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Pandemics trends in E-commerce: drop shipping entrepreneurship during COVID-19 pandemic

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ABSTRACT

Drop shipping represents a delivery business model based on e-commerce logistics, which is very relevant in the global pandemic crisis. In this model, buyers order products and services directly from the manufacturer over the Internet through the intermediary of a drop shipper who ensures the easiest and fastest delivery. Drop shipper is a type of e-commerce entrepreneur that offers goods using online logistics infrastructure to ensure direct physical delivery from the manufacturer to the retailer or customer. This includes drop shipping as a business model to Industry 4.0 (i.e. the digital economy). This paper elaborates how a particular e-commerce model affects the development and improvement of global supply chains. Aim of this paper is to research how entrepreneur can lower its costs along drop shipping supply chain by managing inventory ratios or cost of stock. This enables drop shipping to greatly facilitate market access for cash-strapped entrepreneurs. We also conducted a simulation of optimized drop shipping process to show that there is a constant adaptability for entrepreneurs using drop shipping, especially among small and medium enterprises (SMEs). The timeliness of drop shipping is that it has facilitated as a global delivery solution in relation to the coronavirus disease pandemic (COVID-19). Moreover, drop shipping is based on a Activity-Based Costing (ABC model) whose quantitative efficiency has been proven by scientific analysis and research results. Finally, the legal aspects of drop shipping are given importance in the situation of COVID-19 which had a crucial impact on international trade in 2020, especially in predicting short-term trade trends. Due to this within this paper we also examined the effects of the ″coronavirus″ on global e-commerce. Global drop shipping data ensures qualitative predictions considering pandemic environment, social distancing issues and internet trade curves which are more than useful in today's changing business conditions.

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1 Introduction

Business went cyber: The process of buying and selling products and services over the Internet became known by various names: *E-commerce, online/web shopping, internet sales* or *retail*. Although they sometimes have the same meaning, some structural differences can be found in the different models of doing business online. Internet shopping gained new momentum during the COVID-19 pandemic. Quarantine and physical restrictions have seriously undermined basic economic freedoms and market development opportunities. Szyszko and Rutkowska (2019) determined that modern consumers even before COVID-19 pandemic behaved significantly different, especially regarding future expectations and basing their consuming on economic forecast. Regular social functioning, especially its consumptive aspects, came under a huge question mark. Although there is a lot of new knowledge about the COVID-19 disease, a highly developed e-commerce became a tool to maintain human health and enable sustainable business operations. Traditional organizational models, especially their supply chains, could not physically keep up with the flexibility of e-commerce in such a health crisis. This led to innovative supply chain models where drop shipping was moderated to transfer a significant portion of the regular supply-demand relationship to

a virtual (IT) scale. With the increasing online orientation of global markets, drop shipping gained momentum by reducing costs, maximizing revenue and customer satisfaction while ensuring on-time delivery. To define the true meaning of a drop shipping business, we use a longer but holistic definition more sensibly:

A drop shipper is a retailer/entrepreneur who mediates between a manufacturer and a consumer by connecting IT technologies, online or internet infrastructure with physical distribution infrastructure to:

1) *receive an order from a consumer online,*
2) *fulfill it in a way that identifies the most appropriate product attributes from available manufacturer contacts, databases/contacts,*
3) *identify and execute the shortest and fastest delivery routes to deliver the drop-shipping service with as few interruptions, stops and costs as possible and deliver maximum value of product and profit to all members of the drop-shipping supply chain.*

Basics of drop shipping are in online ordering, Internet market analysis and, above all, cost reduction in the supply chain. Khouya (2001) explains how grassroots cost reduction is achieved by connecting consumers (i.e., buyers) directly with e-retailers who secure products directly from manufacturers at a predetermined price without intermediaries. Respecting Ayanso, Moustapha and Nair (2006) there are also differences in terms of e-retailers which may include e-retailers, manufacturers or e-wholesalers all forming a global e-commerce supply chain. Some of them use drop shipping providers while others do not, which will also be discussed in this paper. For example, most manufacturers and wholesalers have optimal internal inventory levels, which is critical to the effectiveness of drop shipping. This is directly related to the cost management of the company. To reduce costs, drop shippers must manage three sides of the process: producers, product inventory, and consumer demand. Products can be sold to drop shippers (retailers) in larger inventories, focusing on the issue of inventory. Drop shippers can involve wholesalers known for large inventory capacities, but this lowers the value of the drop shipping service. Bailey and Rabinovich (2006) have raised the question of whether drop-shipping is under the influence of inventory speculation. They cite a case of oligopolistic Internet retailers (such as Amazon.com or Barnesandnoble.com) that may plan inventory shifts to lower their own costs, which has a positive effect in drop shipping. Rabinovich and Bailey, in their earlier work in 2004, attempted to define crucial quality variables of Internet commerce by classifying them into the groups of Service Pricing, Transaction Attributes, and Firm Attributes. This led to the conclusion that Internet commerce, like drop shipping, is superior to physical retailers when it comes to price, availability, and quality. In order to reduce drop shipping costs, previous research has strongly focused on eliminating interruptions in the drop shipping supply chain. Due to these problems, many researchers devoted their work to dealing with interruptions in drop shipping using IT solutions, such as Xiao et al. (2019). Here, online infrastructure (IT) and an entrepreneur's trading skills as a drop shipper merge into one. Xiao et al. addressed the issue of removing interruptions in e-commerce by utilising IT innovations that are at the core of modern drop shipping: *achieving the most efficient Internet and online trade and delivery services.* A significant proposal is made by Hanser et al. (2020), who focuses on the demand side of the drop shipping supply chain in dealing with potential disruptions by creating an inventory planning model that distributes higher demand among fewer inventory points. In addition to the "technical" research on optimising the drop shipping process (by managing its critical variables such as delivery time and inventory), there are also analyses that addresses the adaptation of drop shipping in the context of the evolving digital economy and the appropriateness of drop shipping in developing family SMEs. Reuschke and Mason identify drop shipping as best suited to the development of home-based businesses in digital commerce, i.e. these authors support the view of home-based businesses as "online" businesses (Reuschke and Mason, 2020, p. 1).

The use of formal or informal intermediary structures speeds up the whole distribution process, which increases global connectivity, i.e. the product is not confined to a particular place, but its placement goes beyond national borders. Moreover, this encourages the development of wholesalers that supply the entire market when the manufacturer is unable to produce the required quantity of products or when the supply of these products represents a significant proportion of the total cost. In addition, the technological revolution, as well as the exchange of information, enabled the development of drop shipping, which modernised the intermediation process in the last five years. Five out of seven key trends related to drop shipping are driving digital transformation of SMEs, including (KPMG, 2019): 1) personalized customer experience, 2) data-driven decisions, 3) artificial intelligence, 4) cloud (data) solutions and 5) cybersecurity. The given e-environment enabled the companies to reduce their inventory costs as well as increase their inventory and sales turnover. In addition, the supply chain of drop shipping is based on the combination of production, sales and distribution in a way that effectively combines marketing and sales activities and market research.

The Internet made it possible for everyone to buy global products from the comfort of their homes. Marketing became even more present with the very current scheme of social networking, where every online post has an accompanying advertisement or purchase opportunity just two or three "clicks" away. This trend is also followed by more present use of cryptocurrencies (Čičak, 2019), which according to Vašiček, Dmitrović and Čičak (2019) already entered business practice followed by its accountancy evaluation within International Financial Reporting Standards (IFRS). All this reduced the cost to consumers

of visiting stores, wasting time in long lines at megastores, choosing from a line of similar items, seeking information from store clerks, etc. Also, many products available online have online video reviews (e.g., on YouTube), so consumers can preview a potential user experience in advance. This is suitable to reduce potential post-purchase problems and costs for returns or complaints.

This article analyses the avant-garde business model of drop shipping, which has its roots in the fusion of Internet technology and business strategy. It also presents crucial characteristics as well as the issues of drop shipping supply chain in practical e-commerce models and online business trends. Managing relations between members in a drop shipping process and supply chain becomes a true challenge for online entrepreneurs. In addition, this article presents the impact of e-commerce on the global economy, its implementation and importance in the retail industry, and the structure of the drop shipping model with its main features in daily use. Overall, the impact of the COVID-19 pandemic on the performance of e-commerce entrepreneurs on a global scale is examined. Unfortunately thanks to this global health issue *drop shipment* becomes a global mainstream in online business.

2 Drop shipping in terms of modern Internet entrepreneurship

According to Samadi et al. (2011), the first appearance of e-commerce dates back to the 1990s and was based on the principle of buying and selling. The purpose of this type of commerce was to execute transactions quickly and effectively over the World Wide Web using technologies such as Electronic Data Interchange (EDI) and Electronic Funds Transfer (EFT), which facilitated the exchange of information at that time. Although the development of Internet protocols began in the last decade of the 20th century, the significant use of e-commerce did not begin until the beginning of the new millennium. From this period, companies gained access to many new opportunities to sell their products in different markets while reducing their physical presence. In their research Samadi et al. also emphasise that companies in the US and on West Europe have adapted to this online business model in such a way that they have fully harmonised the modern corporate approach as well as loss absorption.

Based on a study of global retail e-commerce conducted by Clement (2020), online shopping in 2019 was capable to generate between $3.5 and $4.5 trillion in revenue with an emerging growth trend. Therefore, the revenue is projected to grow to USD 6.5 trillion in 2023 (Figure 1). This significant growth can be attributed to consumers' higher awareness of the benefits of online shopping and the confidence they have gained from using Internet payments and other transactions. Clement (2019) has also depicted a significant increase in the e-commerce share of total retail sales, which was 14.1% in 2019 and is projected to reach 18.1% in 2021 (Figure 2).

COVID-19 pandemic made a good market case for online entrepreneurship, drop shipping in particular. The current consumer interest in drop shipping represents the COVID -19 pandemic that led to the aforementioned positive trend in online shopping in 2020 and promising predictions in the future period (Figure 2). Even conservative consumers changed their strict opinions on online shopping during the pandemic because health protection prevailed, i.e., health risks are more compelling to conservative consumers than the risk of potential online fraud.

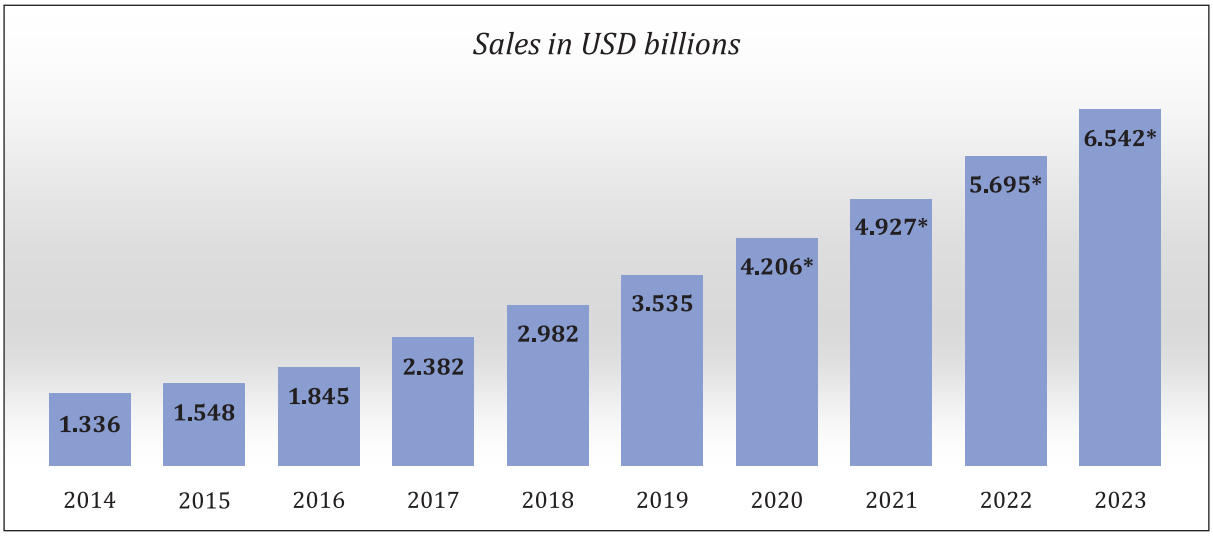

Figure 1 Total sales of online stores in the period 2014 – 2023 (*prediction, in USD billions)

Source: Clement, J.: Global retail e-commerce sales 2014-2023, (2020)

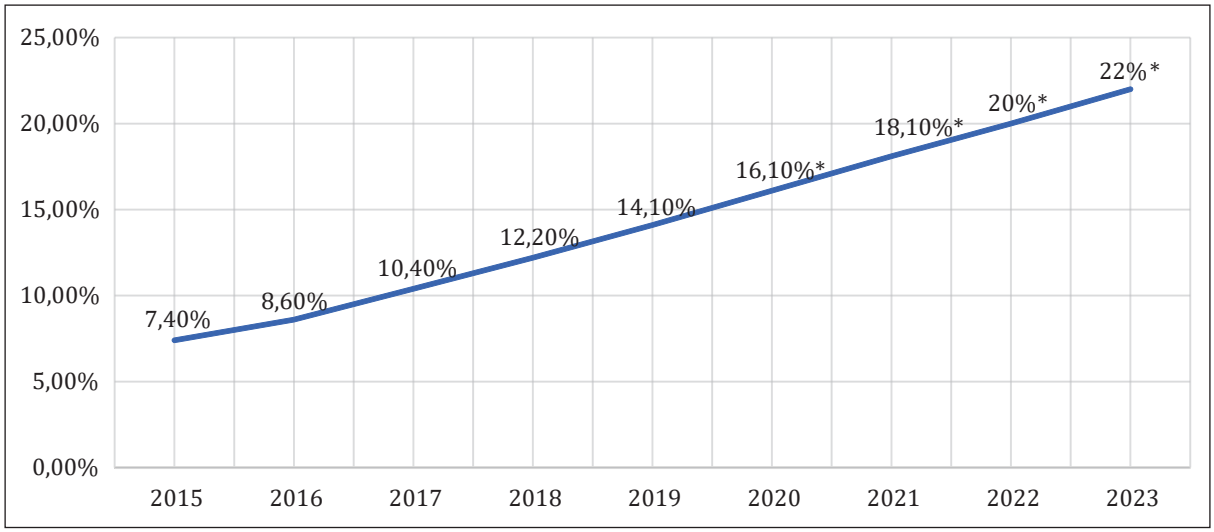

Figure 2 Share of e-commerce in total global retail sales in the period 2015 – 2023 (*prediction)

Source: Clement J.: E-commerce share of total retail sales worldwide 2015-2023, (2019)

The increasing use of new e-commerce models has also led to the development of new forms of supply chains. It has become common to explore which supply chain is most effective for a particular business, i.e. combining different capital, inventory, quality and cost requirements when using a unique supply chain in the global market. Since drop shipping connects consumers individually with a company and a wholesaler, it has proven to be a very adaptable supply chain model as it offers many variations to reduce inventory costs, adjust capital requirements, and still deliver high quality products and services. As a retail supply chain model, drop shipping enables purchase processing, transaction process and distribution operations through intermediation. Instead of a conventional retail model where a company must buy products and then sell them, drop shipping allows products to be delivered directly from the wholesaler or a supplier (to the buyer/consumer). It was mentioned earlier that the drop shipper, as a business owner, does not have the responsibility to maintain an inventory or keep a warehouse. This responsibility is given to the supplier or manufacturer. In addition, the drop shipping model allows for a wide range of suppliers who are not in the same industry. Therefore, the drop shipper can change suppliers almost immediately if one is out of stock. This offers significant time management advantages to both the entrepreneur and the end consumer, as it is a privilege to find a supplier with appropriate reserves, prices, quality and stock availability in a short period of time.

The drop shipping model is suitable for small and medium-sized enterprises (SMEs) because it does not require a large amount of capital like traditional business models. When using drop shipping, overhead and storage costs do not have a large impact on the regular operations of SMEs, which likely allows for easier penetration into new markets. In addition, the business is conducted over an internet connection, with the drop shipper sourcing the product from a supplier who has warehouse space and product inventory. Drop shipping allows flexibility in terms of location and business operations as the entrepreneur can perform all actions through mobile devices such as laptop or mobile phone. The entrepreneur is responsible for contacting the consumers through marketing activities, market research, competitor analysis as well as fulfilling the orders that are submitted to the supplier. Nevertheless, the goal of the entrepreneur (as a drop shipper) is to maximize profit by incorporating the intermediary fee and taking advantage of the modern distribution channels over the traditional ones (as shown below, Figure 3). At the same time, the role of a drop shipper is to deliver maximum value to the customer by optimizing the drop shipping process, i.e. reducing costs at each stage of the drop shipping supply chain. Therefore, the specific role of a drop shipper is in managing value optimization within three main points:

1. delivery of the highest product value to the customer;
2. deducting costs for each party in the drop shipping supply chain and thereby;
3. maximizing profit for drop shipping services.

Avoiding inventory investment and costs is an essential part of drop shipping management. The value of the drop shipping process only increases when inventory costs are efficiently (completely) avoided in the drop shipping supply chain (Figure 3). This is also related to fast drop shipping delivery, where fewer checkpoints and intermediaries equals lower costs, faster delivery and higher value for the manufacturer, drop shipper and the customer.

To achieve speedy delivery, the drop shipper becomes the manager of the entire drop shipping process, which means identifying and managing the conditions of the manufacturer/supplier, any wholesalers (if the product

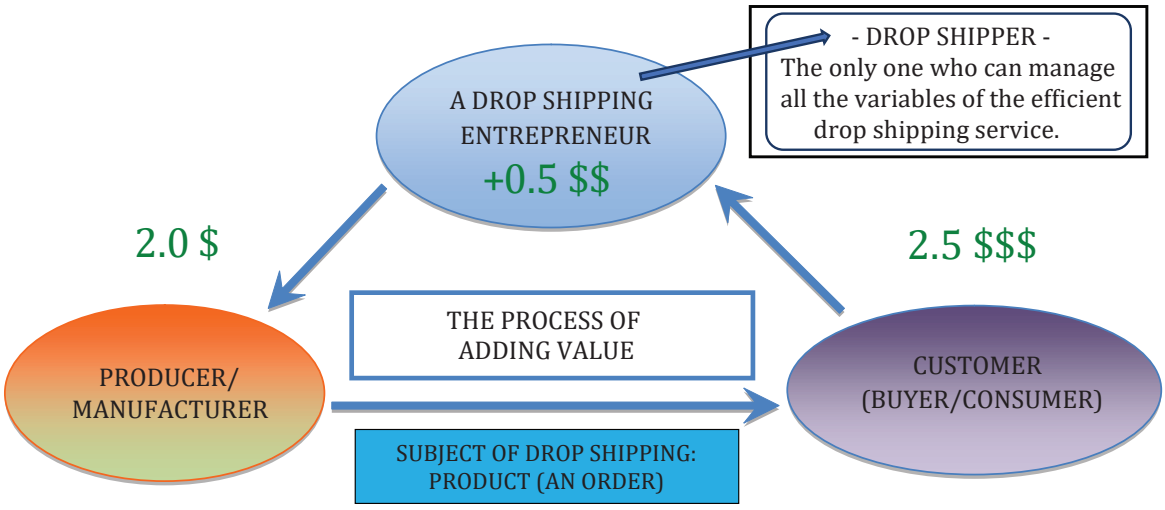

Figure 3 The course of events in the drop shipping model between entities

Source: Authors

requires storage), and the customer environment. The drop shipper is the only one who can efficiently manage all the variables of the drop shipping service, dealing with the manufacturers and suppliers on one side and the customer relationships on the other. In this process, the drop shipper is again the only one responsible for ensuring that value is distributed throughout the drop shipping supply chain (to manufacturers, to wholesalers, and to customers). Wholesalers are included in the drop shipping only when there is a real need to stock a product, as a point of inventory control, and their existence in the supply chain depends only on the drop shipper's ability to eliminate unnecessary "pit stops". This can only be achieved through the use of improved online information, which is why drop shipping is specific to online entrepreneurship. Data that is available online (i.e., via the Internet) allows the drop shipper to acquire and analyse data related to manufacturers, product characteristics, and customer requirements. Trade information is readily available online, allowing the drop shipper to process databases of manufacturers/suppliers, potential warehouses, and distribution channels in accordance with orders placed by customers.

This is the true meaning of drop-shipping: *the creation of new entrepreneurs in the online delivery business in the form of micro, small and medium enterprises that use modern information technology and the Internet to offer global online services equivalent in quality to those offered when the customer physically buys the product.*

Although there are no strict business process distinctions between different companies selling identical products, the consumer's perspective comes to the fore. Consumers observe which companies offer different experiences, usually based precisely on different supply chain strategies. Traditional supply chains such as B2B and B2C confront companies/entrepreneurs with increased costs of harmonisation between participants in the business process (e.g., providing materials or services to another company and its products). These models assume a more complex scheme where each participant has the responsibility to constantly coordinate with others, sometimes even from the product design phase to final delivery. For instance, B2C strongly raises the specific question of responsibility for inventory rationing (Hanser et al., 2020) as a core issue in drop shipping. Inventories have to realistically follow the existing demand. Too high or too low inventory ratios are a matter of marketers who can be employed by producers, drop shippers or even consumers. Therefore, in a case where one of the participants does not execute the transaction favourably, there may be an increase in business risk for all participants, not just one. This is not the case with drop shipping as it does not require any commitment to suppliers or producers, their production processes or business strategy. For this reason, the drop shipper has more flexibility.

Creyts and Weisskopf (2016) operationally simplify the drop shipper as a pure intermediary that connects consumer and supplier and claims its profit in the higher price of the delivered product. Drop shippers therefore use a much shorter supply chain than traditional delivery, which generally represent less risk for him regarding to product quality and safety during delivery process. Ayanso, Moustapha and Nair (2006) elaborate well on the benefits of inventory rationing policies of the so-called "e-tailers". They refer to e-tailers as subjects "*who operate in a ... B2C environment ... and sell non-perishable, in-stock items such as books, CDs, consumer electronics, and body and bath products.*" Generally, these are non-perishable products. E-tailers in this case are manufacturers, producers, wholesalers, and retailers who use drop-shipping individually, on their own, or through a drop-shipping service.

3 Managing drop shipping supply chain

The drop shipping supply chain starts from an established online entrepreneur (a drop shipper) who has first made an agreement with the supplier. There can be considerable confusion when trying to pinpoint the actors in the drop shipping process. In the practice of drop shipping, there are various designations and roles such as: Retailer, Wholesaler, Buyer, User, Consumer, Seller, Producer, Manufacturer, Supplier, E-tailer and E-seller. Youderian and Hayes (2013) classify them into three main groups: 1) manufacturers, 2) wholesalers and 3) retailers. However, this article goes beyond this framework to include customers as the fourth indispensable part of the drop shipping supply chain. We also *introduce a drop shipper as a retailer who takes on intermediation between the manufacturer and a customer based exclusively on using online ordering and shipping of the product.* Considering and extending Youderian and Hayes' description, we give the current participants and roles in the drop shipping supply chain as follows:

1. *Manufacturers* are the makers (i.e., producers) of the product that is the subject of the drop shipping service. Services are usually not an object for this type of online trading service. In the drop shipping supply chain, producers do not intend to distribute their products directly to consumers. Therefore, they sell them in bulk to wholesalers who then sell the items to retailers. The reason for this is to avoid additional storage costs for the producer/manufacturer, which only occurs when the drop shipping supply chain is passed directly from the manufacturer to the wholesaler, who has significant storage capacity. Drop shipping allows the manufacturer to achieve high inventory levels without having logistical distribution centers that present them with the issue of cost or inventory management. It is stated (Creyts and Weisskopf, 2016) that the biggest advantage that the manufacturer gets by participating in the drop shipping model is high inventory turnover. This means that the best way is to ship directly from the factory to the wholesaler, or even better to the drop shipper/retailer who will pass the product on to the customer. This then becomes a question of managing the optimal drop shipping ratio, strategic arrangements and collaboration between the manufacturer and a drop shipper, as demand and production rates need to be matched (this is done through information given by a drop shipper to the manufacturer and vice versa).

2. *Wholesalers* do not always form part of the drop shipping supply chain, as goods can also be delivered directly from the manufacturer to the retailer (No. 3, described below). Due to standard wholesale logistics, which require large warehouses, wholesalers can receive and store large quantities of products. Although buying directly from the manufacturer would be the cheapest way to get a low cost product supply. However, manufacturers have an approach that requires large production volumes that can only be accommodated in the wholesaler's warehouses. Retailers cannot take this approach because they already have a certain level of operating cost in sales that corresponds to their acquired profit margin.

3. *Retailer (intermediary/a drop shipper)* connects customers with manufacturers. This means that retailers can play the role of drop shippers as they are intermediaries between customers and manufacturers. This is a moment in the drop shipping supply chain where a retailer becomes a drop shipper on the condition that it uses online commerce to connect specific customers with a specific manufacturer, i.e. the producer of the demanded/specific product. In this case, it means that the role of the retailer is actually that of a drop shipper.

The importance of the retailer taking on the role of a drop shipper is directly related to the wholesaler. There can be huge savings in this relationship especially between the retailer and the wholesaler. Ayanso, Moustapha, and Nair (2006, p. 136) give an example of the retailer CD, *Spun.com, which avoided an $8 million investment in inventory by leveraging the fulfilment capabilities of the wholesaler*.

This is the main intention of a drop shipping concept; to keep costs to a minimum for each participant in the process, to provide the consumer with the required product value, the producer with low inventory costs, and the drop shipper (retailer) with its profit.

4. *The consumer* (*the customer*) is a crucial participant because his buying habits and specific requirements have been transferred to the electronic age of the Internet and online networks, leading to the development of drop shipping services in general. The buyer is looking for the products with the lowest prices, but he also reconsiders the security of retailers because he wants to get the full value of the product for the money paid. The customer chooses a business owner who is willing to respond to any request and provide support when the consumer is in trouble.

As presented, the customer buys the product at a price set by the entrepreneur who is a drop shipper and leaves personal information necessary to distribute the product and track delivery. The entrepreneur receives the customer's money, on which he adds an operating margin, and places the order, while the rest is transferred to the supplier. The entrepreneur reports the order based on the customer's information. This is an essential step as the supplier's responsibility is related to logistics and product delivery. After receiving the product, the customer gives feedback to the entrepreneur about the quality and condition in which the product was delivered. It should be emphasized that the supplier does not have the practice of putting his characteristics on the product, but in most cases uses the characteristics of the company that made the sale. In this way, the customer has no knowledge of the supply chain, i.e. he assumes that the company stocks the products and distributes them.

In this preview (Figure 4), it is clear that the 3rd role, that of the retailer (a true merchant), is the closest thing to a drop shipper function in modern online shopping. Still,

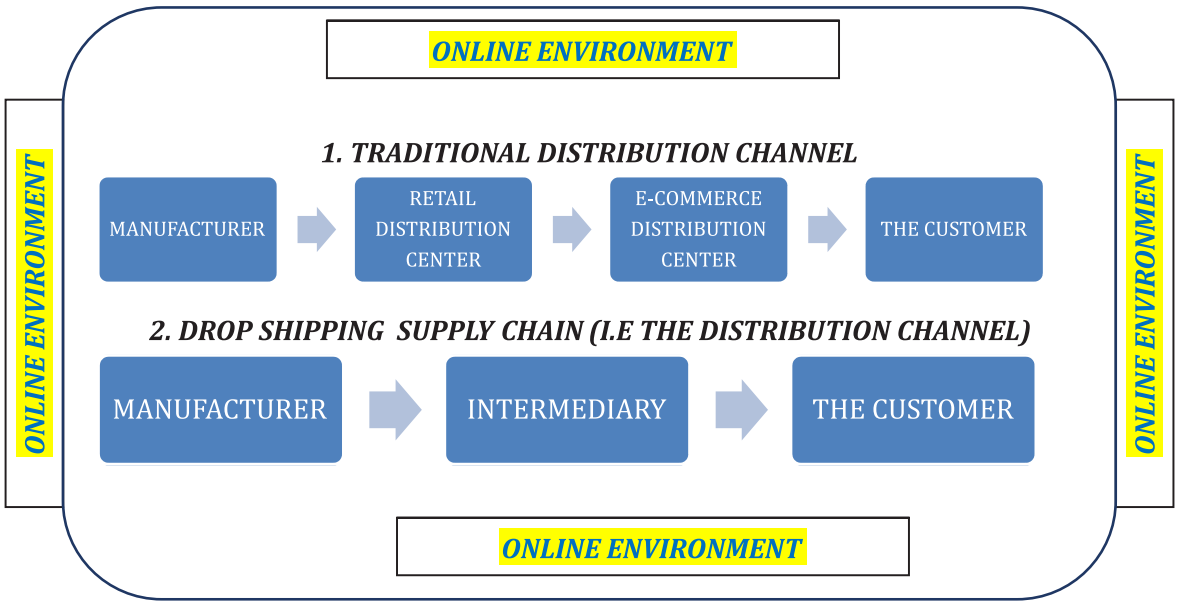

Figure 4 Comparison of traditional and drop shipping supply chain

Source: Author's adjustment based on Creyts, C. A., Weisskopf, N.: *E-Commerce Drop shipping: Building a CPG Supply Chain*. Thesis: M. Eng. in Logistics, Massachusetts Institute of Technology, Supply Chain Management Program, (2016), p. 12.

the question arises: can a manufacturer or a wholesaler be a drop shipper? Indeed, this question is valid, as these two can ship products directly to consumers. However, drop shipping is about an intermediary function based on identifying and analysing specific consumer behaviour and satisfying or yielding to consumer needs through online marketing and lowering costs for both manufacturers and consumers. Cost deduction is fundamental in drop shipping as the cost of activities is considered in the model and used to evaluate the efficiency of the entire drop shipping process. For this reason, drop shipping should involve as few participants as possible who are able to sustainably/continuously participate in the supply chain, creating value for all parties (already presented by Figure 3 and now additionally in Figure 4). There is another issue that needs to be discussed. In any drop shipping scheme, there can be different suppliers identified as follows:

- supplier to wholesaler is a producer,
- supplier to retailer (drop shipper) is a wholesaler,
- supplier to customer/consumer is a retailer, which, as it is stated, is closest to the function of a drop shipper.

When additional parties are involved in the drop shipping process, such as additional suppliers, retailers, etc., value is created for each of them, which means that the value created in the drop shipping process is negatively correlated with the number of parties involved. Fewer members/parties mean more value and therefore direct intermediation between a producer and a customer is the best option for a drop shipper (Figure 4). This also means that the drop shipper will strive to fulfil orders in large volume, although creating intermediation fee that is acceptable to the individual customer. Customers will not accept high drop shipping fees, of course, and the drop shipper has to encompass variety of market products. Drop shippers may also be "rewarded" by the manufacturer of a product if the drop shipper manages to take an entire shipment off-the-production-line products without warehousing it and distributing it directly to customers. This occurs in a smaller number of cases, but is likely.

4 Efficiency parameters for optimization of the drop shipping model

Previous drop shipping research is mostly focused on drop shipment optimization, i.e., creating the most efficient relationships among various drop shipping variables that include: a) delivery time, b) inventory threshold/inventory rationing, c) customer demand (behaviour), d) sales/profit, e) unnecessary process costs, f) total time rationing/speed of order fulfilment. Drop shipment management is about developing the ability to fulfil an order by simultaneously achieving a short delivery time and avoiding inventory costs. When Khouja presented his model for optioning drop shipping for an e-tailer, he considered 14 significant variables (Khouja, 2001, p. 111), 9 of which related to the unit distribution problem. Ayanso, Mustapha and Nair (2006) considered 15 variables in analysing inventory rationing in drop shipping, of which 6 variables were related to time of executing the delivery. It would be wrong to exclude any of the drop shipping variables as the most important. However, some variables have more importance to drop shipping efficiency than others, namely two are analysed below:

1. Time is synonymous with the speed of order fulfilment, the shortest time period to find the appropriate manufacturer and make the fastest delivery i.e. the efficient delivery. Therefore, speed becomes the critical variable for efficient drop shipping. Time is critical for all parties in drop shipping and can be converted into a specific value. Efficient drop shipping in terms of time saves customer time which is precious, the drop shipper can move on to their next orders very quickly, the manufacturer does not have to deal with market issues as much, wholesalers with warehouses can plan their distribution in advance or make an arrangement with a drop shipper to prepare space or conditions to store certain products for some time. Drop shipping saves time and other resources, which translates into financial results and business outcomes, such as lower costs. The availability of the so-called social networks for ordinary customers as potential buyers is also a time variable that becomes more than relevant for drop shipping. There is no social network today that does not have pop-up ads for online purchases. All of them include offers for ″fast″ drop shipping services.

2. Inventory Rationing – Drop shipping is very much concerned with inventory rationing, perhaps one of the fundamental keys to drop shipping working well, because inventory rationing requires optimisation of drop shipping supply chain as a whole. In his paper Hanser et al. (2020) considers eventual disruptions to the inventory management system and states that even a roadblock can lead to a disruption in the drop shipping supply chain. These disruptions mean that more time is needed for delivery, the drop shipper looks for new delivery routes or even new suppliers, which confront the drop shipper with additional logistics management, new costs and time consumption Therefore, Hanser et al. present the implementation of order fulfilment plans that split the demand in a partial drop shipping system, thus sharing the risk of supply chain disruption. Inventory planning is a very good option that allows drop shipper to plan in which point of his supply chain a product will exactly be and for how much time. This reduces the risks of bad shipments significantly.

In drop shipping (i.e. business in general) more time losses equal more cost. Main challenge for a drop shipper is how to harmonize inventory turnovers with demand for a particular product; especially when production cannot fulfil its orders and supply the market with the optimal quantities. Of all of the drop shipping parameters, only two can be directly translated into money, and those are 1) time and 2) cost. Anything that bypasses the already optimised drop shipping supply chain adds time and cost losses. This degrades the value for the costumer and the drop shipper that has been set in the original supply chain conditioning the efficiency of drop shipping model, i.e. its supply chain. To evaluate the efficiency of the drop shipping model, Creyts and Weisskopf (2016) optimise the costs in the model using the Activity Based Costing (ABC). Indirect costs that are not directly observable in the model are considered, which gives more value to the efficiency analysis. The efficiency variable is based on the cost per order (in addition to the fixed cost of operations) and is compared to the variable cost of fulfilling the order. In ABC cost analysis, Creyts and Weisskopf presented the following incremental indirect cost activities: *Goods receipt/warehousing* refers to the receipt and sorting of goods at the point of arrival. Moreover, these goods are transferred to a storage area for drop shipping activities. The next activity is *replenishment*, where goods are transferred from the storage area to a picking area. *Each picking* is the third activity in the process and its function is to pick lines of products from the picking area. The fourth activity, audit and manifest, is used to cheque that the orders and product lines are correct so that the process can move to the next phase. Overall, we respect here the use of Creyts and Weisskopf's model to justify the efficiency variables of drop shipping (Figure 5, 2016, p. 18-20).

The productivity measures of the ABC model are used because they are consistent with the simplicity of the drop shipping supply chain. Creyts and Weisskopf (2016) divided activities into two main cost categories: 1) packaging material costs and 2) labour costs. These two are determined by labour productivity and efficiency. Figure 5 shows the assumed cost recovery for individual seg-

Cost Driver	Units per hour (UPH)	Effectiveness
RECEIVE&PUTAWAY	20	0,78
REPLENISHMENT	60	0,78
PICKING	125	0,78
AUDIT & MANIFEST	50	0,78
PACK	80	0,78

Figure 5 Sequence of drop shipping events related to efficiency measures based on the cost drivers

Source: Adjustment according to Creyts, C. A., Weisskopf , N.: *E-Commerce Drop shipping: Building a CPG Supply Chain*. Thesis: M. Eng. in Logistics, Massachusetts Institute of Technology, Supply Chain Management Program, (2016), p. 18-20.

ment processes in one hour. The segments were studied assuming an efficiency of 0.78 units processed per hour (UPH, average), which determines labour productivity and indirectly their costs. Creyts and Weisskopf assumed that consumers usually order only one item at a time, and labour hours were assumed to be flexible, with new workers being hired at any time. Weekly working hours were assumed to be 40 hours, while labour wages were assumed to be $22 per hour. Material costs were assumed to be $0.79 (11x6x4 inch corrugated box with tape) or $ 1.24, (18x12x11 inch box and with tape). The authors assumed that a firm could use the same logistics firm to distribute all products from the warehouse. Last but not least, model did not consider lost sales, but only simulated 100% of e-commerce orders fulfilled by the retailer.

In addition to the parameters of quantitative efficiency for drop shipping, there is also qualitative efficiency in terms of the suitability of drop shipping for SME development. As an entrepreneurial model, drop shipping has many advantages for the ease of starting a small business. Threlfall (2011, p. 11) cites low initial capital as a fundamental advantage for entering the drop shipping business. Youderian and Hayes (2013, p. 2) highlight the advantage of starting an e-commerce business without the need for pre-invested capital in inventory, which significantly reduces future risks. In a comparison presented by Li, Yijian and Xiaolong (2011), the traditional model, which required retailers to invest a lot of capital and take responsibility for packaging and distribution, was rated poorly in contrast to the advantages of online drop shipping. Drop shipping only incurs costs when the product is actually purchased/ordered online. The retailer does not accumulate products that they do not know they will sell. The initial supplier (manufacturer or a wholesaler) takes responsibility for inventory, which means you can do business without investing heavily in inventory. Financial considerations aside, there are very few, if any, physical constraints here that might prevent a retailer from entering the business. Most products are not subject to the exclusive rights of a particular company, but are a subject of commerce. Operating over the Internet provides business flexibility, not being restricted to a particular location, there is free and constant communication between entities in the supply chain so that business operations always have continuity. According to Randall, Netessine and Rudi (2002, p. 55), drop shipping offers the possibility of diversification, which leads to an expansion of the product range without committing to a particular activity or product. The cost of market research as well as business analysis is kept to a minimum through online platforms that collect data from potential customers (as shown in Chapter 5). Free choice of suppliers also contributes to lower business risk. Chopra and Meindl (2013, p. 96) show a reduction in risk when a particular supplier cannot supply the market, which can lead to a pooling of inventory from multiple suppliers, breaking demand into at least two parts, also known as *risk pooling*. Also, nothing can prevent the drop shipper from finding a new supplier that can fulfil the order at any time. Our goal is to represent all of these advantages in a drop shipping model efficiency simulation that is presented in the following chapter.

5 Covid-19 impact on drop shipping supply chain efficiency

COVID-19, also known as coronavirus had a significant impact on e-commerce market and its participants in 2020 and continuing to do so in 2021. Some companies sought to gain an advantage by selling face masks and protective

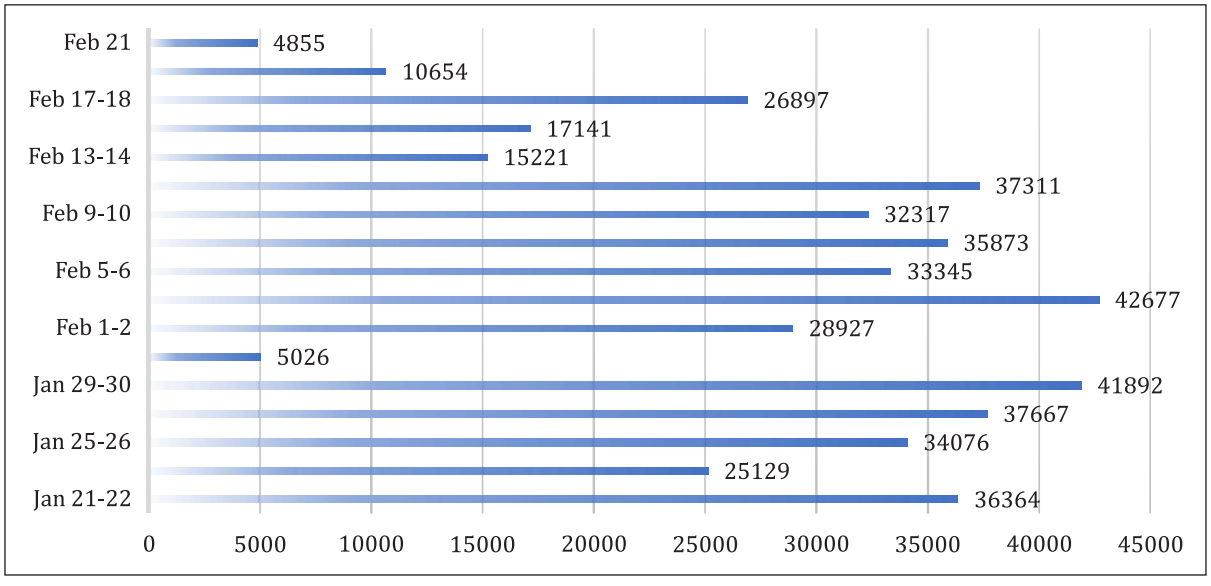

Figure 6 Daily container traffic of China and the USA in 2020 expressed in TEU

Source: Author's creation according to Statista Research Department, Daily containerized cargo traffic from China to the U.S. 2020, (2021)

suits, as well as everyday goods, but the majority of participants were already facing lasting consequences caused by the deadly virus. In addition, Chinese suppliers closed their factories and warehouses indefinitely, and there were distribution problems as airlines and shipping companies experienced traffic delays. According to Statista Research Department (2021, Figure 6), the volume of containers transported from China to the U.S. fell from 37,311 TEUs to 4,855 TEUs just in month and a half, i.e. between February 11th and 21st of 2020. This trend reflects the significant disruption caused to global supply chains and markets by the COVID-19 pandemic.

Although many assumed that due to the change in human routine, there would be greater demand for internet products, it, unfortunately, was not the case. All this caused great pessimism among entrepreneurs, and most of them decided to suspend their business. Figure 7 shows the data on consumption and total website traffic in France concerning the activities they perform. Besides, observations were collected between 16 and 23 February

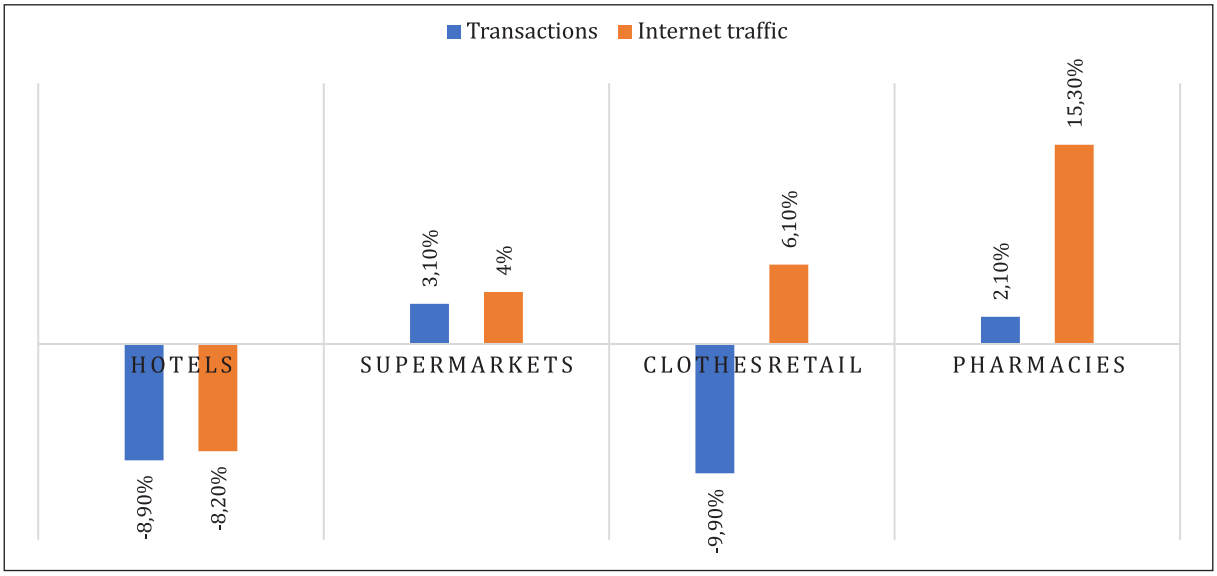

Figure 7 Impact of COVID-19 on e-commerce in France in March 2020

Source: Author's creation according to Content Square: l'impact du COVID-19 sur l'eCommerce, (2020)

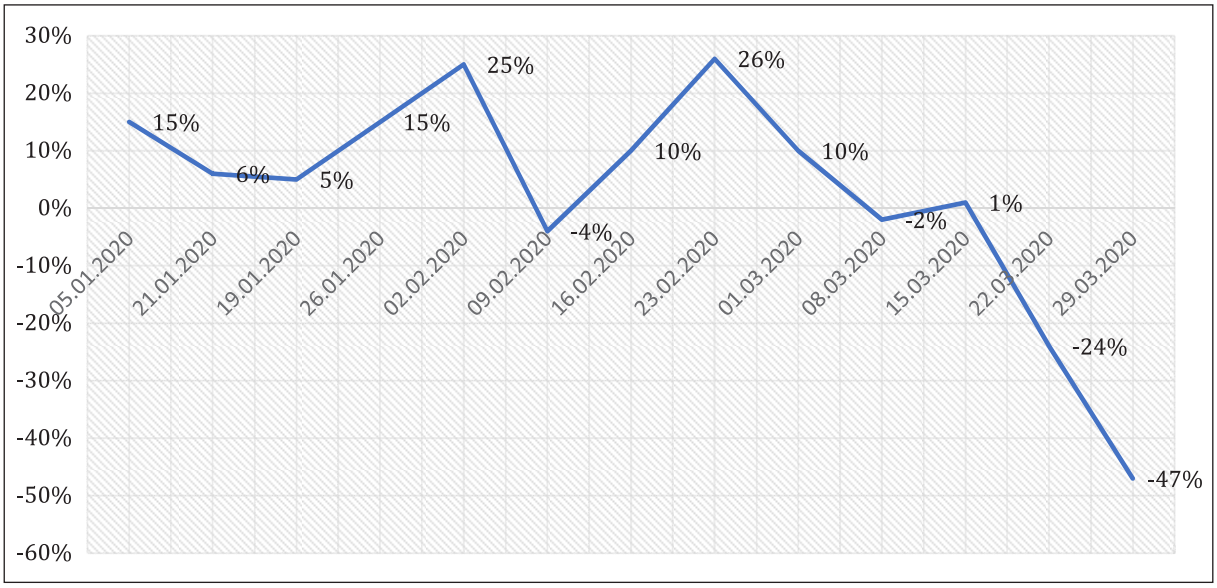

Figure 8 Trend of internet orders in the UK

Source: Author's creation according to Sabanoglu T.: Weekly trend in year-on-year growth of online retail orders in fashion and accessories category in the United Kingdom from January to April 2020 (2020)

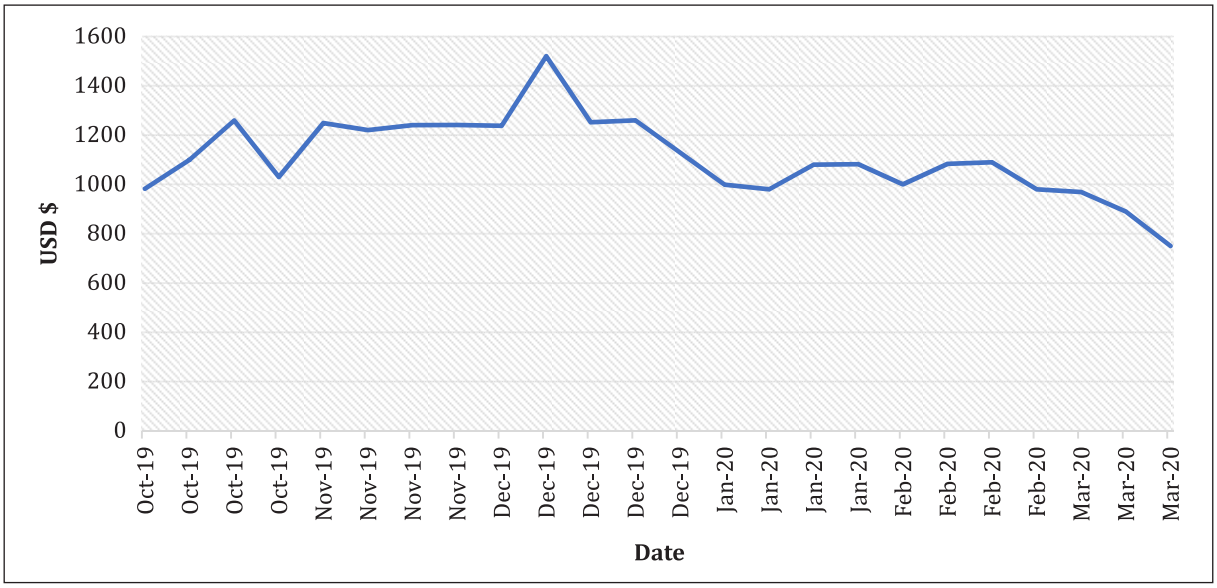

Figure 9 Entrepreneurs' spending on advertising in USD

Source: Author's creation according to Aquino A.: *Social Media Challenges for Ecommerce Business in Coronavirus Crisis*, (2020)

2020 and compared with January of the same year. The survey was conducted by Content Square (2020).

As can be assumed, it was mainly online supermarkets and pharmacies that recorded an increase in sales. On the other hand, fashion and hotel stores experienced an exceptional decline in sales and bookings. It is important to point out that during this period, the demand for inelastic products was at its peak, but people's scepticism as well as the new routine they were living in can be noticed by observing that fashion brands' web traffic was 6.1% higher, while their revenue dropped by 9.9% in one month.

The pandemic situation was extremely unfavourable for the development of any trade, along with the model on which this article is based. The following graph shows the data from Sabanoglu (2020) on the weekly trend of online orders in the UK and accessories category. The survey is conducted from January to March 2020. Between January 5 and March 15, 2020, the growth rate of internet orders in the UK ranged from 26% to -4%. However, after March 15, 2020, the percentage change started to decline and the largest decline was recorded after March 29, 2020, when the UK government announced measures against COVID-19.

In addition, Aquino (2020), in Figure 9, shows the monthly spending of US entrepreneurs on advertising. The fear of declining sales is also reflected in the fact that consumption in March 2020 was as much as 40% lower compared to January of the same year and showed a negative trend. This situation is expected to continue until June, but on the condition that the pandemic is not eradicated. This can further explain the uncertainty of e-commerce as well as drop shipping investors that did not want to take the risk of the adverse situation. Furthermore, this article proposes lower prices of advertising on social media. Through this incentive, entrepreneurs and drop shippers would be incentivised to invest in their exposure and could bring back the competition to the pre-crisis levels more comfortably.

This chapter has presented the current challenges that the pandemic of COVID-19 posed to the current entrepreneurs. As can be seen, in 2020, the complete supply management of goods and services has had a stalemate. Firstly, the container traffic between China and the USA was under great pressure as global measures of preventing COVID-19 disease came into power. The problem of container traffic may pose a significant challenge since, without governmental action, the distribution costs may increase, which will, in the end, affect the suppliers and merchants. Secondly, from the analysis of online orders in France and the UK, it can be seen that only a few types of businesses have an increase in internet transactions. This may be further explained by the situation in the UK where customers' uncertainty and companies' supply chain management have resulted in a decrease in orders in the fashion and accessories industry. Finally, as seen in Figure 9, where spending on advertisements had a reduction, this article proposes a more significant deflation of advertisement prices to incentivise investors, especially SME's, to enhance competition in the market.

6 Conclusion

Entrepreneurship on the internet, as well as the drop shipping model, has significantly changed both the routine of consumers and the way businesses operate. Considering the cost that the traditional delivery model incurred and the amount of capital required, drop shipping gave a rev-

olutionary approach to conducting entrepreneurial activities and an insight into the contemporary supply chain concept. Drop shipping has enabled entrepreneurs of all types to start, build and improve their businesses, even with little initial capital. The development of an activity-based cost model (ABC), which provides a clear view of the costs of each unit in the entire supply chain, shows a more obvious efficiency of the drop-shipping model than the traditional one. In addition to drop shipping, new methods in marketing and Google tools have been developed to provide a better understanding in terms of conducting consumer management or selecting the product the company wants to go to market with. Also, a supply chain entity like a supplier has become an essential part of a business in terms of inventory management and distribution. Selecting a supplier is crucial for any business and the business owner himself has to consider the characteristics of each supplier he comes in contact with. Of course, every business also brings with it a legal aspect that the business must accept. They have to impose all the rights and responsibilities on their customers in terms and conditions, warranties and returns and delivery and act accordingly throughout the business. COVID -19, a pandemic that has caused significant imbalance in the global economy, has also enabled greater business through online commerce. Since its introduction, more internet traffic has been noticed due to the fact that the company's stores were no longer physically accessible. Although they recorded a high turnover of online business, entrepreneurs also recorded a decline in sales as a result of inability to distribute, customer scepticism, and even business distrust. The pandemic gave an example of how business in the virtual world can replace the real one. Therefore, the future will show the extent to which business is driven by information technology.

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