Barriers and Drivers in Adopting E-commerce:
The Philippines Case

Charisse Jollins Z. Ang[1,*]
1 De La Salle University
Corresponding Author: Charisse.ang@dlsu.edu.ph

Abstract: Despite recognized positive relationships between the use of E-commerce' internet sales channels and firm performance, there is still a weak adaptation rate of e-commerce tools among emerging markets' SMEs'. The COVID-19 pandemic has made the business environment more threatening to these vulnerable businesses and thousands of businesses laid off employees or closed-down. Despite global political threats and economic crises, trends from previous pandemics (SARS, Ebola, H1N1) showed that there are observed rises of e-commerce activities during pandemics. Firms that persisted to operate through adaptive use of e-commerce served as an upgrade to their business processes. However, there is a disconnect with the perceived value of internet use and actual implementation of online processes especially in Philippines. Adopting the model of Zaied (2012), which theorized six (6) barriers to e-commerce use in Egypt during the Ebola epidemic, this study determined which are significant in the Philippine – COVID19 context. Through binomial logistic regression, this study determined from 2,307 fairly distributed types of MSMEs gathered through convenience sampling in the span of the 10-month peak of COVID19 cases in the Philippines, that Socio-Cultural and Organizational barriers are actually drivers. This study recommends for the Philippine government to build society's trust and confidence in using E-commerce tools and revive the spirit of entrepreneurship among SME's decision makers.

Key Words: E-commerce, Adoption, Micro, Small and Medium-sized Enterprises

1. INTRODUCTION

1.1 The rise and fall of MSME's

Between 2018 and 2020, the Philippine Department of Trade and Industry (DTI) records show that there was a decrease of 50,142 registered businesses, from 1,003,111 down to 952,969. On July 16, 2020, DTI reported that 26% out of 2,135 surveyed businesses have closed since the implementation of stricter enhanced community quarantine on March 16, 2020. On the same year, the Department of Labor and Employment (DOLE) reported that there were 69,022 displaced workers, due to businesses that closed during the pandemic health and economic crisis. Even after alleviating the local lockdown protocols by late 2021, DTI reported that 10% of businesses in Metro Manila remain closed and may have permanently done so. These metrics do not capture unregistered MSME's, contractual workers, OFW's, daily waged laborers and other Filipinos heavily dependent on

"for-the-day" income, like jeepney, tricycle and pedicab drivers. Despite this however, Filipinos show resilience and find innovative ways in pursuing other means of income. A trend of Filipinos who were laid off started their online businesses. The latest report of registered businesses in 2021 reported 2.081 million registered businesses, a staggering 218% increase from 2020 data. It was also noticeable that some businesses adopted their processes to online platforms. This observation was supported by Ben de Vera of Inquirer (2020), in which he reported that there has been an observed rising number of e-commerce that started during the COVID19 pandemic. At a global scene, Maybank analysts, Kim Eng, Lee Ju Ye and Chua Hak Bin, provides stronger support to such phenomenon, *"Lockdowns have increased online consumer activity, similar to the SARS episode in 2003, which was a turning point for China's e-commerce giants Alibaba and JD.com".* These health crises and subsequent government responses forced businesses to take drastic changes to adapt in the extraordinary situation. Many individuals and existing businesses started using online platforms and pivoted their business

models toward e-commerce. Specifically, the use of Internet as sales channels resulted as a significant and positive mediator between E-commerce and firm performance. (Jovanovic, Vujadinovic, Mitreva, Fragassa, & Vujovic, 2020) Even if the industry practitioners and academicians recognize the positive relationships between internet usage and firm performance, there is still a slow diffusion of e-commerce adoption among Philippines' SMEs. Hence this study examines the barriers that makes the process of adopting e-commerce difficult and seeks to address them. Using Zaied's (2012) theoretical framework in his study "Barriers to E-Commerce to Egyptian SME's", this study seeks to identify which of these proved to be applicable in the Philippine context during the span of COVID19 pandemic and provide recommendations to support SME's utilization of e-commerce platforms.

1.2 Scope/Coverage of the Study

This paper processed 2,037 responses from varying age of entrepreneurs, owners and key decision makers from existing companies and start-up companies that attempted adoption of e-commerce during the Covid-19 pandemic, commencing from the local Enhanced Community Quarantine on March 16, 2020. Respondents are from different regions of the Philippines and from different industries. All are considered MSME's with assets less than Php100 million and employees less than 200. Another qualification for the respondents is that the firm should have attempted adoption of e-commerce during the covid-19 pandemic within the period identified in this study.

1.3 Review of Related Literature

The World Trade Organization defines "electronic commerce" as the production, distribution, marketing, sale or delivery of goods and services by electronic means. According to Zaied (2012), Electronic commerce refers to conducting business transactions over the Internet, which includes exchange of information of value in the form of products and services as well as payments, using web-based technologies. This study synthesizes the focus from these two definitions and operate with the e-commerce definition simply as *conducting business with the use of internet*. Fillis et al. (2003) examined the adoption of e-commerce by SMEs and found that SMEs could gain competitive advantage through adopting e-commerce as it could improve their market performance by having better access to the market. However, despite the prevalent opportunities and workable solutions that adopting business processes online may offer, there is still a slow diffusion of e-commerce among MSME's. This slow paced of adoption has steered a variety of studies in different developing countries, which economies are dependent on MSME's.

One of the pioneer studies about the barriers in adoption of e-commerce among MSME's was done in Egypt. Nawamay and Ismail (1999) reported that the main factors affecting the adoption of e-commerce revolve around awareness and education, market size, e-commerce infrastructure, telecommunications infrastructure, legal system, government issues, affordability/cost structure and social and psychological factors. In 2002, a similar study was made by Cloete et al. in South African MSMEs and they reported that lack of information options, lack of time to investigate options, lack of access to computers, lack of access to hardware and software, limited knowledge of e- commerce models and methodologies proved to be the challenges for South African MSME's towards adoption of E-commerce. Chen (2004) studied the reasons behind the slow adoption of electronic commerce in Taiwan and his results showed that financial shortage and concern over lack of IT employees rank as the top two barriers to adoption of e-commerce by SMEs in Taiwan.

Taylor & Murphy (2004) argued that SMEs occupy small / clearly defined niche markets that do not need global connectivity through experimentation as inhibitors to e-commerce adoption. Furthermore, Bolongkikit et al. (2006) found among other issues that SMEs markets needed a high degree of human interaction.

In 2010, Alshehri and Drew studied the e-ready (readiness) of Saudi citizens to identify the challenges and barriers that affect the adoption of e-government services in Saudi society. Moreover, they classified the barriers into five barriers: Technical, Organizational, Social, Management support and financial barriers. More recently, Alamro and Tarawneh summarized the factors influencing e-commerce adoption in SMEs in Jordan into three contexts; "External environmental context (strong competition, global economy, regional trade agreements, extremely low labor cost in some countries, frequent and significant changes in markets and increased power of consumer); Organizational context (changing nature of workforce, management support, financial resources, increased importance of ethical and legal issues, increased social responsibility of organizations and rapid political changes) and; Technological context (increase innovations and new technologies, e-commerce benefits, e-commerce barriers and rapid decline in technology cost vs. performance ratio)." (Alsheri & Drew, 2010)

Organizations adopting e-commerce in developing countries face problems such as lack of telecommunications infrastructure, lack of qualified staff to develop and support e-commerce sites, lack of skills among consumers needed in order to use the Internet, lack of timely and reliable systems for the delivery of physical goods, low bank account and credit card

penetration, low income, and low computer and Internet penetration. A similar study in 2019 by Dahbi and Benmoussa conducted in Morocco, revealed that the financial and technological factors were the most critical ones, followed by the cultural and organizational factors. (Dahbi & Benmoussa, 2019)

As of date, the most comprehensive model in the literature that seeks to understand whether an SME shall adopt or not adopt E-commerce was the *Integrated Model for the Adoption of Electronic commerce SMEs (IMAES)* proposed by Torres and Acosta (2019). The IMAES model accounted for 14 factors including familiar variables like Ease of Use of technology, Perceived risks, and Organizational Readiness. A study that adopted the IMAES model by (Sánchez-torres et al., 2021) in Colombia, showed that Colombian SMEs adopt e-commerce because of pressure from senior management, performance expectations, the competitive advantage it offers, and pressure from their customers.

The opportunity of using E-commerce is a strategic decision. Regardless of the context or predicament of an organization, the business decision makers must primarily understand its position in relation to its internal (Organizational) and external environment (Political, Economic, Social, Technological, and Legal) whether or not the factors would work in favor to their decision in adopting E-commerce. The 30 barriers identified and group into 6 variables from Zaied's literature review were concurred by his study's experts. The adopted model captures the strategic elements (PESTEL framework) that were not constricted to the details of day-to-day functions of an organization. Moreover, it shifts focus to external elements that an organization may not have direct influence but are important for every strategic business decision. For actionable recommendations, it will be necessary to involve governments which has the power to influence political and economic environment for business entities.

1.4 Adoption of E-commerce in the Philippines

A study published by Philippine Institute for Development Studies (PIDS) in December 2019 by Quimba & Calizo (2019), has investigated the determinants of E-commerce Adoption of Philippine Businesses. Their paper recommended five concrete actionable steps: "First, bottlenecks caused by uncertainty and security concerns should be addressed. Second, government agencies need to support MSME's ecommerce adoption. Third, government agencies should assist firms in adopting ICT. Fourth, government can help supply access to finance to firms intending to adopt e-commerce. Fifth, reducing the cost and improving the quality of internet services should be pursued." (Quimba et al., 2019) Their research work was conducted and

published just months before the eruption of the global impact of COVID-19. Quimba and Calizo sought to propose solutions in improving the adoption of e-commerce in the Philippines. However, since the proliferation of consequences of COVID-19 social and government responses, this study does not cover the phenomenon of increase in E-commerce activity during the pandemic. Hence, this study continues to pose the question, did the COVID-19 pandemic empirically drove the adoption of E-commerce among surviving resilient Philippine SME's? And if so, what were the motivations and practices that can be emulated that embodies Business Resilience?

2. METHODOLOGY

2.1 Research Design

This study is a post-positivist research from Zaied's model (Figure 1) on e-commerce adoption for Egyptian SME's but applied in the Philippine environment and with the consideration of factors brought about by the COVID19 pandemic. This study added the 7th barrier to test the significance of the impacts of the COVID19 pandemic.
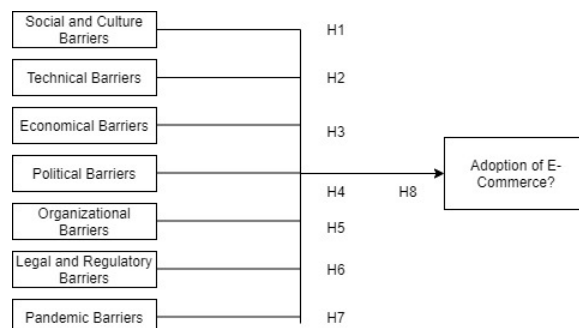

Fig. 1. Barriers in adopting E-commerce (Zaied, 2012)

The dependent variable is a dichotomous variable represented by a Yes / No question capturing whether the respondent successfully adopted E-commerce during the peak of COVID19 (2020-2021). To determine the relationships of the 7 Independent variables (1) Social and Culture Barriers, (2) Technical Barriers, (3) Economical Barriers, (4) Political Barriers, (5) Organizational Barriers, (6) Legal and Regulatory Barriers, and (7) Pandemic Barriers) to a binary result, of whether an SME will adopt E-commerce tools, or not; this study applied **Binomial Logistic Regression** for its statistical treatment.

2.2 Sampling Method

By using online survey forms distributed through convenience sampling, this study was able to process 2,037 responses gathered through online survey forms for 10 months from 2020 to 2021. Given the

government mandate lockdowns during this period, difficulty of movement and limited contact to persons, it was best to use online forms to distribute the research instrument. According to Malhotra and Burks (2006), as cited in Taherdoost (2018), Convenience sampling is "Least expensive, least time-consuming and most convenient sampling method". However, they also emphasized its weakness that this method is subject to: "selection bias", leading to samples not being representative and hence, not recommended for descriptive or casual research. However, according to Klein (2015), a good sample size for a non-parametric convenience sampling method is 20 respondents for every independent variable and plus tested relationships in the model, hence known as the 20:1 ratio. In this model, there are seven independent variables and eight tested relationships resulting to 15 as a multiplier for the 20:1 ratio. Therefore, following Klein's rule, 300 could have been a good sample size. However, given the duration of data gathering and method used, the study retrieved 2,037 verified responses also fairly representing the different sizes of enterprises from micro, small, medium and large companies. See table 1 for the frequency distribution of respondents according to its estimated total assets.

Table 1. **Frequency Distribution of Respondents in terms of Total Assets**

Category	Estimate of Company's Total Assets	Frequency	Percentage
Micro	Up to Php 3 Millioin	644	27.90%
Small	Php 3 - 15 Million	676	29.30%
Medium	Php 15 to 100 Million	556	24.10%
Large	Php 100 Million and above	431	18.70%
		2307	100.00%

This study's resulting representations of company size may be an example that counters the weakness argued by (Taherdoost, 2018) that convenience sampling is not representative.

The 2,307 datapoints were processed using a combination of MS Excel, Jamovi and JASP statistics open software, providing Descriptive, Model-fit and Binomial Logistic Regression results.

2.3 Research Instrument:
Adopting Zaied's questionnaire, an online survey having a 5-point Likert scaled questions has been disseminated online using Google forms. See Appendix A.

Additional information was asked from the respondents on top of Zaied's questionnaire to qualify respondents aligned with the scope and objectives of the study. Moreover, Covid-19 Pandemic barrier was tested for significance and relationship to a dichotomous dependent variable; as a barrier for adopting e-commerce

during the COVID19 pandemic. Also, it has provisions for qualitative information that can give light to other factors not found in earlier studies.

After conducting a pilot test of the extended survey, a reliability test was conducted, and it resulted to 0.917-cronbach alpha. A Cronbach alpha score of .90 and above is an indicator of a very good research instrument. This indicated that all other variables show high reliability scores and present that each variable measures the tested barrier.

3. RESULTS AND DISCUSSION

Through binomial logistic regression, each barrier was tested as a covariate against the likelihood of whether or not a company shall adopt E-commerce. Table 2 summarizes the significance and relationships of each barrier against E-commerce adoption.

Table 2. **Binomial Logistic Regression**

Model Coefficients - Successful adoption of E-commerce?

Predictor	Estimate	SE	Z	p
Intercept	3.1981	0.2468	12.959	< .001
SCB_AVE	**-0.4227**	**0.0912**	**-4.637**	**< .001**
TB_AVE	0.0747	0.1023	0.730	0.465
EB_AVE	-0.1909	0.1169	-1.633	0.102
PB_AVE	**0.4240**	**0.0853**	**4.972**	**< .001**
OB_AVE	**-0.4290**	**0.0972**	**-4.415**	**< .001**
PANB_AVE	-0.0158	0.0913	-0.173	0.863

Note. Estimates are the log odds of "Successful adoption of E-commerce? = Successful - continues to use e-commerce and online platforms / applications" vs. "Successful adoption of E-commerce? = Not Successful - stopped online business process/es or closed online business

From the results presented in table 2, at 95% confidence level, only three barriers proved to be significant in adopting E-commerce among Philippine SME's. These are Social and Cultural barrier (SCB), Political Barrier (PB) and Organizational barrier (OB).

While Technological, Economic and Pandemic Barriers did not show significance. Social and Cultural Barrier and Organizational Barriers show a negative and moderate relationship in adopting E-commerce. Interestingly the results showed a positive and moderate relationship between Political Barrier and adoption of E-commerce.

It is important to remember that the objective of this study is to identify the barriers that hinders the adoption of e-commerce in Philippines. It must be emphasized that to meet this objective, the research instrument's questions were negatively constructed. For example, under Social and Cultural Barrier, questions representing the construct of popularity for online marketing and sales, it was worded as: "*Lack* of popularity for online marketing and sales". For economical barrier, one of the statements evaluated was, "Costs *too high*". A third example under Organizational barrier would be: "*Difficulty* in changing the existing working procedures". To interpret the results, we follow a default rule that a positive and significant estimate is an indicator that the tested variable proves to decrease the likelihood for companies to adopt E-commerce. Whereas a negative and significant estimate is an indicator that the tested variable shall influence a company to more likely adopt E-commerce and are in fact must be reconsidered as *Drivers* of E-commerce in the Philippines. Both Social-Cultural and Organizational Barriers resulted to negative estimates with moderate strengths in convincing companies to adopt E-commerce. (SCB = - 0.4227, *p<.001*; OB = - 0.4290, *p<.001*) Political Barrier is the only significant barrier that resulted to a negative estimate *(PB=0.4240, p<0.001).*

3.1 Social and Cultural Barrier (SCB)

The following constructs correspond to the Social and Cultural Barrier:

- Lack of popularity for online marketing and sales
- Lack of awareness of e-commerce benefits
- Lack of external pressure from suppliers and customers
- Linguistic barriers

A negative estimate of – 0.4227 implies that every negative unit increase of SCB increase the likelihood of a company to engage in E-commerce. A negative estimate in this case infers that when respondents answer this portion of the research instrument, they strongly disagree in the lack of popularity for online marketing and sales; they strongly disagree in lack of awareness of e-commerce benefits, they disagree in lack of pressure from suppliers and customers; and they disagree that

there are linguistic barriers. This moderate to strong disagreement to these statements may be interpreted that the respondents perceive strong popularity for online marketing and sales; strong awareness of e-commerce benefits; strong external pressure from suppliers and customers; and lack of linguistic barriers. Such perceptions and conditions may actually be an indicator that these would be the drivers for adoption of E-commerce in the Philippines.

3.2 Organizational Barriers (OB)

The following constructs correspond to the Organizational Barrier:

- Difficulty in changing the existing working procedures
- Lack of management support
- Organizational resistance to change
- Limited use of Internet banking and web portals by SMEs

Organizational Barrier is the only other significant barrier that has a negative estimate of - 0.4290. Like the process of interpretation from SCB, this negative estimate can be interpreted as respondents saying that: the Organizations find ease or have willingness to change existing working procedures; there is management support for e-commerce; organizations do not resist change; and there is a proliferation of internet banking and web portals by SMEs.

3.3 Political Barrier (PB)

The following constructs correspond to the Political Barrier:

- Change in regulations with each Government
- Changes in government policy
- Lack of an appropriate legal environment to apply e-commerce
- Low level of readiness among government institutions

A positive estimate of 0.4240 indicates that every unit increase of PB decrease the likelihood of an organization to adopt e-commerce in the Philippines. This positive value can be interpreted that the respondents moderately agree to the above statements and can be understood as the perceived barriers why decision makers from organizations may not engage in e-commerce.

4. CONCLUSIONS

The externalities of pandemic threat showed to be an insignificant barrier for Filipinos drive to adopt E-commerce. This result allows us to infer that regardless of the pandemic, Philippine MSME's would have still adopted e-commerce tools even if it may happen at a less abrupt rate than it did during the COVID19 pandemic. A faster turn-around for Philippine MSMEs toward E-commerce during a global crisis exemplifies its social and economic resiliency.

To discover that Social-Cultural and Organizational Barriers are significant drivers for e-commerce adoption in the Philippines is a revelation. For Social-Cultural Driver, Filipinos are known for their love of using mobile phones, internet, social media, and online shopping platforms (Shopee / Lazada). Filipinos are known to be naturally friendly and hospitable. Like most other Asian cultures, Filipinos love spending time with their families and friends, and they would like to connect however possible. Filipinos also tend to have English as a natural secondary language and allows Filipinos to easily consume and/or provide international online products and services. It is natural and not an issue for Filipinos whether they will adopt e-commerce platforms or not. They will consume it as soon as they have the financial capacity and technological infrastructures to do so.

This study also revealed that during the COVID19 pandemic, Philippine MSMEs were more willing to adapt to changes, have supportive management or decision makers to increase use of internet banking and web portals. Decisions founded on resiliency, adaptability and innovativeness kept surviving organizations afloat through the pandemic. One key take-away from our experience out of this pandemic is that we can never be too rigid with our traditional values, policies, and procedures. The world changes, and along with it are what makes up our organization's identity.

The perceived political barrier hinders MSME's to engage in e-commerce. Trust and confidence through government and policy stability; and passing of legal infrastructures like "Subscriber Identity Module (SIM) Card Registration Act" may help decrease Philippine MSME's negative perception on the condition of the Philippines' political environment in relation to E-commerce activities. However, unbeknownst to the insights provided by the quantitative results of this study, several policies and programs were rolled out by the government during the COVID19 pandemic with aims to improve online transactions across public and private entities. To register a new business has never been easier. Central Business Portal, a one-stop site for business registrations became available. Philippine government agencies (DTI and DOST) developed programs and platforms that directly support Philippine SMEs to go online (GovTech project, DTI online seminars, and the oneSTore.ph,). Local government units like Manila City created its independent website that allows online transactions which were normally done in person in the offices of Manila City Hall. Other National Capital Region (NCR) city mayors also follow such strategies like Pasay City's EMI portal.

As Philippines propel economic recovery after the COVID19 pandemic, the government should see beyond the nuisance of the COVID19 pandemic and push forward by passing laws and policies that makes the use of e-commerce tools easier and safer. For example, to help protect consumers of online products and regulate prices both offline and online during extraordinary conditions, the DTI-DOH-DA administrative order no. 1 must be reviewed, updated for an online environment and legislated into a law. It is high time to not keep it as an administrative order, but a law that exceeds coterminous policies and administrations. The government must take an aggressive action in promoting the use of E-commerce tools. This will aid towards positive perceptions of Filipino business decision-makers towards E-commerce. Popularization and commoditization of E-commerce tools for MSME's will result to more E-commerce tool users. The first movers to E-commerce in Philippine SME markets can cause push and pull pressures to other organizations that have connected supply chains with. It is timely for business owners to bravely take new steps in reinventing processes and reap the benefits of E-commerce. When we find ourselves in the most desperate moments, little do we know that we are about to find greatness.

5. REFERENCES

Agus, A. A., Yudoko, G., Mulyono, N. B., & Imaniya, T. (2020). E-commerce Platform Performance, Digital Marketing and Supply Chain Capabilities. *International Research Journal of Business Studies*, *13*(1), 63–80. https://doi.org/10.21632/irjbs.13.1.63-80

Akyilmaz, B. (2021). *E-commerce : Business behaviour during the COVID-10 period. 14*(37), 187–204.

Carvalho S., Carvalho J.V. (2020) The Implications of Digital Marketing and e-Commerce in the Tourism Sector Growth. In: Rocha Á., Abreu A., de Carvalho J., Liberato D., González E., Liberato P. (eds) Advances in Tourism, Technology and Smart Systems. Smart Innovation, Systems and Technologies, vol 171. Springer, Singapore. https://doi.org/10.1007/978-981-15-2024-2_15

Coombs, C., Fakhruddin, B. (SHM), Blanchard, K., Ragupathy, D., Mukherjee, M., Chatterjee, R., Kumar, B., Pal, P., Dhillon, S., & Kumar, A. (2020). Are we there yet? The transition from response to recovery for the COVID-19 pandemic. *Progress in Disaster Science*, *7*(June), 100–117.

https://doi.org/10.1016/j.pdisas.2020.100102

Dahbi, S., & Benmoussa, C. (2019). What Hinder SMEs from Adopting Case Analysis What Hinder SMEs from Adopting E-Commerce? A Multiple Case Analysis. *Procedia Computer Science*, *158*, 811–818. https://doi.org/10.1016/j.procs.2019.09.118

Desiderio, L. (2021). *MSMEs now number over 2 million as of August*. Philstar.com. Retrieved March 21, 2022, from https://www.philstar.com/business/2021/09/30/2130594/msmes-now-number-over-2-million-august

Gonzales, A. (2020) Pandemic shuts down 26% of businesses, - DTI poll. Retrieved from: https://www.manilatimes.net/2020/07/17/business/business-top/pandemic-shuts-down-26-of-businesses-dti-poll/742821/

Hamilton, J. (2020). The Strategic Change Matrix and Business Sustainability across COVID-19. Sustainability, 12(15), 6026. https://doi.org/10.3390/su12156026

Jovanovic, J. S., Vujadinovic, R., Mitreva, E., Fragassa, C., & Vujovic, A. (2020). The Relationship between E-Commerce and Firm Performance : The Mediating Role of Internet Sales Channels. *Multidisciplinary Digital Publishing Institute*, *12* (6993), 1–17.

Köksal, M. H., & Özgül, E. (2007). The Relationship Between Marketing Strategies and Performance in an Economic Crisis. Marketing Intelligence & Planning, 25 (4), 326-342.

Mukherjee, M., Chatterjee, R., Kumar, B., Pal, P., Dhillon, S., & Kumar, A. (2020). Progress in Disaster Science Ecosystem-centric business continuity planning (eco-centric BCP): A post COVID19 new normal. *Progress in Disaster Science*, *7*, 100117. https://doi.org/10.1016/j.pdisas.2020.100117

Öven, H., & Hicintuka, M. (2020). Covid-19: How does it affect international e-commerce firms? A qualitative case study about how the Covid-19 situation affects e-commerce firms and how they respond to it? Sweden: Linneaus University.

Quimba, F. M. A., Jr, S. C. C., Quimba, F. M. A., & Jr, S. C. C. (2019). *Determinants of E-Commerce Adoption of Philippine Businesses*. 2–31.

Šaković Jovanović, J., Vujadinović, R., Mitreva, E., Fragassa, C., & Vujović, A. (2020). The Relationship between E-Commerce and Firm Performance: The Mediating Role of Internet Sales Channels. *Sustainability*, *12*(17), 6993. MDPI AG. Retrieved from http://dx.doi.org/10.3390/su12176993

Sánchez-torres, J. A., Ortiz-Rendon, P., & Rojas-Berrío, S. (2021). The Adoption of E-commerce in SMEs : the Colombian Case. *Journal of Telecommunications and the Digital Economy*, *October*. https://doi.org/10.18080/jtde.v9n3.403

Seetharaman, P., & Kodama, M. (2020). International Journal of Information Management Digitally transforming work styles in an era of infectious disease. International Journal of Information Management, 54(June), 102172. https://doi.org/10.1016/j.ijinfomgt.2020.102172

Taherdoost, H. (2018). A review of technology acceptance and adoption models and theories. *Procedia Manufacturing*, *22*.

https://doi.org/10.1016/j.promfg.2018.03.137

United Nations Conference on Trade and Development. (2019). UNCTAD B2C E- Commerce Index. UNCTAD Technical Notes on ICT for Development N 14. UNCTAD.

Zaied, A. N. (2012). Barriers to E-Commerce Adoption in Egyptian SMEs. International Journal of Information Engineering and Electronic Business, 4(3), 9–18. https://doi.org/10.5815/ijieeb.2012.03.02

Zumstein, D., & Kotowski, W. (2020). *Success Factors of E-Commerce – Drivers of the Conversion Rate and Basket Value. April*, 43–50. https://doi.org/10.33965/es2020_202005l006