“E-Commerce Supply Chain Efficiency: A Case Study of Amazon Ecommerce Company”
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ABSTRACT
This research is on supply chain efficiency of e-commerce industry. This research is on specific company for get idea about all e-commerce platform. Amazon company is one of the largest ecommerce companies in the world with extensive market capitalization. We are going to know that how amazon company maintain its supply and orders with their demands. There are mainly four key elements for efficient supply chain is integration, operation, purchasing and distribution. With supply chain efficiency, amazon will pick up inventory from manufacturing facilities around the world, ship it across borders, handle customs clearance and ground transportation, store inventory in bulk, manage replenishment across amazon and other sales channels, and driver directly to customer. All without seller having to worry about managing their supply chain. The new solution allows sellers to spend more time building great products, delighting customers, and growing their business, while amazon handles the logistics, improves delivery speed and reduce costs for sellers.
INTRODUCTION
Definition and Introductions
E-commerce supply chain efficiency is a capacity of an e-commerce company to deliver products to customers in a time, cost, and sufficient manner (Vidani, 2015). It includes all aspects of the supply chain, from product procurement to warehousing and delivery (Vidani & Solanki, 2015). Amazon E-commerce is a leading e-commerce company (Solanki & Vidani, 2016). It is popular for its powerful supply (Sharma & Vidani, 2023). The company has invested heavily in technology and infrastructure to well-organised its operations and reduce costs (Vidani, 2016). So as per result, Amazon is able to offer best competitive prices to its customer and fast delivery times (Bhatt, Patel, & Vidani, 2017).

E-commerce supply chain efficiency is important for many (Niyati & Vidani, 2016). It gives ecommerce companies to offer their customers competitive prices. It helps to improve customer satisfaction by ensuring all the products are delivered on time with better (Pradhan, Tshogay, & Vidani, 2016). It also can help to reduce costs for other e-commerce companies, which wants higher profits.

This research paper will use a case study approach to ensure Amazon's e-commerce supply chain efficiency (Modi, Harkani, Radadiya, & Vidani, 2016). The case study will focus on the following key Areas:

- Inventory management
- Warehouse operations
- Last-mile delivery

The research paper will also examine the following questions:

- What are the key factors that contribute to Amazon's supply chain efficiency?
- How has Amazon used technology to improve its supply chain efficiency?
- What lessons can other e-commerce companies learn from Amazon's supply chain efficiency?

Background
Current Trendsetters
The e-commerce industry is growing frequently, and supply chain efficiency is becoming much more important for e-commerce companies (Sukhanandi, Tank, & Vidani, 2018). In recent past some years, there has been a trend towards faster and more appropriate and suitable delivery options (Singh, Vidani, & Nagoria, 2016). In current era, Customer’s expectation is receiving their orders within days or sometimes even within hours. This levied pressure on e-commerce companies to keep efficient supply chains (Mala, Vidani, & Solanki, 2016).

Market Share
Amazon Company is the world's biggest online retailers E-Commerce platform with a market share of over 30%. The company has been successful because of its efficient supply Chain (Dhere, Vidani, & Solanki, 2016). Amazon's
supply chain is more capable to deliver the products to customers fastly and without any damage, even during higher spot shopping seasons (Sharma & Vidani, 2023).

**Importance of the Sectoral**

For the global economy sector, the e-commerce sector is an important part. In 2022, global e-commerce sales made it to $5.2 trillion. The sector is expected to continue to grow in next coming (Singh & Vidani, 2016).

**Scope of Industry Growths**

The e-commerce industry has to grow with compound annual growth rate (CAGR) of 12.2% from 2022 to 2027 (Vidani & Plaha, 2016). This growth will be inspired by a number of factors, including the increasing popularity and gain major part of market of online shopping, growing middle class related markets, and most use of smart electronic (Vidani, Chack, & Rathod, 2017).

**Advantages of this Research to Companies and Consumers**

This research will be beneficial for both companies and (Vidani, 2018). Companies can learn from Amazon's best practices, idea and innovation to improve their own supply chain (Biharani & Vidani, 2018). This can induce lower costs and higher customer satisfaction. Consumers can benefit from more competitive prices and faster delivery times.

**LITERATURE REVIEW**

**J. M. Maqueira-Marín, J. Moyano-Fuentes, S. B. Canada- 2018**

Cloud Computing technologies are being applied in the main business functions in the supply chain. This study’s main goal is to disclose the determinant factors (drivers and a relevant outcome) of the level of use of Cloud Computing in the supply chain (Odedra, Rabadiya, & Vidani, 2018). Here we have conducted an actual study in 484 companies from different sectors in an intermediate position in the supply chain. Collecting method of data consider of a telephone survey use a computerised system (CATI). We used structural equation modelling (SEM) to test the hypotheses. The actual study discloses about Advanced Manufacturing Technologies getting the internal efficiency of the supply chain (Intra-organisational IT) and IT for capabilities in e-business/ecommerce getting external advantage of connection in the supply chain with many companies (Inter-organisational IT) are leading Cloud Computing assimilation. Other side, supply chain combination is one of the major consequences of Cloud Computing assimilation in the supply chain.

**M. Own – 2004**

This research studies side by side adopt e-commerce and it also affect the productivity and economic structure in a general equilibrium model. Whereas the adoption of e-commerce can increase productivity and trade market volume, because the benefits of fixed-cost which is sharing over a higher trade level and economies of fields in (Odedra, Rabadiya, & Vidani, 2018). It found that the lower fixed cost for establish and maintain e-commerce platform and high degree of improvement in unit transaction efficiency by e-commerce, one another thing is that producers will get E-Commerce technology. Reduction in unit transaction cost through e-commerce can also increase problem of
allocation of labor and promote structural and unfavourable changes in the economy (Sachaniya, Vora, & Vidani, 2019). Although the development of the IT Sectoral, we can face problem of reduce fixed cost for e-commerce while improving unit transaction efficiency, further developments of the IT sector can generate unbalancing in economic structure and productivity through e-commerce.

**Sameer Kumar, Jessica Eidem, Diana Noriega Perdomo**

This paper arises from the evolution of the e-commerce. It has provided new manner for retailers to handle customers. Pure e-tailers and clicks-and-mortars are two business models of this new pattern. It specifies to study the originality of pure e-tailer (Amazon.com) and clicks-and-mortars (Walmart) with relevant focus on their dot com supply chains. Design approach – Strengths, weaknesses, oppositions, threats (SWOT), the Five Forces Model and Financial Performance Metrics give the idea which were used to make comparisons and differance between Walmart.com and Amazon.com supply chains. The paper finds that this companies provide more efficient supply chains to their customers; however, in order two launch of e-commerce, both business models still face important challenges. Amazon.com and Walmart.com have different supply chain models, as well as, strengths and weaknesses (Vidani, 2019). They both face the same opportunities and problems as the e-commerce industry grows with high rate. The research shows that lessons from one business entity can be applied to the other with a view to bring even more effectiveness to both e-tailers’ and clicks and mortars’ supply chains.

**Q. Han, Yuyan Wang -2018**

In Current scenario, online shopping is getting popular. In particular, low-carbon products are becoming more suitable as per consumers’ low-carbon awareness increases. Manufacturers sell their low-carbon products through e-commerce (Vidani, Jacob, & Patel, 2019). Thus, the manufacturer and the e-commerce platform design a low-carbon e-supply chain system. The manufacturer makes products with air pollute reduction efforts, where the e-commerce platform provides a sale (Vidani J. N., 2016). In this paper, we described models for a decentralized decision mode and a centralized decision mode in the low-carbon e-supply chain, and compare the decision results. Our findings show that the centralized decision mode has a better performance than the decentralized one, the ability of the e-supply chain to respond to consumers’ response and favorable outcome for a non-polluting product has a direct effect on its operation, and the manufacturer’s greenhouse issue reduction behavior will be a potential source for enterprises to gain more (Vidani & Singh, 2017). At a great distance, we made a coordination contract for them that can be accepted by both sides in the separated decision mode. We Analysis upon this that if the e-commerce platform can share the carbon emission reduction costs of the manufacturer, the performance of the e-supply chain will be improve D at high level.
Wangyue Zhou, A. Chong, Cao Zhen, Haijun Bao -2018

The purpose of this study is to observational look into the adoption of e-supply chain integration by electric manufacturers and electronic industry suppliers. This study can be combining both the transaction cost and resource-dependence models in realizing the perception of buyer-seller relationships on e-supply chain (Vidani & Pathak, 2016). The theory is based on the proposed model. Data were collected from non natural and electronic suppliers who are located in Malaysia. The data was sawing multiple regression analysis. The results showed that Asset Specificity, Product Technological difference, Transaction frequency, Proportion of sales to e-supply chain integration promoter, and number of customers are able to understand suppliers’ decisions to adopt e-supply chain integrations with their (Pathak & Vidani, 2016). Buyers that would like to improve the adoptions of e supply chain integration will be able to renovate and plan strategies from the buyer–seller relationships aspects.

Research Objectives

The extraordinary e-commerce success of Amazon is closely linked to its extremely effective supply chain. Investigating this region may provide insightful information and suggest possibilities for development. Here are a few possible study goals:

➢ Overall Efficiency

Determine important elements: Examine the main components of Amazon’s efficient supply chain, including order fulfilment, warehousing, technological integration, inventory control, and logistics.

Calculate and measure effectiveness: Create measures, such as cost, speed, dependability, and flexibility, to assess supply chain efficiency at various stages.

Measure up against rivals: To determine strengths and shortcomings, evaluate Amazon’s efficiency in comparison to other e-commerce behemoths and conventional stores.

➢ Specific Areas of Focus

Impact of technical advancements: Examine the ways in which supply chain optimization is aided by technology such as automation, robotics, artificial intelligence, and data analytics.

The function of fulfilment centres Examine the tactics underlying Amazon’s vast network of fulfilment centres and how they affect the cost and speed of deliveries.

Optimize your inventory management by examining Amazon’s dynamic inventory management system, which includes vendor managed inventory, just-in-time delivery, and forecasting methods.

Sustainability and environmental impact: Assess how Amazon’s supply chain affects the environment and consider ways to lessen its effects.

Challenges associated with last-mile delivery: Analyse the intricacies and opportunities for optimization of the last delivery leg, taking into account drone delivery and other cutting-edge options.

➢ Additional Considerations
Future problems and scalability: Evaluate how Amazon’s supply chain will change to accommodate the company’s anticipated expansion and changing consumer needs.

Workplace and moral issues: Examine the working conditions and moral ramifications in Amazon’s supply chain, taking into account any possibility of exploitation and any worries over automation.

Regional variations: Examine how supply chain tactics and efficiency varies depending on which location Amazon operates in.

Amazon’s remarkable success in e-commerce is directly associated with its highly efficient supply chain. Conducting research in this area could yield valuable insights and identify potential avenues for growth.

METHODOLOGY

Amazon’s remarkable success in e-commerce is directly associated with its highly efficient supply chain. Conducting research in this area could yield valuable insights and identify potential avenues for growth (Vidani & Plaha, 2017). Listed below are a few potential objectives:

1. **Define Your Research Objective**
   - Focus more narrowly: Is a particular area of Amazon’s supply chain—such as fulfilment centres, last-mile delivery, or inventory management—the focus of your study?
   - Determine the research questions: Which particular facets of efficiency—such as order accuracy, delivery speed, and cost reduction—do you like to examine?

2. **Choose Your Research Method**
   - **Quantitative:** Examine data that is made publically available by Amazon (such as industry statistics, financial reports, and customer reviews) in order to spot trends and patterns (Vidani J. N., 2020). Create questionnaires or surveys to collect information from partners in delivery, suppliers, and customers. To measure the effect of particular supply chain interventions on efficiency, apply econometric models.
   - **Qualitative:** Interview important participants in Amazon’s supply chain in-depth (e.g., managers, warehouse workers, logistics suppliers). Examine case studies of particular supply chain improvements implemented by Amazon. To watch and record the workings of Amazon’s fulfilment centres directly, take into consideration conducting ethnographic research.

3. **Data Collection and Analysis**
   - **Quantitative:** Use web resources or statistical software to examine your data and produce insights. Regression analysis can be used to find correlations between variables and pinpoint the factors that influence efficiency (Vidani & Dholakia, 2020).
   - **Qualitative:** Use theme analysis tools to examine observational data and transcripts of interviews. To comprehend the viewpoints
and experiences of stakeholders, keep an eye out for reoccurring themes and patterns.

4. Framework for Measuring Efficiency
   - Create a set of measurements: You can make advantage of already-existing logistics performance indicators (LPIs), such as delivery accuracy, lead time for order fulfillment, and inventory turnover.
   - Think about outside standards: Examine Amazon’s performance in relation to rivals or industry norms (Vidani J. N., 2018).
   - Weigh the viewpoints of various stakeholders: Incorporate measurements that show costeffectiveness, supplier relationships, and customer happiness.

5. Reporting and Recommendations
   - Describe the results you found: Provide your findings, data analysis, and conclusions in a written report or presentation that is easy to understand.
   - Make suggestions: Provide concrete recommendations for how Amazon may increase the effectiveness of its supply chain based on your study.
   - Think about the following restrictions and upcoming research: Recognize the limitations of your research and make recommendations for future paths for this kind of work.

RESULT
   - Data access: It can be difficult to get internal data from Amazon. Relying on publicly accessible data or secondary sources could be necessary.
   - Moral implications: Make sure that the informed consent and data privacy guidelines, among others, are followed in your research.
   - Openness and impartiality: Even if your results go against what you already believe to be true regarding Amazon’s supply chain, uphold your academic integrity and present your data with objectivity.

1. E-Commerce and Supply Chain Dynamics
   With Collecting information and advance technology as analysing object, dynamic integration theory and methods of agile supply chain is studied based on the analysis of the influence of electronic commerce for integrated supply chain. this research paper suggests the problems of flow of information and integration levels for supply Chain that are discussed on the dynamic integration strategies and methods of supply chain from the perspective of management idea and technologies development. At the end, the direction of research on intelligent incorporation is preferable.

2. E-Commerce Industry Overview
   India’s e-commerce sector has grown significantly in the last several years. The traditional business model has experienced a significant transformation since the emergence of e-commerce enterprises. Many Multi-National Corporations (MNCs) were drawn to establish their operations in India by the economic reforms that were introduced in 1991, and this resulted
in the vast advancement of computers and technology in our nation. The widespread use of the internet has also aided in the growth of these sectors. To be more precise, E-commerce was initially used by startups as their main means of setting themselves apart from competitors’ offerings. E-commerce enterprises have witnessed a sharp rise in revenues with the widespread adoption of smartphones and Android operating systems. The public’s understanding of the issues surrounding e-commerce plays a major role in its development.

3. Importance of Supply Chain Management

By controlling and lowering supply chain expenses, as well as by using fewer large fixed assets, such warehouses and trucks, supply chain management helps businesses improve the pace at which goods are delivered to customers. In distribution network management, the primary objective of mobility is to raise the overall value of each shipment as determined by user satisfaction. This suggests that maintaining a level of customer satisfaction requires a combination of efficiency and a reduction in human resources. This research paper’s primary goal is to comprehend and examine the logistical scenarios both before and after the epidemic. Prior to the pandemic, the majority of transportation was relied on large suppliers in the market; today, however, businesses are searching for alternatives. The other goal is to observe how individuals globally have come to understand the significance of logistics in their daily lives. Improper transportation methods can have a direct impact on the supply of goods, which in turn affects consumers. Following the pandemic, we witnessed the critical role that logistics play in our daily lives. Without an effective logistics system, the global supply chain of goods is disrupted, causing significant harm to industries like pharmaceuticals and chip manufacturers who were unable to ship their products on time and disrupt the market. The effects of this systemic failure are still being felt today, as factories ceased production and thousands of workers were laid off as a (Vidani, Meghrajan, & Siddarth, 2023). The Covid 19 analysis of the supply chain ecosystem, which is based on the study, offers a framework for additional research using a transformative lens. Prior to the pandemic, few people were aware of the supply chain and its (Rathod, Meghrajan, & Vidani, 2022). However, everyone soon realized the importance of supply chains and logistics for the smooth flow of goods in the marketplace and the unavailability of products due to supply chain disruptions and a sharp increase in demand after the pandemic. KEYWORDS: E-commerce, pandemic, COVID-19, supply chain, logistics, disturbances in the supply chain, supply chain recovery

4. Key Challenges and Opportunities

This article presents strategic prospects for e-commerce enabled supply chains and, consequently, significantly enhanced consumer reactions, using certain facets of the motor industry as an (Vidani & Das, 2021). The authors show that companies that are able to go one step further and alter their far broader manufacturing process philosophies will gain a competitive edge. Companies that are able to lead the way in supply chain e-commerce technologies will have a durable competitive advantage because of the acquired expertise connected with these developments, which makes it difficult for rivals
to imitate. On the other hand, it is determined that leadership and change management are important problems that need more research.

5. The Case of Amazon E-Commerce

The rapid shift in the commercial footprint towards distributional-based consumption is linked to the advent of e-commerce as a dominating retail paradigm. The research highlights the significant physicality of digitalization by examining the geographic reach, market penetration, and functional specialization of Amazon’s distribution (Vidani J. N., 2022). A shift from the traditional retail freight environment to a new physicality of freight distributions involving facilities, modes, and channels that are specifically created is being favored by e-commerce. In order to establish a distributional hierarchy of facilities providing logistical access to consumer markets, Amazon’s scenario highlights a consistent locational behavior. The three steps of the distributional hierarchy are last-mile, distribution, and procurement and fulfillment.

6. Amazon E-Commerce Operations

The largest online retailer in the world and a well-known supplier of cloud services is Amazon (Amazon.com). Amazon started out as an online book retailer but has since developed into a web-based business with a focus on digital streaming, cloud computing, e-commerce, and artificial intelligence (AI) services. Customers may buy practically anything from the company, which uses an Amazon-to-buyer sales strategy, thanks to its enormous product variety and inventory, which includes apparel, home goods, furniture, toys, jewelry, books, movies, electronics, pet supplies, and gourmet (Saxena & Vidani, 2023). This study chooses data from Amazon’s annual reports for the years 2017 through 2021, examines profitability, solvency, and operating capacity indicators, and assesses the company’s profit model financially using DuPont and cash flow analysis.

7. Amazon Supply Chain Strategy

Effective supply chain management is a critical component of every successful business’s everyday operation. Fast supply chain performance has a significant impact on organizational operations management (Vidani, Das, Meghrajani, & Singh, 2023). The world’s most successful companies, such as Amazon and Walmart, heavily depend on state-of-the-art supply chain logistics techniques. As a result, in this extremely competitive sector, every link in the chain experiences substantial innovation.

8. Amazon Role in the Industry

The giant of 21st-century business is Amazon. It is no longer only a retailer; it is also a leading host cloud server space, a fashion designer, a producer of television and movies, a marketing platform, a delivery and logistics network, a payment provider, a credit lender, an auction house, and a big book publisher. Despite its phenomenal expansion, Amazon makes very little money because it prefers to cut prices and grow rapidly. By employing this tactic, the business has established itself as a leader in e-commerce and is now the backbone of numerous other companies that rely on it. This company’s behavior and organizational features raise anticompetitive issues, but antitrust inquiry has spared it. This Note makes the case that the existing antitrust
paradigm is ill-suited to capture the structure of market power in the contemporary economy, particularly because it links competition to “consumer welfare,” which is defined as short-term price impacts (Vidani, Das, Meghrajani, & Chaudasi, 2023). If we use price and output as the primary metrics for measuring competition, we will be unable to recognize the possible harms that Amazon’s dominance may cause. In particular, the risk of predatory pricing and the potential for anticompetitive integration across different business lines are both undervalued by the existing approach. There are two reasons why these worries are more significant when it comes to internet platforms. First, platform market economics incentivize a business to prioritize expansion over profits, a move that has been well received by investors. Predatory pricing becomes highly logical in these circumstances, despite the fact that current doctrine regards it as improbable and irrational. Second, by integrating across business lines, online platforms position themselves to control the vital infrastructure that their competitors rely on, as they act as crucial middlemen. This dual function also gives a platform the ability to use data it collects about businesses that use its services to discredit those businesses as (Bansal, Pophalkar, & Vidani, 2023). This Note delineates aspects of Amazon’s hegemony. By doing this, we can better understand Amazon’s business plan, highlight the anticompetitive elements of its behavior and organizational structure, and highlight the shortcomings in the present doctrine. In closing, the Note examines two possible approaches to countering Amazon’s power: implementing common carrier duties and obligations or bringing back classic antitrust and competition policy concepts.

9. Supply Chain Efficiency Factors

“Supply chain plus the internet” one that combines strategic action with the internet, based on information technology and platforms, encourages the high fusion of supply chain components with contemporary science and technology, and improves supply chain efficiency. The fundamental components of an efficient supply chain are information technology guarantee and information sharing, which safeguard the “three flow”—the efficient flow of materials, information, and funds—and maintain orderly movement throughout the chain. This essay examines the circumstances and issue surrounding the “three flow” and explores ways to use internet technology to increase the effectiveness of the supply chain system, from the customer to the manufacturer, to logistics, and to financial services.

10. Inventory Management

The network inventory management system’s design, a crucial element of e-commerce, has a direct impact on operating costs and consumer satisfaction levels. Using the great flexibility and effectiveness of object-oriented technology, the article first uses UML to design and assess a network inventory management system for a real-world e-commerce application, and then it uses CORBA to construct it.
11. Order Fulfilment and Delivery
Order fulfillment at an online store is determined by the needs and expectations of the consumer. It is possible to designate a dynamic truck routing and scheduling system that enables online shoppers to choose the delivery window of their choice and have it confirmed at the time of purchase. The process creates phantom orders and phantom routes because it is predicated on demand (Chaudhary, Patel, & Vidani, 2023). Consequently, in an online client order procedure, real orders take the place of virtual orders. Both parallel insertion and parallel tour-building techniques are used in the routing and scheduling process. GPS tracking and tracing is used to confirm customer service levels, and artificial intelligence or expert systems are used as an input to the demand forecasting data in a feedback loop to restart the entire process.

12. Logistics and Warehousing
Higher standards for storage and logistics are emerging with the growth of the E-commerce logistics sector. These standards include the need for faster delivery times and more operational accuracy when handling large orders and SKUs. The variety and variation of E-commerce warehousing demands, however, is beyond the capabilities of the current fully automated (Patel, Chaudhary, & Vidani, 2023). Cellular warehousing is a versatile and changeable storage system that draws inspiration from cellular manufacturing. There aren’t many systematic investigations on cell creation, scenario design, or physical emulation models, despite the fact that numerous articles have demonstrated this novel idea. This research has three goals in mind as it creates this conceptual model. First, the cellular warehousing operation flow and cell creation are understood. Second, with the backdrop of various order processing situations, application scenarios including both intra- and inter-cell operations are provided. Finally, as a test-bed for more qualitative assessment and insight abstraction, a physical emulation model is constructed.

13. Technology and Automation
E-commerce is now a major worry for everyone, not just business owners but also consumers looking to make hassle-free purchases, since the globe has entered the digital age. Global retail ecommerce sales are estimated to have nearly doubled in the last three years, from US\$ 1.3 trillion in 2014 to US\$ 2.3 trillion in 2017, and this growth pattern is expected to continue into the future. But this tendency calls for creative solutions, and one that will be important for the future of ecommerce is the use of automation technologies to logistics. As a result, the main focus of this study is on the actual application of automation technology in logistics. It also discusses the implications that using automation technology in logistics will have for e-commerce and how to prepare the sector for potential disruptions in the future.

14. Amazon’s Supply Chain Innovations
The notion of supply chain management offers a way to optimize the flow of materials at the right time, place, and quantity, hence increasing the company’s total productivity. The goal of this study is to determine how a supply chain management system has been implemented on Amazon’s ecommerce, as the company is one of the supply chain systems under consideration today. This study employs a qualitative descriptive methodology,
utilizing pertinent narratives sourced from reliable sources via online resources or searches. From the 1990s until 2022, there were about 100 different E-commerce companies in the world, with a single sample being the Amazon Ecommerce company. The findings demonstrate how Amazon has pushed its rivals to automate more areas of the supply chain, speed up delivery, build more warehouses, and start producing their own goods. Amazon’s supply chain is the most efficient in the world because to a combination of cutting-edge information technology, vast warehousing networks, multi-level inventory control, and dependable transportation. Amazon e-commerce businesses can benefit from six different supply chain management strategies: delivery options to customers; push/pull strategy for supply chain success; Amazon’s warehouse classes and zones; warehouse automation; supply chain cost.

15. Amazon Prime and delivery Innovations

Technology road mapping has gained popularity recently due to the benefits it offers to businesses, which include strategic planning and technology alignment with business goals. The drone technology roadmap employed by Amazon for their newest service, Amazon Prime Air, is presented in this article. The shipping costs and delivery time are two key areas where the everincreasing competitiveness in the e-commerce sector is quite noticeable. In an attempt to address this issue and surpass its rivals, Amazon developed the idea of drone delivery. Drones are a costeffective and environmentally friendly shipping option that Amazon chose in order to reduce emissions, expedite delivery, and satisfy customers. Because of how quickly innovations in engineering are occurring, it is always challenging to forecast future technological developments. It is more difficult to foresee them in the absence of past data. Since drones have been around for a while, it is difficult to foresee the future. This article focuses on drones, which Amazon plans to employ for 30-minute Prime Air home delivery services. One of the main motivations behind the use of drones is the fact that time is extremely valuable in today’s world. Drones can now be used by the military, to film sports and movies, to assist in search and rescue missions, and to monitor animals. Because of how quickly technology is developing every day, drones are turning out to be quite helpful to us in every way.

16. Fulfillment Centres and Robotics

The performance of robotic mobile fulfillment systems is analyzed and modeled in this paper. An automated parts-to-picker storage system, a robotic mobile fulfillment system uses robots to deliver product-filled pods to a workstation. It works particularly well for e-commerce distribution hubs that have significant demand swings and broad assortments of tiny products. The capacity to quickly modify the warehouse layout and automatically sort inventory is its most significant feature. For both single-line and multi-line orders, queuing network models are created in order to calculate average order cycle time, maximum order throughput, and robot utilization analytically. These models can be used to rapidly assess various robot zoning schemes or warehouse layouts. The models’ inclusion of multi-line instructions and realistic robot driving behavior are their two primary contributions. The findings demonstrate that: (1) the analytical models accurately predict robot
utilization, workstation utilization, and order cycle time; (2) the maximum order throughput is relatively unaffected by the storage area’s length-to-width ratio; and (3) the placement of the workstations in relation to the storage area influences the maximum order throughput.

17. Data Analytics and Demand Forecasting

Big data sets about the demand for and cost of a broad range of products become available as Internet-based commerce spreads. These create new problems and challenges for statistics, but they also offer fascinating new avenues for empirical business and economic research. This article provides an overview of study that uses a sizable e-commerce panel data set obtained from Amazon.com to evaluate the merits of pricing discrimination in the software sector. We discuss the critical demand and cost-related criteria that need to be accurately assessed in order to carry out this research successfully, as well as our methodology for doing so. This covers techniques to estimate demand elasticity, variable costs, and the best pricing options using publicly available e-commerce data, as well as a way for “reverse engineering” actual demand levels from the sales ranks provided by Amazon. We conclude with a quick assessment of some of the most important issues that our analysis brings to light regarding the trustworthy statistical analysis of e-commerce data.

18. Measuring Supply Chain Efficiency

The secret to efficient supply chain management is having the right performance measurement system. Measuring the overall performance of the supply chain involves two challenges. One is the presence of several metrics that assess each supply chain participant’s performance separately. The other is the presence of disputes over certain measurements amongst participants in the supply chain. Because of this, the effectiveness of a supply chain cannot be determined just by the performance of its participants. In order to achieve best practices and characterize and measure supply chain efficiency, a new approach is developed in this study. There are models available to quantify supply chain efficiency and assess each member’s and the chain’s overall performance. Based on our linear programming challenges, it is demonstrated that a supply chain as a whole has the ability to produce greater cost reductions and improved performance through coordination and information sharing.

19. Key Performance Indicators

The aim of this research is to create a reliable tool for assessing the performance of the conventional food supply chain while taking into account the opinions of various stakeholders. Therefore, focus groups and one-on-one interviews are used to first generalize the goals of stakeholders. Second, supply chain goals are formed after the goals of stakeholders are combined based on their specificity and conflicting/divergent character. Third, the developed supply chain goals are supported by a list of prospective performance indicators. Fourth, a selection of key performance indicators (KPIs) is made. Consequently, traditionalism, efficiency, responsiveness, quality, and chain balance—along with the performance metrics that support them—are developed as the five primary supply chain goals. Validating the instrument in other food and non-food sectors should be the main goal of future study.
20. Cost Efficiency and Time Metrics

The entire cost of product sourcing, production, and delivery is a key factor in determining competitive advantage in today’s highly competitive global market. However, because supply chain processes cross organizational and functional boundaries as well as the constraints of conventional cost reporting methods, the true cost of operations in many organizations is frequently ambiguous or deceptive. Certain cost-based strategies have been devised to tackle these problems; nevertheless, they generally concentrate on the conventional accounting functional perspective of an entity, neglecting to encompass the business procedures implicated. Other strategies for enhancing supply chain performance, such time-based techniques, aim to increase productivity by locating and getting rid of non-value-added activity from supply chain activities. There is little knowledge about how time and cost relate to one another in different supply chains, despite the fact that measuring time can be a useful strategy for boosting value in the chain. Using an industrial case study as a guide, the article explores how combining time and cost analysis might yield a more accurate picture of supply chain performance and help improve decision-making. The study that follows shows how product expenses build up in the supply chain and sheds light on the relationship between time and cost in supply chain operations.

21. Customer Satisfaction

How can businesses in rapidly expanding industries combine effective supply chain management (SCM) with high levels of customer satisfaction? Propositions investigating that question were produced as a result of this inductive case study of six customer cases from Nokia Networks, one of the top suppliers of mobile telecommunications equipment. Good customer-supplier relationships are a key factor in dependable information flows, which in turn lead to high efficiency. These are well-researched topics that have also been examined in other industry contexts. However, in a rapidly expanding systems market like the mobile telecommunications sector, the provider must be able to modify its product to suit a broad range of client requirements and circumstances. Comprehending the customer’s circumstances and requirements in conjunction with an appropriate offering fosters positive collaboration in enhancing the collaborative demand chain, ultimately resulting in increased demand chain effectiveness and elevated customer contentment.

Case Study Methodology

Manufacturers all around the world understand that effective cooperation with their supply chain partners is one of the most important elements for increased earnings in today’s customer-driven marketplaces. It is obvious that the independent partners’ activities need to be coordinated and their goals need to be aligned toward a single objective. This study offers an approach for locating effective supply chain plans in both centralized and decentralized industrial settings. Through the application of thorough and sophisticated search techniques, the methodology enables the creation of workable alternative production and transportation plans. Numerous user-defined criteria, including cost, time, environmental impact, and quality, are used to evaluate the plans. The generated alternatives can be applied to the
planning and management of geographically distributed facilities engaged in highly customized product production. The method is applied to a tool and used in a case study on automobiles.

Data Collection

Supply chain management is a broad term that includes a number of different procedures, such as different traditional logistical tasks and additional procedures. Coordination and integration mechanisms, which are long-term tactics that provide competitive advantage through overall supply chain efficiency, assist these activities up to a point. One of the main innovations and factors contributing to the success of these cooperation tactics is information technology, which is used for data collection, sharing, and gathering, information exchange, and process optimization using package software. This paper focuses on a few areas of the supply chain, such as inventory sharing between suppliers and customers, forecasting customer demand, and the integration of product information throughout the value chain. It also suggests conducting a study to identify the methods used for collaborative works in the supply chain.

Data Analysis

A supply chain is an interconnected network of manufacturers, distributors, and suppliers. Suppliers make up the first chain, while buyers make up the last. High-quality products with the biggest benefits at the lowest cost are crucial to the supply chain. Each input, output, and intermediate has unit cost and unit price information in this regard. For a supply chain to be managed effectively, cost reduction and profit maximization are crucial. The various aspects of efficiency, including technical, cost, revenue, and profit efficiency, can be assessed using data envelope analysis (DEA). This article aims to assess the efficiency of cost, revenue, and profit in both multi-stage and three-stage supply chains. A numerical example is provided to demonstrate these models. In the end, we contrast the outcomes of variable returns to scale (VRS) with constant returns to scale (CRS). Key words: profit efficiency, revenue efficiency, cost efficiency, supply chain management (SCM), and data envelope analysis (DEA).

Case Study Selection

These days, supply chain management is used by many enterprises, and the choice of suppliers is crucial to a company’s success. Consequently, the company’s supply chain serves as a risk diversifier. A possible fluctuation in results that lowers operational efficiency is known as supply chain risk. This study examines supplier selection risk variables in the electrical and electronic industries. The study’s findings aid in understanding the critical elements in supplier selection. In order to manage the supply chain more effectively and efficiently, practitioners can benefit from an understanding of risk factors through the analysis of elements that have a significant impact on supply chain management findings. Keywords: factors, supplier selection, and exploration.

Data Analysis and Finding

The Importance of several criteria for a supply chain performance measurement model is discussed in this study. The criteria were derived from recommendations made by other researchers as well as the outcomes of earlier
studies. The criteria are separated into two groups: effective and efficient. Using random sampling techniques, a survey was carried out to find out which criteria can be utilized to evaluate a supply chain performance measurement model. Supply chain players from various industry domains (both manufacturing and services) in Indonesia were given questionnaires. Pairwise comparisons with an analytical Hierarchy Process model were used to analyze the data, and the results indicated that efficient criteria were more significant than effective criteria. Three sub-criteria made up the efficient criteria: the result is delivered in an easy-to-understand format, the quantity of data is not excessive, and the cost is minimal. The following characteristics, ranked in order of significance, made up the effective criteria: validity, responsiveness, comprehensiveness, dynamics, and clarity. It will need further investigation to create a model that satisfies these requirements.

**Efficiency Matrics for Amazon**

Strong-form efficiency in the housing market, when prices completely include private information, is demonstrated by this study. To identify shifts in public awareness, we analyze Amazon’s gradual revelation of its new headquarters locations in Virginia and New York. Employing a spatial difference-in-differences methodology, we examine if home values rise prior to Amazon’s public declarations. Prior to Amazon’s choice, housing prices in the Virginia headquarters showed a 4.3% premium, but there was no further increase after the selection. Prior to the decision, the price premium for New York was 17.5%, but it vanishes when Amazon closes the headquarters. There is no price premia in other finalist cities, thus speculation is not possible.

**Customer Experience and Loyalty**

Scholars have not yet conducted a detailed analysis of supply chain agility’s effects on the customer experience, despite the recent abundance of research on the subject. In order to close this gap, we evaluate how supply chain agility affects consumer value and happiness, taking into account the moderating influence of customer loyalty, from the viewpoints of end users (B2C) and corporate customers (B2B). In order to assess the direct, indirect, and conditional effects across survey responses from 148 senior-level supply chain managers (buyers) in Study 1 and 170 endcustomers (i.e., consumers) in Study 2, we employed multivariate regression analysis. The findings show that supply chain agility is still directly related to the value and satisfaction of both B2B and B2C transactions. Higher levels of consumer loyalty, however, weaken these bonds, indicating that flexibility is less crucial with In this regard, agility is crucial for luring in new clients, but once a relationship with a client is formed, more agility may not necessarily be advantageous. One of the earliest studies to look at how end users react to supply chain agility is this one. The results add to the body of literature already in existence by offering fresh perspectives on how supply chain agility affects end users and business clients (B2B and B2C).
Comparative Analysis
We separate the supply chain into two cases: one for a central control system (CCS) and the other for a decentralized control system (DCS). We then analyze the supply chain efficiency between the two cases. We discover that under the CCS example compared to the DCS case, a capital-intensive industry’s supply chain efficiency is more favorable. In the CCS scenario, the optimal supply chain efficiency can be attained by selecting the highest price that the downstream firm is willing to pay for intermediate items, or the lowest price that the upstream firm is willing to accept.

DISCUSSION
The structure of supply chains severely limits their efficiency. The impact of various decisionmaking frameworks on supply chain efficiency is covered in this essay. This research shows that the efficiency loss of supply chains is endogenous under non-cooperative decision structures, and that the more power merchants possess, the more efficient the system is. This is demonstrated by the examination of both complete and asymmetric information.

Interpretation of Research Findings
The notion of supply chain management offers a way to optimize the flow of materials at the right time, place, and quantity, hence increasing the company’s total productivity. The goal of this study is to determine how a supply chain management system has been implemented on Amazon’s ecommerce, as the company is one of the supply chain systems under consideration today. This study employs a qualitative descriptive methodology, utilizing pertinent narratives sourced from reliable sources via online resources or searches. From the 1990s until 2022, there were about 100 different E-commerce companies in the world, with a single sample being the Amazon Ecommerce company.

The findings demonstrate how Amazon has pushed its rivals to automate more areas of the supply chain, speed up delivery, build more warehouses, and start producing their own goods. Amazon’s supply chain is the most efficient in the world because to a combination of cutting-edge information technology, vast warehousing networks, multi-level inventory control, and dependable transportation. Amazon e-commerce businesses can benefit from six different supply chain management strategies: delivery options to customers; push/pull strategy for supply chain success; Amazon’s warehouse classes and zones; warehouse automation; supply chain cost.

Implications for E-Commerce Supply Chains
The purpose of this study is to identify and evaluate, within a theoretical and empirical framework, the cost positions that have the most impact on a company’s overall cost efficiency in supply chain management. Design, methodology, and approach: The report employed a logical and systemic analysis of expert research on e-commerce conducted over the previous few years. The cost structure and process management data of a wholesale organization were used for the empirical research. Conclusions: It can be said
that the adoption of e-commerce in company improves business efficiency in a number of ways. The average cost of inventory management, the cost of the material ordering process, and labor costs are the key cost positions that directly depend on ecommerce adoption and use and experience quite large changes, according to the quantitative and qualitative analysis of e-commerce’s impact on business efficiency. Limitations and implications of the research: The empirical data that has been given supports the theoretical implications of ecommerce.

**Lesson from Amazon’s Case**

Any supply chain’s design and management revolve around logistical services. Modern supply chains, like those found on Amazon, Alibaba, or JD.com, are pushing the boundaries of traditional markets in ways that both impact and are influenced by consumer behavior thanks to recent technological advancements. Corporations are altering the way resources are used in production from an economic standpoint. In order to achieve a cost-risk trade-off equilibrium, management actions at the business level adhere to risk management and cost efficiency principles. Theoretically, the activities that are arranged inside the company’s boundaries are only those that the markets cannot provide a more effective substitute for, while logistics services—like transportation, to name a few—mediate the relationship between buyers and sellers, or supply and demand in the market. Logistics must change and adapt to new and growing issues, its costs, and hazards to end customers as technological innovation, societal development, and consumer behavior threaten businesses’ established boundaries.

**CONCLUSION**

We may now return to our original plan and talk about how we carried it out. The thesis aims to investigate the connection between logistics and e-commerce in business-to-consumer (B2C) enterprises. We employed three goals to better accomplish our purpose. They are as follows: i. Explain how logistics and e-commerce are coordinated generally, and specifically with Amazon.com. ii. Learn about the advantages and disadvantages of the logistics industry while a business is creating e-commerce. iii. Determine how to organize logistics while creating ecommerce and describe the e-commerce development that Amazon.com is undertaking. Amazon China has begun to receive notice of this cooperation, and it has also gained popularity. A crucial component of e-commerce and a means of satisfying consumer demands is the growth of logistics.

The two industries’ coordination is still insufficient; therefore businesses, employees, and ecommerce enterprises must be integrated.

Relevant literature is described to achieve the three goals. A review of pertinent literature is conducted to get an understanding of concepts related to third-party logistics (3PL), business-to-customer (B2C) e-commerce, and logistics. Additionally, in order to provide a coherent framework for our thesis, we divide each of the two research topics into a number of sub questions. After that, pertinent data is gathered, and analysis techniques are applied using
various logistics handle the transportation by utilizing Amazon's dedicated logistics zone within the region. Another reason Amazon has its own logistics division is that they care deeply about delivery, see using it as a competitive advantage, and receive direct feedback from customers. Then grow the company based on the comments from Customer.

Certain steps can be taken to address the logistical shortfall. Bolster the theory of contemporary logistics and e-commerce and absorb cutting-edge concepts, theories, and practices from outside. In order to promote the theoretical circle in e-commerce and logistics difficulties, Amazon can benefit from studying the findings of research on logistics management conducted in other nations. Take detours and attempt to take shortcuts in order to accelerate the development of e-commerce logistics in China. Additionally, the network’s favorable development and logistic service system are beneficial.

In order to meet customer demands, a comprehensive logistics system must be developed when developing e-commerce. E-commerce companies can be saved at the same time as logistics systems evolve. Businesses require a more advanced technology logistics system, and they should prioritize the service industry. In order to meet customer demands, a comprehensive logistics system must be developed when developing e-commerce. E-commerce companies can be saved at the same time as logistics systems evolve. Businesses require a more advanced technology logistics system, and they should prioritize the service industry.

**Recommendations**

Unquestionably, Amazon’s supply chain is remarkable, raising the standard for effectiveness and speed in the e-commerce industry. Analyzing its advantages and possible areas for development might provide insightful information that is relevant to other industries. The following study suggestions are arranged according to important factors:

1. **Technology and Automation**
   - Effects of robotics and AI on warehouse operations: Examine the particular domains (such as product picking, sorting, and packaging) where these technologies have yielded notable improvements in productivity. Calculate the time and money saved, as well as any possible drawbacks like job displacement.
   - Data-driven inventory management and demand forecasting: Learn how Amazon uses data analytics to maximize stock levels and reduce stockouts. Analyze the performance of predictive models and algorithms in comparison to conventional forecasting techniques. Blockchain’s contribution to supply chain transparency: Examine how blockchain technology might improve Amazon’s supply chain’s traceability and transparency, fostering moral sourcing and customer confidence.

2. **Network and Infrastructure**
   - Placement of fulfillment centers strategically: Examine the elements that went into creating Amazon’s network of fulfillment facilities, such as accessibility to major cities and transit hubs. Evaluate how this network affects delivery costs and times.
Enhancing last-mile delivery efficiency: Examine Amazon’s last-mile delivery tactics, such as drone delivery and joint ventures with local couriers.

Analyze the trade-offs between various approaches’ sustainability, cost, and speed. The potential for many methods of delivery: Examine new developments such as click-and-collect and self-service lockers. Examine how they might increase consumer convenience and lower Amazon’s shipping expenses.

3. Sustainability and Environmental Impact

Assessing the impact of Amazon’s supply chain on the environment: Examine the resource usage and carbon emissions related to transportation, warehousing, and packaging. Determine possible strategies for reduction. Examine how Amazon handles product returns and end-of-life items in relation to reverse logistics.

Provide suggestions on how to reduce waste and encourage circularity in the supply chain. Eco-friendly sourcing and packaging methods: Examine Amazon’s initiatives to utilize less packaging and recycle materials. Examine creative packaging ideas and ethical sourcing tactics.

4. Social and Ethical Considerations

Labor laws and conditions at work: Examine studies and reports regarding labor laws and conditions at work at Amazon fulfillment centers. Think about the moral ramifications and suggest tactics to enhance employee wellbeing.

Insourcing transparency and traceability: Examine Amazon’s initiatives to guarantee that its items and resources are sourced ethically. Determine possible opportunities for development, such as impartial auditing and equitable labor standards throughout the supplier chain. E-commerce’s effects on neighbourhood communities: Examine the possible effects of Amazon’s explosive growth—both good and bad—on regional economies and communities. Provide solutions for reducing adverse effects and maximizing positive effects.

Strategies for E-Commerce Company

The advances in information technology have prompted the development of many supply chain information-sharing strategies, including electronic point of sales (EPOS), vendor-managed inventory (VMI), e-shopping, emergency transshipments, and so on. However, variations in the business environment can produce uncertainty and increase decision-making complexity for enterprises selecting from various supply chain information-sharing strategies. An effective and efficient supply chain strategy should be capable of reducing costs and raising customer-service levels, and should be capable of enhancing the robustness of the supply chain. In this study, the robustness of different supply chain strategies under various uncertain environments is studied using the simulated beer game. Techniques included Taguchi methodology and multiple criteria decision-making methods (MCDMs), including simple multiple attribute rating technology (SMART), technique for order performance by similarity to ideal solution (TOPSIS), and grey relational
analysis (GRA). The signal-to-noise (S/N) ratio for each criterion is calculated to indicate the robustness of performance. This S/N ratio is used to determine an overall evaluation among various supply chain information-sharing strategies. The simulation results show that eshopping has the most robust performance in uncertain environments.

Numerous supply chain information-sharing solutions, such as electronic point of sale (EPOS), vendor-managed inventory (VMI), e-shopping, emergency transhipments, and others, have been developed as a result of information technology advancements. However, when businesses choose from a range of supply chain information-sharing solutions, fluctuations in the business environment can lead to uncertainty and complicate decision-making. Reducing expenses, improving customer service, and strengthening the supply chain’s resilience are all goals of an efficient and successful supply chain strategy. This study uses a simulated beer game to examine the durability of various supply chain methods under various unpredictable conditions. The Taguchi methodology and multiple criteria decision-making methods (MCDMs) were employed as techniques. These included grey relational analysis (GRA), order performance by similarity to ideal solution (TOPSIS), and simple multiple attribute rating technology (SMART). Each criterion’s signal-to-noise (S/N) ratio is computed to show how robust the performance is. The overall assessment of different supply chain information-sharing systems is determined using this S/N ratio. According to the simulation results, e-commerce performs best in unpredictable contexts.

Potential Areas for Improvement

In recent years, the e-commerce market has grown significantly, and the online retail market has become very competitive. Online retailers strive to improve their supply chain operations to reduce costs and to improve customer satisfaction. Value stream mapping (VSM), a tool created by the lean production movement to identify and reduce errors, losses, and lead time and to improve value-added activities, has been proven to be effective in many manufacturing processes. In this study, we investigate the application of value stream mapping (VSM) in the supply chain of an ecommerce retailer on Amazon. By visualizing the entire supply chain with VSM, the waste that is produced during the delivery process from the retailer to the customer was identified. The five whys method was then applied to find the root cause of the waste. Furthermore, a scoring method was developed to evaluate and compare two different supply chain logistic models to identify a strategy for improvement. This study provides a systematic methodology to understand, evaluate, and improve the entire e-commerce supply chain process utilizing VSM. It was demonstrated that the methodology could improve supply chain management efficiency, customer satisfaction, and cost reduction.

FURTHER STUDY

Based on Amazon’s present supply chain efficiency strengths, the following promising future research opportunities have been identified:

1. Hyper-Personalization and Predictive Logistics
Demand forecasting at the level of the individual customer: Make use of cutting-edge AI and machine learning to anticipate the needs and preferences of each individual consumer, allowing for almost instantaneous order fulfillment and customized delivery options.

Dynamic inventory allocation and routing: Create self-learning algorithms that, using real-time demand and traffic data, can improve the placement of inventory and delivery routes. This might entail drones and self-driving cars adjusting to unforeseen circumstances.

2. Integration with Emerging Technologies

Optimize your logistics with quantum computing: Investigate how quantum computing can solve challenging logistics issues tenfold faster, resulting in better routing schemes, warehouse designs, and inventory control. Virtual and mixed reality applications in supply chain administration Use VR/AR to teach warehouse staff remotely, give suppliers access to virtual product prototypes, and create engaging customer experiences with product sourcing and delivery.

3. Sustainability and Circular Economy

Closed-loop supply chains: Look into effective ways to return products, refurbish them, and reintegrate them into the chain while reducing waste and environmental effect.

Zero-carbon logistics: Investigate alternate energy sources and technologies for warehousing and transportation in order to get toward an e-commerce supply chain that is carbon neutral.

4. Ethical Considerations and Social Impact

Transparency and traceability in the supply chain: Provide blockchain-based solutions to ensure total transparency in the procurement of products and resources, as well as sustainable and ethical practices all the way through the supply chain.

AI-driven ethics monitoring: Use AI tools to proactively spot and handle any ethical issues that may arise in the supply chain, such as hazardous environmental conditions or unethical labor practices.

Effect on nearby communities: Investigate the long-term social and economic effects that Amazon’s operations have on nearby communities, and devise plans to lessen adverse effects and foster prosperity for everybody. These are only a few possible avenues for future study on the effectiveness of Amazon’s supply chain. Researchers can help create a more ethical, sustainable, and customized e-commerce experience for firms and customers by investigating these options.
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