



# Operations/supply chain management in a new world context

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After some decades of relative stability, admittedly with some turbulent events such as the 2008–10 global financial crisis, many operations and supply chains had reached a relatively mature state of stability in late 2019. The current pandemic has placed a lot of stress on many systems and many people, and seems to be exacerbating the world's focus on many other challenges that were simmering or growing. These provide in aggregate a new set of challenges for the whole world of work and its economies, and within that for the design of operations and supply chains. Going forward, and ultimately with the pandemic behind us, economic conditions will be changed for a long time, and hence the context of trade, production and distribution, and at a micro-level, the nature of work will have new challenges to overcome and with that, new opportunities.

As incoming editors a year ago, our 2019 editorial described 14 topic areas deserving of research and professional practical attention in operations and supply chain management (O/SCM), that are still important and deserving of scholarly and practical work (Samson and Kalchschmidt, 2019). While the topics such as supply chain risk, sustainability and new technology have remained relevant, the context of our world, our organisations, and the way we work and consume, within which O/SCM operates, have changed markedly in a short time. Many new challenges have emerged or been sharpened and refocussed. Certainly, this brings new research problems. Many of the new conditions that O/SCM work within are either directly or indirectly related to the global pandemic that has swept across the planet.

We encourage researchers to study and submit papers to Operations Management Research that are of course of high quality in every way and focussed on these contemporary issues. We have initiated special issues and also welcome such papers and studies for our regular stream. We are also of course seeing a healthy stream of more traditional articles, and we continue to welcome these.

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## 1 Some major changes in O/SCM's context

Decisions within supply chain design such as transport mode, facility size and location, whether to multisource or single source, make versus buy and procurement policies are impacted by macroeconomic forces and political changes. The faltering of what was some 50 years of advancement of globalisation and with that the previous massive rise of global trade of goods and services has changed the equation here. The Covid19 pandemic has caused some government policy makers and corporate executives to want to reduce their reliance on long international supply chains that can be readily disrupted, leading to consideration of reshoring or other risk mitigation strategies, even including buffer stocking of some key inputs or products. We have recently seen Brexit, US-China trade wars, Make America Great Again, Chinese advances in the South China Sea, and numerous other trends that mitigate against the free trade progress of recent decades, and now the pandemic that changes perceptions of supply risk. How will we redo supply chains as this progresses, and the risk profile of long existing supply chains increases? We have recently seen pandemic related closures of regions of China and many other sources of supply, plus constraints at international borders, difficulty for people to travel internationally to do business and other challenges that change the risk-return equation of international procurement. Research is warranted to provide decision support for this element of the new world of supply. This should also take in the high volatility of prices as well as supply reliability, for example energy prices, and this is in a world where, for example, oil prices have bounced around with great volatility, even briefly going negative! How can those who operate operations cope with unpredictably wild swings in demand, currently caused by the shock of the pandemic, and in future, by unknowable new shocks?

## 2 Climate change

Climate change has continued to challenge policy makers, supply chain and other business executives and consumers,

who are concerned with global warming impacts of energy policy, transport mode decisions, supply and facility location decisions, as well as product designs, recycling policies, and packaging choices. The pandemic has led to large rises in on-line shopping and home delivery in many countries, working from home as at least a temporary ‘new normal’, decreased use of public transport and fuel, and many other consequential changes. Will these changes really be temporary and ‘snap back’ post-pandemic, or be at least a partial start of new ways of working, shopping, consuming, and hence producing and distributing goods and services?

Industries such as travel and tourism, universities, airlines, accommodation and restaurants have been transformed and, in some cases, decimated by the pandemic’s impacts, and research is warranted about lessons learned and future paths that will reshape supply chains and production operations: while also taking climate change and the green environment sustainability into account. This includes considerations of energy efficiency and emissions, water and other critical resource use, product and packaging reuse, reduction and recycling as part of O/SCM designs.

### 3 CSR/ ESG

Investors in particular but also customers and employees have been increasingly concerned with corporate social responsibility (CSR) of businesses in recent years, and this has accelerated with the transformation and explicit addition of governance concerns, leading to the growing popularity of ESG (Environmental, Social, Governance) practices and results of organisations. All three domains of E, S and G centrally involve the O/SCM aspects of work, warranting much more research attention to develop knowledge about how such non-financial parameters relate to competitiveness in markets and financials, with many nuances still unknown. I see some organisations paying lip service to ESG, some doing just enough to meet minimum compliance requirements of regulators or investors, and others that are sincerely embedding CSR/ ESG into their corporate values, philosophy and hence practices. An example of a highly advanced organisation in terms of CSR/ESG is Toyota, in which I recognised when working inside that company that their ‘Respect for People’ is sincerely and deeply engrained, leading to a large portfolio of ESG activities, operational excellence, and great business outcomes. Our scholarly research should be able to make a significant contribution to understanding ‘what works’ with ESG, and facilitate more effective practices and allocation of resources, generating knowledge that leads to better and faster progress.

### 4 Demographics, inequality, technology, are all changing and challenging

There are many other changes going on in society that have been accelerated or exacerbated in these pandemic times, that will have implications for how we design and conduct O/SCM. Populations in developed countries are ageing and, led by Japan, we see the first absolute shrinking of population numbers: such trends impact on the supply of labor needed to do O/SCM work, on GDP and on consumption habits. Inequality is high and, in many places, it is rising, including in OECD countries and developing nations, where just a few very wealthy people control often more assets than masses of ‘their’ workers who live relatively poorly. With interest rates being at an all time low, returns on monetary capital doing well and returns on human effort and capital often being low, implications for the sustainability of operations and supply chains merit further study. Modern slavery is an example of an emerging topic of research.

Another key input to O/SCM is of course technology, where rapid evolution of Industry 4.0, digitalisation, is disrupting almost everything. Many studies forecast that the mix of human inputs and technologies such as artificial intelligence will change the nature of work in many places and ways, which is surely relevant to O/SCM. Blockchain has the potential to disrupt central payments systems, just as Uber and Airbnb have disrupted taxis and hotels. Digitalisation can impact product designs, business models, distribution and indeed every aspect of O/SCM: perhaps the rise of Amazon is the best single example of retail and distribution disruption. Our research should examine the implications of these changes, from perspectives of labour force, productivity, energy, service quality, environmental impact, and societal/ consumer impacts.

### 5 Risk and resilience

These many challenges and changes raise the general topic of production and supply risk and resilience. Most businesses and their leaders were recently caught short, unprepared for the pandemic and what it did to both their supply and demand. Forecasts of demand, procurement and production plans had to be thrown out the window with very little notice, and in many cases employee layoffs were necessary, sudden and massive. It is interesting that in a world where private sector activity and entrepreneurial business building is often admired while governments are criticised for their inefficiency and bureaucracy, that when the pandemic-induced going got tough, many businesses pushed their employees out the door and governments caught them as they fell. The result is a productivity and GDP disaster that befalls the world, and we will all have to find ways of coping with much larger national

debt burdens, changing balances between fiscal and monetary policy, and their implications for businesses and their O/SCM parameters. Low interest rates, large debt burdens and recession will be with us for a while. This shifts the contextual economic and societal forces impacting on O/SCM.

## 6 O/SCM's connections with other functions

Most past research has been within disciplines, some say paradigms, and so just as the first decades of operations management focussed inwards on the production function, and only relatively recently morphed into supply chains and networks considerations, we have not sufficiently researched how O/SCM can most effectively connect with decisions and strategies in marketing, financing, human behaviour, accounting, and other functional and strategic aspects of the firm. This is precisely why issues of globalisation, trade, consumer trends, labor supply, pandemics and other shocks, CSR/ESG, demographics, government policies, macroeconomics and other elements need to be connected to our research, because they may not all directly impact on O/SCM, but may put pressure or provide opportunities on those other functional areas that must fit with O/SCM designs. Examples are:

- Changing debt levels might impact on the cost or availability of capital that O/SCM executives must use, when considering technology, equipment or facility decisions.
- Government policies might increase or decrease the attractiveness or competitiveness of some products, when we decide on in- versus outsourcing, or on- versus off-shoring
- Marketing considerations weigh on decisions about product (sku) range, that impact on production capability, flexibility, cost and capacity
- In order to make operations more resilient, a different skills mix in the labor force might be desirable, hence human resources recruiting and training implications arise
- The company's desire to take a particular position in terms of CSR/ ESG (perhaps done to attract investors or consumers or comply with regulations) might cause changes to product designs and operations, process technology choices and even new operations such as recycling.

Indeed, O/SCM can and should be considered not as an end in itself, but as a means to the end of the organisation, and ultimately society achieving their goals. We need to do more research that traverses functional boundaries.

## 7 Research opportunities

The cost in human lives and suffering of the present pandemic can be at least partially attributed to poor planning, no doubt some awful politicking, but also to ineffective governance and supply chains. We should be developing, testing and validating business models and methods for O/SCM designs that improve resilience, so we are not so unprepared for the next big shock, be it a pandemic, natural catastrophe or something else. In Australia where I live, better supply chains last summer would have reduced losses and damage from our bushfires. Some strategies that deserve research for improving resilience can include new and better planning methods, perhaps adapting Scenario Planning and Risk Analysis methods to improve preparedness. Workforce flexibility is another potential. A body of research exists around whether supply chains and operations are designed to pursue primarily efficiency goals versus flexibility goals, and research is warranted about how best to lower the trade-off rates and create synergies between these, perhaps including innovation in business models, workplace cultures and new technologies.

Much of our research, stemming originally from doctoral training programs being highly specialised, is composed of studies that are very narrow and deep in their scope, yet this is a mismatch with many of our world's important O/SCM challenges, that encompass other than single issues and are not one-at-a-time. As complexity and interconnectedness of real world challenges increases, can we develop new models and methods for gaining insights about them? Single events such as the Covid19 pandemic have caused shocks to many in both supply and demand simultaneously, so perhaps research into risk and resilience should increasingly be broader than in the past.

At Operations Management Research journal, we encourage a diversity of approaches, problems being addressed and methods used, including more traditional and 'bold' research works to be submitted, as long as they have relevance to our O/SCM field, and potential for generating real world practical insights.

## Reference

Samson D, Kalchschmidt M (2019) Looking forward in operations research. *Oper Manag Res* 12:1–3. <https://doi.org/10.1007/s12063-019-00138-8>

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