1. Executive Summary

Artificial Intelligence has helped transform business operations in many industries due to Industry 4.0. The companies in the food retail industry have embraced this change and invested heavily in updating the AI capabilities in their fulfilment and delivery processes to compete in a dynamic market. In particular, the online grocery market has been steadily increasing and experienced an explosive growth due to the pandemic. Before the pandemic, e-grocery sales were expected to be 4.3% of the total grocery market in 2020 but were closer to 10.2% by year's end. Online grocery sales are expected to account for 12.5% of the $1.07 trillion grocery market in 2021 and to 20% in 2025.

This report focuses on analyzing the operations procedures of Sobeys Inc., a leading national Canadian food retailer who recently opened its first fully automated e-commerce customer fulfillment center to support its online grocery fulfilment and delivery service. The purpose of this report is to evaluate the effectiveness of AI at the Sobeys automated customer fulfillment center by analyzing key performance metrics and operations management processes, and further assessing the impact of AI on the food retail sector. Sobeys has partnered with Ocado to design and build their online retail fulfilment infrastructure. The UK-based retail and technology company's proprietary Ocado Smart Platform (OSP) combines the capabilities of an automated fulfilment center with AI technology to help manage the end-to-end AI software capabilities for the grocery retailer to expand its market. The physical fulfilment center platform is dynamically linked across shopping channels, fulfilment, and last mile solutions, helping with order fulfilment, delivery route optimization, data integration, forecasting and determining promotions. AI allows Sobeys to have the ability to meet the complex and changing expectations of shoppers while driving better productivity, greater flexibility, and higher margins for grocery retailers. The fulfilment centers are configured to accommodate much greater storage capacity than large store-based alternatives, with scalable product range. The infrastructure within the fulfilment centers is modular and tailored to grow with the business.

It was found that using this technology, Sobeys was able to maintain a lean inventory model with only 0.4% wastage compared to 2-3% at a regular grocery retailer warehouse, all while still maintaining maximum product availability. Using the modular grid warehouse arrangement and sorting robots to tend to it allows the warehouse to be more space efficient, carrying 2-4 times the items compared to a traditional warehouse while still being able to fulfil 50-item orders in less than 5 minutes where a standard in-store pickers would take on average 40 minutes. The AI brain manages a 99% order accuracy by providing clarity on stock levels and availability in real-time so that customers receive the correct items. They are able to maintain a 95% delivery punctuality by

constantly optimising the routing for its vans based on real-time factors like fuel, traffic and weather.

A potential area of expansion for AI technology includes changing the face of customer service and Customer Relationship Management (CRM) strategies. Companies will be able to use AI to gain real-time insights across all customer contact channels, automatically escalate and classify cases using sensitivity and domain expertise predictive analytics, power chatbots to deliver knowledge using automated workflows, deliver personalized services anywhere and optimize scheduling and routing planning using complete CRM data.

In conclusion, the added value, higher productivity, and efficiency that AI offers is driving innovation and change management and is transforming business operations. AI based software algorithms allow for real-time enterprise-wide data integration that optimizes operational efficiencies and enhances customer experiences. Implementation of AI and automation very much aligns with Lean philosophy, with space efficiency, waste reduction and continuous improvement lying in its core. With the emergence of a global pandemic, market buying habits suggest a substantial growth in e-commerce sales, and this trend is likely to stay.

The proposed solutions and recommendations going forward for both small- and large-scale operations includes a market analysis and feasibility study. This will help determine how AI and automation transforms the organizational structure and strategies, resulting in companies reassessing their operating models for all their facilities, from stores to distribution centers to headquarters. Another recommendation would be for companies to develop programs to support change management initiatives, employee empowerment, and ensure business strategy alignment. As AI technology disrupts retail workers with entry-level skills on a large scale, organizations will be required to develop a social-impact plan to create avenues to help these people to acquire new skills and succeed. Product development and knowledge sharing aside, a joint venture arrangement can also help make AI and Robotics based e-commerce services viable for smaller firms. Not only does it reduce operational costs, but it also increases the utilisation of the fulfilment center and therefore its efficiency.