

Chapter 1

The Global Web

Understanding

Supply Chains

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ABSTRACT

The modern supply chain function represents a worldwide network that binds producers with distributors along with logistics companies and government bodies. Such a system guides worldwide economic activity and maintains alignment with technological developments and political systems while addressing societal needs and preserving the environment. The production process brings raw materials through transformation into final products before distributors move products throughout market territories. The transportation and logistics functions belong to logistics firms, but governments enforce the regulations. The sophisticated international system demands expertise from both businessmen and officials as well as consumers to optimize its operational capabilities and limitations.

INTRODUCTION

Global commerce requires supply chains as its vital connection to conduct the flow of goods along with services and information across international borders. A supply chain exists as a complex interconnected system which unites raw materials suppliers with manufacturers while adding logistics providers and retailers and consumers. Due to the efficient and resilient supply chains economic stability improves together with business competitiveness and satisfaction for consumers.

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Current disruptions stemming from the COVID-19 pandemic together with geopolitical turmoil and climate-induced events have revealed critical weaknesses within worldwide supply frameworks thus making businesses along with authorities evaluate standard operating approaches. Global business operations depend on complicated supply chain network relationships which link raw material suppliers to manufacturers along with logistics providers until they reach retailers who distribute items to customers worldwide. Modern supply chains represent essential systems because they help businesses minimize costs through optimized operations and resource access and fast product delivery to wide markets (Christopher, 2016). Complex supply chains have become vulnerable because of their advanced network structure. Various systemic vulnerabilities surfaced during the COVID-19 pandemic mostly because of companies depending on one supplier and just-in-time delivery systems resulting in semiconductor and medical equipment shortages (Gereffi 2020). The Russia-Ukraine war interrupted global grain and energy supplies at the same time that extreme weather events caused damage to infrastructure leading to delayed shipments (Ivanov, 2021). The drive for sustainability gained importance under current pressures where consumers and regulators seeks visibility regarding labor practices, ethical sourcing and carbon emissions (Seuring & Müller, 2008). The unstable market environment has pushed businesses to implement blockchain together with artificial intelligence (AI) to create an enhanced supply chain visibility and circular economy infrastructure while expanding their supplier network (Kshetri, 2021; Ellen MacArthur Foundation, 2019).

BACKGORUND OF SUPPLY CHAIN

Structure and Functioning of Global Supply Chains

Global supply chains (GSCs) use multiple countries to establish complicated networks where production and distribution and transport link numerous industrial stakeholders and enterprises. GSCs work through global efficiencies such as lower labor expenses and access to raw materials for optimized production and delivery operations. GSCs operate through a systematic process which begins with raw material sourcing and includes production, assembly, distribution and ends with the delivery phase to consumer markets. Companies determine decisions at every production phase according to cost efficiency and market proximity and skilled labor availability (Christopher, 2016). The principal elements defining GSCs involve their multinational operation coupled with digital tracking tools and susceptibility to operational interruptions. The modern GSC operation depends heavily on three main technologies including enterprise resource planning (ERP) systems and block-

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