

Chapter 3

The Role of the Trucking Industry in the Pre-/Post-COVID-19 Environment for Modern Industries

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ABSTRACT

Various economic, social, and environmental developments are converging to create an uncertain future for the U.S. trucking industry. These include, but are not limited to, the continuing truck driver shortage, an increased concern about environmental sustainability, and the industry volatility brought on partly by the effects of the COVID-19 pandemic, which includes consumers pivoting to online shopping in never previously seen before numbers. On the horizon, technologies, such as IoT and autonomous vehicle technologies, have the potential to provide supply chain managers with information and services needed to enact positive change and solve existing logistics problems. This chapter is an examination of the issues currently surrounding the trucking industry in the U.S., with a particular focus on the two compelling topics of the truck driver shortage and autonomous vehicle technology. For the purpose of context, two Pittsburgh-area trucking companies were examined to gain a better understanding of how small- to medium-sized trucking-based logistics companies are currently operating in this space.

INTRODUCTION

Covid-19, Trucking Industry

The trucking industry in the U.S. has been at a crossroads for some time. The global pandemic has laid bare many of its inequalities and shortcomings. Numerous economic, social, environmental, and technological developments are converging to create an uncertain future. The truck driver shortage continues, the rise of ecommerce as a result of the Covid-19 pandemic increased industry volatility.

DOI: 10.4018/978-1-6684-5250-9.ch003

Sustainability continues to be an issue for a global industry (Sharma & Joshi, (2018) that contributes over 23% of greenhouse gas emissions (Kite-Powell, 2020), with 5% produced by large and medium-weight trucks in Canada and the U.S. alone (Barla, 2010). Most notably, new technologies, especially IoT and autonomous vehicle technologies, are poised to further disrupt the industry but also provide supply chain managers with the tools needed to tackle existing issues, such as the current truck driver shortage and sustainability concerns.

Purpose

This research effort provides a scholarly examination of the current status of trucking in the U.S. and a discussion of driving forces that are affecting the industry, with a particular focus on the truck driver shortage and autonomous vehicle technology. Additionally, two Pittsburgh-area trucking companies were examined in order to gain a better understanding of how these macro industry forces are shaping small-medium sized trucking-based logistics companies. Pitt-Ohio is an example of a successful traditional trucking operation while Locomotion is a technology start-up aiming to disrupt the current trucking industry through the introduction of long-haul autonomous trucking technology. Based on these analyses, a discussion of managerial implications is presented, which supply chain managers can use to improve trucking operations in the short and long terms.

BACKGROUND

Brief Overview of the U.S. Trucking Industry

Trucking is a global industry and a necessary component of almost all supply chains. While sea, rail, and air can move items to specified locations such as ports, stations, and airports, trucks have the flexibility to move items over both long and short distances to a wide variety of locations, including last mile delivery directly to the customer. Trucks can also move different quantities of goods ranging from a full truckload (FT) or truckload (TL) and less-than-truckload (LTL). Currently, the U.S. trucking industry is comprised of approximately 75,000 companies which includes smaller single location and larger multi-location entities. The combined annual revenue is approximately US\$190 billion (Dun & Bradstreet, 2021). Recent changes in consumer behavior have altered demand. As a result of the Covid-19 pandemic, online shopping has increased while demand from struggling businesses has declined. As a result, more emphasis has been placed on LTL hauls, medium-duty commercial vehicles that are more flexible for short-haul, and last-mile transportation needs.

The U.S. trucking industry has been very competitive and, as with any sustainable business enterprise, profitability of these transportation companies depends on efficient management, cost containment, and operations. While larger companies can take advantage of account relationships, bulk-fuel purchasing, fleet size, and accessibility to drivers, small-medium compete by the ability of quick turnarounds, serving niche markets, and/or transporting irregularly sized goods. Net margins are very low at less than 1% while bankruptcies are common. Additionally, the industry is considered “fragmented” with the 50 largest companies only accounting for 40% of total revenue. Revenue and bankruptcies are correlated directly to the cost of fuel. Additionally, all companies in this industry must adhere to a variety of government regulations surrounding emissions, safety, the transportation of hazardous materials, and commercial

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