

THE IMPACT OF THE ON-DEMAND ECONOMY ON MALAYSIAN LOGISTICS

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ABSTRACT

The on-demand economy has reshaped the logistics landscape, particularly in last-mile delivery and warehouse management. The rise of e-commerce has driven significant changes in the sector, necessitating innovative approaches to optimize operations and meet increasing customer expectations. The study explores the challenges and opportunities presented by the on-demand economy, including the role of technology, satellite depots, and emerging trends like crowd logistics. By analyzing the interplay between these factors, the paper highlights the critical role of balancing efficiency, cost-effectiveness, and customer satisfaction in shaping the future of logistics.

Keywords: *on-demand economy, logistics, last-mile delivery, warehouse management, e-commerce.*

Introduction

The sharing economy, gig economy, or on-demand economy are other terms for the same business model that uses technology to link companies or individuals looking for particular services with service providers who can meet their needs. The on-demand economy has significantly impacted the logistics sector. Allied Industry Research (2022) projects that between 2022 and 2031, the on-demand logistics industry will expand at a compound annual growth rate (CAGR) of 20.8%, reaching USD 80.6 billion. The on-demand economy's growth has changed several industries, including logistics, and encouraged the creation of creative ways to boost last-mile delivery effectiveness. Consequently, a paradigm shift in supply chain management has resulted from the on-demand economy, with an emphasis on customer satisfaction, transparency, and creative logistics techniques.

The on-demand economy, defined by platforms that facilitate exchanges between service providers and consumers, has completely transformed the distribution of goods and services. Through contract or freelance labor arrangements, technology platforms connect people looking for services with providers. While it is different from traditional markets, Benjaafar (2021) and Song (2022) point out that it has the ability to transform these markets into entrepreneurial ecosystems by implementing

information and communication technology (ICT). However, Duch-Brown (2021) disagrees that online markets are currently more integrated than traditional markets, despite their innovative nature. Waluyo (2021) discusses how the coronavirus pandemic has affected conventional markets and caused a move towards digital marketing applications. The study also illustrates how external factors have caused the landscape to change.

Warehouse Management

There are several different aspects of logistics and supply chain optimization that are involved in the management of warehouses and satellite depots. A warehouse serves as a facility for inventory management and storage. According to Geoff (2023), warehouse management involves organizing for the purpose of achieving maximum pick and pack efficiency, implementing rigorous stock tracking, ensuring security, and guaranteeing that the working environment is clean and well-organized. Traditional warehouses, being centralized facilities, typically store large quantities of merchandise. Satellite depots, on the other hand, are mini-warehouses that are strategically positioned and located closer to consumers (Lark, 2023). Satellite depots might help minimize transportation costs, improve delivery times, and free up warehouse space (CRS Cold Storage, 2019). Time-sensitive shipments, like temperature-controlled products, necessitate a specific duration for successful delivery, making this particularly crucial.

The best practices for managing warehouses in an economy that operates on demand include prioritizing demand-supply matching, taking into account the mutual impact that exists between tactical and operational planning, developing hybrid network architectures, and making use of mobile satellites to ensure that delivery routes are as efficient as possible. Unnu (2022) observed on-demand warehousing by utilizing dynamic facility location models in his research. According to his findings, the power of on-demand storage comes from its ability to create hybrid network architectures that make use of self-distribution facilities in a more efficient manner by utilizing their capacity. The two-echelon city dispatching model with mobile satellites (2ECD-MS) is a model that Lan (2020) proposes. In this model, the locations of mobile satellites change according to the demands of customers in order to ensure the efficiency of delivery routes every day. Additionally, the study proposes a cluster-based variable neighborhood search scheduling algorithm to determine the locations of mobile satellites and the dispatch routes of trucks and tricycles.

Last-Mile Delivery

The term "last-mile delivery" refers to the final leg of a product's journey, which includes the transport of the product from a distribution center or warehouse to the doorstep of the consumer. Even though it is the most costly and time-consuming stage in the shipping process, this essential stage is crucial since it plays a significant role in determining the overall level of customer satisfaction (Alexandra, 2003). In the on-demand economy, it is crucial to effectively manage operational expenses in last-mile delivery and satellite depot management in order to maintain competitiveness and ensure customer satisfaction.

Effective management of last-mile delivery and satellite depots is the main factor that determines the effectiveness of the supply chain and logistics business, particularly in the context of e-commerce and the on-demand economy specifically. When it comes to satisfying the requirements of consumers, making the most of available resources, and ensuring sustainability, these components are absolutely necessary. Bruni et al. (2023) look into drone-assisted last-mile delivery with shared depot resources. They also come up with a mixed-integer program with linear restrictions to account for how tactical and operational plans affect each other. The ability to provide timely and efficient last-mile delivery has a direct impact on customer satisfaction, which in turn helps to develop brand loyalty in an environment that is extremely competitive. The pooling of orders is an essential source of efficiency, and efficient last-mile delivery methods include initiatives such as collaborative logistics, urban consolidation centers, and multimodal transport. Additional sources of efficiency include multimodal transport. Zhang (2022) suggests a paradigm for quantifying the efficiency loss that occurs in urban last-mile delivery systems. He also discovers that time frames have the potential to dramatically exacerbate the problem of efficiency loss. Lyons (2023), conducting a comprehensive assessment of the existing literature and identifying 22 different strategies, has examined urban consolidation centers, freight bicycles, and collaborative logistics as the most examined last-mile delivery solutions. Kou (2022) proposes a multimodal transport design to facilitate last-mile delivery in rural areas. The study realizes that multimodal transport has the potential to successfully minimize the distribution costs associated with last-mile delivery in rural areas.

Last-Mile Delivery and Warehouse Management in Malaysia

The on-demand economy has transformed last-mile delivery in Malaysia, leading to the expansion of on-demand delivery services that prioritize efficient last-mile delivery. The effective use of these services, which include efficient routing, real-time tracking, and extensive data analytics, helps to reduce the amount of time and resources required for delivery, hence improving the efficiency of the last mile. (TruxCargo, 2023). According to Lujistik (2024), a few examples of companies in Malaysia that provide last-mile services include Pos Malaysia, GDEX, and City Link Express. Last-mile delivery

has become an essential component of the logistics industry in Malaysia due to the surge of e-commerce entities. Projections indicate that Malaysia's e-commerce sales will grow from US\$7.1 billion in 2021 to US\$13.8 billion in 2025 (Kosmo, 2023).

Last-mile delivery services and satellite depots in Malaysia are now facing a variety of challenges, and satellite depots present a potentially useful solution to these problems. These smaller facilities serve as distribution points, which enables faster delivery and a more flexible customer experience due to their increased response. Companies have the ability to significantly reduce delivery times and improve customer satisfaction by pre-stocking high-demand commodities in satellite depots (Lark, 2023). This could result in a higher standard of satisfaction among customers.

According to the findings of several studies, the logistics and courier services business in Malaysia faces several potential opportunities and significant problems. There is a significant relationship between client preferences and factors such as cost optimization, service quality, express alternatives, and overall service excellence. One of the most important factors that customers consider when choosing a courier service is the pricing range that is offered by different firms. Haron (2023) emphasized crowd logistics as an innovative frontier in the Malaysian logistics business, highlighting its potential for improving efficiency and sustainability. The study also highlighted the point that crowd logistics represents new horizons.

However, the study indicated that there are issues in the management of resources, technology, and operations. In order to deliver effective solutions, it is necessary to make investments in technology and standardize processes. Zainuddin (2022) provided evidence that customer-related factors have a major impact on the effectiveness of last-mile delivery in Malaysia following the COVID-19 outbreak. This study underlines the significance of aspects such as meeting delivery time, delivery volume, effective route planning, and infrastructure in influencing the efficiency of logistics service providers (LSPs). Also included in this study is the importance of infrastructure.

Krishnan (2019) emphasizes that Malaysian warehouses recognize the importance of technology in determining their ability to adopt new smart warehouse technologies. He specifically pointed out that managerial influence and expenses are two of the most important variables. As an alternative, Vatumalae (2020) demonstrated increases in efficiency with the use of warehouse management systems, while Ghapar (2023) addressed operational difficulties through the implementation of real-time inventory management solutions. The study's findings recommend addressing these problems by implementing current software solutions and real-time inventory

management systems. Rahman (2023) emphasized the importance of optimizing labor, equipment, and technological integration in order to increase operational efficiency in Malaysian warehouses. Collectively, these findings enhance our understanding of the sector's complexity, thereby offering valuable insights for strategic decision-making.

Conclusion

The on-demand economy has revolutionized the logistics industry, particularly in last-mile delivery and warehouse management. By leveraging technology and innovative strategies, businesses can optimize operations, enhance customer satisfaction, and gain a competitive edge. However, challenges such as cost optimization, service quality, and resource management still remain. The successful integration of technology, the strategic deployment of satellite depots, and the exploration of emerging concepts like crowd logistics are crucial for navigating the complexities of the on-demand economy. As e-commerce continues to grow, the logistics sector must adapt and evolve to meet the increasing demands of consumers while ensuring sustainability and profitability. Eventually, the future of logistics lies in its ability to balance efficiency, cost-effectiveness, and customer experience. By adopting a holistic approach that involves last-mile delivery, warehouse management, and technological advancements, the industry can unlock new opportunities and thrive in the dynamic on-demand landscape.

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