

# The Impact of Coronavirus (COVID-19) Pandemic on E-commerce

**Fathia Suryaning Rindita, Emad George Issa Majlaton, Akanksha Singh, Ibrahim Namazov, Andrea Tick**

Óbuda University

ayarindita@stud.uni-obuda.hu, emadmajlaton@stud.uni-obuda.hu, ,  
akanksha@stud.uni-obuda.hu, ibrahimnamaz@stud.uni-obuda.hu,  
tick.andrea@uni-obuda.hu

*Abstract: COVID-19 has affected everyone's daily lives. People in this world have been asked to stay at home to slow down the pandemic. The key purpose of this research is to explore the impact of coronavirus (COVID-19) pandemic on online business or e-commerce. Coronavirus, one of the known deadly viruses, has already taken the lives of many in almost half of the countries. Due to restrictions and lockdowns the countries' economic growth has slowed down. However, some business types could take advantage of the situation and the pandemic created new business opportunities and strengthen digital forms of business transactions. The pandemic has almost shaken up all types of businesses including the e-commerce business on a massive scale. This research aims to understand and determine the impact of coronavirus (COVID-19) pandemic on online business activity (B2C). Secondary data analysis as conducted. The research showed that some categories like supermarket and medical e-commerce exploded as shoppers went online while other categories like jewelry and luxury, fashion and apparel, auto or tools, and travel categories were going down and lost business to a great extent.*

*Keywords: business, coronavirus, e-commerce, online shopping, pandemic*

## 1 Introduction

The coronavirus (COVID-19) has a big effect on the economy in this world. It has changed the purchasing habits for the world within a month. Most countries were on lockdown and people had to stay at home and it has pushed consumers to head to online shopping. This affects the demand and uncertain supply chain issues for the e-commerce industry. The World Trade Organization (WTO) [1] has indicated that it is the right time for e-commerce to save the world economy and that it is to intervene with vigor and vitality, and to prove e-commerce of its importance and effectiveness in the field of trade and online shopping. The COVID-19 pandemic has made it clear that e-commerce can be an important tool/solution for consumers in times of crisis, and that it is also an economic driver, including the potential for small businesses as well. However, the pandemic has highlighted not only the importance of digital technologies in general, but also several vulnerabilities across the world.

E-commerce in various regions has been affected by the new COVID-19 pandemic. Countries in which the highest number of cases were recorded included Italy, Spain, Germany, France in Europe and China in Asia during the first wave of the pandemic. The Chinese company Alibaba, a giant provider of e-commerce services, has struggled to maintain growth rates during the economic slowdown in its domestic market and faced the uncertainty of coronavirus outbreaks. Major companies affected in the market include Alibaba Group Holding Ltd., Amazon.com, Inc., Qoo10 Pte. Ltd., JD.com, Walmart Inc., Shopify, Rakuten Group, eBay Inc., and others [2]. For instance, Amazon made some huge investment in one-day shipping that has not yet been compensated. In 2019 its net income decreased by 26% and freight costs increased by 46% [2].

This research is conducted in order to find out how big the impact of coronavirus COVID-19 on companies offering online shopping possibilities has been. Furthermore, the researchers analyzed how big the impact from the pandemic situation to some of the biggest e-commerce companies in the world is by comparing revenue figures of such companies before and after the first wave of the COVID-19. The research also strives to look into whether the pandemic situation really impact consumer's buying habit by comparing data before and after the first wave of the pandemic. Moreover, it aims to reveal which e-commerce sectors were greatly impacted. The research applied secondary research methods by using and analyzing quantitative secondary data shared and published by large think tanks and well-known data providers.

This global pandemic is very different to those of the past, such as Spanish Flu after the First World War for example. Now, as the global economy begins to contract after the effects of the unprecedented global lockdown, people, businesses and economies adapt to the "new normal". For better or for worse, the COVID-19 pandemic has brought information and communications technologies to the forefront of human life. It has also amplified well-known problems, such as the "digital divide", problematic internet use, and market failures [3].

The paper is organized as follows; it introduces some earlier research in the literature review, then in chapter 3 gives some details on data collection process and research methods, then in chapter 4 analyses the data and finally in chapter 5 draws conclusions about the results. The results revealed that despite the continuous growth in e-commerce, the sector still has noticeable potentials and supposedly the rate of e-commerce and online shopping will increase and will gain a larger market share in the future.

## **2 Literature Review**

Electronic commerce or mostly known as e-commerce is the buying and selling of goods and services on the internet. Other than buying and selling, many people use internet as a source of information to compare prices or look at the latest products on offer before making a purchase online or at a traditional store. E-

business is sometimes used as another term for the same process. More often, though, it is used to define a broader process of how the internet is changing the way companies do business, of the way they relate to their customers and suppliers, and of the way they think about such functions as marketing and logistics. For the purpose of this study e-commerce is taken to mean doing business electronically [4].

Internet and e-commerce are closely wrapped towards developed countries. But they can achieve tremendous benefits to developing countries if it is applicable as an ideal business purpose. Ecommerce is a revolution in business practices. The term commerce is viewed as transactions conducted between business partners. Electronic commerce is an emerging concept that describes the process of buying and selling or exchanging of products, services and information via computer networks including internet [5].

Previous studies find that the dominant two motivations for shopping in physical stores instead of shopping online are immediate possessions and social interactions, while online shopping tends to be substantially more convenient and economical [6]. Online shopping offers greater flexibility in terms of time, location, and product variety [7]. One potential barrier that makes many consumers hesitant to adopt online shopping might be the learning cost. Consumers might have preferred to shop in physical stores not only due to the desire for immediate possessions but also because they have been averse to investing time into learning how to shop online. In this aspect, the pandemic can be a trigger that induces the late majority, who have been averse to the new way of shopping, to finally shop online [8].

According to the investigation that has been done by Jiangxin and Chenyang (2020) [9] about the impact of COVID-19 on China's e-commerce industry, the significance of e-commerce for the prevention and control of the pandemic situation in China during the pandemic period is extraordinary. The development of mankind is accompanied by various dangers and struggles. The impact of the new coronavirus epidemic situation is not only on people's lives and e-commerce, but the end of the epidemic situation does not mean the end of the crisis. In the future, human development will still face various crises. Only by relying on people's wisdom and adopting scientific measures can we resolve the crisis and promote the continuous development of society [9].

New customers rather adapted to the new life situation including the adoption of e-commerce systems by developing new shopping habits and behaviors. It is expected to have a direct and permanent change in the market. According to a survey that took place in the United Kingdom in 2021 by Hillier [10], forty percent of the interviewed customers agreed that they would continue with online shopping in the future even when COVID-19 comes to an end. This will have a direct effect on the development of the widely used online platforms to satisfy customers' needs.

According to the survey by Ecommerce Europe [11] in January 2021, the majority of respondents believe that retail stores' online sales increased during the lockdown, with the majority claiming that retail stores with an online presence ('brick-and-click') were influenced in the same way as pure online players, and some claiming that the positive effects for retail stores' online sales were even stronger than those for pure players. E-commerce has been successful in assisting traditional retailers in adapting to new regulations and staying in business.

E-commerce retail sales show that COVID-19 significantly boosts e-commerce. Sales in e-commerce are expected to reach \$6.5 trillion by 2023 [12]. Both in the developed and developing countries such as Malaysia, Singapore, Thailand, and Pakistan, the number of customers and buyers participating in e-commerce has increased. In Pakistan for example e-commerce launched its services and shopping opportunities in the early 2000 but seriously underperformed, only 3% of the whole population used online buying possibilities. However, during the pandemic a gradual increase of 10% in daily record in e-commerce in Pakistan has been reported, while in parallel the number of internet users is also growing by 15% on a daily basis. What really gives an impetus to e-commerce is that 30-40% surge the demands of products [13]. According to Meyer [14], e-commerce sales are up by 25%, shoppers get orders with less contact (up by 62%) and retails must pivot products, sell what their customers are really buying. Moreover, Common Thread Collective [15] detected a 28.48% growth in e-commerce sales after the outbreak of the pandemic.

### **3 Material & Methods**

The research focused on secondary research methods and analyzed secondary data from multiple sources. Secondary data were collected from published books, journals, research papers, magazines, daily newspaper, internet and official statistical documents. Analysis of secondary data can include any data that are examined to answer a research question [16]; it can be used in several ways in the context and conduct of a research project. In this research, the research problem has been identified first, then a strategy was developed to arrive at the solutions for the research problem and to find answers for certain research questions, to identify the potential problems, and to obtain the required background information while improving the credibility of the study [17].

The research applied quantitative method and applied time series analysis; analyses were conducted on data from existing data sources. It involves collecting facts and figures and often results in numerical, structured data. Quantitative data are used when a researcher is trying to quantify a problem or address the "what" or "how many" aspects of a research question. It is data that can either be counted or compared on a numeric scale [18]. Data used for this study purpose were collected from the World Bank [19], UNCTAD (United Nations Conference on Trade and Development) [20], netcomm suisse e-commerce association [21], and many other authorized websites.

## **4 Results and findings**

### **4.1 Growth of e-commerce**

People have adopted social distancing as a means of slowing the pandemic's progress, which has naturally resulted in a decline in brick-and-mortar shopping. That implies that online shopping would likely increase as people turn to online platforms, web shops and e-commerce to purchase products they would usually buy in person. Although e-commerce sales are not boosting all over the world, different economies, different countries and different people responded differently to the pandemic situation, restrictions and regulations. Some sectors deep dived while some industries are experiencing substantial increases with the extension to online platforms and could take high advantage of the situation. This is particularly true for online sellers of groceries and household goods. Traditional brick-and-mortar groceries moved to online platforms, opened web shops and offered household deliveries. Moreover, new, exclusively online groceries and food stores started their operations. Furthermore, delivery services also opened up, offering home deliveries based on submitted shopping lists given by customers (e.g. kifli.hu). As an example, for household goods, sales of traditional household staples have quadrupled on JD.com, China's largest online retailer, compared to the same time last year [22]. According to a survey conducted by Engine [23], people are spending 10-30% more time online on average despite the fact that a large proportion of them believe in a recession for the following year [23]. The following subchapters present how coronavirus affected the various shopping categories during the first and second wave of the pandemic, focusing on groceries, subscription and convenience services and other e-commerce categories like cleaning, baby products, jewelry and luxury or toys and games.

#### **4.1.1 Grocery E-commerce**

In the second week of March 2020, supermarket e-commerce exploded as shoppers were locked out from physical stores, or restrictions were imposed on them regarding schedule and maximum number of shoppers in the retail outlet, so they went online to find items that weren't available in their local grocery stores. Figure 1 below [22], based on Rakuten Intelligence data, shows an almost two and a half times increase in grocery-related e-commerce during the second week of March 2020 compared to the same period of the previous year.

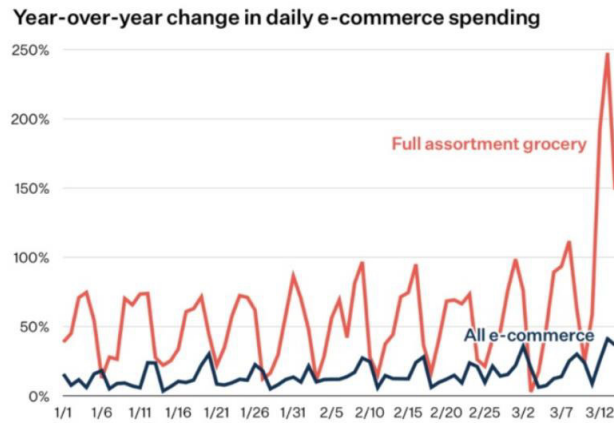


Figure 15  
Grocery-related e-commerce growth [22]

Till then the year-over-year (YoY) change in daily e-commerce spending for grocery product shows a balanced performance, similarly to all e-commerce transactions. The trend for all e-commerce as well as for grocery-related e-commerce shows a slight upward movement experiencing no peculiar peaks or valleys.

#### 4.1.2 Subscription Services

Though e-commerce revenues do not appear to be soaring as quickly as one would expect, there are a few exceptions. One of these is subscription and convenience services, which have already seen substantial sales and conversion rate increases in recent years. A performance branding firm (WITHIN) [24] has monitoring and evaluating data from selected companies YoY to see how COVID-19 affects e-commerce in a variety of industries. The performance percentage changes are shown in Figure 16 [22] showing that both revenues and conversion rates experienced a drastic growth at the outburst of COVID-19 worldwide. The conversion rate is a highly significant indicator in e-commerce since it shows the percentage of visitors to the websites that complete the desired goal, namely a conversion out of the total number of visitors. It shows how many transactions were finalized and completed. High conversion rate is a good indicative of successful web design and well-structured web shops since it means that people find what they want, and they can easily complete the deal.

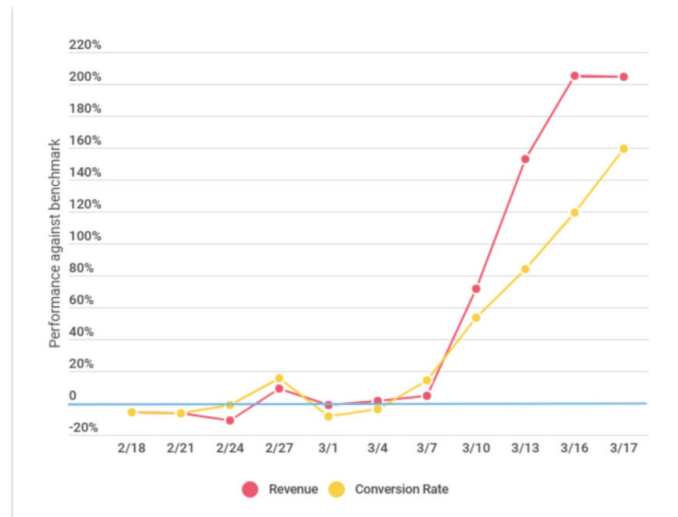


Figure 16

*Changes in Subscription Service Performance in February and March 2019 [22]*

Right after the outburst of COVID-19 in Europe and the lockdown in several countries in March 2020, the revenues and conversions rates skyrocketed compared to the same period of the previous year. The YoY change shows a 200% change in case of revenues by 16 and 17 March 2020, and the YoY change for conversion rates jumped to 160% by the middle of March 2020. Although the gap between the revenue and the conversion rate percentages changes compared to benchmark opened in the observed period, the beneficial effect of COVID-19 on subscription and convenience services could be detected.

#### 4.1.3 Other e-commerce category

In addition to groceries, subscription and convenience services, e-commerce encompasses a wide range of other products and services from a variety of categories. The COVID data on e-commerce shopping activity have been updated frequently by Common Thread Collective [15], selected sectors are examined as seen in Figure 17.

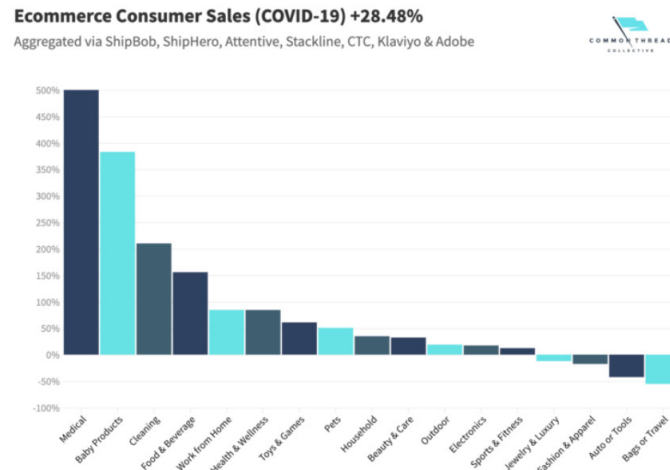


Figure 17

*Changes in e-commerce consumer sales [22]*

According to Figure 17 the medical product sector seems to be the real gainer of the pandemic, consumer sales soared by 500% compared to the same period of the previous year. Although e-commerce output is not necessarily improving or declining, segmenting the data by vertical reveals more details. Baby product sales also jumped by over 350% compared to the same period of the previous year while food and beverages (more than doubled) follows cleaning services, which increased by around 150% compared to the same period of the previous year. On the other hand, business segments that lost on the pandemic situation were the Jewelry and Luxury sector, the Fashion and Apparel sector, the Auto and Tools and the Bags and Travel sectors. People went buying online exclusively such products that were necessary for their everyday life and they seem to have avoided buying luxury products or products that support travelling.

On the other hand, according to Meyer [14] sales of gifts and specialty grew by 18.9%, home and garden sales by 8.4% and apparel and accessories by 14.3% but people did not buy swimwear (down by 62% YoY), luggage (down by 77% YoY) or cameras and equipment (down by 64% YoY).

The following subchapters deal with selected type of businesses in the retail sector.



## 4.2 The Impact of COVID-19 Pandemic on Big Electronic Commerce Company

Since 1 December 2019, coronavirus has been impacting the entire e-commerce market worldwide until this day, and consequently it has changed the nature of business. Since the COVID-19 virus outbreak, online shopping demand has increased exponentially. The main reasons are shutdowns and voluntary or mandatory quarantine decisions that occur with the disease becoming a global pandemic. With the increasing number of cases, there has been an increase in these closures and quarantines. People who have and do prefer online shopping and are used to do their shopping online might decide to return to stores and do their shopping in physical stores when numbers of infected people decrease at specific periods, measures relax, and closures reduce. However, the comfort of online shopping, the home deliveries, the increasing number of pick-pack point combined with the expectedly strengthening home office practices imply that e-commerce could stabilize at the achieved performance and will not deep dive in the future after the pandemic period.

According to the research done by Bhatti *et. al.* [13], 52% of consumers avoid going to brick-and-mortar shops and crowded areas. Furthermore, 36% of them avoid brick-and-mortar shopping until they get coronavirus vaccine. Coronavirus has a different size impact on different products meaning a high or even a low impact on the sales performance of commodities [25]. Overall sales of e-commerce increase because of this virus, people avoid going out, they keep social distance and tend to buy from home, work from home such. As an example, Walmart grocery – a major market player in the USA – managed to increase its e-commerce sales by 74%. Moreover, the media usage also increased in this time, e.g. Facebook and Google have updated their features to connect more people in single time. Facebook introduced messenger for 44 people that is competing to Zoom in 2020. Similarly, Google also launched updated version of Google Meet [26].

Table 5 [20] shows the revenue of top retail e-commerce companies worldwide (“webwide”). The biggest revenue is 4,059 million USD for Amazon, followed by Ebay with its 1,227 million USD, and the third biggest one is from Rakuten Japan with 804 million USD.

Table 5

Top retail e-commerce websites in COVID-19 pandemic [20]

| No. | Retail Website | Millions | Millions |
|-----|----------------|----------|----------|
| 1   | Amazon.com     | 4059     |          |
| 2   | Ebay.com       | 1227     |          |
| 3   | Rakuten.co.jp  | 804      |          |
| 4   | Samsung.com    | 648      |          |
| 5   | Walmart.com    | 614      |          |
| 6   | Apple.com      | 562      |          |
| 7   | AliExpress.com | 532      |          |
| 8   | Etsy.com       | 395      |          |
| 9   | Homedepot.com  | 292      |          |
| 10  | Allegro.pl     | 272      |          |

Upon analyzing the top e-commerce retailer, Amazon, which generated almost three times higher revenues than the second largest Ebay.com (Table 5) during the pandemic in 2020 (Table 5), the following was found about its retail performance. Figure 18 shows that from 2004 to 2020 Amazon revenues increased annually, following an exponential pattern (Eq. 1).

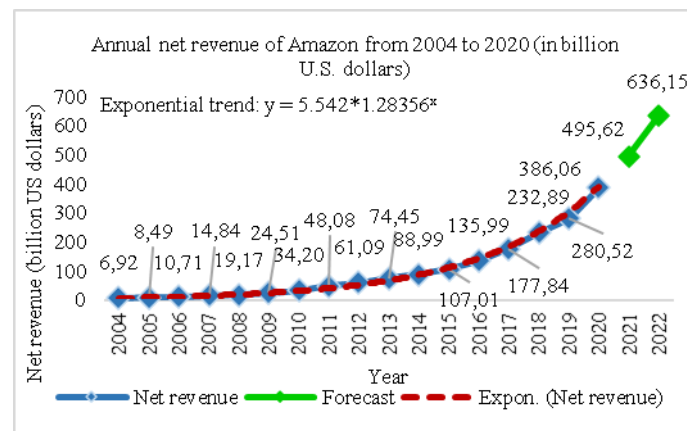


Figure 18

Annual net revenue of Amazon from 2004 to 2020 (developed by authors based on data at Statista.com [27])

$$\text{Exponential trend: } y = 5.542 * 1.2836^x \quad (1)$$

The most significant and a drastic change can be traced from 2019 to 2020 when COVID-19 outbreak resulted in country lockdowns and sales rapidly shifted from

personal to online sales. According to the exponential trend Amazon succeeded in increasing its revenue by an annual 28.356% between 2004 and 2020. Provided that further COVID waves follow and restrictions will be further implemented Amazon can expect a revenue of 495.62 and 636.15 billion USD in 2021 and 2022, respectively, according to the exponential trend.

Figure 19 below shows the net sales generated by Amazon from 2017 to 2020 in more detail. The observed data shows a 3.014 billion USD (4.85%) quarterly increase in the observed period. According to the linear trend applied, the net sales at Amazon would increase by a quarterly 4.189 billion USD and despite the fact that only quarter 4 shows extreme high profits, the company's net sales volume grows steeply and rapidly. Thanks to the pandemic situation both the company's annual net revenue and net sales grew significantly, annual net revenue followed an exponential trend while net sales followed a linear trend. The multiplicative and the additive trend analyses gave similar results for the company's net sales behavior and forecast, which allows the authors to present the additive model in the paper. The results show that for the coming four quarters (2021. Q3. – 2022. Q2.) Amazon can expect net sales over 100 billion USD in each quarter 107.11, 128.29, 113.35 and 118.96 billion USD, respectively.

Figure 19 displays the actual net sales figures in the observed period, the linear trend, the seasonally adjusted time series, the forecast figures and the trend-cycle series.

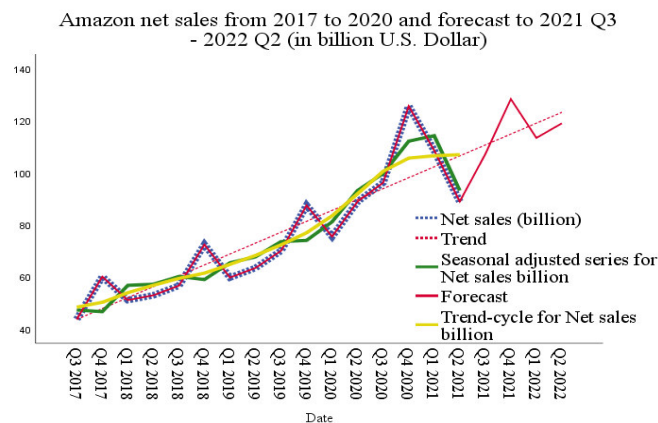


Figure 19  
*Amazon net profit from 2017 Q3 to 2021 Q2 and forecast for 2021 Q3 – 2022 Q2*  
*Developed based Amazon figures [28] [29]*

Net sales follow seasonality having the largest net sales figures in the fourth quarters, furthermore, it shows a continuous upward trend. However, the seasonally adjusted series detects that net sales jumped high from the second quarter of 2020 and a reasonable decline can be seen between the first quarter and the second quarter of 2021. The random effect can also be seen in the time series (seasonally adjusted time series). The smoothed trend-cycle time series displaying only the trend and the cycle factors while leaving out the random effect, is even more smoothed. It also implies an upward trend, which is the consequence of not only the pandemic but the cycle factor as well.

Table 6 includes the observed data, the moving average, the seasonal differences (billion USD), the error component and the seasonally adjusted as well as the trend-cycle series. The observed net sales data remain under the trend for three quarters, seasonal differences being -3.54, -5.67 and -4.25 billion USD on average - while quarter four figures are above the trend ( $s_{IV}=13.46$  billion USD). Net sales figures skyrocketed in the fourth quarter of 2020, then dropped drastically in the following two quarters. The 2020 figure can be linked to not only the seasonal sales but to the second and the third waves of COVID-19.

Table 6

Amazon net sales time series decomposition using additive modelling (Source: developed by authors)

| Seasonal Decomposition        |                 |                       |                                                          |                 |                            |                             |                             |
|-------------------------------|-----------------|-----------------------|----------------------------------------------------------|-----------------|----------------------------|-----------------------------|-----------------------------|
| Series Name: Profit (billion) |                 |                       |                                                          |                 |                            |                             |                             |
| DATE                          | Original Series | Moving Average Series | Difference of Original Series from Moving Average Series | Seasonal Factor | Seasonally Adjusted Series | Smoothed Trend-Cycle Series | Irregular (Error) Component |
| Q3 2017                       | 43.70           | .                     | .                                                        | -3.54           | 47.24                      | 48.33                       | -1.09                       |
| Q4 2017                       | 60.05           | .                     | .                                                        | 13.46           | 46.59                      | 50.18                       | -3.59                       |
| Q1 2018                       | 51.04           | 53.53                 | -2.49                                                    | -5.67           | 56.71                      | 53.88                       | 2.83                        |
| Q2 2018                       | 52.89           | 56.68                 | -3.79                                                    | -4.25           | 57.14                      | 56.73                       | .41                         |
| Q3 2018                       | 56.58           | 59.31                 | -2.73                                                    | -3.54           | 60.12                      | 59.40                       | .72                         |
| Q4 2018                       | 72.38           | 61.70                 | 10.68                                                    | 13.46           | 58.92                      | 61.39                       | -2.47                       |
| Q1 2019                       | 59.70           | 64.69                 | -4.99                                                    | -5.67           | 65.37                      | 64.77                       | .61                         |
| Q2 2019                       | 63.40           | 68.25                 | -4.85                                                    | -4.25           | 67.65                      | 68.18                       | -.53                        |
| Q3 2019                       | 69.98           | 72.10                 | -2.12                                                    | -3.54           | 73.52                      | 72.26                       | 1.26                        |
| Q4 2019                       | 87.44           | 77.26                 | 10.18                                                    | 13.46           | 73.98                      | 76.89                       | -2.91                       |
| Q1 2020                       | 75.45           | 83.72                 | -8.27                                                    | -5.67           | 81.12                      | 83.43                       | -2.31                       |
| Q2 2020                       | 88.91           | 91.75                 | -2.84                                                    | -4.25           | 93.16                      | 91.91                       | 1.25                        |
| Q3 2020                       | 96.15           | 100.65                | -4.50                                                    | -3.54           | 99.69                      | 100.54                      | -.86                        |
| Q4 2020                       | 125.56          | 104.79                | 20.77                                                    | 13.46           | 112.10                     | 105.60                      | 6.50                        |
| Q1 2021                       | 108.52          | .                     | .                                                        | -5.67           | 114.19                     | 106.48                      | 7.71                        |
| Q2 2021                       | 88.91           | .                     | .                                                        | -4.25           | 93.16                      | 106.93                      | -13.77                      |

Figure 6 displays the cycle and the random effects in Amazon net sales figures in the observed period. The cycle effect shows that till the end of 2019 there was a

downward trend and the positive upward cycle phase boosted Amazon net sales figures even more till the end of 2020. At the moment downward trend can be detected.

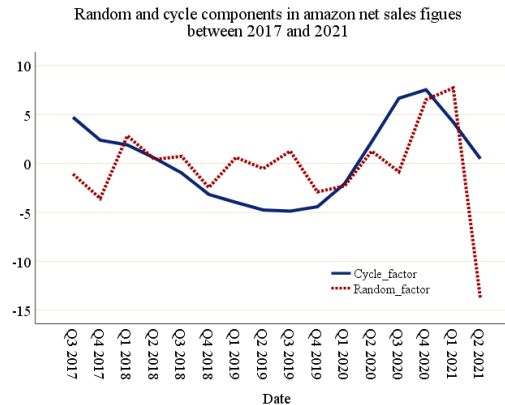


Figure 20

Cycle and random effect in amazon net sales figures between 2017 and 2020 (additive model)

The quarterly irregular components in the additive model spread around 0 randomly, the last quarter of 2020 and the first quarter of 2021 show a relatively high random effect. The linear trend based on the net sales data is given in Eq. 2, meaning that the net sales revenues grow by 4.189 billion USD quarterly on average according to the linear trend.

$$\text{Linear trend } y = 4.1894 \cdot x + 39.431 \quad (2)$$

The multiplicative model gave very similar trend and forecast results. Figure 21 displays the calculated adjusted seasonal indices showing that the first three quarter figures are gradually growing from 93 % of the trend through 94% to 96% and quarter 4 figures are 1.178 times higher than the linear trend. The multiplicative model forecasts even higher net sales for the fourth quarter of 2021 than the additive model.

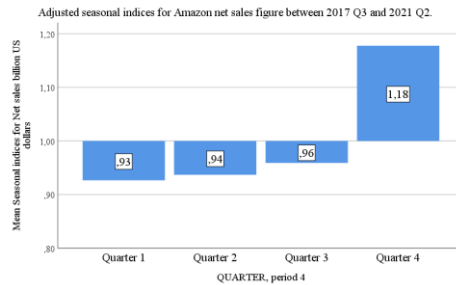


Figure 21

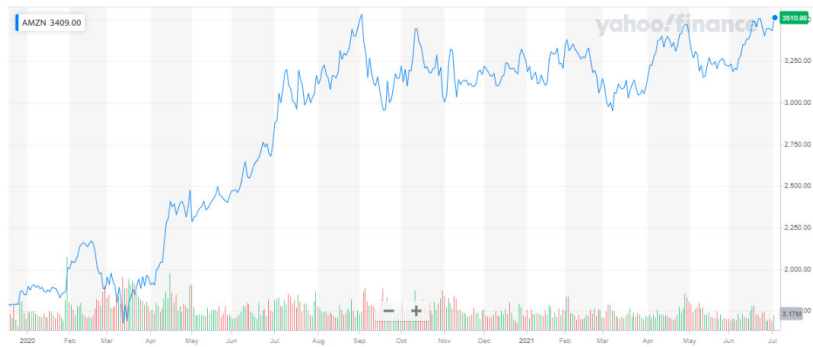
Seasonal indices for Amazon net sales 2017-2021

Although there was a decrease in the fourth quarter of 2019 and the third quarter of 2020, significant increases were observed in other periods, according to the e-commerce net sales data in Amazon's Quarterly report. There is a nearly two-fold increase in the transition from the first to the second quarters of 2020.

Should the price of Amazon stocks be examined through Yahoo Finance [30], it can be said that with the pandemic, it was decreasing at the beginning of 2020, and it has an increasing trend from 16 March to 2 September 2020. Then, its value experienced fluctuations at a higher price.

Figure 22

Amazon historical stock prices from January 2020 to July 2021 [30]



### 4.3 Customer behavioural change

The possibility of permanent changes in consumers' shopping behavior as a result of the pandemic, which is one of the points that was addressed in this study, was also mentioned in a UNCTAD report based on a survey of approximately 3,700 consumers in nine developing and developed economies conducted in 2020 [20]. According to the report by UNCTAD [20] and netcomm suisse e-commerce association [21], the COVID-19 outbreak has permanently altered online shopping

behavior. Consumers in developing countries will be more likely to shop online after COVID-19 than consumers in developed economies. Changes in shopping habits may also be a factor. During the coronavirus, the level of online shopping culture increased in developing countries. Meanwhile, in developed countries this habit has already existed. Therefore, according to the report, the change in shopping habits in developing countries after COVID-19 is one of the factors contributing to the emergence of lasting habits [20].

#### 4.4 The Impact of COVID-19 and Accelerated Growth of E-commerce

Based on U.S. Commerce Department data released in December 2020, consumer spending through nonstore channels grew 31.3% over November 2019 based on year-over-year (YoY) figures [31]. Figure 23 displays the YoY percentage changes of US nonstore sales by month. The highest growth percentage was reached in June with 31.5% while the lowest growth percentage was in January 8.3%. By June the monthly growth rate almost quadrupled while it fell from June for the summer periods. The fall in e-commerce growth rate might be thanked to summer holidays and the ease on restrictions and opening hours of retail shops and retail outlets. People could return to their personal shopping habits for the summer period. The second highest growth rate for nonstore channels was captured in November, which can be justified by the second wave of COVID-19.

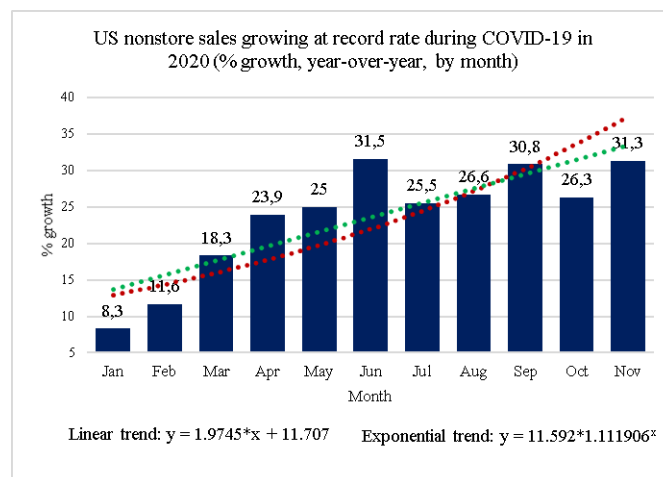


Figure 23

U.S. nonstore sales growing rate in 2020, Source: Digital Commerce 360

Fitting either linear or exponential trend on the percentage growth change the expansion of nonstore sales shows similar growth rate in percentage changes. The average monthly YoY percentage growth rate equaled 21.952% and the trend shows further growth in the future. If nonstore channels can strengthen their position in the market and people realize the benefit of buying online, nonstore channel sales are not expected to drop even after COVID-19. However, it must be noted that for the summer period in 2020 people returned to more traditional channels, while still then the growth rate compared to January was tripled. The use of digital possibilities and the comfortable mode of sales also inspire people to buy online.

According to the linear (Eq. 3) and the exponential (Eq. 4) trend the growth rate for the following period is expected to be 11.707% and 11.19% points, respectively.

$$\text{Linear trend: } y = 1.9745x + 11.707 \quad (3)$$

$$\text{Exponential trend: } y = 11.592 * 1.111906^x \quad (4)$$

The US Department of Commerce issues its quarterly report regularly [32]. E-commerce sales reached 762.675 billion USD by the end of 2020 representing a 40.3% growth from 2019 [32]. E-commerce estimate increased 39.1% from the first quarter of 2020 to first quarter 2021. Online sales accounted for 21.0% of total retail sales in 2020, up from 15.8% in 2019 and 14.3% in 2018 [32]. This number represents the highest annual U.S. e-commerce growth in at least two decades. Additionally, growth in e-commerce accelerated by two years, thus if it were not for the pandemic, the nearly 800 billion USD in online retail sales in 2020 would not have been reached until 2022. Accordingly, U.S. retailers had a COVID-19-related 152 billion USD boost in e-commerce sales in 2020.

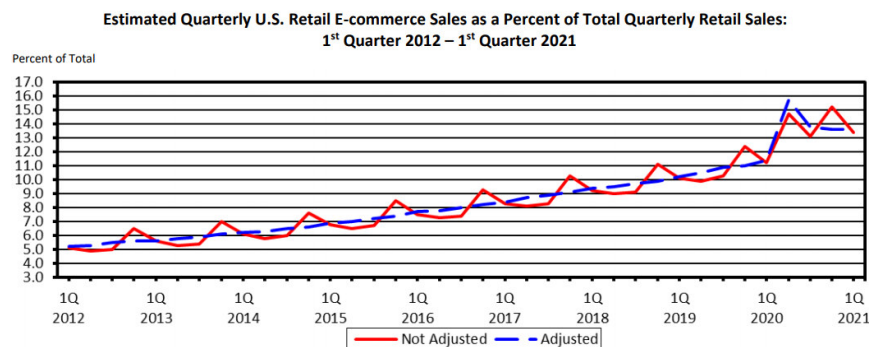


Figure 24  
U.S. retail e-commerce sales: 1st Quarter 2012 – 1st Quarter 2021

Source: U.S. Department of Commerce [32]



According to the data published by the U.S. Commerce Department [32], during Q3 of 2020 from July to September, consumers spent 201.382 billion USD online with U.S. retailers, up 36.1% from 147.96 billion USD for the same quarter the prior year. In other words, nearly 1USD in every 5USD spent by consumers in Q3 came from online orders. E-commerce sales in the Q3 of 2020 accounted for 13.6% of total sales. It should be noted that while growth in the retail industry through Q4 has begun to slow, e-commerce had its second highest increase after June, rising in November 2020, 32% YoY due in part to the holiday shopping.

### **Conclusion**

The newest coronavirus that is familiarly known as COVID-19 has changed humans's live. People in this world have been asked to stay at home to stop the spreading of the coronavirus and to slow down the pandemic. Moving around is now limited. It has also affected human's behavior in shopping, people had no choice and had to change their behavior from the traditional way of shopping to online shopping in order to fulfill their needs. This research shows that the pandemic had the biggest impact on online businesses or e-commerce, which impact is without doubts beneficial. The biggest winners are the groceries, the subscriptions and convenience service providers as well as home delivery services but all different business segments could develop, digitalize and introduce online shopping facilities. The research presents that some categories like supermarket, medical, baby products, cleaning products, food and beverage, health and wellness, and toys and games e-commerce "exploded" in a positive sense and became the winners of the game. However, some business sectors suffered losses and lost markets, categories like jewelry and luxury, fashion and apparel, auto or tools, and bag or travel were going down.

Although e-commerce is continuously expanding year by year, comparing the figures in the year 2020 with previous years, revenues from e-commerce retail companies have significantly increased. As for examples, Amazon, the largest retail e-commerce company has significantly increased its revenues and net sales. Amazon figures show exponential trend considering various figures.

As a conclusion, COVID-19 pandemic brought to opportunity to develop in e-commerce, the results prove that when digitalization is mature enough to offer buying services online and people are forced to use online platforms due to the circumstances, the combination brings its success and on one hand gives an impetus to the business sector to develop and on the other hand results in changing human behavior.

The research focused mainly on developed economies and mentioned some examples from developing countries, leaving the potential for future research on ecommerce development traced in developing countries and economies.

## References

- [1] World Trade Organization, "E-commerce, Trade and The COVID-19 Pandemic," 4 May 2020. [Online]. Available: [https://www.wto.org/english/tratop\\_e/covid19\\_e/covid\\_reports\\_e.htm](https://www.wto.org/english/tratop_e/covid19_e/covid_reports_e.htm).
- [2] M. Abdelrhim and A. Elsayed, "The Effect of COVID-19 Spread on the e-commerce market: The case of the 5 largest e-commerce companies in the world," 8 June 2020. [Online]. Available: <https://ssrn.com/abstract=3621166>. [Accessed 25 May 2021].
- [3] S. Barnes, "Information management research and practice in the post-COVID-19 world," *International Journal of Information Management*, vol. 55, 2020.
- [4] A. G. Khan, "Electronic Commerce: A Study on Benefits and Challenges in an Emerging Economy," *Global Journal of Management and Business Research: Economics and Commerce*, vol. 16, no. 1, 2016.
- [5] Ohidujjaman, M. Hasan and M. N. Huda, "E-commerce Challenges, Solutions and Effectiveness Perspective Bangladesh," *International Journal of Computer Applications*, vol. 70, no. 9, pp. 9-17, 2013.
- [6] V. Mahajan, E. Muller and Y. Wind, *New Product Diffusion Models*, New York: Springer, 2000.
- [7] A. J. Rohm and V. Swaminathan, "A Typology of Online Shoppers Based on Shopping Motivations," *Journal of Business Research*, vol. 57, no. 7, pp. 748-757, 2004.
- [8] R. Peres, E. Muller and V. Mahajan, "Innovation Diffusion and New Product Growth Models: A Critical Review and Research Directions," *International Journal of Research in Marketing*, 27, 2, pp. 91-106, 2010.
- [9] J. He and C. Liu, "An Investigation on the Impact of COVID19 on China's E-Commerce Industry," *Design Engineering*, vol. 2020, no. 11, pp. 443-456, 2020.
- [10] L. Hillier, "Stats roundup: the impact of covid-19 on E-commerce," 5 March 2021. [Online]. Available: <https://econsultancy.com/stats-roundup-the-impact-of-covid-19-on-e-commerce/>. [Accessed 5 March 2021].
- [11] Ecommerce Europe, "Impact of the Coronavirus on e-commerce," Ecommerce Europe, Rue d'Arlon, 2021.
- [12] K. Jones, "COVID-19The Pandemic Economy: What are Shoppers Buying Online During COVID-19?," 8 April 2020. [Online]. Available:

<https://www.visualcapitalist.com/shoppers-buying-online-ecommerce-covid-19/>. [Accessed 10 March 2021].

- [13] A. Bhatti, H. Akram, H. M. Basit, A. U. Khan, S. Mahwish, R. Naqvi and M. Bilal, "E-commerce trends during COVID-19 Pandemic," *International Journal of Future Generation Communication and Networking*, vol. 13, no. 2, pp. 1449-1452, 2020.
- [14] S. Meyer, "COVID-19 Infographic: How Ecommerce Is Being Impacted," 2021. [Online]. Available: <https://www.bigcommerce.com/blog/covid-19-infographic/#covid-19-infographic-impacting-ecommerce>. [Accessed 15 April 2021].
- [15] A. Orendorff, "10 Ecommerce Trends for 2021: Growth Strategies, Data & 17 Experts on the Future of Direct-to-Consumer (DTC) Retail," Common Thread Collective , 13 March 2021. [Online]. Available: [https://commonthreadco.com/blogs/coachs-corner/ecommerce-trends-future?\\_ga=2.184961068.48005898.1625505273-1034135002.1624914080#ecommerce-trends-6](https://commonthreadco.com/blogs/coachs-corner/ecommerce-trends-future?_ga=2.184961068.48005898.1625505273-1034135002.1624914080#ecommerce-trends-6). [Accessed 20.03. 2021].
- [16] T. P. Vartanian, Secondary data analysis, New York: Oxford, 2011.
- [17] N. K. Malhotra, D. F. Birks and P. Wills, Marketing research: An applied approach, London: Pearson Education, 2012.
- [18] DeWitt Wallace Library, "Qualitative vs. Quantitative Data," 9 March 2021. [Online]. Available: <https://libguides.macalester.edu/c.php?g=527786&p=3608639>. [Accessed 3 March 2021].
- [19] World Bank Group, "World Bank Open Data," The World Bank, 2021. [Online]. Available: <https://data.worldbank.org/>. [Accessed 15 April 2020].
- [20] United Nations Conference on Trade and Development, "COVID-19 has changed online shopping forever, survey shows," UNCTAD, Geneva, 2020.
- [21] "netcomm suisse ecommerce association," netcomm suisse ecommerce association, 2021. [Online]. Available: <http://www.netcommsuisse.ch/>. [Accessed 20 March 2021].
- [22] S. Meyer, "Understanding the COVID-19 Effect on Online Shopping Behavior," Big Commerce, 2021. [Online]. Available: <https://www.bigcommerce.com/blog/covid-19-ecommerce/#product-categories-shifting-during-covid-19>. [Accessed 8 April 2021].
- [23] G. Sterling, "COVID-Consumers: Pessimistic, but spending more online,"

- 25 March 2020. [Online]. Available: [https://searchengineland.com/covid-consumers-pessimistic-but-spending-more-online-331519?\\_ga=2.5150769.32165542.1624914080-1034135002.1624914080](https://searchengineland.com/covid-consumers-pessimistic-but-spending-more-online-331519?_ga=2.5150769.32165542.1624914080-1034135002.1624914080). [Accessed 28 March 2021].
- [24] “Marketing Pulse Dashboard,” WITHIN, 2021. [Online]. Available: <https://within.co/marketing-pulse/>. [Accessed 10 April 2021].
- [25] O. Andrienko, “Ecommerce & Consumer Trends During Coronavirus,” SEMRUSH, 14 April 2020. [Online]. Available: <https://www.semrush.com/blog/ecommerce-covid-19/>. [Accessed 9 April 2021].
- [26] S. Davis and L. Toney, “How Coronavirus Is Impacting Ecommerce,” 12 March 2020. [Online]. Available: <https://www.roirevolution.com/blog/2021/06/coronavirus-and-ecommerce/>. [Accessed 22 June 2021].
- [27] “Annual net sales of Amazon 2004-2020,” Statista.com, February 2021. [Online]. Available: <https://www.statista.com/statistics/266282/annual-net-revenue-of-amazoncom/>. [Accessed 2 May 2021].
- [28] “Quarterly results,” Amazon Inc., 2021. [Online]. Available: <https://ir.aboutamazon.com/quarterly-results/default.aspx>. [Accessed 15 June 2021].
- [29] “Amazon revenue grows 38% to \$60.5 billion in Q4 2017, AWS sales up 45%,” Reuters, 1 February 2018. [Online]. Available: <https://venturebeat.com/2018/02/01/amazon-revenue-grows-38-to-60-5-billion-in-q4-2017-aws-sales-up-45/>. [Accessed 15 May 2021].
- [30] “Amazon.com, Inc,” Yahoo Finance, 2021. [Online]. Available: <https://finance.yahoo.com/quote/AMZN/chart?p=AMZN#eyJpbmRlcjZhbCI6ImRheSIsInBlcmVZGljaXR5IjozLCJ0aW1lVW5pdCI6bnVsbCwiY2FuZGx1V2lkdGgiOjIuODgyMzUyOTQxMTc2NDcwNiwiZmxpcHBIZCI6ZmFsc2UsInZvbHVtZVVuZGVybGF5Ijp0cnVILCJhZGoiOnRydWUsImNyb3NzaGFpciI6dHJ1ZSwiY2hhc>. [Accessed 5 July 2021].
- [31] Digital Commerce 360, “US nonstore retail sales surge 31% in record-breaking November,” Vertical Web Media LLC, 2021. [Online]. Available: <https://www.digitalcommerce360.com/2020/12/16/us-nonstore-retail-sales-surge-31-in-record-breaking-november/>. [Accessed 12 May 2021].
- [32] U.S. Department of Commerce, “Estimated Quarterly U.S. Retail E-commerce Sales,” U.S. Department of Commerce, Washington, D.C., 2021.