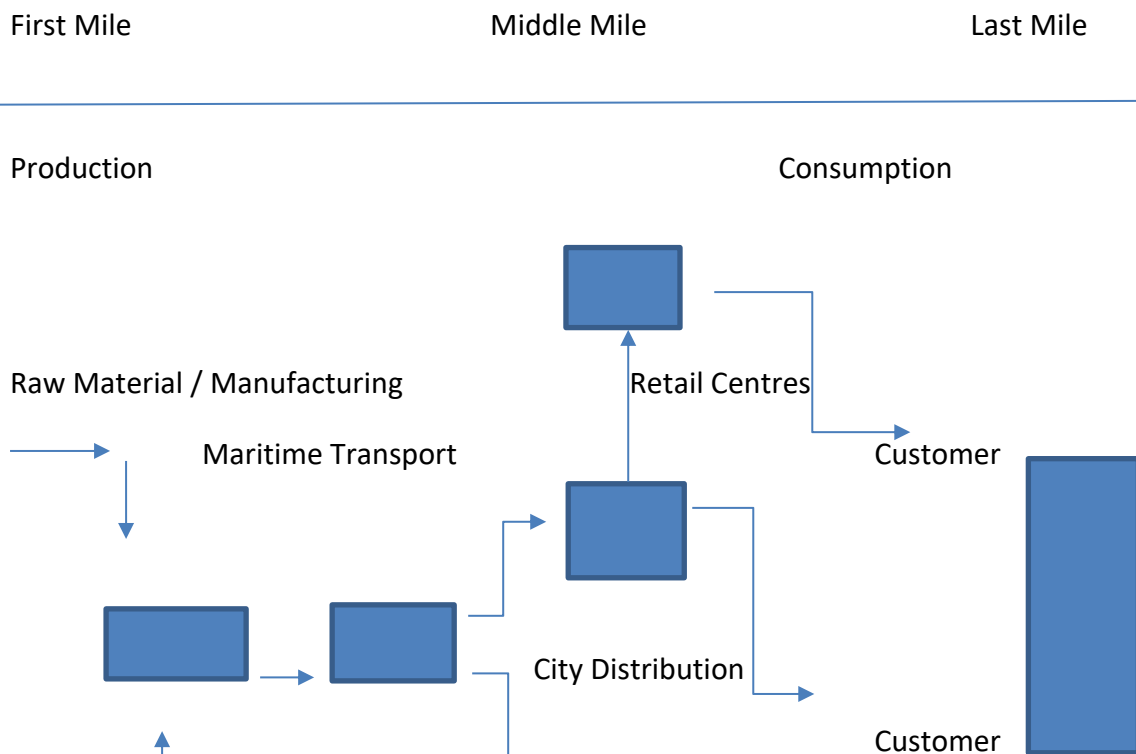
- Assisted Picking Robots
- Goods to Person Robots
- Wrapping Robots
- Indoor Robotic Transport
- Inventory Management Robots
- Robotic Arms
- Smart Operations
- Wearable Devices
- Intelligent Process Automation
- Algorithmic Optimisation
- Supporting Robots
- Asset Tracking and Monitoring

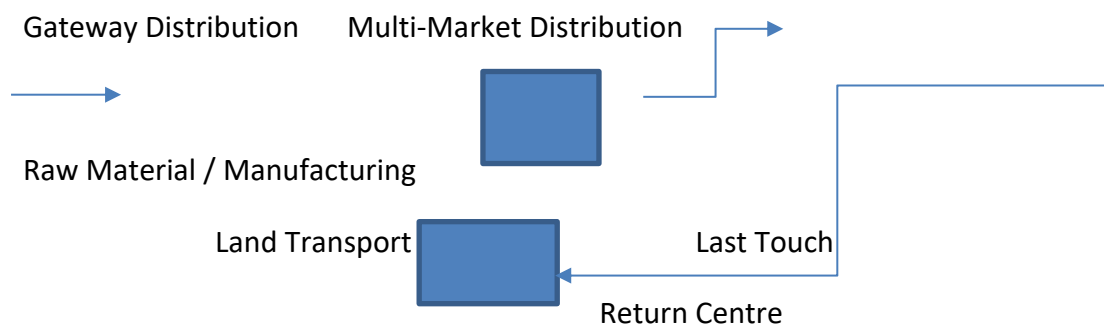
New Opportunities in Real Estate

“The real challenge for most governments is the funding gap. The funding challenge is twofold – the absolute amount required for infrastructure and the time delay before it has a positive impact on the economy.” – Savills panellist

The panellist from Savills discussed the government’s challenge in unlocking the hidden value of real estate in order to create value in demands in supply chain. The production process involves several touch points as illustrated in the following diagram of various stages in the supply chain journey (s).

Diagram on Supply Chain Journey(s)





The manufacturers are concerned with the first mile in the supply chain and have some visibility in the middle mile, but usually are not involved in the last-mile delivery. Within Singapore, some companies are resorting to developing “drop box” locations for the ease of consumers. However, in more central locations, the value of the real estate has not been fully optimised to have accessible distribution centres or collection points that could unlock and enhance the value of the real estate in those locations. The optimal value of the last mile stage is relatively low but this stage in the supply chain holds the most potential in terms of market value.

In addition, the panellist from Savills highlighted the growth of the internet economy in new regions like Southeast Asia. The internet economy in Southeast Asia is booming within the urban areas and beyond, driven largely by e-commerce. The pandemic has added increased impetus to e-commerce consumer trends and the need of infrastructure in the ecosystem to cater for these trends. The need to build a robust and resilient supply chain which would include easier access to supplies has enhance the need to relook positioning of stocks and supplies for consumers going forward. In addition, the first-mile stage consisting of manufacturers and production have to be re-examined in terms of diversification of sources of supplies. There are several challenges that need to be addressed which includes mutual recognition of standards to ensure health and safety of consumers. With the rise of consumer demands in the Asian region amidst rising trade tensions, the sourcing of new sustainable production lines become critical. Disruptive technologies are transforming business models that have to cater to changing lifestyles and consumer demands especially in the urban areas. The increasing complexity and the urgency to deliver instant gratification to consumers have created a convenience-centric ecosystem that is increasing in complexity for the logistics sector.

Technology for Seamless Delivery

“When we look at supply chain, most brand owners are on top of the first mile and middle mile. But the last mile is where everything falls apart. The level of digitalisation typically stops from the last mile onwards — sometimes called the invisible mile.” – Versafleet panellist

The panellist from Versafleet shared how technology can be utilised to manage increasing complexity in “last mile” delivery. Versafleet innovates transport management software to automate logistics operations for companies in the region. The traditional method of managing last mile delivery has been with pen and paper because brand owners normally digitalise the “first mile” and at most have visibility over the “middle mile” movements. The last mile is usually outsourced to third party that engages SME transporters. The effectiveness of Versafleet’s software in transforming brands’ deliveries into seamless flow was demonstrated in several case studies.

In one case study, in Malaysia, just before the Movement Control Order (MCO) was imposed, a popular health and beauty retailer deployed Versafleet’s systems. This resulted in 90 per cent of time saved in reduced planning time for deliveries from two to four hours to under 10 minutes. The company was able to use split-teams of operators to plan together in real time remotely even while working from home. Operational efficiency has been increased by 200 per cent and the company was able to restock all its store outlets once to twice daily and up to five times a day. The company was able to receive real-time updates on delivery progress which enhances customer satisfaction and facilitated contactless deliveries. Not only has the billing time improved because of digital proof of deliveries, the live tracking also reduced the worries and anxieties for recipients especially for home deliveries.

In another case study, in relation to creating revenue from the same asset base as mentioned by the previous speaker from Savills, Versafleet was able to assist an established office mover company to leverage on its software to increase its efficiency and productivity. However, there are always lessons to be learned and improvements to be made to the software. For example, although Versafleet’s app was available in seven different languages, when it was deployed in the southern Indian region of Tamil Nadu, Versafleet had to add Tamil to the range of Indian languages because Hindi was not widely used in that region. In addition, the software has to adapt to various levels of technology and be able to run on the most basic of IT infrastructure.

The Versafleet platform and transport management software enables companies to have their delivery and supply-side data to be captured and analysed to provide seamless delivery that includes safe-distancing measures and contactless delivery, which is especially pertinent in the new socially-distanced world. With just seven days’ accumulation of data, Versafleet was able to map an entire city’s product distribution.

Supply Chain Resilience

“Mass amounts of data transmitted over platforms provide a big knowledge base which organisations can use to analyse, predict and improve their supply chain strategies for the future.” – Opentext panellist

The fifth panellist, from Opentext, highlighted the need to build supply chain resilience by leveraging on cloud computing. For example, companies are advised to diversify their supply chain networks to be able to redirect business to alternative second or third suppliers. Some of the methods companies are utilising to build more resilience in their business models includes nearshoring production by shortening logistics networks; introducing dual sourcing

by quickly identifying alternative suppliers; establishing a global plant floor with the ability to manufacture anywhere; developing a supply chain map to identify points of weakness across supply chain; and accelerating business recovery by appointing a business continuity manager.

For companies that have decided to outsource their supply chain network, Opentext provides the unified integrated platform to enable companies to connect, optimise and grow their business. Supply chain software like Opentext bring many benefits to supply chain businesses. First, they afford businesses the flexibility to enable business continuity by ensuring accessibility of information from any location in the world. Second, they can help to facilitate collaboration to improve daily supplier relationships and enable post-disruption conditions in the supply chain to be determined. Third, they provide visibility that gives real-time view of shipment disruptions and information flows across the end-to-end supply chain. Fourth, they can generate insights to enable companies to leverage supply chain information, to make faster decisions and optimise business processes. By leveraging Internet of Things (IoT), companies are able to stay connected and enable an intelligent supply chain. IoT provides access to obtain real-time insights into shipment location and condition. Geo-fencing could then be used to ensure visibility and security of connected assets and shipments. This is undertaken by event monitoring and dashboard tools, with exception-based notifications that would enable better asset utilisation while improving customer satisfaction.

Going forward, disruptions will assume many different forms and companies need to build more resilience into their business operations. COVID-19 will force companies to restructure their supply chain operations. The pandemic has accelerated the growth in cloud-based integration technologies, like Opentext, that can enable and accelerate transformation.

Q & A Session

Q. Companies are adopting a “China Plus One” strategy, shifting away from an over-reliance on China as a trading partner in response to the pressure of recent trade wars and the coronavirus pandemic. What can Singapore and companies in Singapore do to better maximise on this trend?

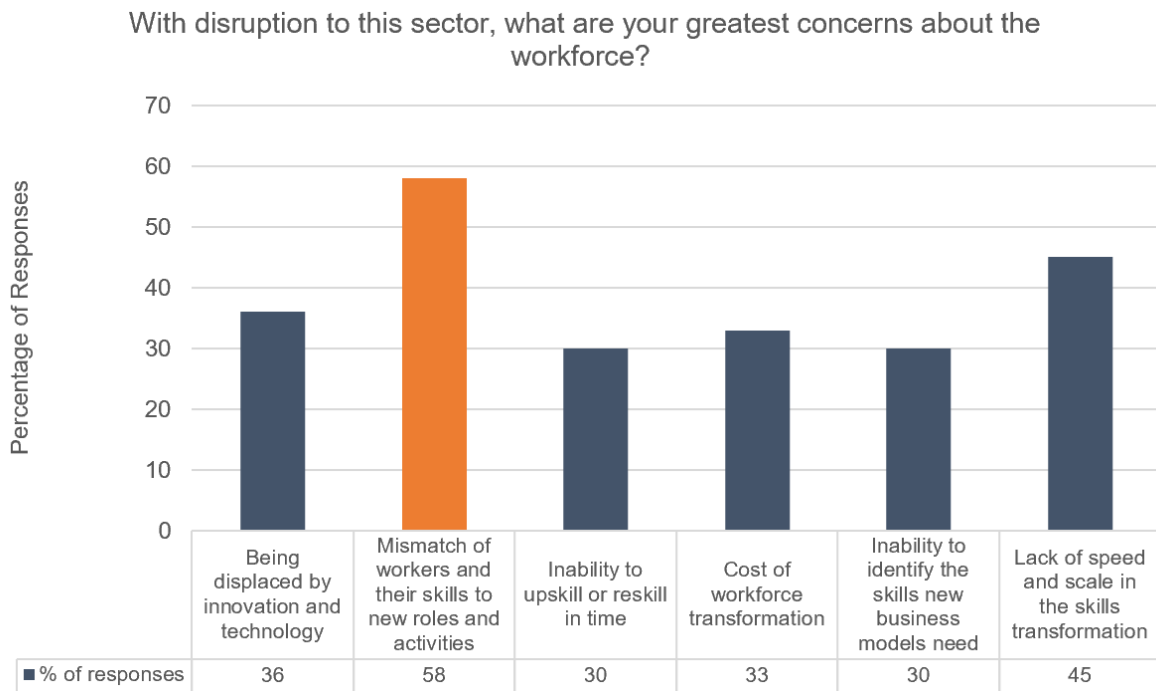
The Savills panellist pointed out how this strategy is likely to benefit economies in the ASEAN region such as Indonesia and Vietnam. For Singapore to capitalise on this trend, the EDB panellist brought up the example of Batam’s rise as a new manufacturing hub in the region. Singapore could complement the growth of the manufacturing hub with its logistics ecosystem, serving as an gateway for distribution in the region and globally.

Q. What might be the implications to the workforce in logistics industry? And what are the gaps (if any) in terms of skill sets required?

The DHL panellist shared his view that the segments of labour force in supply chain will be impacted to various degrees. For transactional labour-intensive tasks, these will need to be automated. The middle layer roles involve augmenting planning and forecasting which will be impacted in some ways by Industry 4.0. The supplementing roles could work in tandem with the changes brought by Industry 4.0. The Savills panellist added that manufacturers, distributors, wholesalers and retailers connected with the logistics sector will be impacted by

Industry 4.0. The change management required needs to involve a vision, planning and a road map to enable staff in the company to be engaged in a movement that is purposeful to transform the company.

“The bottom line comes down to change management. You can have the best digital technologies but if any of the key stakeholders are not convinced, you are set up for failure.” – EDB panellist



A second poll was conducted to elicit the audience’s greatest concerns about the workforce of the supply chain and logistics sector. A majority of 58 per cent of poll responses included the mismatch of workers and their skills to new roles and activities as one of their greatest concerns. The lack of speed and scale in skills transformation and the risk of being displaced by innovation and technology were also key concerns highlighted by the audiences.

Q. Many of the presenters discussed systems that optimised inventory management. Are these systems integrated with revenue management — including, more specifically, price optimisation?

The DHL panellist shared that any technology adopted has to be able to be scaled across the entire operations to reduce the costs of investments and induce ROI as soon as possible and also savings. The Opentext panellist said the digital platforms in which his company operates for company clients are able to calculate the cost models of existing operations and new technologies available to reduce costs. To lower the costs, the new technology on the digital platforms are available on a user basis to all client companies.

Q. Can the panellists shed light on the extent to which and how machine learning is used in the industry?

The Versafleet panellist said they were tasked to optimise software solutions for a client company that had to transport workers after closing hours late at night. The traditional method involved numerous buses, random on-the-spot scheduling pegged to demands of the manpower needs on that day. Versafleet used AI and developed “on the fly” optimisation system to match buses to passenger needs for the company daily. The basic data tapped into was from human resource records that contained the details including the residential address of employees. With this basic data captured, the AI system could then add to this data such as the performance of the bus drivers and passenger satisfaction to provide analytics that is useful for planning ahead and this contributed to cost savings for the company. The key factor is an evidencebased approach for operational optimisation and cost savings.

Concluding Thoughts

The supply chain and logistics sector is undergoing unprecedented change, compounded by the impact of COVID-19. To survive and thrive in this transformation, companies need to build supply chain networks which are resilient and responsive, while seizing new market opportunities and capitalising on technological investments. To support the industry transformation, building a skilled workforce across all segments of the value chain and supporting the evolution across organisations is essential.

Faizal Bin Yahya is a Senior Research Fellow at IPS and acknowledges the contributions of Ms Si Ngah Leong and her team at Lancia Consult in the drafting of this report.

If you have comments or feedback, please email ips.update@nus.edu.sg