Chapter 14
Technological Impact of Electronic Logging Devices in the Operational Process of the Transportation Industry

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ABSTRACT

This chapter explores the influence of electronic logging devices and their potential impact on the operational processes of commercial trucking transportation. The chapter answers the following question: what impacts will ELD have on the supply chain operations of the commercial transportation industry? The introduction of ELD will change how organizations manage and organize products' transportation, improve their operators' quality of life, and minimize redundant travel. Implementing ELD where no technology was regulated will impact how operational process managers manage equipment and employees. Real-time data will influence truck operators' actions to improve supply chain efficiencies. The chapter overviews the progress and sustainability of the Canadian commercial trucking transportation industry by introducing ELD technology. The industry's ability to manage new technologies will shape its future and continue to supply the market with a reliable and sustainable supply chain.

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1. INTRODUCTION

1.1 Research Gap and Motivation

This research explores technology's impact on the Canadian commercial trucking industry. Many technologies, such as electric bicycles, multi-directional elevators, and maglev trains, influence the transportation industry (Crawford, 2020). Making logistics smarter by using more technological innovations helps better handle the increasing complexity and volume of logistics operations (Feng & Ye, 2021). Information is one of the central topics in supply chain coordination literature which has been analysed from different perspectives, especially the benefits and ways to share the information which is suitable for centralized supply chains (Vosooghidizaji et al., 2020). Digitalization in logistics is consistent with the current trend in every domain (Shin & Taghipour, 2021).

This research focuses on process technology introduced or being researched in the commercial transport trucks or Heavy-Duty Vehicles (HDV) industry to focus the study's scope. The technology included in this research is Electronic Logging Devices (ELD). This technology is considered a disruptive digital transformation in the transportation industry, which replaces traditional means to log drivers and truck activities (Koomen & Fenik, 2021). The research collected opinions and data from academic and public opinion to discuss the following question: What impact will ELD have on the supply chain operations of the commercial transportation industry? The findings provide an overview of industry perspectives on the new ELD in a conceptual review of the industry's views of these technology's impact.

The research in this study is important for compiling the opinions and facts on introducing this technology into the commercial transport industry process. First, it introduces technology where there was no technology before in the case of electronically monitoring drivers' work hours. Second, ELD is a necessary technology for standardization across the industry and operational safety and efficiency improvement (Scott et al., 2019). The technology will benefit the drivers/operators of commercial vehicles and the operations administration and government department's enforcement of the regulations. ELD will help drivers by reducing fatigue-related injuries and deaths due to vehicle accidents and out-of-service time for failing to keep accurate records and improve driver quality of life. It will also reduce an organization's administrative costs in monitoring drivers' hours of service (HOS) compliance. Government agencies' enforcement of regulations will save time and costs with a standardized method to track drivers' HOS. The benefits and advantages of digital technology for the supply chain are no longer in dispute (Taghipou & Merimi, 2021). The industry will benefit because it will standardize competition for federal carriers and comply with US regulations (Transport Canada, 2020). Third, ELD often incorporates an In-Vehicle Monitoring System (IVMS) with a greater capacity to collect data and enhance driver training and coaching. This technology will significantly improve the supply chain to maximize vehicle utilization. As a result, it minimizes the industry's environmental impact by reducing harmful emissions and optimizing supply chain routing by reducing transportation redundancies (Slack & Brandon-Jones, 2019).

ELDs are intended to create a safer work environment for drivers through easier, faster, and more facilitation of their duties (Wade et al., 2021). Others see using ELDs as the potential for greater transportation times and operation costs, limited capacity, and adversely affected supply chain efficiency (Sapra, 2019).