

## Chapter 10

# Examining the Effects of the Russia–Ukraine Conflict on Global Supply Chains

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### ABSTRACT

*Conflicts cause significant losses of life and property, create environmental and socio-cultural changes, and lead to significant disruptions in global supply chains. The Russia-Ukraine conflict, occurring on Ukrainian territory, is still ongoing and its consequences are uncertain. This bottleneck in global food and energy supply, large increases in the costs of basic logistics services, such as international transportation and warehousing, come to the fore as the first consequences of the conflict. These developments prevent countries in many distinct parts of the world from reaching vital resources, such as food and energy. Therefore, this study aims to evaluate the effects of the Russia–Ukraine conflict on global supply chains. In this context, the relevant literature, sectoral publications, and reports from international authorities related to global supply chains were examined in a conceptual framework. The results of the study suggest that the conflict poses significant problems that will adversely affect global supply chains.*

### 1. INTRODUCTION

A supply chain is an integrated system that starts from the procurement of raw materials or semi-finished products, proceeds through production, packaging, storage, and distribution, and finishes with the delivery of final products to end customers. The links of this chain are not limited to manufacturers and suppliers only. There are many different parties in a supply chain, such as logistics service providers, retailers, insurance companies, customs brokerages, and customers (Cooper et al., 1997; Min & Zhou,

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2002; Chopra & Meindl, 2007). Especially in recent years, national supply chains have been insufficient in terms of raw material supply, product diversity, and the ability of national companies to develop sustainable success strategies; therefore, there is a need to improve the existing traditional structures (Beamon, 1999; Choi et al., 2004; Sampson & Spring, 2012). In this context, an understanding of global-scale commercial activity comes to the fore. Globalization of supply chain links allow commercial activities to be conducted across country borders by offering several benefits, such as low-cost procurement of raw materials and semi-finished products, efficient outsourcing, and a wide customer portfolio, instead of local and limited markets (Prasad & Sounderpandian, 2003; Meixell & Gargeya, 2005; Christopher et al., 2006). Unlike those serving in local markets, companies that engage in commercial activities and ventures in the global market can expand their supplier and customer networks and develop low-cost and high-quality production and distribution strategies with various resources (Duclos et al., 2003; Gereffi & Lee, 2012; Choi et al., 2012). However, although globalization has several advantages for multinational companies, wide-ranging issues affecting nations such as epidemics and wars can cause unforeseen disruption in supply chain links (Toygar & Nart, 2022). In fact, such problems have recently been experienced by companies conducting global-scale commercial activities. The Coronavirus disease, which started in the People's Republic of China (PRC) in December 2019 and was declared a global pandemic in March 2020, had negative effects on global supply chain links (Toygar & Yıldırım, 2021; Jagtap et al., 2022). The COVID-19 pandemic also caused unprecedented disruptions in global trade (Barlow et al., 2021; Wang et al., 2021; Verschuur et al., 2021), with sharp decreases in global trade volumes of agricultural commodities (Anderson et al., 2021). As a result of the pressure of the pandemic on global trade, wheat prices have risen to levels that have never been observed in the last 14 years (Mckenna, 2022). After 2 years with the COVID-19 pandemic, 60% of the global working population earned income less than that in the pre-pandemic period (UNCTAD, 2022d). In this process, historical records were broken in transportation costs, especially due to disruptions in logistics services and increased prices of energy commodities, such as crude oil and natural gas (Maliszewska et al., 2020; Burgos & Ivanov, 2021).

Companies' difficulties accessing raw materials during the pandemic caused the "just in time" production model to lose its validity, which was one of the most important gains of globalization (Brakman et al., 2020; Fonseca & Azevedo, 2020; Lingum et al., 2021). The adoption of heavily stocked production strategies, starting from the first days of the normalization movements, has brought along several problems in international transportation processes (Kumar et al., 2020; Sharma et al., 2020; McMaster et al., 2020). COVID-19-related restrictions have decreased industrial production but led to companies storing most of their goods (Goniewicz et al., 2020; Han et al., 2020; Hugelius et al., 2021). In this process, the implementation of intense restrictions in coastal facilities such as ports, which are the most important collection and distribution centers, has almost brought operational activities to a standstill due to staff shortages (Toygar et al., 2022). For example, the Yantian terminal of Shenzhen port, one of the busiest ports in the world, stopped serving for 6 days due to pandemic-induced quarantine measures, affecting a total of 600 thousand TEU containers (1 TEU equals to 20 ft container) (Chambers, 2021; Seow, 2021). In case of a regional or large-scale problem, maritime companies develop many different solution strategies until they solve the problem, including non-compliance with shipping schedules, regional voyage cancellations, or reduction of port calls (Toygar et al., 2022). For example, ship calls decreased by 17% in 2020 (UNCTAD, 2021a). As another example, the compliance of container ships with their voyage bookings decreased by 35% in the first months of 2021, an unprecedented decrease in the container transportation sector for the period between 2011 and 2021 (Murphy, 2021a). In addition, in 2021 blank sailing was announced for 919 container ships routing between the world's two largest trade routes,

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