

Impact of B2C E-Commerce to the General Performance of Selected Logistics Service Providers in Metro Manila

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Abstract

The rapid expansion of e-commerce has significantly impacted the logistics sector, prompting the researchers to explore its influence on society. Managing e-commerce platforms presents unique challenges due to the diverse inventory products involved, underscoring the importance of understanding how B2C E-commerce affects logistics companies' overall performance. This study, conducted within a logistics company in Metro Manila, aimed to assess the impact of B2C E-commerce on logistics service providers (LSPs) and identify common issues, as well as understand its effects on respondents' general performance. Utilizing 30 employees from selected LSPs as respondents, a 28-item questionnaire was used to elicit the impact of B2C E-commerce to LSPs. Simple weighted mean was used as a tool in analyzing the data. Findings suggest that respondents generally agreed on the positive impact of B2C E-commerce across various aspects of logistics operations. In terms of warehousing, respondents agreed (WM=3.63) that B2C E-commerce had a positive impact on warehousing practices, reflecting an encouraging experience. Concerning inventory management, respondents moderately agreed (WM=3.35) on the general performance of LSPs in utilizing B2C E-commerce, indicating a somewhat positive perception. Regarding order processing, respondents agreed (WM=3.46) on the beneficial impact of B2C E-commerce, indicating a favorable view of its performance. Similarly, respondents agreed (WM=3.57) on the valuable contribution of B2C E-commerce to information systems within logistics operations, highlighting its importance. In terms of packaging, majority of respondents agreed (WM=3.58) on the essential role of B2C E-commerce in packaging practices, emphasizing its significance in the overall process. Overall, the findings suggest that LSPs have generally performed well in utilizing B2C E-commerce across various aspects of logistics operations. However, there are still areas to be looked at, such as reverse logistics and inventory management, where improvements could be made to further enhance LSPs performance.

Keywords: business-to-consumer (B2C), E-commerce, logistics service provider (LSP), warehousing, inventory management, order processing



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INTRODUCTION

As defined by Chen (2021), the term “commerce” refers to all activities involving the exchange of commodities or services for something of value, such as currency or, in bartering societies, other goods or services. It also encompasses the process of transporting those items from manufacturer to buyer and everything in between. As time pass by, the evolution of commerce took a big leap especially with the advent of technology. Thus, the birth of “electronic commerce” (or E-commerce). E-commerce, as defined by Sharma (2018), is a variation of commerce in which products are sold electronically via the Web. It contains a software application where different parties, like consumers and sellers, enact their roles and responsibilities. The most common users of e-commerce platform are consumers who check out, shop, and discover different products

they want, adding them to their electronic cart. For retailers, e-commerce platforms are crucial in managing their business online, facilitating communication, posting, displaying, and introducing their products. The e-commerce platform aids different people, especially sellers and buyers, to buy and sell their products.

E-commerce has greatly benefited society, with many people understanding its purpose in the industry. According to Tripathi and Shukla (2017), e-commerce began around 40 years ago with the introduction of early technologies like Electronic Data Interchange (EDI) and teleshopping, paving the way for modern-day e-commerce stores. E-commerce enabled online shopping to sell through online platforms, providing sellers with opportunities to trade

their products using e-commerce platforms, thus revolutionizing the way goods are sold.

According to Zeng et al. (2023), the exponential growth and demand for e-commerce are certainly affecting the logistics and transportation sector, of which shall be prepared to manage higher volumes and delivery expectations. To further satisfy evolving customer expectations while remaining profitable and growing, logistics and transportation businesses should seek solutions that provide a combination of flexibility, convenience, and competitive pricing. Freight forwarding firms may successfully develop to meet ever-changing consumer needs by adopting shorter equipment life cycles.

Sasso (2019) argued that as e-commerce continues to grow, logistic companies will need to adjust their business models to accommodate the fast, free, and convenient delivery services that consumers demand. Last-mile delivery will be a key area of focus for companies looking to compete in the e-commerce realm against giants like Amazon. In Sparkman's (2018) article, the rapid growth of e-commerce also created demand for an additional 452,000 warehouse and distribution workers in 2018-2019, which could turn out to be unsustainable in the already labor-strapped industry, according to a new report from CBRE, the international industrial real estate firm. This projected demand for 2018-2019 exceeded the industry's job growth since 2013 of 180,300 new positions per year, reflecting the growing volume of e-commerce sales.

The stable development of e-commerce, the ubiquitous usage of mobile technology, and the further development of the information and communications technology infrastructure have made trade simpler and more comfortable than ever before (Kawa & Światowiec-Szczepańska, 2021). Nevertheless, meeting customer satisfaction in logistics needs is becoming more challenging in e-commerce. The adoption and operation need to be discerned so that necessary adjustments in logistics can be made as soon as possible.

In Kayicki's (2018) study, the evolution of logistics and supply chain and its connection to e-commerce are illustrated (Figure 1). The evolution began in the 1970s when direct deliveries from wholesalers and/or suppliers filled shop shelves. In the next decade, retail centralization and delivery began with the establishment of distribution facilities managed by businesses. This stage is distinguished by the presence of primarily domestic vendors. Global sourcing grew in the 1990s, and many stores established import centers to accept container supplies of non-food items. Due to the rapid development and expansion of e-commerce at the beginning of the twenty-first century, new distribution networks for e-fulfillment were built. By then, the rise of e-commerce faced logistic companies with new opportunities as well as new challenges. Figure 2 depicts the relationship of e-commerce on logistics.

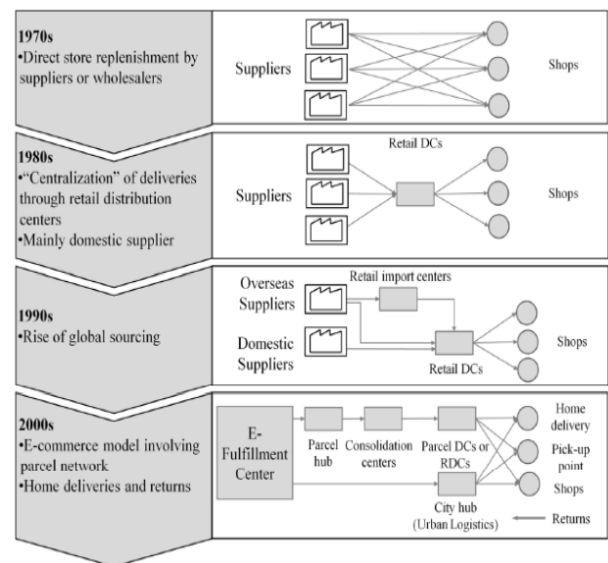


Figure 1
The evolution of logistics and supply chain (Kayicki, 2018).
Source: https://www.researchgate.net/publication/314093962_E-Commerce_in_Logistics_and_Supply_Chain_Management

Figure 2 illustrates the status of logistics before and after the rise of e-commerce. Prior to e-commerce, the logistics process was simple – everything was done "inline." However, with the shift to e-commerce, multiple "lines" are now involved in the process. According to Cho, Ozment, and Sink (2008), e-commerce businesses with robust logistical capabilities have a better chance of gaining a competitive

advantage and enhancing their performance while Micu, Aivaz, and Capatin (2013) conclude that the quality of logistics services is a key differentiator and a crucial success factor in influencing e-customer satisfaction and retention rates.

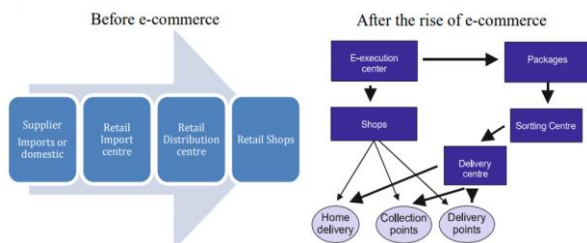


Figure 2
Logistics before and after the rise of e-commerce Before e-commerce After the rise of e-commerce. (Erceg & Kilic, 2018)

Source: https://www.researchgate.net/publication/328215821_INT-ERCONNECTION_OF_ECOMMERCE_AND_LOGISTICS_EXAMPLES_FROM_CROATIA_AND_TURKEY

One of the six types of e-commerce is business-to-consumer (B2C) model. In traditional commerce, B2C is a retail model where products or services move directly from a business to the end user who has purchased the goods or services for personal use (Barney & Chai, 2020). In e-commerce, B2C involves sales between online businesses and consumers. A popular example of B2C e-commerce platform is Amazon. E-commerce sales happen almost entirely on the internet, apart from the shipping and delivery processes, so they give sellers and buyers the comfort and freedom to make transactions anytime at any place (Natarajan, 2021).

The advancement of B2C e-commerce necessitates support from logistics as the latter is intrinsically linked to the future development of e-commerce. The relationship between logistics and e-commerce is closely intertwined, with logistics playing a vital role in the development of e-commerce. This relationship reflects the challenges logistics face in developing e-commerce, with e-commerce serving as a means to resolve these challenges. Conversely, the solution to e-commerce issues relies on logistics to provide the necessary resources, indicating a symbiotic relationship between the two.

The emergence of e-commerce has significantly propelled the development of the logistics industry fostering trade innovation and altering circulation patterns. Logistics has played a critical role in transitioning the logistics business from traditional methods to modern design development modes. Present-day logistics has evolved into an indispensable component of the system, supporting modern business applications.

The explications above suggest that B2C e-commerce favorably impacted the logistics industry. Henceforth, it is also imperative to know if this impact has trickled down to the immediate stakeholders of the logistics industry – the Logistics Service Providers (LSPs). Thus, the primary objective of this study is to determine the impact of B2C e-commerce to the general performance of LSPs. Results of the study shall serve as basis in addressing pertinent areas of the B2C with low impact thereby improving the processes and services that go along in the B2C e-commerce operation.

LITERATURES

Connection of B2C E-commerce in Logistics' Order Fulfillment: Order fulfillment involves completing a sales order according to customer specifications (Sasso, 2019). This process includes receiving, processing, and shipping orders. With the growth of e-commerce and the digital marketplace, known as "The Amazon Effect," customers now expect rapid, free shipping and competitive prices. As e-commerce expands, businesses must adapt their models to meet consumers' demands for fast, free, and convenient delivery. This places traditional logistics and supply chain approaches under pressure, necessitating strategic changes to provide low-cost and on-demand delivery services.

Logistics companies must adapt to the increasing delivery pressures aligned with evolving consumer expectations. Companies are becoming more flexible in meeting customer orders and expectations, with consumers now accustomed to extremely fast delivery (Monroy, 2020). Businesses are

transitioning to smaller trucks to support more frequent deliveries and employing various approaches to fulfill shifting consumer expectations, including deploying inventories closer to demand through specialized operations or shared facilities managed by third-party logistics partners.

To maintain the stability of the entire process, companies must implement a high-standard inventory management model. E-commerce logistics incur significant delivery and operational costs due to the time lag in the entire process, from customer order placement to goods delivery. The potential for last-mile delivery failure poses a significant challenge (Siwei, 2020).

Logistic Potential and Challenges of E-Commerce in the Philippines: The growth of e-commerce in Manila is being driven by customer choice and improved convenience enabled by the internet. E-commerce encompasses selling products or services directly to customers via a digital platform and accepting various payment methods. The availability of a wide selection of products at competitive prices, along with numerous suppliers and customers online, fuels e-commerce growth in the Philippines (Statista Research Department, 2021). Leading e-commerce platforms like Lazada, Shopee, and Zalora dominate the online shopping market, offering enticing deals and utilizing social media to promote offers. With a thriving economy and a digitally savvy population, the Philippines presents a rapidly expanding e-commerce market, attracting both domestic and international businesses competing for market share.

METHODOLOGY

Population and Sampling. A total of 30 employees from selected Logistics Service Providers (LSPs) in Metro Manila were randomly selected as the respondents of the study. The breakdown are as follows: 8 Managerial staffs; 12 Specialists/Experts; 9 Office staffs; 9 Representatives; and 2 classified as Others. These respondents were chosen

because of their experience, knowledge, and understanding about the general performance of logistics companies in utilizing B2C e-commerce. Majority of them were located in Parañaque City and Pasay City.

Instrumentation. A 28-item self-made survey questionnaire was developed based on the reviewed literatures and studies. To comply with the Covid-19 protocol, the questionnaire was converted into an online survey through Google Forms. This is to ensure the researchers and respondents safety and convenience. In measuring the responses, a 5-point Likert scale was used. Please see Table 1 below for the scale range and verbal interpretations:

Table 1
Likert Scale used in assessing the B2C e-commerce impact to the general performance of LSPs.

Scale	Range	Interpretation
5	4.50-5.00	Strongly Agree
4	3.50-4.49	Agree
3	2.50-3.49	Moderately Agree
2	1.50-2.49	Disagree
1	1.00-1.49	Strongly Disagree

Three experts validated the instrument: Research Adviser; Statistician; and, Technical Professor from the Customs Administration Department of Asian Institute of Maritime Studies (AIMS). Refinements were made based on the comments of the validators. The final version of the instrument undergone testing through a test-run with 10 non-participating LSP respondents. Based on the results, the questionnaire gained a Cronbach Alpha value of 0.957, demonstrating high reliability and accuracy.

Data Gathering. Initial administration of the survey questionnaire was done through coordination with the Logistics Service Providers (LSPs). A letter was forwarded to the LSPs asking for a permission to conduct a survey with their officers and staffs. Upon acquiring their approval, administration of the instrument began on February 1, 2022 and ended on February 15, 2022. The researchers adhered to the regulations set forth in the Data Privacy Act of 2012 where information gathered

from the respondents will only be used solely for the purpose of the study and that no other means of use will be done.

Retrieval of responses from the Google website was done on February 17, 2022. The downloaded responses undergone review to ensure completeness and accuracy of gathered information. After review, the data were then prepared for statistical treatment.

Data Analysis. Utilizing Statistical Package for Social Sciences (SPSS v.20), weighted mean was employed to compute the impact of B2C e-commerce on the overall performance of selected logistic service providers. This method assigns different weights to data points, considering their relative importance. Hence, providing a more nuanced understanding of the variables involved in the study.

RESULTS

Table 2
Mean Distribution of B2C E-commerce Impact to the General Performance of Logistics Service Provider in terms of Transportation

Transportation Statements	Weighted Mean	Descriptive Interpretation
1. B2C E-commerce made Logistics companies increase its focus on last-mile delivery.	3.87	Agree
2. B2C E-commerce clients made Logistic company increase its use of air freight.	3.70	Agree
3. B2C E-commerce had enhanced reverse logistics.	3.27	Moderately Agree
4. B2C E-commerce clients made the Logistic company provides a wide range of vehicle classes.	3.67	Agree
5. Increased e-commerce buying has resulted in the exponential growth of parcel delivery traffic congestion.	3.50	Agree
6. B2C E-commerce clients is redefining transportation practices.	3.57	Agree
Average Weighted Mean	3.59	Agree

As presented in Table 2, the respondents "agree" that the general performance of the selected LSPs in using B2C e-commerce is effective in terms of transportation as reflected by the average weighted mean of 3.59 (agree). Only the statement "B2C E-commerce had enhanced reverse logistics" was marked "moderately agree" with an average weighted mean of 3.27 (moderately agree).

Clearly stated, that transportation related statements have an effect when it comes to transportation. B2C eCommerce boost the LSPs when it comes to transportation especially on providing a wide range of vehicle classes. It

allows LSPs to ship goods to different companies.

Table 3
Mean Distribution of B2C E-commerce Impact to the General Performance of Logistics Service Provider in terms of Warehousing

Warehousing Statements	Weighted Mean	Descriptive Interpretation
1. B2C E-commerce clients are redefining warehousing practices.	3.63	Agree
2. There is increasing use of automation within the warehouse facilities.	3.87	Agree
3. LSP shifts from Bulk Orders to Individual Items as e-commerce provides a convenient shopping experience in that orders can now come in small batches and even in single items.	3.53	Agree
4. Logistics company's Average Dwell Time has significantly changed because of growing B2C E-commerce clients.	3.37	Moderately Agree
5. There has been a rise in demand for warehouses within urban areas and near residential communities.	3.73	Agree
Average Weighted Mean	3.63	Agree

Table 3 presents the B2C impact to the general performance of LSPs. LSPs "agree" on the impact of B2C on their warehousing requirement as supported by an average weighted mean of 3.63. (agree). This suggests that there is an increasing use of automation within the warehouse facilities with the highest weighted mean of 3.87, followed by the statement "There has been a rise in demand for warehouses within urban areas and near residential communities" which has a weighted mean of 3.73. The other remaining statements were marked "agree," except for the statement "Logistic company's Average Dwell Time has significantly changed because of growing B2C E-commerce clients" which had the lowest weighted mean of 3.37 (moderately agree).

Table 4
Mean Distribution of B2C E-commerce Impact to the General Performance of Logistics Service Provider in terms of Inventory Management

Inventory Management Statements	Weighted Mean	Descriptive Interpretation
1. B2C E-commerce clients made Logistic company experience difficult demand fluctuation.	3.27	Moderately Agree
2. B2C E-commerce clients made Logistics companies experience stockouts.	3.23	Moderately Agree
3. Growing B2C E-commerce clients made Logistics companies invest in automated inventory systems such as real-time, automated updates, and barcoding systems.	3.33	Moderately Agree
4. B2C E-commerce clients are redefining Inventory Management practices.	3.57	Agree
Average Weighted Mean	3.35	Moderately Agree

In terms of Inventory Management, as shown in Table 4, most respondents "moderately agree" on the general performance of selected logistics service providers in utilizing B2C E-commerce, with an average weighted mean of 3.35 (moderately agree). It is notable that

respondents agreed with only one out of four statements, with the highest weighted mean of 3.57, indicating that "B2C E-commerce clients are redefining Inventory Management practices." All other statements received a rating of "moderately agree," including "Growing B2C E-commerce clients made Logistic companies invest in automated inventory systems such as real-time, automated updates and barcoding systems" (WM=3.33), "B2C E-commerce clients made Logistic companies experience difficult demand fluctuation" (WM=3.27), and "B2C E-commerce clients made Logistic companies experience stockouts" (WM=3.23). The average weighted mean of 3.35 suggests that respondents moderately agree on the influence of B2C e-commerce on inventory management.

Table 5

Mean Distribution of B2C E-commerce Impact to the General Performance of Logistics Service Provider in terms of Order Processing

Order Processing Statements	Weighted Mean	Descriptive Interpretation
1. High consumer demand and increasing service level standards had forced Logistic companies to re-evaluate their core competencies and refocus their resources on servicing the end consumer to a higher degree.	3.50	Agree
2. B2C E-commerce clients made the Logistics company increase its demand for shipping volume and time.	3.83	Agree
3. There has been a slow turnaround time in Logistic company's order fulfillment as B2C E-commerce orders are increasing.	3.57	Agree
4. There has been an Order Errors in Logistic company's order fulfillment as B2C E-commerce orders are increasing	3.27	Moderately Agree
5. B2C E-commerce made Logistic company offer Segmented Customized Services.	3.23	Moderately Agree
6. B2C E-commerce clients are redefining Order Processing practices.	3.33	Moderately Agree
Average Weighted Mean	3.46	Agree

Table 5 shows the impact of B2C E-commerce to the general performance of LSPs. In general, the respondents indicate agreement regarding the beneficial performance of selected LSPs in utilizing B2C E-Commerce for Order Processing, as justified by an average weighted mean of 3.46 (agree). Reviewing the responses, it revealed that three out of the six indicator statements were marked as "agree."

This includes the increase in demand for shipping volume and time due to B2C E-commerce clients, resulting in a weighted mean of 3.83. Additionally, respondents noted a slower turnaround time in order fulfillment as B2C E-commerce orders rise, indicated by a weighted mean of 3.57. Moreover, the pressure from high consumer demand and rising service

level standards forced logistic companies to reassess their core competencies and allocate resources more towards end-consumer service, resulting in a weighted mean of 3.50. However, the remaining three statements received a rating of "moderately agree." Despite this, the overall weighted mean of 3.46 suggests a collective agreement among respondents regarding the impact of B2C E-commerce on the performance of LSPs in terms of order processing.

Table 6

Mean Distribution of B2C E-commerce Impact to the General Performance of Logistics Service Provider in terms of Information System

Information System Statements	Weighted Mean	Descriptive Interpretation
1. B2C E-commerce made Logistic company adapt various software/systems in order to cope up with the demand.	3.50	Agree
2. B2C E-commerce made Logistic company centralize the Logistics Communications and Data Transfer.	3.53	Agree
3. B2C E-commerce made Logistic company enhance its Customer Service.	3.63	Agree
4. B2C E-commerce is redefining Information Systems practices.	3.60	Agree
Average Weighted Mean	3.57	Agree

Table 6 reflects the beneficial impact of B2C E-commerce to LSPs in terms of Information System. All four indicator statements received an "agree" rating from the respondents. The statement "B2C E-commerce made Logistics company enhance its Customer Service" garnered the highest weighted mean of 3.63. Following closely is the statement "B2C E-commerce is redefining Information Systems practices" and "B2C E-commerce is redefining Information Systems practices," both with a weighted mean of 3.60. The average weighted mean of 3.57 suggests a collective agreement among respondents regarding the impact of B2C e-commerce on the performance of LSPs in terms of information systems.

Table 7

Mean Distribution of B2C E-commerce Impact to the General Performance of Logistics Service Provider in terms of Packaging

Packaging Statements	Weighted Mean	Descriptive Interpretation
1. B2C E-commerce caused the changing equipment needs for logistics' packaging.	3.60	Agree
2. Customer expects packages must be designed to be durable enough to withstand the often complex automated and manual supply chains involved in delivering the product to the consumer's doorstep.	3.43	Agree
3. B2C E-commerce is redefining packaging practices.	3.70	Agree
Average Weighted Mean	3.58	Agree

The perceived impact of B2C e-commerce on the performance of some LSPs in terms of Packaging was unanimously rated as "agree." This was supported by an average weighted mean of 3.58. As shown in Table 7, the statement "B2C E-commerce is redefining packaging practices" received the highest weighted mean of 3.70 among the four indicators. This was closely followed by "B2C E-commerce caused the changing equipment needs for logistics' packaging," which obtained a weighted mean of 3.60. Lastly, "Customer expects packages must be designed to be durable enough to withstand the often complex automated and manual supply chains involved in delivering the product to the consumer's doorstep" had the lowest weighted mean of 3.60 (agree). This unanimous agreement among respondents highlights the significant influence of B2C e-commerce on the packaging practices of LSPs.

DISCUSSION

Findings of the study indicated that majority of the respondents had a positive perception on the general performance of Logistics Service Providers (LSPs) in utilizing Business-to-Consumer (B2C) E-Commerce. Respondents generally agreed that LSPs effectively utilized B2C E-commerce for transportation purposes, with a weighted mean of 3.59, indicating agreement. However, there was a slightly lower agreement (WM=3.27) regarding the enhancement of reverse logistics through B2C E-commerce.

In terms of warehousing, the findings suggest that respondents agreed (WM=3.63) that B2C E-commerce had a positive impact on warehousing practices, reflecting an encouraging experience. In terms of inventory management, while respondents moderately agreed (WM=3.35) on the general performance of LSPs in utilizing B2C E-commerce for inventory management, this still somewhat indicated a positive perception. In terms of order processing, respondents agreed (WM=3.46) on the beneficial impact of B2C E-commerce on order processing, indicating a favorable view of its performance. In terms of

information processing, respondents agreed (WM=3.57) on the valuable contribution of B2C E-commerce to information systems within logistics operations, highlighting its importance. In terms of packaging, majority of respondents agreed (WM=3.58) on the essential role of B2C E-commerce in packaging practices, emphasizing its significance in the overall process.

In summary, the research findings suggest that LSPs have generally performed well in utilizing B2C E-commerce across various aspects of logistics operations. However, there are still areas to be looked at, such as reverse logistics and inventory management, where improvements could be made to further enhance LSPs performance.

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