

The Role of Operations and Supply Chains in Mitigating Social Disruptions Caused by COVID-19: A Stakeholder Dynamic Capabilities View

Abstract

Purpose – The disruption caused by COVID-19 exhorts to reiterate the role of Operations and Supply Chain Management (OSCM) in achieving social sustainability. Therefore, the present study seeks to develop a conceptual understanding of the OSCM ecosystem’s role in enabling the world to accelerate towards social sustainability.

Design/methodology/approach – This study uses the integrative review method to achieve the stated objectives. The study first identifies the societal disruptions caused by COVID-19. Then based on dynamic capabilities theory (DC), stakeholder theory, and real-life examples, the study puts forward the Stakeholder Dynamic Capabilities (SDC) view as an approach to overcome these social challenges.

Findings – Taking the SDC view, the study identified ten social challenges aggravated by the COVID-19. Response actions for OSCM have been proposed to mitigate these challenges.

Research limitations/implications – The pandemic has brought new challenges to the OSCM to achieve social sustainability. Therefore, the study’s proposed response actions aim to assist OSCM managers in leveraging their expertise to do good for society and create a better world. Moreover, the study also provides avenues for future research on the topic.

Originality/value – Based on the SDC view, the study attempts to conceptualise social sustainability for OSCM during a pandemic. The SDC view helps capture internal and external social challenges emerging due to COVID-19 and utilise firms’ capabilities to overcome these challenges.

Keywords: COVID-19, Dynamic capabilities theory, Operations and Supply Chain Management (OSCM), Social Sustainability, Stakeholder theory.

1. Introduction

The term “Black Swan” was coined by Taleb (2010) as a metaphor to describe disastrous events that come as a surprise, have an extreme impact on the economy and society, and have retrospective predictability. Globally, the occurrence of disasters, both man-made and natural, have increased in the recent past. The Centre for Research on the Epidemiology Disaster reported that between 1995 and 2015, 6457 weather-related disasters occurred across the globe, claiming millions of lives and leaving billions of people affected (Koshta *et al.*, 2021). Moreover, 1438 epidemics and pandemics were recorded by the World Health Organization (WHO) between 2011 and 2018 (Hudecheck *et al.*, 2020). The recent black swan, COVID-19, has caught the world by surprise because of its disparate nature compared to other recent disasters such as cyclones, flash floods, earthquakes, and tsunami. The COVID-19 pandemic, first reported from the Chinese city of Wuhan, is the most cursed black swan and one of its kind after the 1918 pandemic (Sodhi *et al.*, 2021). By February 2021 COVID-19 has claimed 2,535,520 lives and infected more than 1.1 billion people globally, thus, creating a global health crisis and threatening social sustainability leading to social disruption (Sodhi *et al.*, 2021).

Since its outbreak in December 2019, the COVID-19 pandemic has affected every aspect of human life. For example, the restrictions on travel and transport have disrupted the supply of various essential products such as food, medicines, and other household essentials. These measures, accompanied by restrictions to visit marketplaces and the closure of retail outlets, are likely to affect people’s ability to meet their daily food and medicine requirements (Koshta *et al.*, 2021). Moreover, the decrease in demand for nonessential products is likely to impact the income of those employed in these businesses. Studies have also reported a negative impact of the pandemic on mental health (Usher *et al.*, 2020). These aggravated social issues demand the attention of operations and supply chain management (OSCM) more than ever.

In recent years, scholars have increasingly called for the integration of social issues in the OSCM to create value for communities (Lee and Tang, 2018; Seuring and Müller, 2008; Sodhi, 2015). The role of OSCM is crucial because it is at the forefront of businesses and interacts directly with society (Nakamba *et al.*, 2017; Sodhi, 2015). OSCM’s focus on social issues is essential because of the industry trends and changing needs of society which expects that the businesses contributing and gaining economic benefits will not take away social equity (Sodhi, 2015). Due to growing

competition, it is crucial to avoid reputational damages to sustain in the market. Therefore, there is a need to understand how OSCM could support social sustainability (Nakamba *et al.*, 2017; Sodhi, 2015). In this regard, Tang (2020) showed how operations and technology could help attain sustainable development goals (SDGs). Marshall *et al.* (2015) surveyed 156 supply chain managers to explore the driving factors of social sustainability adoption in OSCM. Similarly, Awan (2019a) surveyed 272 manufacturing firms to assess the drivers of social sustainability performance. Gruchmann *et al.* (2019) empirically examined the linkage between social sustainability and logistic services. They reported that consumer awareness of sustainable logistics and financial incentives are important in promoting logistics social sustainability. In another example, Awan (2019b), Awan (2018) and Awan *et al.* (2020a,b), using the survey method, suggested that relationship governance is a positive predictor of firms social performance in manufacturing and export manufacturing firms, respectively. Moreover, Nakamba *et al.* (2017) and Govindan *et al.* (2021) provided an extensive literature review on social sustainability in OSCM.

However, these social sustainability efforts by OSCM scholars in the past have been challenged by the ongoing COVID-19 pandemic. This is because the COVID-19 outbreak has exacerbated not only large social issues (or external social issues) such as gender inequality, hunger, poverty, and unemployment but has also raised within-firm social concerns (or internal social issues) such as worker safety, job loss, and reduced wages—these issues, highlighting the need to reiterate the concept of social sustainability for OSCM. Based on the above arguments, we propose the following research questions to guide this study.

RQ1. *What are the social issues arising due to the spread of COVID-19?*

RQ2. *How can operations and supply chain management managers help in mitigating these social challenges?*

The study responds to these research questions by identifying the within supply chain social challenges and external social challenges that are outside of the firm posed by COVID-19. Ten social issues have been identified, including employee's health and safety, psychological well-being of employees, the potential bankruptcy of suppliers and SMEs, job loss and pay cut, discrimination, panic and self-preservation, food security and nutrition, gender inequality, forced migration, and increase of youth not in employment, education, or training (NEET). We do not

claim this list to be exhaustive; however, they cover most of the social challenges resulting from the COVID-19 outbreak. Next, the Stakeholder Dynamic Capabilities (SDC) view is presented to overcome these challenges. Specifically, building on dynamic capabilities theory (DC) which is internal to the firm and stakeholder theory used in social responsibility are used to propose thirteen strategies to mitigate social issues (detailed in section 5). This also helped in conceptualising future opportunities.

The present study adds to the growing body of knowledge on socially responsible OSCM in the following ways: First, the study provides a timely understanding of the social challenges brought by COVID-19. The COVID-19 pandemic is one of a kind global level disruption after the 1918 flu pandemic (Sodhi *et al.*, 2021), and a limited understanding of such disruption is available in the literature. Even much less knowledge exists about social challenges resulting from the pandemic outbreak. Therefore, the present study highlights the key areas of concern. Second, using stakeholder theory and dynamic capabilities theory (i.e., SDC view) as a lens for studying social sustainability helps us propose response actions to overcome these challenges. Specifically, the stakeholder theory's objective of treating all the stakeholders equally and the dynamic capabilities theory's focus on firms' sustenance in the dynamic environment helped propose mitigation strategies that could create a win-win situation for all. Third, unlike prior research, which focuses on within-firm or within-supply chain social sustainability, the present study extends the boundaries of socially sustainable OSCM by incorporating the external social challenges in OSCM's social responsibility. By conceptualising the role of OSCM in changing the lives of stakeholders during these challenging times of COVID-19, we aim to motivate future research to incorporate external social sustainability in OSCM's objective, which could assist in making this world a better place for all. This also responds to the call made by Lee and Tang (2018) to investigate socially responsible OSCM. Fourth, the study will help managers translate their boardroom talks on social sustainability to on-the-ground implementation. Society needs OSCMs' support more than ever to cope with the disruptions caused by the current pandemic. Specifically, how the OSCM managers could utilise their strengths to support society have been highlighted. Fifth, our findings show that doing good for society can also be beneficial for managing operations and supply chains. For example, sourcing products from local small and medium enterprises (SMEs) can help the OSCM managers reduce supply-side disruption and provide business and finances to the SMEs and associated people.

The rest of the study is structured as follows. Section 2 details the past relevant literature and theoretical foundations of the study. The study methodology is detailed in section 3. Internal and external social challenges resulting from the COVID-19 outbreak are present in section 4. Section 5 links the SDV view with the mitigation strategies. In section 6, the study attempts to address the social challenges by conceptualising social sustainability for OSCM using the SDC view. Based on this conceptualisation, section 7 lists the opportunities for future work. Finally, the study concludes in section 8.

2. Background

2.1. Literature review

A summary of some relevant studies in the intersection of OSCM and COVID-19 is present in Table 1. The review suggests that most of the studies do not explicitly mention the sustainability dimension they focus on. However, their intrinsic focus is on economic recovery from COVID-19 disruption or economic sustainability. While few studies focus on social sustainability, their scope is limited to internal (i.e., within-firm or supply chain) social sustainability. For example, Cole and Shirgholami (2021) and Majumdar *et al.* (2020) studied the impact of the COVID-19 outbreak on workers' lives. Sodhi and Tang (2021) demonstrated how OSCM could support its employees and small third-party sellers to cope with the disruption. The literature review further reveals that the dynamic capabilities theory (Mishra *et al.*, 2020; Modgil *et al.*, 2021), the resource-based view (Baz and Ruel, 2020), institutional and resource dependence theory (Butt, 2020), theory of crisis management, and stakeholder theory (Obrenovic *et al.*, 2020) are commonly used by OSCM scholars to understand the impact of COVID-19 (Table 1). The use of theories helps simplify complex scenarios, improve communicability, and offer insights into the likely future outcomes (Corley and Gioia, 2011).

Table 1. Summary of some relevant OSCM studies on COVID-19.

Authors	Sustainability dimension	Theory	Study objective
Baz and Ruel (2020)	-	The resource-based view and Organisational information processing theory	The study examined the role of supply chain risk management practices on supply chain resilience and robustness in mitigating the disruptive effects of COVID-19.
Burgos and Ivanov (2021)	-	-	The study investigated the impact of COVID-19 on the food retail supply chain and its resilience.

Butt (2020)	-	Institutional and resource dependence theory	To explore the steps/countermeasures taken by buying and distributing firms to address supply chain disruptions caused by COVID-19.
Cole and Shirgholami (2021)	Social	-	The study argues that the lockdown restrictions will result in regressive modern slavery because of the growing survival needs due to COVID-19
Ivanov (2021)	-	-	The study investigates exit strategies to help the supply chains to recover after the pandemic is over.
De Sousa Jabbour <i>et al.</i> (2020)	Economic and Social	-	The study aims to propose action plans for the managers and scholars to address OSCM related challenges in a post-COVID-19 era.
Majumdar <i>et al.</i> (2020)	Social	-	The authors studied the reasons behind the lack of social sustainability in the clothing supply chain operating in COVID-19 affected South Asian countries.
Mishra <i>et al.</i> (2020)	-	Dynamic capabilities theory	The study investigates the role of supply chain resilience in dealing with disruptions caused by COVID-19 and achieving operational excellence in the food supply chain.
Modgil <i>et al.</i> (2021)	-	Dynamic capabilities theory	The study explores how firms can employ artificial intelligence to improve supply chain resilience by developing visibility, distribution, and sourcing capabilities during COVID-19.
Nagurney (2021)	-	-	The study proposes a network optimisation model for the economic activities of the supply chain (production, transportation, storage, and distribution) by considering labour availability as a variable, which is affected by COVID-19.
Obrenovic <i>et al.</i> (2020)	Economic	Theory of crisis management, stakeholder theory, and Distributed cognition theory	The study examines essential factors that determine business sustainability and the ability to overcome adversity in various phases of crises, i.e., the COVID-19 pandemic.
Paul and Chowdhury (2020)	-	-	The study proposes a recovery model for revised production planning to minimise

Pereira <i>et al.</i> (2021)	Social	-	the impact of supply and demand disruptions. The study assesses how supply chain learning for the suppliers changed with changes in sustainability initiatives resulting from the COVID-19 outbreak.
Sarkis (2020)	Economic and Environmental	-	The study provides research guidance for achieving supply chain sustainability in the post-COVID-19 era.
R Sharma <i>et al.</i> (2020)	Economic	-	The authors identify and examine COVID-19 disruption risk in the agriculture supply chain aimed at improving its resilience.
A Sharma <i>et al.</i> (2020)	Environmental and Social	-	The study aims to provide strategic insights into major problems the firms face and strategic options firms are contemplating.
Singh <i>et al.</i> (2020)	-	-	The study highlights the importance of supply chain resilience during pandemic (COVID-19) outbreaks and proposes a model to improve the responsiveness and resilience of the food supply chain.
Sodhi and Tang (2021)	Environmental and Social	-	The study highlights the OSCM related challenges wrought by COVID-19 and proposes a response action for the policymakers and decision-makers.

2.2. Research gap and research objective

A thorough analysis of OSCM studies aimed at coping with COVID-19 disruption reveals the following research gaps.

- Scant attention is given to social sustainability in the OSCM literature on COVID-19.
- The external social responsibility has not gained sufficient attention from the OSCM scholars.
- The literature review further reveals the scarcity of theoretically grounded studies to understand and cope with the disruption.

Based on the research gaps mentioned above, the following research objectives are derived.

- To develop an understanding of how OSCM can sustain in this dynamic environment and support society during a pandemic outbreak.

- To provide a conceptual understanding regarding the use of existing resources and capabilities by the OSCM to support the stakeholders
- To propose an SDC view based framework as an approach to overcome social challenges.

2.3. Theoretical foundations

2.3.1. Dynamic capabilities theory

Practitioners and researchers have always been interested in understanding how firms survive and prosper while facing environmental or social challenges (Danneels, 2011). This question becomes more interesting when challenges are instantaneous and destructive. In order to survive and cope with social changes, firms need to renew or redesign their capabilities (Floyd and Lane, 2000). Inability to renew organisational capabilities can have severe consequences for firms, people and communities (Stopford and Baden-Fuller, 1994). Practitioners are interested in deriving how some companies can redesign their capability and survive challenging environments while others cannot? One of the most prominent theories can be the Dynamic Capabilities Theory proposed by Teece et al. (1997) to answer the aforementioned crucial question. A firm's ability to redesign its resources, competencies, policies and strategies for adapting and redesigning its internal and external skill resources and functional competencies to face social or environmental challenges refers to dynamic capabilities (Teece *et al.*, 1997). According to Teece (2007), competencies under dynamic capability theory are categorised into three components detailed below:

(i) Sensing opportunities and threats - includes a firm's ability to learn, sense, shape and calibrate opportunities and threats through internal and external environment analysis. This analysis is related to the process of developing exogenesis science and technological capabilities, identifying target markets and gauging the changing customer needs and preferences.

(ii) Seizing the opportunity - this component involves: (a) offering customer-focused solutions – which includes revising business models to deliver value by identifying market segments and developing a mechanism to introduce new attributes in products and services to satisfying customer needs (Laaksonen and Peltoniemi, 2018). (b) defining a firm's boundaries- includes determining the scope of forms and forming strategic capabilities to manage challenges within the firm's scope (Teece, 2007). (c) Establishment of trust and loyalty- a firm's performance is directly linked with employees' level of commitment and loyalty (Teece, 2007). (d) selection of decision-making protocols – consists of interpreting information than analysing the information from

professional and social contacts to establish a hypothesis about customer needs, marketplaces responses and changes in technology needed to cope with the challenging environment (Nonaka and Toyama, 2007).

(iii) *Managing threats and reconfiguration*- In a continuously changing environment (more important in disruption), firms can encounter threats related to shirking, the strategic manipulation of information, and internal complacency. Therefore, to sustain dynamic capabilities, continuous redesign of business models, coalignment, realignment is needed (Capron *et al.* 1998). The firm's ability to recombine and redesign its strategies, identify paramount priorities, and restructure accordingly are crucial factors for facing social and economic challenges (Teece, 2007).

2.3.2. *Stakeholder theory*

Stakeholder theory is another important theory to analyse the social sustainability aspect in a pandemic situation. Freeman (1984) defines a stakeholder as “any group of individuals who can affect or is affected by the achievement of organisation's objective”. Stakeholder theory consists of three fundamental lenses: the descriptive, normative, and instrumental lens (Donaldson and Preston, 1995). The descriptive lens focuses on ‘how firms behave’, the normative lens focuses on ‘how firms should behave’, and the instrumental lens focuses on ‘how a firm's behaviour affects its performance (Rajesh, 2021). Stakeholders can be internal stakeholders (e.g., owners, customers, employees, and suppliers) as well as external stakeholders (e.g., government, consumer advocates, specific interest groups and media) (Freeman 1984). Although various other categorisations of stakeholders exist in the literature, the firms need to consider all stakeholders that can be affected when accomplishing their goals. The present study categorises stakeholders as internal and external, as suggested by Freeman (1984). Under internal stakeholders, we majorly focus on firms' employees and tier-1 suppliers and their employees. The general public consisting of women, youth, and vulnerable populations, are considered under external stakeholders.

An important aspect of stakeholder theory is its focus on stakeholders' actions and responses. Scholars have identified three fundamental actions and responses of stakeholders. The first action can be based on stakeholders' influence strategies which can be explained through resource dependence theory. Stakeholders can either use direct strategies (which firms have resource dependence on stakeholders) or indirect strategies (in case of no resource dependency) (Freeman, 1999). Additionally, the stakeholders can influence firms based on power and legitimacy (Eesley

and Lenox, 2006) by forming allies and networks (Eesley and Lenox, 2006) and through institutional support (Friedman and Miles, 2002). The second action can be based on stakeholder's mobilisation, which suggests that the stakeholders group have heterogeneous interests with considerable variation among individual attitudes. Therefore, firms should carefully consider individual stakeholders' interests (Wolfe and Putler, 2002). The third aspect is based on stakeholder's response and support for firms (Rajesh, 2021). Stakeholder support mostly depends on a firm's cognitive legitimacy, reliability, accountability and strategic flexibility (Choi and Shepherd, 2005). Additionally, stakeholders are more supportive when they believe that firms treat and reward them fairly (Hosmer and Kiewitz, 2005).

The next important aspect of stakeholder theory is firms' strategies to gain stakeholder support, strategies to manage stakeholders and strategies for balancing stakeholders' interests. Firms can support through building trust, avoiding opportunistic relationships (Heugens *et al.*, 2002), reputation management, and charitable contribution (Godfrey, 2005; Carter, 2006). Freeman (1984) describes four key strategies for stakeholder management: exploit, defined, swing, and reinforce. However, scholars have also focused on strategies like network positioning and ethical practices (Huse and Eide, 1996). Regarding strategies related to balancing stakeholder interest are primarily focusing on firms long-run values (Jensen, 2001), considering multiple stakeholder perspectives (Schwarzkopf, 2006), enhancing stakeholders' participation (Burton and Dunn, 1996), and ethical decisions (Reynolds *et al.*, 2006).

2.3.3. *Stakeholder Dynamic Capabilities (SDC) view*

The SDC view, a combination of stakeholder theory and dynamic capabilities theory, considers that the firms do not operate in isolation and their actions directly or indirectly impact society, and vice versa. Therefore, the firms need to support society or stakeholders. Under the SDC view, every stakeholder is given equal importance, and the firms take social responsibility and work towards the betterment of society. In this task, the OSCM managers identify opportunities and use their existing resources and capabilities to support the stakeholders. Since firms themselves may struggle to maintain business flow, these opportunities could be 'for profit' opportunities that also provide profit to the firms' internal stakeholders without exploiting the external stakeholders. The SDC view promotes the use of firms' existing resources and capabilities for societal good. Doing so avoids the burden of excess spending on resources or capabilities. To conclude, the SDC view

promotes a firm’s management to actively consider social responsibility in a challenging, disruptive environment (Figure 1).

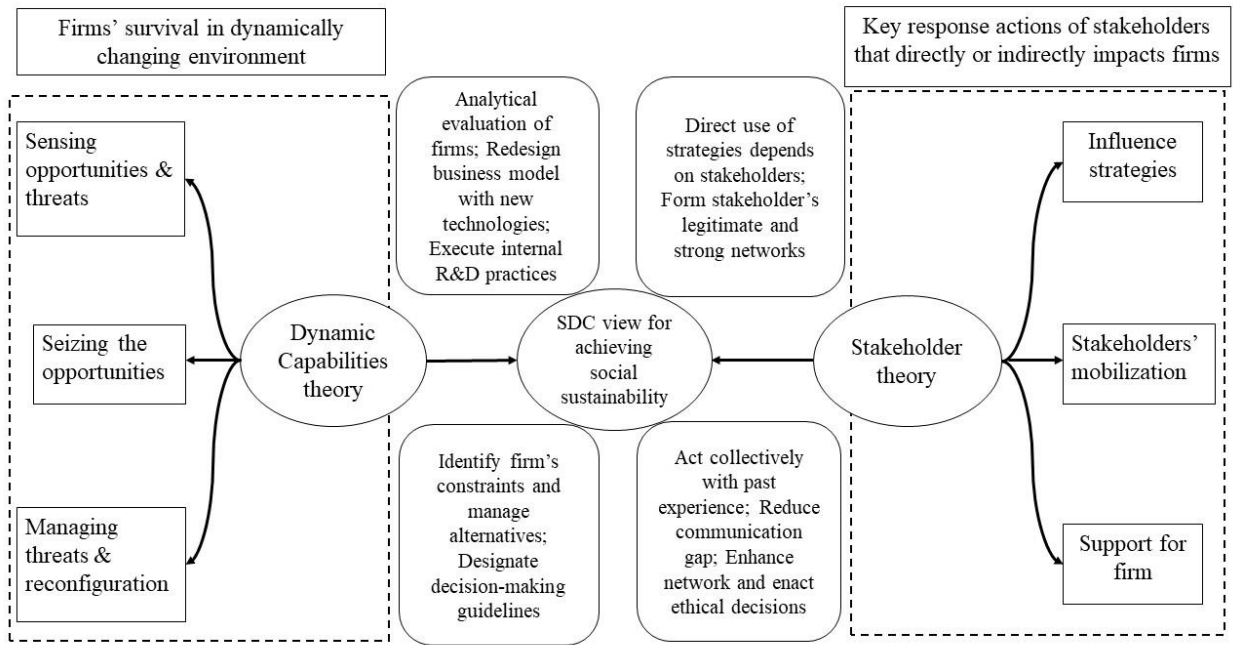


Figure 1. Foundation of stakeholder dynamic capabilities (SDC) view

3. Methodology

Reflecting on the impacts of COVID-19 on society, an integrative review method of creating a preliminary conceptualisation of a new topic is chosen. The outcome of using such a method is a set of theoretically grounded suggestions that the OSCM managers could implement for societal welfare during a pandemic outbreak.

An integrative review is a method that generates knowledge on a new or emerging topic through holistic conceptualisation and synthesis of the literature. The resulting conceptual framework offers new perspectives or ways of thinking about the emerging topic (Torraco, 2005). In this integrative review based study, we identified numerous published studies across disciplines, reports of international organisations, and news articles to identify the social consequences of the COVID-19 pandemic. Next, we employed the theoretical framework of dynamic capabilities theory and stakeholder theory to categorise the social disruptions into internal and external social consequences. These theories, along with real-life examples, are used to put forward the

Stakeholder Dynamic Capabilities (SDC) view as an approach to overcome these social challenges.

4. Social disruptions caused by COVID-19

The COVID-19 has severely affected the lives and livelihoods of people across the globe. Taking the SDC view, this section details the dire social consequences of COVID-19, both internal and external to the supply chain. Internal social consequences refer to social consequences within the supply chain, such as those related to the firm and its suppliers. In contrast, external consequences refer to the impact on society in which the firm operates. Although the external social consequences could occur at the workplace, these consequences are also visible beyond the firm's boundaries.

4.1. Employees' health and safety: The resumption of economic activities by the firms to sustain their business has put the workforce under threat of getting infected from COVID-19. The COVID-19, which primarily spreads through respiratory droplets or contact with the contaminated surface (WHO, 2020), has equally high chances of spreading at the workplace as any other place. For example, in manufacturing firms, people often come close to each other during production or maintenance activities. Touching machines and equipment by infected individuals may also lead to a contaminated surface. A real-life example of this is the spread of COVID-19 in the American meatpacking industry which infected 45,000 workers because of the high-density workspace (Kost, 2021). In service firms, the employees often contact multiple customers, thus exposing them to the risk of getting infected (e.g., employees at the bank, supermarkets, restaurants, delivery services) (ILO, 2020a).

4.2. Psychological well-being of employees: The International Labor Organization (ILO) highlighted that the pandemic has impacted the physical health and safety of the employees and has also brought fear and stress that impacted their psychological well-being. For example, health workers have to work for long hours with fewer rest periods, resulting in increased fatigue and a negative impact on work-life balance (ILO, 2020a). The employees may find it difficult to adapt to a new schedule and different workspace. For example, Meyer *et al.* (2021) reported that work from home and social distancing measures have resulted in reduced social support, thus affecting the psychological health of employees.

4.3. Potential bankruptcy of suppliers and SMEs: The COVID-19 pandemic has put the supply chains under strain more than ever. The lockdown measures taken by the governments across the globe to flatten the curve of infection spread has paused the movement of materials/goods. Deloitte reported that more than 90% of the Fortune 1000 companies have their suppliers in affected provinces of China (Renjen, 2020), resulting in the closure of manufacturing and service facilities. Under such conditions, the firm may postpone payment to suppliers who are already stuck with components, products, and materials. This, in turn, hampers suppliers' finances and their ability to pay their suppliers (Sodhi and Tang, 2021). A similar impact is visible on small and medium enterprises (SMEs), which may not maintain their supply of products and services, leading to declining finances and business closure. For example, Intellectap, a World Economic Forum (WEF) alliance member, in their survey of 106 Indian and African SMEs, found that 32% have stopped the business, whereas 27% have laid off employees (WEF, 2020). Moreover, the SMEs majorly operate in local markets and target low-income households who themselves are severely affected by the crisis (WEF, 2020).

4.4. Job loss and pay cut: The COVID-19 outbreak has pushed the world into a serious economic recession, causing millions of job losses worldwide (Ranjbari *et al.*, 2021). ILO's estimate shows that 25 million people will lose jobs worldwide, which may increase to 40 million (Singh *et al.*, 2020). The OSCMs are laying off employees due to decreasing sales (Belhadi *et al.*, 2021) or to save money by disinvesting in non-core operations. In the airline's industry, 7-13% have already lost their jobs (Belhadi *et al.* 2021), while the earnings of 53% of Uber drivers, among the 871 surveyed, has decreased by 67% (Hossain, 2021). This job loss and pay cut could increase poverty and the inability to purchase food and other essential products.

4.5. Discrimination: The rate of spread and mortality associated with COVID-19 has exacerbated human rights concerns such as discrimination against people of certain nationalities and races and people working in areas that have a high risk of infection (ILO, 2020a). Human Rights Watch (2020) reported growing discrimination and verbal and physical violence against Asians and people of Asian descent in various countries. People believe that Asians are the source and carriers of COVID-19. In another example, in the United States of America (USA), the African-Americans visiting the hospital with COVID-19 symptoms were less likely to get tested than white people (Eligon and Burch, 2020). In Chicago, of the total deaths due to COVID-19, 70% are African-Americans (Blow, 2020). Moreover, UNESCO reported that

communities did not want the healthcare workers to go home to avoid neighbourhood contamination (UNESCO, 2020).

4.6. Panic and self-preservation: Bavel *et al.* (2020) highlighted that people panic out of self-preservation when exposed to any risk. The self-preservation behaviour is excessively blind that could endanger the survival of others. This phenomenon is evident in the current scenario, where people are engaged in panic buying due to COVID-19 (Islam *et al.*, 2020). People started storing essential products with the fear of running out of stock, leading to empty store shelves. For example, the demand for healthcare products such as sanitiser, masks, and disinfectants increased exponentially to protect oneself from getting infected (Islam *et al.*, 2020). This abrupt increase in demand also resulted in demand-side disruption for the OSCM.

4.7. Food security and nutrition: The food security status, which was already dire across the globe, especially in developing countries, has been exacerbated by COVID-19 (Mishra and Rampal, 2020). Countries' export restrictions on staple food items and food system workers getting infected have affected the product availability. Moreover, the restrictions on the transboundary movement of products are likely to impact farmers who rely on export (Nchanji and Lutomia, 2021). The issue of food security intersects with the issue of poverty and income loss. Millions of people are engaged in the informal sector for their livelihood, whose income is affected due to lockdowns. For this vulnerable population, no income means no food or less food with less nutrition (Chriscaden, 2020). Moreover, people who are infected or are following voluntary quarantine may not be able to visit nearby stores to buy food (Ekici *et al.*, 2014). Thus, affecting their ability to fulfil daily food and nutrition demand.

4.8. Gender inequality: Studies suggest that the pandemic has disproportionately impacted women and their employment (Alon *et al.*, 2020). A report from McKinsey & Company states that women's jobs are 1.8 times more vulnerable to the current crisis than that of men. Moreover, while women make only 39% of global employment, they account for 54% of the total job loss due to the current pandemic. The reason is that women employees are clustered in the service sector, such as hospitality, retail, and wholesale trade, which are most affected by COVID-19 (Madgavkar *et al.*, 2020)—leading to job loss and weakening of women's finances. Women are at the forefront of unpaid-care work, including cleaning, cooking, child care, and elderly care. The closure of schools, work from home measures, and high mortality rate for the elderly population due to COVID-19 has further increased the burden of unpaid care on women

(Wood, 2020). These burdens result in the lower participation of women in paid jobs (Madgavkar *et al.*, 2020).

4.9. Forced migration: The COVID-19 outbreak has triggered massive internal and international migration across the world. These migrants are majorly employed in the agriculture sector in destination areas and temporarily hired to fulfil seasonal jobs. The lockdown measures such as restrictions on business activities have resulted in employment and income loss of these people, affecting their capacity to meet nutritional food requirements for themselves and their families. Moreover, the migrants' settlements are highly crowded, which increases their vulnerability to COVID-19. The migrant workers in various countries are struggling to return to their area of origin due to restrictions on travel and are increasingly facing discrimination as they are being perceived as COVID-19 carriers (FAO, 2020). The travel restrictions have also led to the labour shortage in sectors such as agriculture which is highly dependent on migrant labourers. As a result, the harvesting of spring and summer crops is expected to suffer (World Bank, 2020).

4.10. Increase of youth NEET: One of the most significant impacts of the pandemic is the reduction of employment opportunities for youth, resulting in the rise of youth not in employment, education, or training (NEET). The NEET are youth who are neither receiving any formal education nor gaining experience and income from employment. In Europe, youth NEET is expected to increase from 4.7 million to 6.7 million due to the ongoing pandemic (Tamesberger and Bacher, 2020). Business closures have led to reduced vacancies and increased job losses making it challenging for the youth NEET to find employment and make a living (ILO, 2020b). Moreover, business needs are changing, and there is an increase in demand for digital skills (Kassid, 2020). The changing needs increase the threat of youth NEET becoming obsolete as they are neither gaining experience nor skills. Thus, making them one of the hardest-hit groups who may experience long-term consequences of the COVID-19.

5. SDC view for mitigation strategies

The COVID-19 pandemic has put forward a myriad of challenges affecting large sections of the population. Firms are experiencing both demand and supply-side disruption and struggling to maintain business. As per dynamic capabilities theory, companies should redesign their resources and competencies and manage alternatives to survive in this dynamic environment. Like firms, the other stakeholders of the society, such as the general public, small and medium enterprises (SMEs),

and firms' suppliers and customers, are also facing numerous issues beyond their capacity to manage (for details on issues, see section 3). Based on stakeholder theory, while stakeholders expect firms' support to mitigate the challenges posed by COVID-19, the firms may also be willing to support the stakeholders to create a long-term relationship. Looking at the combined problem, the OSCM not only need to manage their businesses but also help other stakeholders mitigate the challenges posed by the pandemic. To this end, we propose a conceptual framework based on Stakeholder Dynamic Capabilities (SDC) view.

The SDC view builds on dynamic capabilities theory, which can explain how firms can maintain business continuity in this uncertain environment, and stakeholder theory, which can motivate firms to take actions that create value for all stakeholders. The dynamic strategy of redesigning the business model and managing alternatives such as adopting automation and digital technologies, supplier management, adopting local suppliers to the supply chain, and seizing opportunities can help the business survive in a dynamic environment. Moreover, stakeholder management through psychological support, awareness campaign, youth development program, promoting gender equality, taking care of employee well-being, and food health and transportation support to the vulnerable population can assist in mitigating social challenges and building relations with the stakeholders.

6. Conceptualising social sustainability for OSCM

The present study proposes a conceptual framework based on the SDC view to help the world mitigate the social challenges exacerbated due to the COVID-19 outbreak. The proposed framework covers both the internal social risks as well as external social risks and attempts to suggest ways, based on real-life examples (Table 2), to alleviate these social challenges/risks (Figure 2).

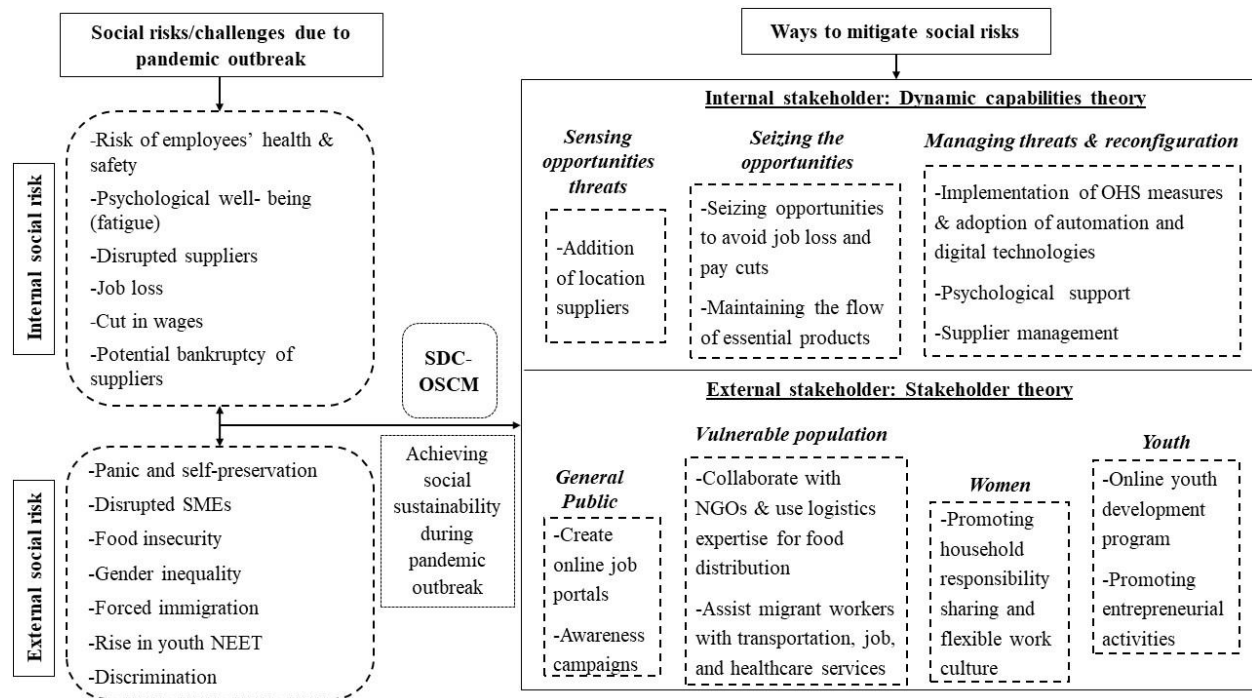


Figure 2. Conceptual framework

6.1. Internal: Dynamic capabilities view

6.1.1. Sensing opportunities and threats

6.1.1.1. *Addition of local suppliers:* Due to the COVID-19 outbreak, firms are struggling to ensure supply continuity because of reliance on a limited number of global sources (Remko, 2020). While the firms continue to support their suppliers, extending the supply chain by adding local suppliers is equally important to avoid supply shocks (Remko, 2020). Sourcing from local SMEs will help the firm avoid short-term supply shocks and provide income to SMEs that otherwise are struggling to get business. Other measures could include providing digital support such as advertisement of products and services offered by the SMEs and access to capital to keep business running.

6.1.2. Seizing the opportunities

6.1.2.1. *Seizing opportunities to avoid job loss and pay cuts:* Laying off has a long-term impact on society as it would affect people's spending power, ultimately leading to loss of business. The firms could avoid layoffs by identifying new opportunities and directing the unused power workforce towards them. For example, the consumption of nonessential products or services has decreased while that of essential products or services has increased. By

identifying opportunities in the essential products, the firms could avoid layoffs and generate employment opportunities while adding a source of revenue to their supply chain. The OSCMs should ask the top executives to take a salary cut rather than cutting the salary of low-level employees.

6.1.2.2. Maintaining the flow of essential products: To handle this situation, firms engaged in the business of essential products should make a contingency plan to maintain a continuous flow of end products. Other firms could support these businesses by lending their expertise, such as logistics facilities, to ensure the timely availability of products on supermarket shelves. OSCMs in nonessential businesses should find opportunities in essentials to earn revenue and utilise their workforce by being socially responsible.

6.1.3. Managing threats and reconfiguration

6.1.3.1. Implementation of OHS measures and adoption of automation and digital technologies:

The health and safety of the people who drive the OSCM are important to keep the firms operating during these unprecedented times. To achieve this, the firm needs to ensure the effective implementation of updated occupational health and safety (OHS) measures and risk assessment. The OHS could include activities such as sanitised and risk-free equipment, and machine surfaces, the availability of necessary personal protective equipment (PPE), World Health Organization (WHO) social distancing guidelines are followed at the workplace, and OHS training is provided to employees. Additionally, risk assessment could help in identifying tasks and resources that increase workforce exposure to infection. Thus, helping the firms in isolating the tasks or resources and preparing response plans under different scenarios. OSCMs should also adopt automation and digital technologies to reduce person-to-person contact and eliminate high-density workplaces.

6.1.3.2. Psychological support: Scholars often link employees' psychological well-being with productivity and performance (Keeman *et al.*, 2017). Leaders' expression of compassion and empathy is proven to impact employee psychology positively (Renjen, 2020). Other measures such as sharing employee concerns while maintaining confidentiality, providing relevant information, reducing workload to avoid burnout, assistance in maintaining work-life balance through flexible working hours and leaves, and developing a grievance reporting system could be adopted by OSCM to maintain employee psychological well-

being. These measures will also assist in increasing the productivity and performance of employees during these difficult times.

6.1.3.3. Supplier management: As the countries ease restrictions to accelerate trade, the firms whose suppliers are in affected areas should take the following steps from a social perspective. First, they can assess the measures the suppliers are taking to protect their employees from getting infected. Second, they can ask the supplier to assess the risk affecting its operations and contingency plans and how they plan to mitigate these risks if they arise (Lewry, 2020). Third, communicate with the suppliers and provide them with a real-time view of demand; this would assist the suppliers in optimising their resources. Fourth, they should pay the supplier on time, which will help them pay their employees and suppliers on time (Lewry, 2020). Fifth, they can provide medical support to small suppliers who do not have sufficient resources to offer medical facilities to their employees. These steps are necessary as any social irresponsibility from the supplier side can significantly affect the brand. For example, Nike’s brand image was significantly impacted after a child labour incident was reported at one of its suppliers (Sodhi, 2015).

Table 2. Real-life examples of firms using mitigation strategies to address social risks

Social risks	Mitigation strategies by firms	Source
Workforce health and safety	Toshiba group adopted new OHS measures such as minimisation of interpersonal contact, advancing holidays, mandatory use of personal protective equipment, and health-related surveys	Toshiba (2020)
	PwC that automation technologies such as autonomous material movement, internet of things, robotics can reduce workforce density.	PwC (2020)
Psychological well-being of employees	Toshiba is providing psychological support to its employees through educational activities, stress checks and help in coping mental-health enlightenment, and professional support.	Toshiba (2020)
Potential bankruptcy of suppliers and SMEs	Ginkgo Bioworks CEO Jason Kelly highlighted the importance of isolating and managing suppliers to ensure business continuity.	Clift and Court (2020)
	KPMG suggests gaining visibility into new and old suppliers’ operations and infrastructure for a safe work environment and business continuity.	Ferbrache (2020)
	Google pledged 200 million dollars funds to support SMEs	Clift and Court (2020)

Seizing opportunities to avoid job loss and pay cuts	Lufthansa and Virgin Atlantic are switching from flying people to cargo flights. Restaurant chains, namely Subway and California Pizza Kitchen, have started selling groceries.	Morgan (2020a)
Create online job portals	Airbnb offered 14 weeks' pay to laid-off employees and developed a platform where they could find new jobs	Hossain (2021)
Awareness campaigns	McDonald's and Coca-Cola split their logo to promote social distancing.	Hessekiel (2020)
Maintaining flow of essential products	Shine distillery in Portland started making hand sanitiser to alleviate the acute shortage.	Morgan (2020b)
	Ecommerce company JD.com implement drone routes to deliver essential products across China.	Clift and Court (2020)
Food and nutrition	The Ideal Bite Community Kitchen has collaborated with NGOs to provide free food to needy	Morgan (2020b)
Diversity and Gender equality	Uber is supporting diversity and gender equality, flexible work hours and leaves. In another example, Facebook has hired child and elderly care providers to reduce unpaid-care work from women.	Umoh (2020)
Healthcare and other facilities for vulnerable population	Salesforce, Microsoft and several other large companies have donated funds to support healthcare facilities and affected people.	Morgan (2020b)
Youth development programs	Babbel is offering free language courses to US students	Hessekiel (2020)

6.2. External: Stakeholder Theory

6.2.1. General public

6.2.1.1. *Create online job portals:* There is a need to create an online platform where people can find new jobs and learn new skills—in other words, matching the supply with the demand of the workforce. While demand for some products has reduced, the demand for others, especially essential products, has increased considerably, and so need for employees to work.

6.2.1.2. *Awareness campaigns:* There are high chances that the OSCM could experience discrimination at the workplace, thus hampering diversity. It has also been suggested that people boycott brands based on their position on social issues (Bagalini, 2020). Therefore, to tackle this situation, the OSCM should disseminate desired information through media

campaigns to raise awareness. The firms could make use of their marketing teams to come up with creative ideas to strengthen solidarity. Moreover, the OSCM can redirect their marketing spending on raising awareness.

6.2.2. *Vulnerable population*

6.2.2.1. *Collaborate with NGOs and use logistics expertise for food distribution:* Fulfilling the daily food needs of the vulnerable population is a tough task for the local governments, who have been struggling to achieve this even before the pandemic outbreak. Immediate action by the OSCMs could be to collaborate with NGOs to fulfil the food needs of the vulnerable population. For example, Infosys is providing food and nutrition access to the underprivileged in India (Clift and Court, 2020). OSCM expertise such as logistics could assist in the delivery of food products to the communities in need. OSCMs should help these people find jobs or entrepreneurial opportunities, which will reduce their dependency on external sources for food and other essentials. Efforts are needed to ensure the safety of farmers and transportation of their produce to the market to maintain supply.

6.2.2.2. *Assist migrant workers with transportation, job, and healthcare services:* The OSCMs could help the migrants through the following means. First, provide access to testing and treatment for COVID-19; this will help identify and isolate infected migrants (World Bank, 2020). Second, many migrants lacked means of transportation to travel back to their area of origin. Therefore, transportation and logistics firms or firms with a large fleet of vehicles can help migrants in transportation while maintaining social distancing. Such measures will ensure the safe movement of labourers from area-of-work to area-of-origin. Third, many OSCMs are engaged in contract farming; these can support the farmers of their value chain by matching their demand for labour with the supply of migrant workers. Such steps will help the migrants with a new job, and the farmers will benefit from the harvest.

6.2.3. *Women*

6.2.3.1. *Promoting household responsibility-sharing and flexible work culture:* Acting now, despite the ongoing crisis, could not only benefit gender equality but will also accelerate economic growth. McKinsey & Company suggest that improving gender parity by 2030 could lead to a \$13 trillion improvement in global GDP for that year. They also find that companies with greater gender diversity are 25% more likely to have above-average profitability than companies with low gender diversity (Madgavkar *et al.*, 2020). As

women assume multiple responsibilities at home, due to COVID-19, the OSCMs should provide them flexible working hours, reduce workload, and, if possible, allow work from home. These measures could reduce the risk of infection and help in maintaining a work-life balance. Moreover, male employees should be encouraged to share unpaid-care responsibilities. OSCMs could offer free education through mobile apps and online platforms to increase women's access to learning and develop new skills (Tang, 2020). OSCMs should make women aware of emerging business opportunities and work towards including women-owned businesses in the supply chain. For example, In Pakistan, Nestle, through its Rural Women Sales Program, is training women to be rural sales agents for Nestle products (Nestle, 2020).

6.2.4. Youth

6.2.4.1. *Online youth development program:* Eurofound (2015) reported that the non-integration of youth during the 2008-2009 recession led to the European economies' loss of 162 billion euros per year. Youth being NEET also has social consequences such as opting out of social participation resulting in the decline of social capital (Tamesberger and Bacher, 2020). There is a pressing need to keep the youth updated about the changing trends and help develop new skills, and this could be achieved by running online training and development programs. These certified courses should also assist the youth in finding jobs that match their expertise.

6.2.4.2. *Promoting entrepreneurial activities:* Youth NEET with revolutionary ideas, useful for OSCM, could be provided with financial support for infrastructure development and business set-up, generating jobs for more people. For example, firms selling their products in plastic bottles would be interested in supporting business ideas aimed at recovery, recycling, or reusing plastic bottles, which indirectly affects the firm.

7. Future research directions

This section presents future research opportunities for OSCM scholars for exploring the role of OSCM in mitigating social challenges posed by the COVID-19 pandemic. Moreover, potential research questions are also presented in Table 3 and are linked with theories in Figure 3.

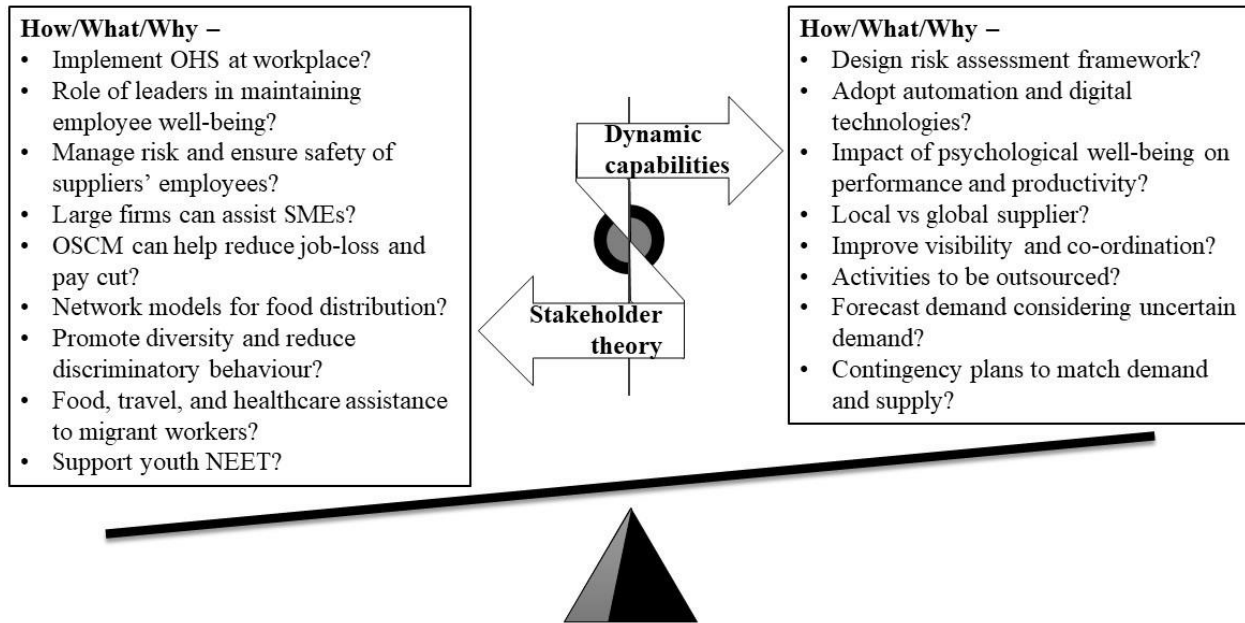


Figure 3. Graphical representation of potential future research avenues based on theories.

Workforce health and safety: There exists a pressing need to update risk assessment and OHS to ensure employees' safety. Therefore, the scholars should develop a risk assessment framework that will assist in identifying the sources of COVID-19 risk and update the OHS of the OSCMs accordingly. In the event that COVID-19 contaminates the workplace, a set of strategies for different scenarios must be created.

Maintaining employee psychological well-being is a complicated task and, leaders can play an important role in it. We encourage OSCM researchers to investigate this relationship empirically. Although some firms may have developed best practices for ensuring employee psychological well-being, others may still struggle. Through a theory-driven case study approach, the scholars should report these best practices, which will help other firms develop or adopt employee well-being initiatives. A cross-case analysis may be performed to see how different firms across industries are ensuring employee well-being. Researchers should also explore the gap between employees' expectations and employers' actions if any. Such multi-source analysis may aid in understanding employees' needs and preparing action plans accordingly.

Managing supply chain disruption: We argue that achieving social sustainability starts from the firms' workplace. Failure to manage own survival can lead to social disruptions within the supply chain and affect OSCMs' ability to support society. The challenge that the OSCM currently face

is to maintain the supply of raw materials or products. Hence, research on multi-sourcing strategy such as its role in reducing supply risk is timely and important. Also, can the local SMEs be used for this purpose? The scholars can also work on identifying and selecting suppliers that are in less affected places. Factors such as choosing one supplier from one geographical location, exploring SMEs as suppliers could be considered to minimise supply risk.

Another relevant stream is finding ways to enhance supply chain visibility and coordination through supplier collaboration and the use of supply chain control towers (Oliveira and Handfield, 2019). The traceability could be enhanced through the use of digital technologies such as Blockchain (Xu et al., 2021; Rogerson and Parry, 2020; Chaudhuri et al., 2018), particularly for raw materials sourced from countries with dubious human rights and OHS records. The idea behind achieving visibility is to improve own operational performance and decision making (Barratt and Oke, 2007). Scholars should look at how ready businesses are to implement emerging technologies and how useful they are in improving supply chain visibility (Ivanov, 2021). As firms search for local suppliers, they may face the issue of workplace visibility and lack of coordination from these local suppliers; recall the example of Nike from section 4.3. The researchers should make efforts to find ways to overcome such issues and create a win-win situation. Furthermore, multi-sourcing can increase the complexity of the supply chain. Therefore, the minimum and the maximum number of suppliers for a particular product, material, or service needs to be explored.

Large social causes: Due to self-preservation and panic buying behaviour, firms are facing demand-side disruption. Under such circumstances, how can firms maintain the flow of products and services to the market would be interesting to explore. What activities should OSCM focus on, and which activities can be outsourced need investigation? For example, in India, ITC has collaborated with food delivery platforms -Swiggy, Zomato, and Dunzo to ensure an uninterrupted supply of essentials to customers' doorstep (The Economic Times, 2020). Contracts for these outsourced activities and pricing instruments also need to be designed. By focusing on competencies and outsourcing non-core activities, OSCM can help firms sustain their own business and provide business to others, reducing the risk of job loss and pay-cut and generating employment opportunities for youth NEET. Considering the dynamically changing demand, studies on demand forecasting could assist the firms and retailers in efficiently maintaining their inventory.

As the firms plan to support women, rural people, and youth NEET, innovative ideas for providing opportunities should come from academics. Recall the example of Nestle from section 4.9, more such ideas need to be explored. Moreover, the scholars should identify barriers that obstruct the implementation of such socially responsible ideas and find the causal relationship between them—the identified causes that can be worked upon.

Regarding food and nutrition needs, the major challenge is to match supply with demand because of two reasons: first, countries are taking a nationalist approach and have stopped the export and are hoarding staples; second, logistics hurdles are making it difficult to transport produce where it is needed (Almeida and de Sousa, 2020). OSCM scholars should explore the consequences of such hoarding behaviour by the countries and make necessary suggestions. For example, Almeida and de Sousa (2020) reported that hoarding of staples by producer countries could result in food scarcity in the dependent countries leading to panic buying and increased prices. Considering the challenges faced by the firms and government to provide food to people in need, optimisation models for the location of distribution centres and vehicle routing for food delivery should be worked upon.

As highlighted earlier, information dissemination is important to tackle discrimination (racial, ethnic, and gender). In this regard, future research should guide the firms in choosing the modes of information dissemination and allocating a budget to each mode to maximise the speed of information spread. For example, in countries with high mobile phone and internet penetration rates, a higher amount should be allocated to publicity on online platforms than television ads and print media.

Table 3. Potential research questions

Social risks	Key research agenda for the future
<i>Workforce health and safety</i>	<ul style="list-style-type: none"> • Conceptualise the role of occupational health and safety (OHS) measures during a pandemic outbreak • Design and implementation of COVID-19 risk assessment framework at the workplace. • How can digital technologies and automation assist in workforce health & safety?
<i>Psychological well-being of employees</i>	<ul style="list-style-type: none"> • How does a lack of psychological well-being due to a pandemic affect the firm's performance and productivity?

	<ul style="list-style-type: none"> • What is the role of leaders and leadership style on employees' psychological well-being?
<i>Potential bankruptcy of suppliers and SMEs</i>	<ul style="list-style-type: none"> • How to manage risk at suppliers' place to ensure well-being of their employees and reduce supply chain disruptions. • Examine the local vs global suppliers during the pandemic outbreak to avoid supply shocks. • What are the challenges faced by the SMEs in adopting automation and digital technologies, and how can large firms assist them in mitigating these challenges during pandemic outbreaks? • How to enhance supply chain visibility and coordination through supplier collaboration during a pandemic outbreak?
<i>Job loss and pay-cuts</i>	<ul style="list-style-type: none"> • How can OSCM practices help to reduce employment loss and pay cuts during a pandemic? • What are the activities the firms should focus on, and which activities should be outsourced?
<i>Panic and self-preservation</i>	<ul style="list-style-type: none"> • Understanding the contingency plans to match the supply with demand for essentials products. • Demand forecasting considering the uncertainty and changing demand.
<i>Food security and nutrition</i>	<ul style="list-style-type: none"> • What are the food security-related challenges arising due to hoarding behaviour by the countries? • To develop network models for the distribution of food.
<i>Discrimination and gender inequality</i>	<ul style="list-style-type: none"> • Understanding the gender inequality and its impact on supply chain sustainability during the pandemic. • Explore the measures that promote diversity and reduce discriminatory behaviour.
<i>Forced migration</i>	<ul style="list-style-type: none"> • How can firms use their existing capabilities to support migrating workers, such as providing employment, food, healthcare facilities, and travel assistance?
<i>Youth NEET</i>	<ul style="list-style-type: none"> • How can the firms support youth NEET with employment opportunities and skill development?

8. Conclusion

The COVID-19 pandemic has caught the world by surprise and has aggravated social issues globally. Apart from the public health crisis, COVID-19 has led to increased job loss, gender inequality, crimes, unemployment, food insecurity, forced migration, and health and safety issues, among others (see section 3 for details). Some firms have made efforts to respond to social issues, but these efforts are not sufficient, and there is still scope for doing more for society. For example,

Toshiba is providing psychological support to its employees through educational activities and mental-health enlightenment. Babbel is offering free language courses to US students (for more examples, see Table 2). The present study contributes to theory and practice by providing conceptualise understanding of the role of OSCM in enabling the world to achieve social sustainability. Specifically, using the SDC view, ten social challenges that represent a majority of the social issue caused due to COVID-19 outbreak are identified. The study then proposes mitigation strategies, based on SDC view and real-life examples, to overcome these challenges, which also helped identify future research opportunities for the OSCM researchers.

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