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A COMPREHENSIVE REVIEW OF ECOMMERCE SUPPLY CHAIN MANAGEMENT

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Abstract:

The rapid growth of e-commerce has transformed the landscape of global commerce, with a staggering 2.14 billion online shoppers contributing to a total expenditure of US$ 4.9 trillion in 2021 alone. This surge in online transactions has necessitated the development of intricate supply chains within e-commerce businesses of all sizes, encompassing crucial processes essential for efficient delivery of goods and services to consumers. Consequently, e-commerce supply chain management strategies have emerged as vital tools for digital merchants to streamline operations and enhance customer experiences. Understanding the dynamics of supply chain management in the e-commerce industry is paramount for businesses seeking to optimize their activities and unlock future growth opportunities. This abstract underscore the significance of staying abreast of industry trends and adopting effective management techniques to navigate the evolving landscape of e-commerce supply chains successfully.

Keywords — ecommerce, supply chain management, ecommerce strategies, inventory management.
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I.   INTRODUCTION

The landscape of commerce underwent a seismic shift in 2021 as the world witnessed an unprecedented surge in online shopping. With approximately 2.14 billion individuals engaging in e-commerce transactions, the global expenditure soared to an astounding US$ 4.9 trillion within the span of a year. This monumental figure not only underscores the immense scale of digital commerce but also illuminates the profound implications for businesses operating within this realm. Across the spectrum, from small-scale enterprises to multinational corporations, e-commerce sellers have witnessed the emergence of intricate supply chains essential for the seamless delivery of goods and services to their clientele.

In response to this dynamic environment, e-commerce supply chain management strategies have become indispensable tools for merchants seeking to optimize operations and elevate customer experiences.

Recognizing the pivotal role of supply chain management in the e-commerce ecosystem, acquiring insights into industry trends and management techniques is imperative for businesses aspiring to streamline activities and propel themselves toward greater success in the ever-evolving digital marketplace.

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II.   An E-COMMERCE SUPPLY CHAIN

The e-commerce supply chain encompasses a sequence of logistical operations essential for the functioning of an online retail establishment. These operations span from the acquisition of raw materials to the manufacturing of final products, along with activities such as inventory control, warehouse management, order processing, and the crucial last-mile delivery.

More specifically, within this framework, goods and products traverse the supply chain from sellers or suppliers to buyers, while payments flow from buyers to sellers. Moreover, owing to the digital nature of the business, information exchange occurs at various stages along this continuum.

The overarching objective of maintaining an efficient supply chain is twofold: to ensure the delivery of high-quality products to consumers and to cultivate exceptional e-commerce customer experiences. Central to achieving this objective is the effective management of the supply chain, which plays a pivotal role in orchestrating the seamless flow of goods, services, and information throughout the online retail ecosystem.

III.   E-COMMERCE SUPPLY CHAIN MANAGEMENT

In e-commerce, Supply Chain Management (SCM) pertains to overseeing the movement of resources and information among various stakeholders throughout the supply chain. It acknowledges the interdependent roles of entities such as suppliers, producers, and logistics providers in establishing a dependable supply chain, recognizing that any disruption along this chain could disrupt the timely delivery of goods to end-users.

Efficient and effective e-commerce supply chain management entails optimizing the operations of the supply chain. This involves implementing a range of techniques and strategies aimed at enhancing efficiency, productivity, and profitability. By leveraging these methods, businesses can ensure smooth and seamless supply chain operations,

ultimately leading to improved customer satisfaction and sustained growth.

IV.   WORKING OF AN E-COMMERCE SUPPLY CHAIN

Supply chain management for e-commerce focuses on the overall flow of products, resources and information between different tiers of suppliers and buyers. This flow, also known as the e-commerce logistics process, consists of five key stages and actors.
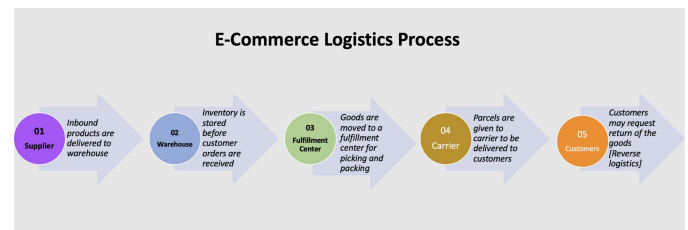

Fig.1 Representation of an ecommerce logistics process

1) Supplier: The supplier procures the raw materials needed to create the products, and delivers them to a factory or manufacturing plant for assembly. In some cases, the products themselves may be assembled already, and have no need for further fabrication processes.

Either way, these materials or products that are brought into the business are called inbound goods, and they will soon head towards the e-commerce warehouse.

2) Warehouse: As the second step of the e-commerce logistics process, the warehouse is where inventory is stored and managed until the time comes for them to reach their new owners: your customers.

Keeping track of inventory plays a significant role at this stage. Inventory management software can be used to enhance visibility into your stock in the warehouse, such as how much goods you have, where they're located, and when to re-stock.

3) Fulfillment Centre: Once a purchase has been made on your e-commerce store, the products purchased then move from the warehouse to the fulfillment centre, one step down the line of your supply chain, closer to hopeful customers

4) Carrier: The carrier in the form of a courier service such as FedEx, DHL or UPS then takes your package for delivery to the final destination.

While one can handle e-commerce packaging internally, these courier services usually offer different packaging options you can choose from to keep your products safe and secure throughout the journey of e-commerce transit to your customers.

5) ***Customer****: Customers are the last actor involved in the e-commerce supply chain. Under normal circumstances, customers receive the products, enjoy them, and both parties end up satisfied.*

However, one must still prepare for the possibility that purchasers will return your products for whatever reason (defects, issues, and sometimes even e-commerce fraud).

Reverse logistics *— the process by which the purchased goods are returned to the seller — is therefore something that should be taken into account as well.*

V. BENEFITS OF E-COMMERCE SUPPLY CHAIN MANAGEMENT

Effective supply chain management forms the backbone of every product-centric organization, exerting considerable influence on the prosperity or downfall of your enterprise. Remarkably, 79% of businesses boasting well-functioning supply chains experience superior revenue growth compared to their industry peers. By streamlining their supply chains, they also slash costs by 15%. Benefits of an effective SCM can be listed down as follows.

1) ***Faster Shipping times****: Contemporary consumers exhibit heightened expectations and diminished patience towards e-commerce merchants compared to earlier times.*

For instance, a McKinsey & Company report highlights that 90% of online shoppers anticipate delivery within 2 to 3 days, with almost half of them prepared to switch to alternative vendors if shipment delays occur.

However, the e-commerce supply chain is susceptible to various pitfalls, including tardy deliveries from suppliers, bottlenecks in manufacturing facilities, inventory shortages in warehouses, and numerous other challenges.

The spectre of delays looms large, jeopardizing customer satisfaction upon realization. Yet, with adept SCM strategies in place, these risks can be mitigated, paving the way for expedited shipping and contented clientele.

2) ***Improved inventory accuracy:*** *Annually, retailers worldwide suffer approximately US$1.75 trillion in lost sales and expenses due to mishandling of inventory. This mismanagement primarily stems from issues like overstocks, understocks, and avoidable returns, often resulting from inadequate visibility into a business's inventory.*

Efficient supply chain management, which entails monitoring, overseeing, and forecasting inventory based on historical data and future projections, enhances transparency throughout the supply chain, thereby mitigating such losses.

- *Enhanced inventory accuracy yields several benefits, including:*

- *Prevention of lost sales due to stockouts*

- *Minimization of losses from spoiled or expired goods.*

- *Reduction in carrying costs associated with unsold inventory*

- *Improvement in cash flow by maintaining only necessary inventory levels.*

3) ***More satisfied customers****: Retaining customers is 5 to 25 times more cost-effective than acquiring new ones, but how can one ensure repeat business from customers for a second, third, or even fourth time? The key lies in what we term as the customer experience.*

From a logistical standpoint, ensuring the safety and integrity of products during e-commerce transit, providing real-time shipment tracking, and, notably, ensuring timely delivery are essential methods to maintain customer satisfaction.

Regarding e-commerce delivery, a study by Oracle revealed that 13% of customers would permanently abandon an online store if their orders are not delivered punctually. It's worth noting that inadequate supply chain management could lead to the loss of a significant number of customers.

VI. STRATEGIES FOR E-COMMERCE SUPPLY CHAIN MANAGEMENT ENEFITS OF E-COMMERCE SUPPLY CHAIN MANAGEMENT

Ensuring customer satisfaction serves as both an intangible advantage and the ultimate objective of operating a dependable e-commerce supply chain.

To assist you in excelling in SCM and enhancing your business operations for improved efficiency, below are 8 tips and strategies elucidated for e-commerce supply chain management.

1) ***Ensure inbound logistics efficiency****: At the onset of the e-commerce supply chain, the vendors play a pivotal role. Any hiccup in inbound logistics could trigger a cascade of delays downstream. Hence, it's prudent to collaborate with suppliers known for their integrity, credibility, and reliability.*

A recommended approach is to seek out suppliers offering punctual deliveries, swift responses to inquiries, and top-notch customer support.

If your current vendor is causing bottlenecks in your supply chain for any reason, engage in dialogue to address the challenges or contemplate transitioning to a more adept supplier.

2) Improve how you manage your warehouse or inventory: *Relying on manual inventory tracking often leads to inaccuracies, if not outright unreliability. Imagine the frustration for both you and your customers when they make a purchase on your e-commerce platform, only to discover that the item is out of stock.*

To address this issue, implementing inventory management software can significantly enhance visibility into your stock across various segments of the supply chain, particularly if you operate as an omnichannel retailer with multiple locations. This software ensures you consistently fulfill your customers' needs and can even forecast their future demands.

Likewise, a warehouse management system (WMS) offers transparency regarding your storage facilities. It provides immediate access to critical data such as warehouse capacity, current orders, and product life cycles. This information empowers you to make informed decisions at any given time.

By analysing your warehouse's current capacity and layout, you can optimize its design, thereby improving both space utilization and productivity.

3) Automate manual tasks in the order fulfillment process: *The era of relying solely on manual labor for warehouse management is now a thing of the past. With technological advancements, integrating e-commerce automation has become a feasible option to not only reduce labor costs but also mitigate losses stemming from human errors.*

A prime illustration of this is evident in Amazon's warehouse and fulfillment centres, where autonomous mobile robots replace human workers in transporting packages, while systems, rather than individuals, efficiently scan and package outbound goods.

If fully automating your warehouse proves to be a substantial investment for your online business, consider leveraging smaller yet cost-effective technologies to bring about tangible and beneficial changes.

For instance, the utilization of gloves equipped with screens and scanners capable of identifying products by their barcodes can streamline warehouse operations and enhance workforce productivity.

Even these modest and straightforward automation technologies can empower employees to track their tasks and handle shipments with greater efficiency compared to manual processes.

4) Consider using voice enablement in the warehouse: *The volume of daily orders you manage directly influences your eventual profit margins. Therefore, boosting this figure can facilitate the expansion of your business, with voice enablement serving as one effective method to achieve such growth.*

Much like wearables that enhance employee productivity, the integration of voice-directed and speech recognition systems within the warehouse can accelerate workflow processes and reduce labor hours.

Moreover, voice technology offers an additional advantage by enabling the collection and analysis of warehouse data. This capability facilitates swifter inspections and necessary repairs, further optimizing operational efficiency.

5) Deploy management systems and the latest information systems technology: *Regarding automation technology, you can elevate your operations by implementing specialized information and management systems.*

In addition to the inventory and warehouse management systems mentioned previously, consider incorporating order management systems like QuickBooks Commerce, which offer a range of features to streamline your order fulfillment process.

Furthermore, enterprise resource planning (ERP) technology can aid in managing accounting and human resources functions, further enhancing operational efficiency.

6) Explore the use of third-party logistics over internal fulfillment: *Fulfillment expenses can significantly impact your bottom line, and managing all orders solely with internal resources may not offer the most cost-efficient solution. Additionally, as your business expands, storage and distribution demands may exceed internal capabilities.*

This is why many e-commerce enterprises opt for third-party logistics (3PL) services.

Delegating the order fulfillment process to 3PL providers not only cuts costs and transit times but also allocates additional time and resources for focusing on other critical aspects of your business that require urgent attention and improvement.

However, it's essential to recognize that partnering with a 3PL company may not suit every business. Nonetheless, it's worthwhile to consider this option and determine its suitability for your specific needs.

7) Optimize delivery routes and times: *Merely focusing on costs isn't the sole factor to consider when determining how goods are transported to your customers.*

While opting for the most economical delivery option might offer substantial savings, consider the impact on customer satisfaction if packages arrive weeks or months after an order is placed on your online store.

However, by strategically identifying and assessing the locations of manufacturers, warehouses, and customers within the supply chain, you can devise delivery routes that are both cost-effective and efficient.

Through optimization of delivery routes and schedules to enhance efficiency and minimize costs, you can elevate customer satisfaction levels and potentially boost profits.

8) Enhance your paperwork and processing: *Transferring anything you write on paper to a tablet or phone offers the convenience of effortless sharing.*

For instance, employing barcodes and radio frequency identification (RFID) to monitor and record goods can enhance the accuracy of your inventory management, potentially allowing customers to verify items independently.

Moreover, RFID technology enhances efficiency by enabling simultaneous scanning of multiple tags on various product items, even from a distance, thereby further streamlining operations.

VII. CONCLUSION

E-Commerce supply chain management serves as a guiding framework for digital merchants, equipping them with tools and methodologies to streamline and enhance the flow of materials, products, finances, and information.

It constitutes a crucial component for ensuring the seamless operation of e-tailers, fostering positive customer experiences, and establishing a robust groundwork for business expansion.

However, the true catalyst for the growth of an online enterprise lies in e-commerce funding. Financial resources are essential for investing in product lines, expanding the workforce, and potentially entering new markets.

Additional funding can also prove beneficial during instances such as preparing for peak seasons by stocking up on inventory or scaling up marketing campaigns.

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