



**E-COMMERCE
IN INDONESIA:
THE RISE OF ONLINE
COMMERCE AND ITS
IMPACT ON FIRMS'
PERFORMANCE
AND CONSUMERS**



E-COMMERCE IN INDONESIA: THE RISE OF ONLINE COMMERCE AND ITS IMPACT ON FIRMS' PERFORMANCE AND CONSUMERS



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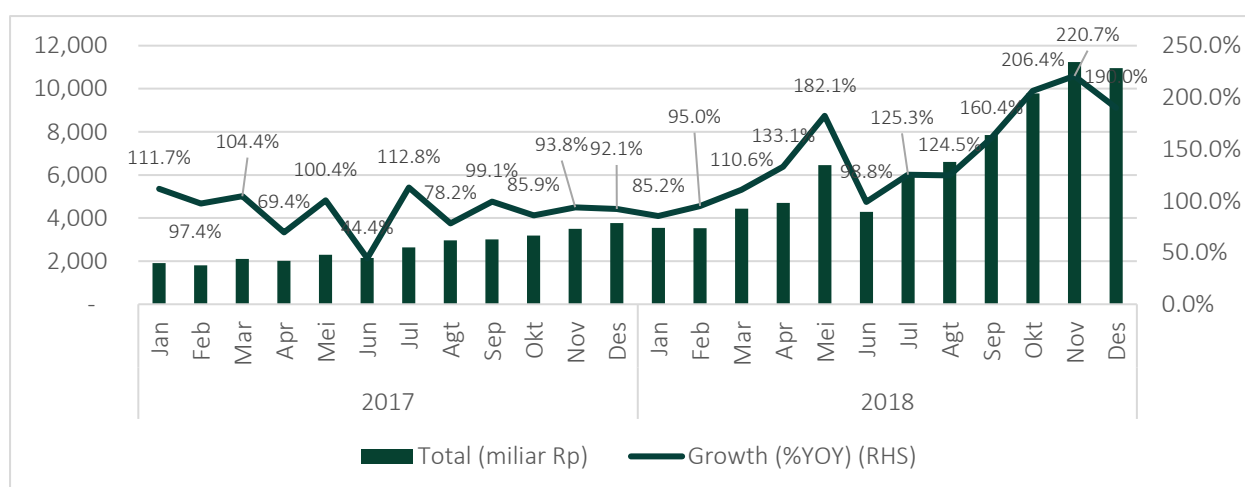
Abstract

E-commerce has grown over the last five years and taken over a larger portion of the retail sector in Indonesia. While a lot has been discussed on the benefits of online trade, not many studies look at the phenomena using quantitative analysis. Using a dataset generated from a survey of 1,100 firms, we try to explore how the use of internet technology for commerce (e-commerce) affects market coverage, sales and profit, and the cost structure of businesses. The preliminary findings show that being online allows firms to improve their performance. On average, firms that have an online presence improve their sales by 12%. Moreover, smaller firms seem to benefit even more from being online. This study also looks at characteristics of e-commerce consumers in Indonesia by discussing the results of a survey conducted with 2,000 respondents across the country.


1 Introduction

E-commerce is growing and is taking over an increasingly large portion of the retail sector in Indonesia. With gross domestic product (GDP) of over \$1 trillion and a population of more than 260 million, Indonesia has the potential to be one of the largest e-commerce markets in the Asia and Pacific region. Statistics gathered by Bank Indonesia (BI) from the four largest e-commerce marketplace platforms in Indonesia show that transactions reached almost Rp 110 trillion in 2018, a 156% increase from the 2017 value. Those four platforms are estimated to account for around 80% of electronic trading conducted through integrated e-commerce platforms in Indonesia, which had an overall value of around Rp 140 trillion in 2018.

Figure 1: Value of Online Commerce from E-commerce Platforms



Source: Presentation of Bank Indonesia's senior deputy governor during the launch of the bank's Indonesian Economic Report 2018, LPI 2018, in Padang on 29 March, 2019.



The fast growth of online trade and e-commerce have opened up discussions on their potential impacts on Indonesian business and the economy. Many see the opportunities for online trade to help small and medium enterprises (SMEs) overcome major obstacles such as limited access to the market and to information due to limited knowledge and expertise, which often prevents them from enhancing their performance and productivity. Moreover, digitalization can potentially diminish market friction faced by buyers and sellers in order to make transactions, such as the need to travel, meet, and gather information (Pangestu and Dewi, 2017). In October 2016, the Indonesian government announced its E-Commerce Road Map 2017–2019. The road map aims to bring the digital economy, not only e-commerce, to a value of \$130 billion in Indonesia by 2020.


However, many also point out that the growing online trade has shifted consumption patterns and has undesirably affected the retail sector, one of the major services sectors in the Indonesian economy. In 2017 public debate surfaced when many retailers started to close down their operations because the retail sector had grown by only 4% in the first half of the year, compared to 11% in 2016 (Pardede and Zahro 2017). Some argue that the decline was caused by weakening purchasing power (see for example World Bank 2017), while others mentioned that shifting toward online commerce, combined with changing preferences toward leisure consumption, were the factors behind the retail sector's poor performance (see for example BI 2018). Given that online commerce can grow by more than 100% annually, albeit remaining small compared to the total retail market, concern toward negative impacts on the conventional retail sector needs more attention. It becomes more important given that many SMEs are among the traditional retailers that might be negatively affected by e-commerce.

This paper is an attempt to provide insight into the impact of online commerce on the Indonesian economy and businesses. Unfortunately, there are very limited e-commerce data available to explore the impact of e-commerce thoroughly at a macro level. While BI has been collecting data for a couple of years, detailed information has not been made available to the public and for deeper analysis. It is still difficult to measure the magnitude of online commerce in Indonesia. The figure of Rp 140 trillion cited above is believed to be underestimated, as a significant part of online commerce might also be conducted over social media, outside of online marketplace platforms.¹

With limited data to support the analysis at the aggregate and macro levels, an analysis on the impact of online commerce will be conducted at the micro and business unit levels. The analysis looks at how the rapid development of online commerce over the last four years has affected the business performance of firms that decided to go online, and more importantly of those that decided remain offline. In addition, analysis will also be conducted to explore the characteristics and benefits of online trading for consumers.

This paper is part of a research series conducted by the Centre for Strategic and International Studies (CSIS) in order to measure the impact of digital technology being utilized in several economic sectors in Indonesia. This study aims to look at how e-commerce has changed the landscape of business and consumers' economic activities in the country. In order to gain better insights on the issue, we start by looking at several characteristics of those using online platforms for economic transactions, from both the business and consumer sides. Some publicly available data, although limited, is used to gain

¹ See for example Damuri et. al. (2018), which documents various cases of social media use to facilitate online trade that may not be as integrative as marketplace platforms, but are easier for many SMEs and their customers to use.



more knowledge about the current development of online trade. We then explore how the use of e-commerce affects firms' performance in terms of market coverage, sales and profit, and business cost structure. Information gathered from a business survey is used for that purpose. It is then complemented by the analysis of the pattern of online purchases gathered from a consumer survey. The information and analysis are used to provide policy recommendations for the further development of e-commerce in Indonesia.

2 An Overview of E-commerce Business and Consumers in Indonesia

Several Characteristics of Online Businesses in Indonesia

While data on e-commerce is very limited, the Central Statistics Agency (BPS) included in the 2016 Economic Census a few questions related to online trading (selling goods online, buying goods online, and searching for information about online goods). According to the census, there are around 27 million enterprises in Indonesia, dominated by micro and small enterprises with 26.26 million (98%), with large enterprises number around 450,000 (1.67%).² Only 2.67% of them conducted business online. The definition of online firm in the economic census is rather broad: a firm that sells goods online, buys goods online, or searches for information online about goods to purchase or sell. While this might not be an exact approximation of firms conducting e-commerce activities, a closer look at the data gives us good insights on the presence of online businesses and their characteristics.³

Figure 2 below exhibits the distribution of online firms and proportion of online firms according to firms' size.⁴ Looking at the pie chart, 65.95% of online enterprises are micro firms and 21% of the total online enterprises are small firms. Medium enterprises come in third with 11.16%, while large enterprises are only 1.85% of the total online enterprises in Indonesia. Although micro enterprises have the highest distribution of online enterprises, it is large enterprises that reach the highest proportion of going online (see Figure 2 bar chart). While micro and small firms dominate the number of online enterprises, the proportion of such firms that have an online presence is still very small: Only

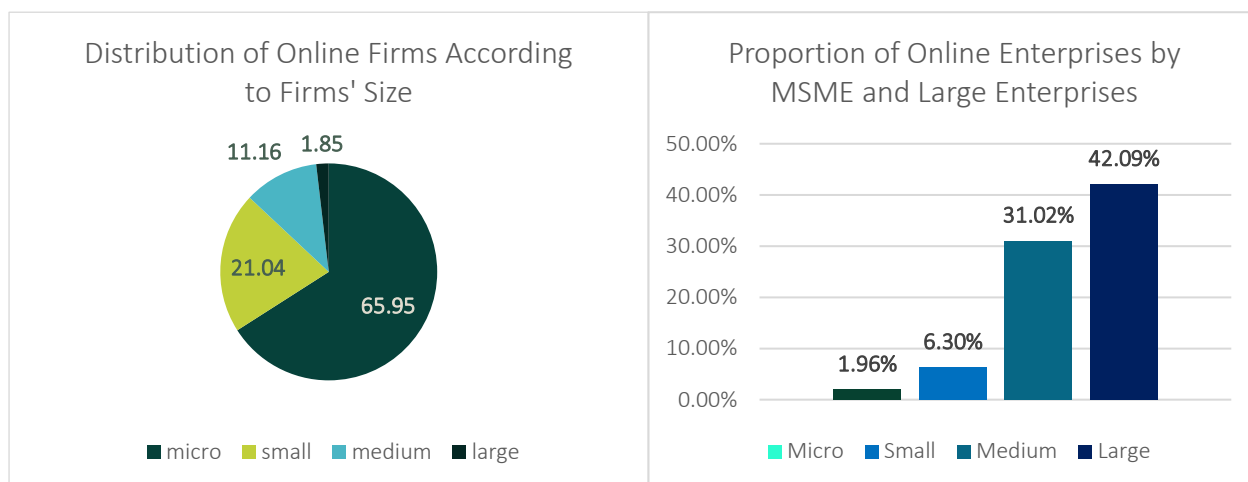
² The definition of micro, small, medium and large enterprises follows BPS classifications, based on the number of workers. Micro firms have fewer than five workers, small have five to 20 workers, medium have 20 to 100 workers, while large enterprises have more than 100 workers.

³ While the OECD (2002) defined e-commerce as buying and selling of goods and/or services among firms, individuals, government, or other organizations through the internet, business that conduct e-commerce are normally described as those that perform selling.

⁴ Firm size in this classification is based on the number of employees. Firms with fewer than five employees are considered as micro, fewer than 20 is classified as small, between 20 and 500 is medium and large firms are those employing more than 500 people.

1.96% of micro and 6.3% of small firms are online. On the contrary, around 42% of large enterprises have an online presence, while the figure is 31% among medium enterprises.

Figure 2: Online Enterprises by Firms' Size



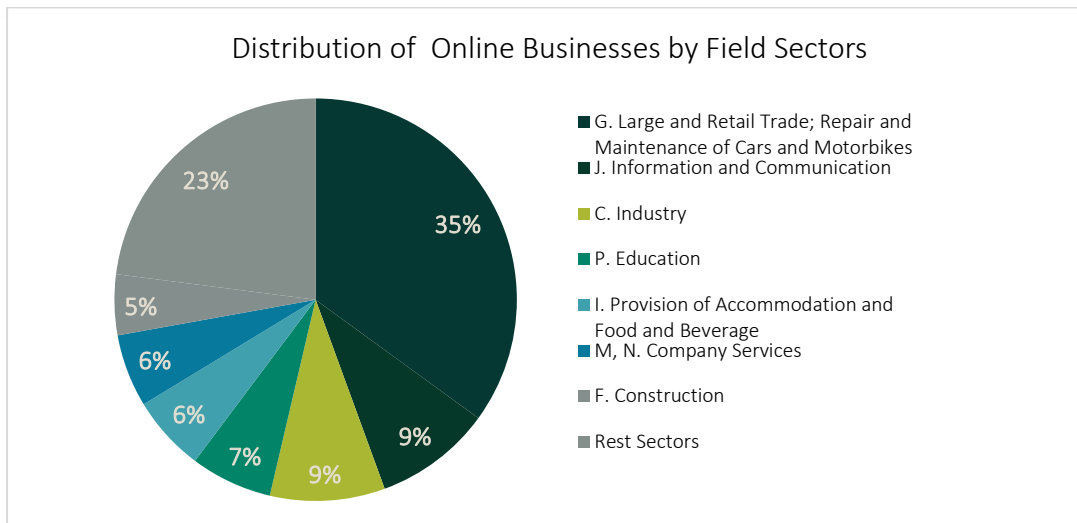
MSME = micro, small and medium enterprises

Source: Economic Census 2016, author's calculations

Large enterprises are more likely to go online as they are typically more mature and have more capacity to conduct online transactions. This corroborates with the Melitz model where most small firms are not profitable enough to cover the high fixed costs and network distribution; meanwhile, large and efficient firms are able to export their goods (Koch, 2011). Moreover, large firms are more likely to reach economies of scale, which gives them the advantages of mass production and covers the relatively high initial cost of going online.

Many of those online firms also have better legal status. A majority of Indonesian enterprises, particularly micro and small firms, have no legal entity (62%). Medium and large enterprises are more likely to have a formal legal structure, such as limited liability. If we take a closer look at the proportion of online enterprises, those in the form of limited liability companies have the highest proportion of going online. Approximately 77% of limited liability companies are online. This finding aligns with previous observations which explain that large firms are most likely to go online. Other formal business structures, such as representative offices or foundations, also have a relatively high online presence. Meanwhile, only 6% of less formal enterprises like limited partnerships (CV) have an online presence. The figure is even lower for business units with no legal status.

Figure 3: Online Businesses by Sectors

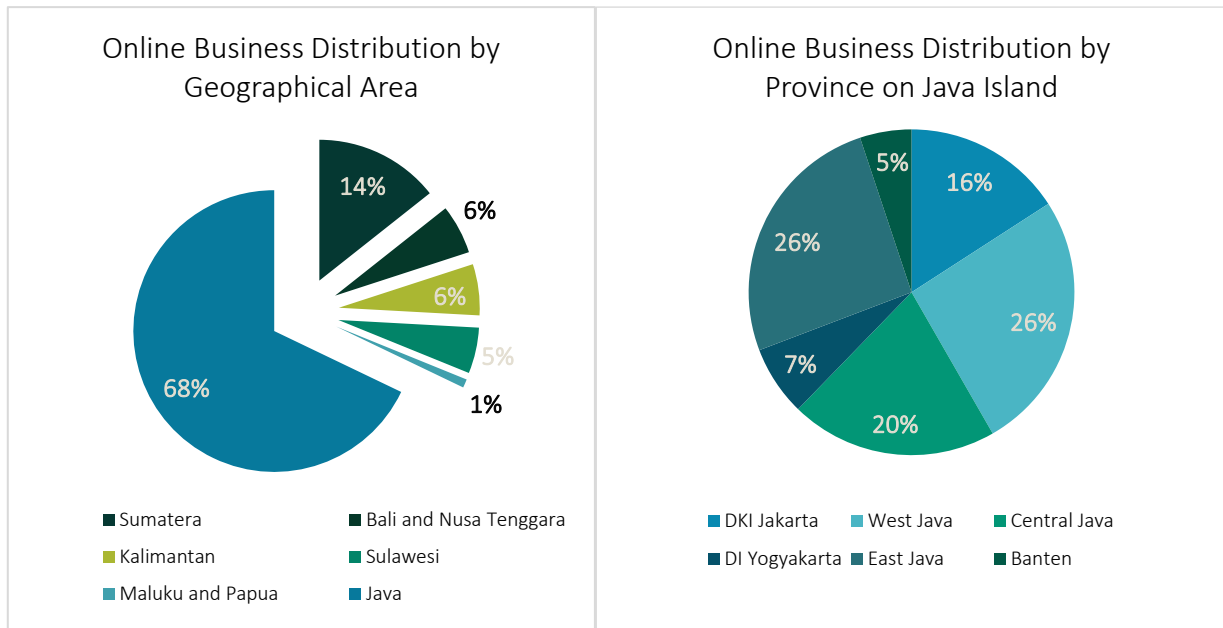


Source: Economic Census 2016, author's calculations

Figure 3 provides the distribution of online businesses based on their activity sectors. Most online businesses are wholesale and retail trade firms, while only around 9% are manufacturing firms. Education services and business services only account for 6% of all online businesses in Indonesia. The nature of retail firms as buying-and-selling businesses means online systems offer greater opportunities for them. In addition, having an alternative marketing channel, such as e-commerce, helps retail businesses to add value to their products, relative to manufacturing firms. Therefore, they have more incentives to use online systems in their operations. We will explore this notion when looking at characteristics of online firms collected from our survey.

Geographically, the majority of online enterprises are located on the islands of Java and Sumatra (Figure 4, left pie chart). On the other hand, only about 1.52% of online enterprises are located in Maluku and Papua. A lack of infrastructure, such as transportation, telecommunications, and energy, continues to hinder economic activities in such provinces, including online businesses. On the contrary, Java contributes around 68% of Indonesia's online businesses (BPS, 2016), spread quite evenly across the island's six provinces (see Figure 7, right pie chart). One of the reasons behind the high concentration of online enterprises in Java is the ease of internet access. Internet penetration in Java is also distributed evenly among its provinces. In the case of growing online businesses in West Java, the government plays a significant role in facilitating the market, such as by giving free domains to SMEs, leading them to conduct online transactions.

Figure 4: Online Businesses by Islands and Selected Provinces



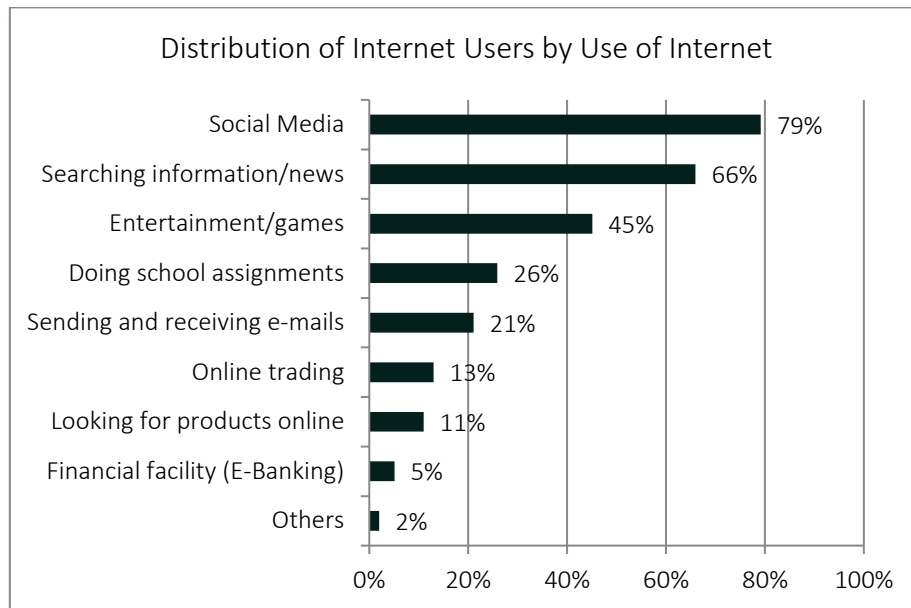
Source: Economic Census 2016, author's calculations

Some Characteristics of Online Consumers

The National Social and Economic Survey (Susenas) has collected information on the use of the internet since 2014. Based on Susenas 2017 data, approximately 76.7 million people had accessed the internet in the three months before the survey. The majority of users use smartphones to access the internet (66%). Other than smartphones, internet users also use laptops (16%), desktop computers (13%), and tablets (4%). Most internet users in Indonesia are located in urban areas (71.16%), while the remainder are located in rural areas.

While the number of internet users is currently quite significant, the proportion using the internet as a trading platform remains relatively small, although this has increased significantly over the last three years. The latest Susenas data shows that only 13% of internet users conduct activities related to online trading, while 11% reported looking for products online (Figure 5). While small, this figure has improved from 2015, when only 11% had ever used the internet for trading purposes. The majority of people use the internet for social media (79%), followed by searching for information/news (66%), and for entertainment/games (45%).

Figure 5: Distribution of Internet Users by Internet Use

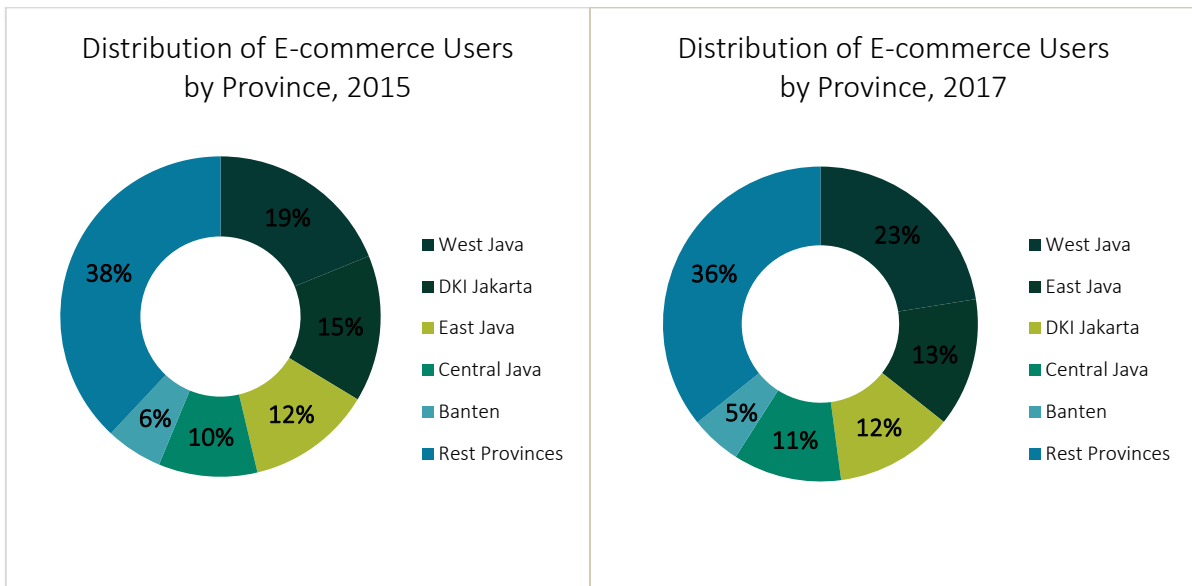


Source: National Social and Economic Survey (Susenas) 2017, author's calculations

The popularity of social media has also helped to facilitate the rise of online trading. There is an indication that a significant portion of online trading in Indonesia happens not through e-commerce platforms, but rather through social media. According to the Indonesia National Survey Project (INSP), carried out by ISEAS – Yusof Ishak Institute in 2017, around 13.5% of respondents had used social media to buy and sell items over the internet, but only 7% had used e-commerce platforms (Azali, Negara and Damuri, 2019). This might be related to the nature of social media and Indonesian consumers' preferences. Transactions through social media require direct and more personal communication between buyers and sellers to select products and to settle payments and delivery details. This kind of transaction might be more appealing to Indonesian consumers who are still new to online trading. From the producers' and sellers' side, this method of transaction is also desirable as they can maintain communication for promotional purposes in the future. On top of that, it is also easier for sellers and producers to handle complaints more personally than through online platforms' rating systems (Azali, Negara, and Damuri, 2019).

Figure 6 presents the geographical distribution of e-commerce users by selected provinces in 2015 and 2017 based on Susenas data. In both years, most e-commerce users (around 62% to 64%) came from West Java, East Java, DKI Jakarta, Central Java, and Banten—all provinces in Java. The distribution is also heavily skewed toward urban areas, which were home to 83.67% of the total e-commerce users in 2017. This is not surprising as there are a lot of online businesses in those areas. Moreover, those provinces also have the highest distribution and proportion of internet users, with relatively good coverage of mobile internet. West Java, for example, is home to more than 23% of Indonesia's internet users, with 74% of its population living in urban areas. In Jakarta, a high proportion of the population also has access to the internet, similar to other provinces in Java.

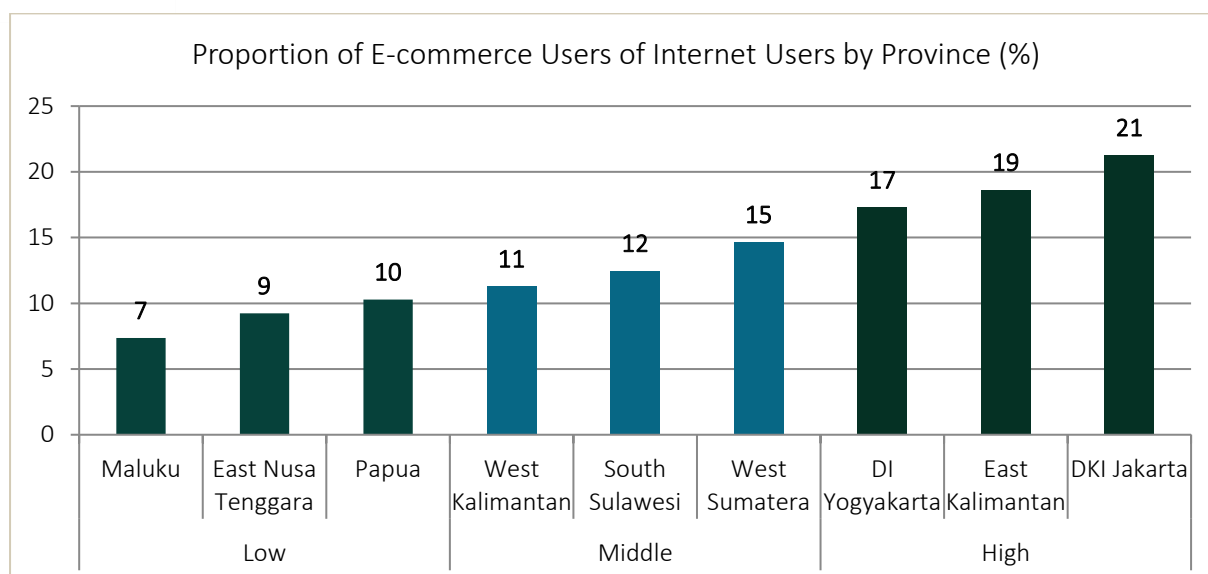
Figure 6: Distribution of E-commerce Users by Province



Source: National Social and Economic Survey (Susenas) 2015 and 2017, author's calculations

While West Java is the main location of e-commerce users, people from DKI Jakarta are the most likely to engage in online trading. Figure 7 provides the proportion of internet users conducting commercial activities online. This is in line with the previous figure which shows that both internet and e-commerce users are distributed mostly in Java. Most provinces located in the eastern regions of Indonesia have a low proportion of e-commerce users, at less than 20% of their internet users. Combined with a low level of internet penetration, the number of e-commerce users in the eastern regions remains low. This, again, might be due to the infrastructure gap between western and eastern Indonesia.

Figure 7: Proportion of E-commerce Users by Province



Source: National Social and Economic Survey (Susenas) 2017, author's calculations

3 How E-commerce Affects the Indonesian Economy: Survey of Business and Consumers

The objective of this study is to provide analytical work on how e-commerce has affected the Indonesian economy. We attempt to look at the impact from two points of view: business and consumers. Due to the limited availability of secondary data, we collected primary data from two surveys conducted on businesses and consumers in Indonesia. This section provides an overview on the methodology we used to carry out the surveys and on the profiles of respondents.

Survey of Business and Respondent Profile

The purpose of the survey of business is to collect indicators of firms' performance, such as sales, profit, number of consumers, and operational costs, in conjunction with their online activities. There are two types of information we aim to collect from the survey: perceptions on the impact of e-commerce, and firms' self-reported performance figures, such as sales, profit, and costs.

The survey was conducted by asking questions to firms that operate online businesses—for simplicity we refer to them as online businesses or firms—and those that have no online operations, which we call offline firms. In saying a business is online, we ask whether it has engaged in at least one of three forms of online trading: having an online presence on integrated e-commerce platforms (e.g. Tokopedia, Bukalapak); maintaining a website that acts as a selling platform; or using social media to sell products. Social media presence is included in our scope of online business as the use of social media to facilitate online trading is still significant, as previously discussed in other parts of this paper, despite the fact that social media does not offer integrated online transaction facilities.

The reason for including offline firms is to examine how the e-commerce boom in Indonesia in the last few years has affected their performance. In addition, this survey was also designed to observe the

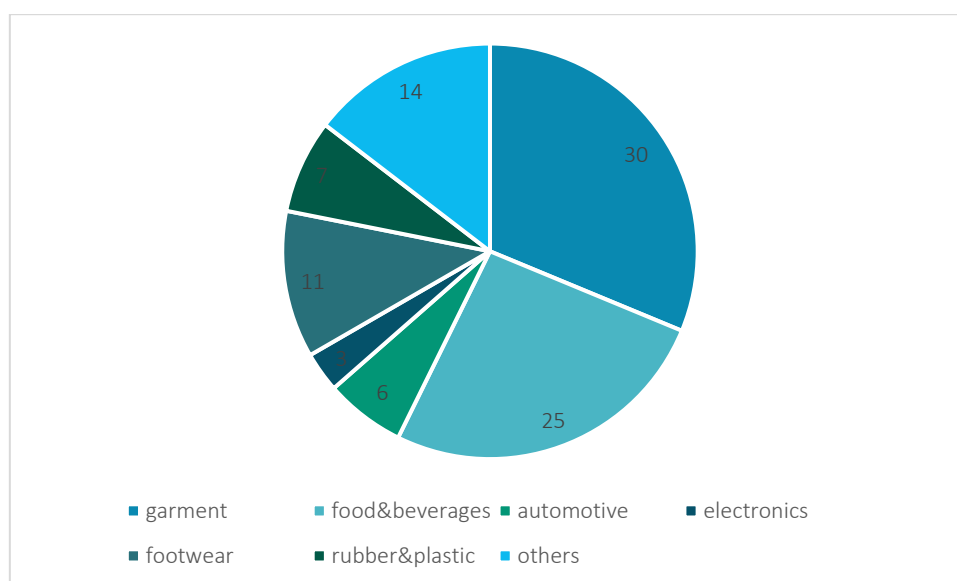
main factors that limit or hinder offline firms in adopting e-commerce. Moreover, we use this survey data to construct econometric modelling, which aims to look at the difference of sales growth between online firms and offline firms.

CSIS conducted face-to-face surveys of 600 firms in three of the biggest cities in Indonesia—Jakarta, Bandung, and Surabaya. The surveys were carried out in December 2018 by proportionating the respondents among the type (manufacturer versus retailer) and size (micro, small, medium, and large) of firms. The aim of the survey was to observe characteristics at firm level, not in a macro or national context. Thus, we did not select our sampling to represent the national situation, but rather to collect information on firms' performance.

Our survey respondents consist of 56% manufacturing firms and 44% retail firms. As we did not have a very big sample in our research, we believed it was crucial to choose the priority sectors for our main research, which were the manufacturing and retail industries. We recognize that e-commerce has also benefited other Indonesian sectors such as agriculture and services. According to size, 53% of our respondents were micro and small firms, while 47% were medium and large firms. The main reason we equally proportionated firms' size in our sample was because the objective of the survey was to allow researchers to observe online and offline firms' characteristics thoroughly and use this for quantitative analysis.

Of the respondents, 36% are online firms or have been using the internet for their business activities (see Figure 13). From that number, only 17% fully utilize online commerce for channelling sales, while the rest use a combination of offline and online. The median year that firms started to use e-commerce in this survey was in 2015. The definition of online commerce itself in this survey is not limited to the use of e-commerce platforms, but also social media and firms' websites. A majority, or 30%, of firms in this survey are part of the garment sector, followed by 25% from the food and beverages sector, and 11% in the footwear sector (see Figure 8). The respondents were dominated by domestic firms: 98% of firms have full domestic ownership.

Figure 8: Firms' Characteristics According to Industry





Survey of E-commerce Consumers

In this study, we also examine the characteristics and patterns of e-commerce consumption behaviour in Indonesia. The analysis complements the examination from the business perspective in the previous section. We would like to highlight the key drivers determining consumers' attitudes toward e-commerce in Indonesia. These include individual factors such as education, age, job, and income, perceptions toward e-commerce or online platforms, as well as economic situations such as infrastructure and access to financial services.

In order to answer those questions, we conducted a survey of Indonesian citizens in mid-March 2019. The survey was done by proportionately dividing the population in 34 provinces by using multistage random sampling. The sample was also divided proportionately by urban area and rural area, and by men and women. The proportion of men and women in the sample is 50%-50%, while there was a slightly higher proportion of rural areas, accounting for 50.4%. A total of 2,000 respondents were gathered for the survey. The survey had a margin of error of $\pm 2.5\%$ with a 95% level of confidence.

As the survey was conducted through random sampling methods, the characteristics of the respondents can be considered to represent the characteristics of consumers in Indonesia. The result provides newer information on the presence of online consumers available from Susenas 2017, as discussed in the previous section. Moreover, the survey provides insights on the perceived benefits and obstacles in conducting online transactions, which can be used to further develop Indonesia's online trading.

4 How E-commerce Affects Indonesian Business: Findings from the Business Survey

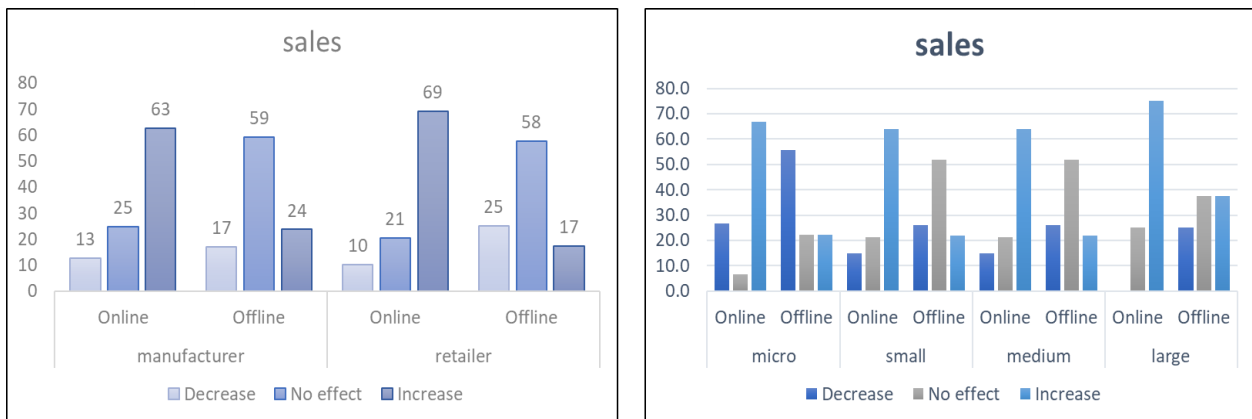
E-commerce and Firms' Performance

Impact on Sales

Figure 9 below shows how e-commerce has affected respondents' sales performance. In general, online firms think that e-commerce has a positive impact on their sales. These findings are quite similar to those of Nagy (2016) and Lavenburg (2005). A majority of manufacturers (59%) and retailers (69%) believe that their sales increased significantly from using e-commerce. The percentage of online retail firms who perceived positive impacts from e-commerce is higher than manufacturing firms. This is quite reasonable considering that adopting a new sales channel is more important for retailers than manufacturers. Large online firms tend to see that adopting e-commerce has increased their sales. While the proportion is lower, smaller firms also see that online trading has a positive effect on their sales performance.

While there is a hypothesis that online trading has negatively affected non-online business, the majority of our respondents saw no effect on their sales. Only micro firms perceived a negative effect from increased online trading, while medium and large firms saw that the online trend did not affect their sales performance. The result gives an indication that smaller firms are more prone to the negative impacts of disruptive technology than larger firms. Ensuring the adoption of technology among small firms is crucial to their survival.

Figure 9: Firms' Perceptions of E-commerce on Sales by Sector and Firm Size

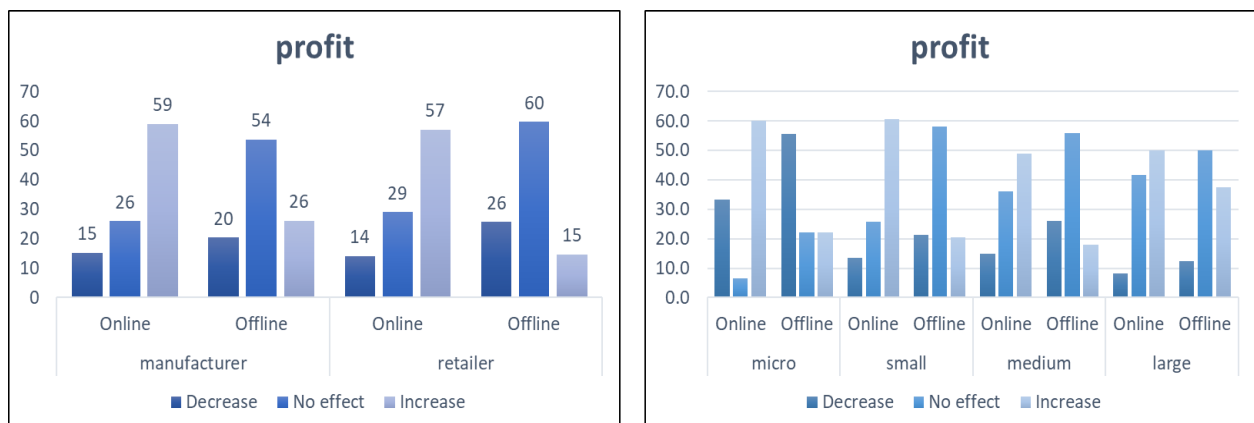


Impact on Profit

In this survey, we also ask how e-commerce has affected profit and profit margins. Figure 16 below shows firms' views on profit. We found that the use of e-commerce does not only positively affect their sales, but also positively affects their profit. A majority of online retailers (57%) and online manufacturers (59%) believe that e-commerce results in more profit for their firms. Looking at the firms' size, the percentage of micro and small online firms that believed e-commerce increased their profits was 60%, much higher than the proportion of medium and large online firms, which were around 50%. This result is slightly different compared with data from France. Statista (2014) stated that the use of e-commerce in larger firms created a higher profit margin in those firms in 2013. One logical explanation is that, in Indonesia, micro and small firms have not reached their full potential in terms of production or increasing consumer numbers. Larger firms usually use more e-commerce functions or even have their own websites, which also creates a higher cost to maintain online commerce.

With regards to offline firms, in general they believe that e-commerce in Indonesia does not affect their profit. It was a similar story with the perceptions on sales. Still, the majority of micro firms (55%) thought that the e-commerce trend in Indonesia had reduced their profits. More than 50% of medium and large offline firms believe that the high growth of e-commerce does not really affect their profits. This perception on sales and profit indicates that micro and small firms will be harmed the most if they do not adopt online technology.

Figure 10: Firms' Perceptions of E-commerce on Profit

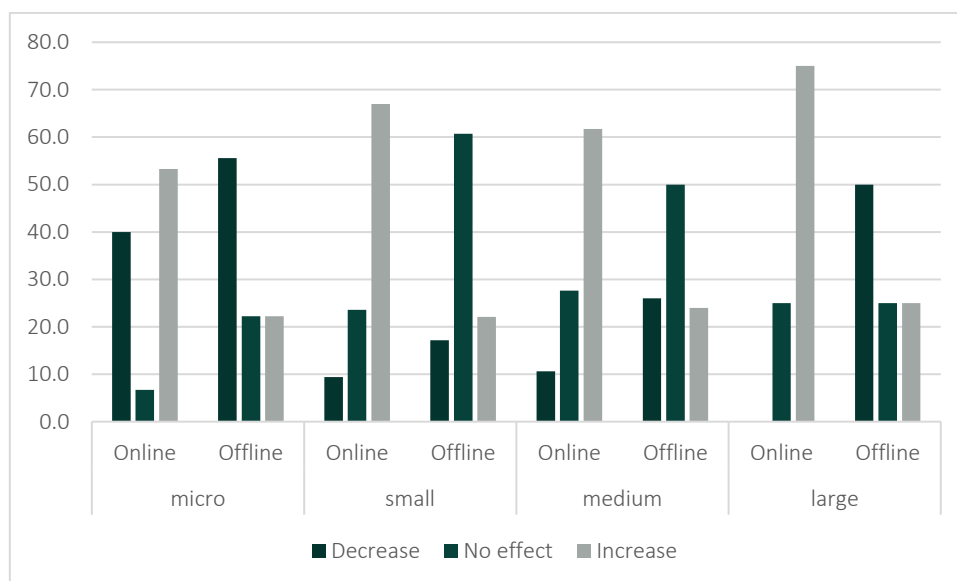


Impact on Number of Consumers and Market Coverage

The use of internet technology, or in this context e-commerce, could increase sales and profit through at least two channels: an increased number of consumers, and cost efficiency. We found that online firms see e-commerce as increasing the number of consumers. Large online firms benefitted the most by utilizing e-commerce to reach new consumers, as more than 70% of them believed that e-commerce brought more consumers to their firms. This is due to larger firms usually having more resources to maintain online platforms for their businesses activities, and it being easier for them to have their own websites. This means that larger firms have more capacity to reach new consumers by designing and packaging their online platforms into something attractive. Only 53% of micro offline firms perceived that e-commerce increased their ability to reach more consumers.

For offline firms the story is mixed. A majority of small (60%) and medium (50%) firms believe that e-commerce in Indonesia does not greatly affect their consumers (Figure 11). However, as with sales and profits, 55% of micro firms see e-commerce as reducing their consumers. Again, during conditions when e-commerce is growing significantly in Indonesia, micro offline firms will be disrupted the most. In general, although they did not see a decline in their sales or profits, offline firms believe that their number of consumers declined. One logical explanation is that e-commerce brings more competition (OECD, 2013), which makes businesses more vulnerable to losing their existing consumers if they do not adopt it.

Figure 11: Firms' Perceptions of E-commerce on Number of Consumers

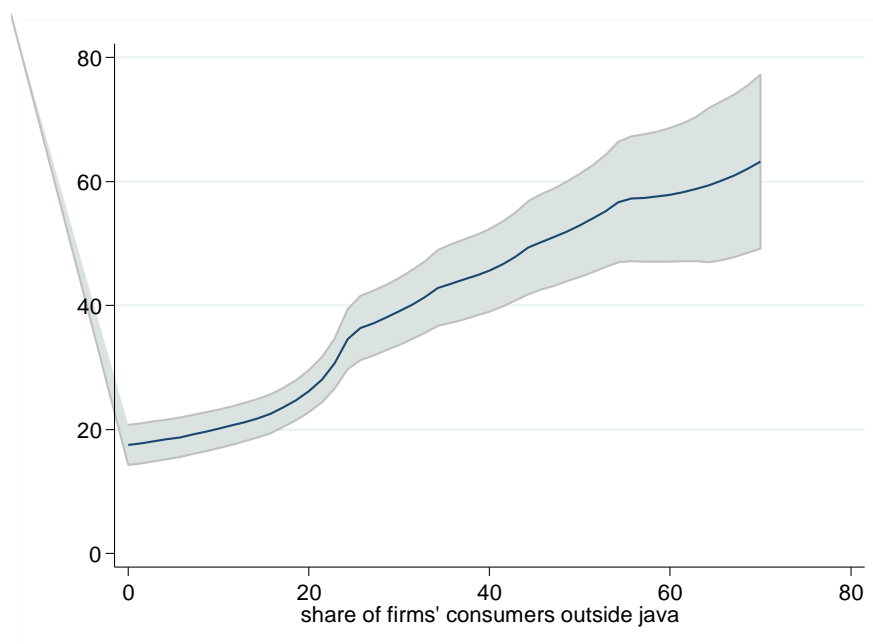


The use of technology itself creates an opportunity for firms to widen their market coverage, which results in increasing their number of consumers. Although we are unable to pinpoint the increase in market coverage as a result of e-commerce adoption, we can observe the proportion of consumers outside Java. We found that online firms have a higher proportion of consumers outside Java compared to offline firms. Of online firms, 70% have consumers outside Java, compared with only 24% of offline firms. It is important to remember that all respondents are firms located in Java, thus having consumers outside the island can be attributed to having wider market coverage.

In addition, we also aimed to see whether there is a clear association between online sales proportion and the location of firms' consumers outside Java. As all these firms are located in Java, we assume that having an online sales channel will assist them to have more consumers outside Java. In Figure 12 below, we found that there is a positive association between firms' online sales proportion and their share of consumers outside Java. It indicates that firms that have higher online sales proportion relative to total sales are more likely to have a higher percentage of consumers outside Java.

However, this is only a descriptive analysis and we cannot definitely say that e-commerce causes firms to have a higher proportion of consumers outside Java. There could be other factors contributing to this phenomenon which we cannot currently control in the research as we do not have any historical data related to the change of consumer proportions based on location.

Figure 12: Proportion of Online Sales in Firms and Share of Firms' Consumers Outside Java



E-commerce and Firms' Cost Structure and Marketing Strategies

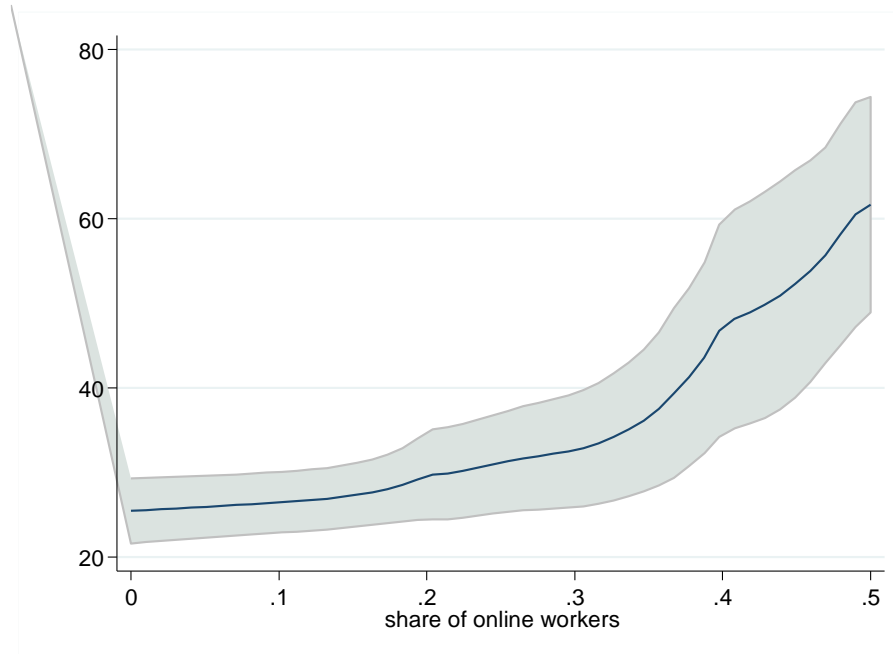
Impact of Online Dedicated Workers on Firms

The impact of e-commerce can also be observed in the cost structure of business. While the use of e-commerce can free up some labor, there is a need for new roles in dealing with online transactions. As stated by Terzia (2011), e-commerce affects the demand for certain skills and generates demand for individuals with skills to master such technology.

Figure 13 below shows a graph of dedicated online workers hired by firms and sales growth of the online firms. As we can see from the figure below, we found that there is a positive association between the share of online workers and firms' sales. This is in line with Terzia (2011), who stated that there might be a need for new skills due to online sales potentially generating more sales for firms. Workers who deal with online platforms usually have responsibilities related to technical internet problems, maintaining online platforms, and optimizing marketing strategies to sell the products on online platforms, which require a new set of skills from newly hired workers. Although there will be

an increase in the cost of production from hiring more workers to handle online matters, firms will enjoy more sales in comparison with firms that do not hire dedicated workers for online tasks.

Figure 13: Share of Dedicated Online Workers and Total Sales of Firms



Impact on Marketing Costs and Discounts

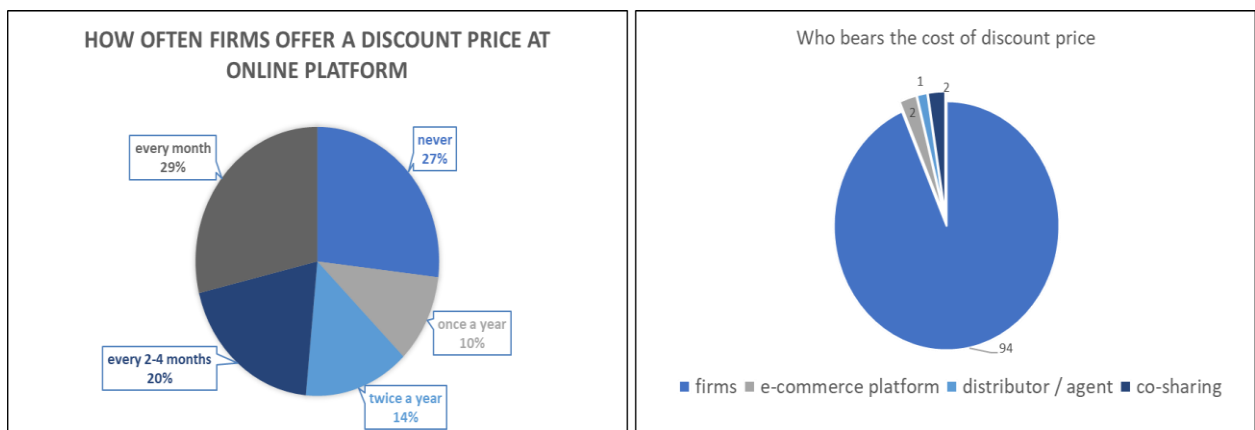
Figure 14 shows online and offline firms' perceptions related to marketing costs. A majority of respondents say there is no impact on marketing costs, both for online and offline firms, regardless of their size. However, a significant portion of online firms see an increase in marketing costs. This finding does not support the view that e-commerce might bring down firms' costs. One factor behind this is the present cost of internet usage and the cost to build and rent internet platforms. Another factor relates to frequent discounts and promotions on online platforms to attract more potential consumers.

Figure 14: Firms' Perception of E-commerce on Marketing Costs



Figure 15 shows the frequency of online firms offering discounted prices on online platforms, and who bears most of the cost. We found that 29% of our online respondents continuously offer discounted prices every month. Only 27% of respondents do not offer discounts. Breaking it down to size, the majority of firms that do not offer discount prices are micro and small firms. Around 94% of respondents stated that they bear the cost of discounts and promotions, and only 2% of respondents said e-commerce platforms assumed the cost.

Figure 15: Frequency of Online Firms Offering Discounted Prices and Those Bearing the Cost



The Use of Future Technology in E-commerce

Another interesting aspect of cost structure relates to the use of future technology (such as Google Analytics) to conduct a deeper analysis of firms' markets. Using this technology or big data analysis, firms are able to look at the characteristics of consumers who visit their online platform or consumers in general, so that they are better equipped to develop marketing strategies. In addition, further

analysis can be performed such as on the number of products seen by consumers, combined with how much was sold.

However, the awareness level of this technology is still very low in firms. According to our survey, only 29% of respondents were aware about the presence of this technology. The number of firms using this technology is even lower, accounting for 20% of online commerce respondents. Such limited understanding on the use of big data analysis hinders firms in designing more appropriate online business strategies that could reduce online trading costs and expand their markets. Due to low use of future technology, it is hard to conduct further analysis, such as by looking at the impact of those analyses on sales and profits.

Modeling the Impact of E-commerce on Business

To answer our main research questions, we constructed a linear regression model to find a coefficient correlation between online commerce and firms' performance. The indicator used for firms' performance is the firms' growth of sales during 2015-2017. We used these three years in this model to capture the impact of e-commerce on firms' sales due to the rise of e-commerce, which has grown significantly in the last five years in Indonesia. We used a dummy variable to indicate online firms: one for online firms and zero for offline firms. As mentioned previously, e-commerce itself in this context is not limited to e-commerce platforms, but also the use of social media, websites, or even a combination of these three elements for business purposes. Other variables, such as GDP by sector, the size of firm, type of firm, and time effect variables have been selected to control the regression model.

Data used in this model was based on CSIS' e-commerce survey. In addition, we combined it with a CSIS manufacturing survey that focuses more on medium and large manufacturing firms. The survey was carried out around the same time at the CSIS e-commerce survey. Thus, the total of firms or individuals used in this model was 1,100 firms.

This model can be expressed as follows:

$$Sales_i^t = \alpha + \beta_1 Online_i + \beta_2 \ln GDP_i^t + \beta_3 micro_i + \beta_4 small_i + \beta_5 medium_i + \beta_6 manu_i + \beta_7 online * micro + \beta_8 online * small + \beta_9 online * medium + \beta_{10} online * manu + \beta_{11} D2016 + \beta_{12} D2017 + \epsilon$$

The variables are described below.

- Sales : growth rate of firms' sales year-on-year
- Online : dummy variable of e-commerce; 1: firms are using e-commerce, 0: firms are not using e-commerce
- Lngdp : Indonesian GDP by sector in log form
- D2016 : time fixed effect for year 2016
- D2017 : time fixed effect for year 2017
- Micro : dummy variable for micro level firms
- Small : dummy variable for small level firms

Medium : dummy variable for medium level firms

Manuf : dummy variable for manufacturing firms

The specification allows us to examine the effect of being online across different sizes of firms. By doing this, we know which classes of firms have statistically higher sales growth when utilizing e-commerce. Another interaction that we examine further in the model is online firms and the type of firms (manufacturers versus retailers). In this case, we aimed to see if there is a significant difference of sales growth between online manufacturers and online retailers.

Regression Results

According to our regression calculation, we found that the use of internet technology or e-commerce in firms significantly affects their sales growth. Online firms have 12.8% higher sales growth than offline firms (Model 2). This result is quite rigorous, as we have controlled with other internal factors (scale and type of firms) and external factors (Indonesian economy and dummy invariant year). The standard error of online variable did not change much when we added new variables into the model, from the first model into the second model.

Table 1: Regression Result

	(1) sales	(2) sales	(3) sales	(4) sales	(5) Sales
Online	12.72*** (1.198)	12.88*** (1.199)	12.28*** (1.845)	19.524*** (3.386)	22.05*** (3.696)
Lngdp	1.779*** (0.426)	2.247*** (0.4410)	2.320*** (0.44)	2.234*** (0.441)	2.285*** (0.441)
Micro		1.642 (5.027)	-7.564 (5.88)	1.219 (4.928)	3.282 (4.915)
Small		7.563*** (1.412)	7.469*** (1.572)	7.695*** (1.402)	8.862*** (1.458)
Medium		4.237*** (1.132)	4.262*** (1.269)	4.407*** (1.836)	17.37*** (4.466)
online*micro			21.07* (9.847)		
online*small			0.285 (2.848)		
online*medium			-0.0013 (2.697)		13.598 (9.052)
Manuf		-0.427 (1.690)	-0.596 (1.695)	1.443 (1.836)	5.192*** (2.011)
online*manuf				-8.248** (3.607)	11.93*** (4.015)
d2016		-0.810 (1.185)	-0.841 (1.185)	-0.882 (1.184)	-0.873 (1.180)
d2017		0.733 (1.263)	0.670 (1.263)	0.521 (1.268)	-0.532 (1.264)
medium*manuf					-14.98***

					(4.564)
medium*manuf*online					16.713*
					(9.412)
_cons	-12.35*	-21.97***	-22.518***	-23.25*	-27.28***
	(5.078)	(5.364)	(5.374)	(5.341)	(5.399)
N	2549	2546	2549	2546	2546
adj. R-sq	0.047	0.062	0.064	0.065	0.0712

Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

One interesting finding from our model is the different magnitude of e-commerce impacts, following the size of firms as represented in the third column (Model 3). The only significant interaction coefficient applies to micro-scale firms. Online micro firms have 13.5% higher sales growth compared to micro firms that do not use e-commerce. This result indicates the significance of the impact of e-commerce when used by micro firms in order for them to grow further.

This significant impact for micro firms can be best explained through two things. First, the firms usually are in a development phase or not yet mature, which mean they have not optimized their whole production or sales potential. A low level of innovation, such as using e-commerce technology, can significantly affect their sales growth, compared to medium or large firms. Second, micro firms are also characterized by the limited markets or number of consumers that they can reach. Thus, by using e-commerce, they can potentially increase their market coverage and consumer reach to make their sales skyrocket.

Indonesian firms are dominated by micro-level firms, which are characterized by being part of the informal sector and adding a low-level contribution to the economy. Although this type of firm contributes a lot to employment absorption, micro firms struggle to upscale to a higher level like medium or large firms. This model shows that the use of technology, in this context e-commerce, can be an option for the development of micro and small firms in Indonesia.

The fourth column presents the regression result of e-commerce impacts across different types of firms. We found that online retailers have higher sales growth than online manufacturing firms. This result matches with the perceptions in Figure 15, in which a majority of online retailers believe that e-commerce increases their sales at a slightly higher rate than online manufacturers.

Another finding from our model is that there is a positive association for medium-scale manufacturing firms when using online technology (see Model 5). We found that medium-scale manufacturers that use e-commerce have 1.7% higher sales than offline medium-scale manufacturers. For other combinations of size and type of firms, we did not find any evidence that showed a sales difference among firms (or the difference was statistically insignificant).

5 E-commerce and Consumers in Indonesia

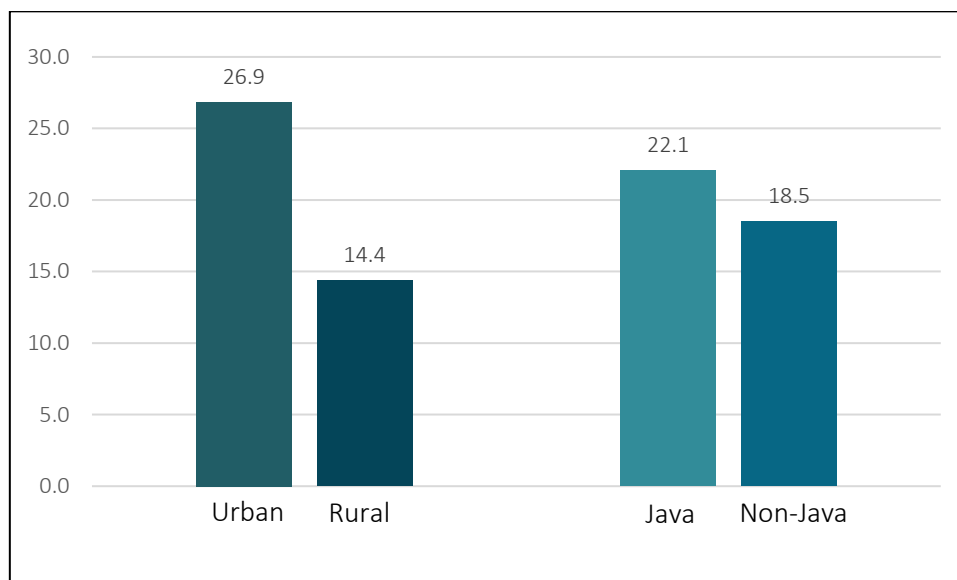
As previously mentioned, this study aims to provide deeper insights into the use of e-commerce both for businesses and consumers. This section discusses the results of our survey of consumers by looking at several characteristics of Indonesian e-commerce users. While some characteristics have been discussed in the previous section based on Susenas 2017, this survey provides more up-to-date and

comprehensive information on e-commerce users, including patterns of online shopping in Indonesia, as well as benefits and obstacles.

Some Characteristics of E-commerce Consumers in Indonesia

Our survey found that 21% of Indonesians have shopped online at least once in the last year. The number itself is a jump from Susenas 2017 data we observed in the previous section, which is around 13% of the population. Looking in more detail at geographical characteristics, it seems that urban and rural locations determine online purchases more significantly than Java and non-Java locations (Figure 16). Around 27% of respondents living in urban areas had shopped online, while 22% of respondents in Java had done so. This pattern indicates the importance of infrastructure in allowing consumers to make online purchases, as also indicated in the analysis from business perspectives in the other part of the paper.

Figure 16: Online Consumers According to Regional Characteristics



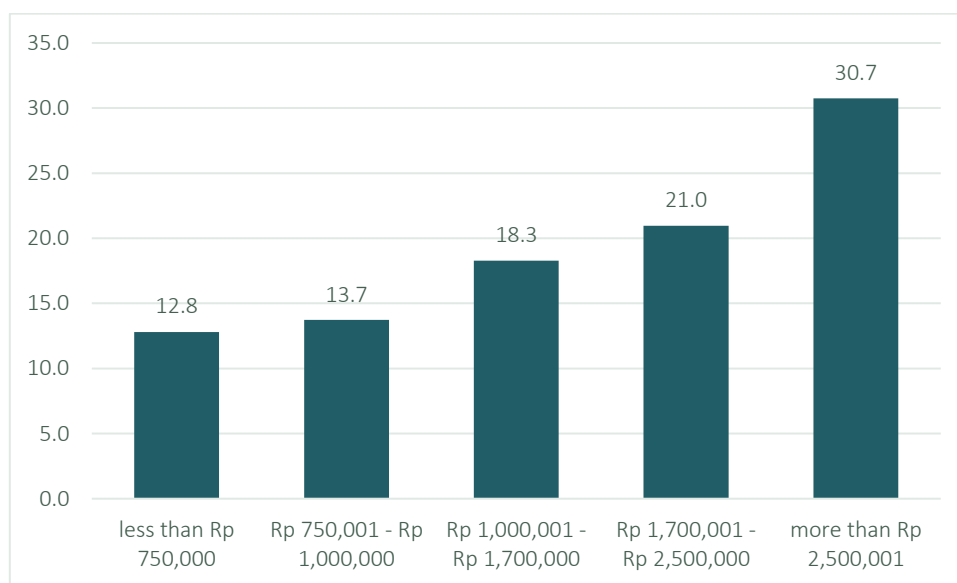
Another important and interesting characteristic is the age of online consumers. A total 45% of those between 17-35 years of age (“millennials”) had made online purchases, compared to, for example, only 18% of those between 36-45 years of age. These millennials are also most exposed to other internet-based activities such as social media. Around 40% of them use social media on a daily basis. There is also a strong correlation between those who use social media and online purchase activity. Around 45% of active social media users have made online purchases, compared to only 8% who never use social media.

The possibility of shopping online is also higher among people who have completed higher education. Of individuals with an undergraduate degree or higher, 54% have purchased goods online. This is quite reasonable as higher education can be associated with a higher degree of openness toward new technology, including the use of e-commerce. They also seem to have higher confidence toward online trading systems, as we will explore further below. It is interesting to note that respondents who had never attended school had also never shopped online. That might be because of a lack of literacy skills,

and because they are typically from older age groups. Bear in mind also that the proportion of those who never attended school is very small, at less than 3%.

The monthly expenditure of respondents is another factor shaping their attitudes toward e-commerce. Figure 17 shows the proportion of respondents who have shopped online based on their average expenditure per month. As we can see, higher expenditure per month is associated with a higher probability of purchasing goods and/or services through online platforms. More than 30% of respondents with monthly expenditure of Rp 2.5 million or more have shopped online before, while only 12.8% of respondents in the lowest bracket of expenditure have bought products online. This indicates that higher expenditure, which can also reflect a higher income, has a positive correlation with preferences toward online commerce.

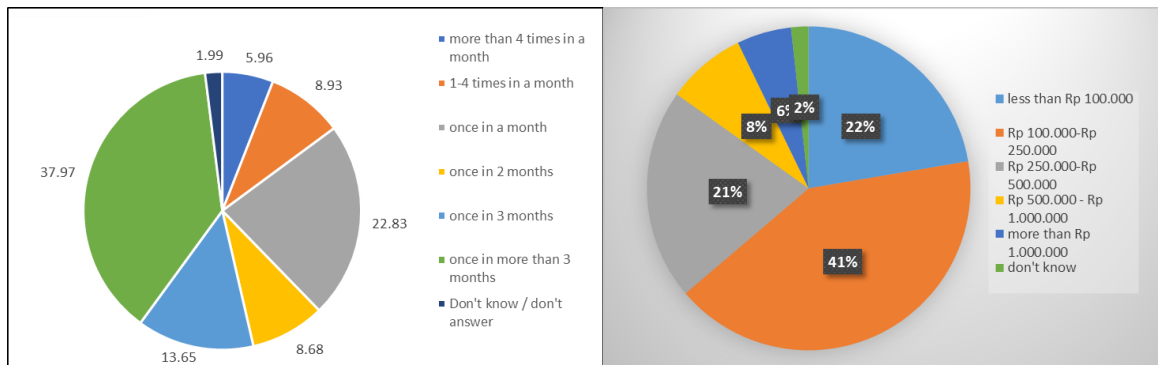
Figure 17: Online Consumers According to Respondents' Expenditure Per Month



Pattern of E-commerce Consumption in Indonesia

We also use information from the survey to gain insights on the patterns of online commerce. Figure 25 shows the frequency of respondents' online purchases. While the number of online consumers appears to be increasing, the frequency of purchases remains modest. The majority of them (60%) make an online purchase less than once a month, although there is 15% that shop online more than once a month. The right panel of Figure 25 also shows their estimated monthly online expenditure. Around 63% of online consumers spend less than Rp 250,000; only 16% of them spend more than Rp 500,000 per month through e-commerce.

Figure 18: Frequency of Online Purchasing and Monthly Online Expenditure

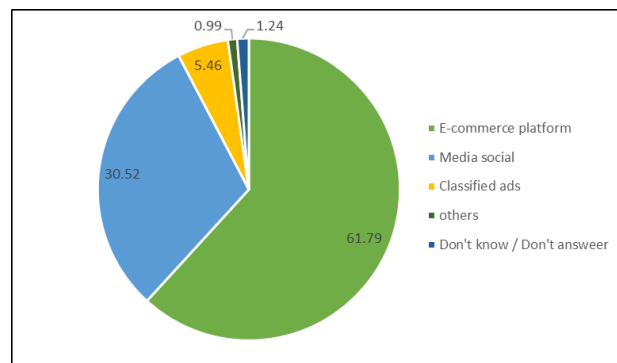


One interesting development in Indonesian e-commerce can be observed in the ways consumers pursue their transactions. Figure 26 shows the types of online platforms being used by respondents for online shopping. A majority, or 62%, of respondents use e-commerce platforms such as Tokopedia, Lazada and Bukalapak, while only 31% of respondents use social media platforms such as Facebook or Instagram for online purchases. The number of those who use classified ad platforms for transactions is even lower.

This result is interesting as it shows a different situation to that observed from a survey conducted by ISEAS in 2017 (Azali, Negara, and Damuri, 2019), as referred to in the previous section. The 2017 survey shows that the majority of online purchases were conducted through social media. The change in our 2019 survey might be related to greater awareness and confidence levels related to online purchases in Indonesia. Consumers have become more confident in using integrated online platforms, while supporting services such as payment systems and delivery are getting better and easier to use.

Greater access to infrastructure and digital payment services that have blossomed in the last two years might also help to increase the use of online platforms. This is indicated by the geographical characteristics of e-commerce platforms. The majority of urban online consumers (73%) use integrated platforms for their transactions, compared to only 43% in rural areas. Again, access to infrastructure and payment systems might support better e-commerce services and development.

Figure 19: Platforms Used by Online Consumers

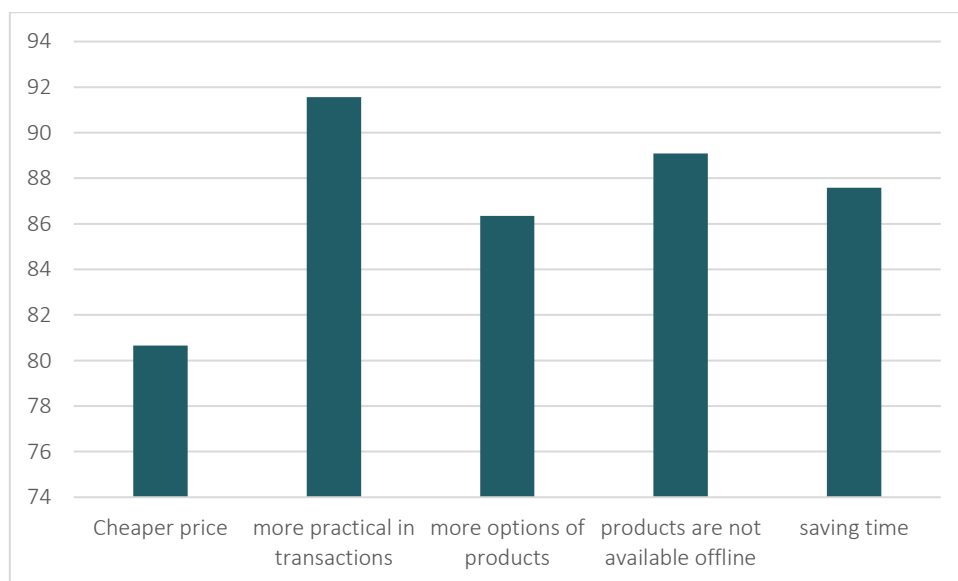


Moreover, the survey tells us that a significant number of e-commerce users began making online purchases recently. Around 45% of respondents started using e-commerce in 2018 or 2019. Cross tabulation shows that 60% of new online consumers conducted online purchases through e-commerce platforms. It seems that new consumers found the integrated services offered by platforms to be more convenient than other online options. It is also interesting to see that 86% of these new consumers say their economic situation had either improved or not worsened during the last year. Good economic conditions might also affect people’s decision to start making online purchases.

Figure 20 shows the motivation and benefits of those conducting online purchases. In general, 80% of respondents believed that all the factors mentioned below were important in motivating them to make online purchases. The most valued benefit was the practicality of online systems. By purchasing goods and or services online, they do not need to travel, bear transportation costs or spend time to visit stores. In addition, the options of goods provided on online platforms make it easier for them to avoid visiting several stores before deciding to purchase a product. Meanwhile, the factor with the least effect on encouraging respondents to shop online was the potential of lower prices. Nevertheless, there was still quite a number, with 80% of respondents believing that shopping online offered lower prices.

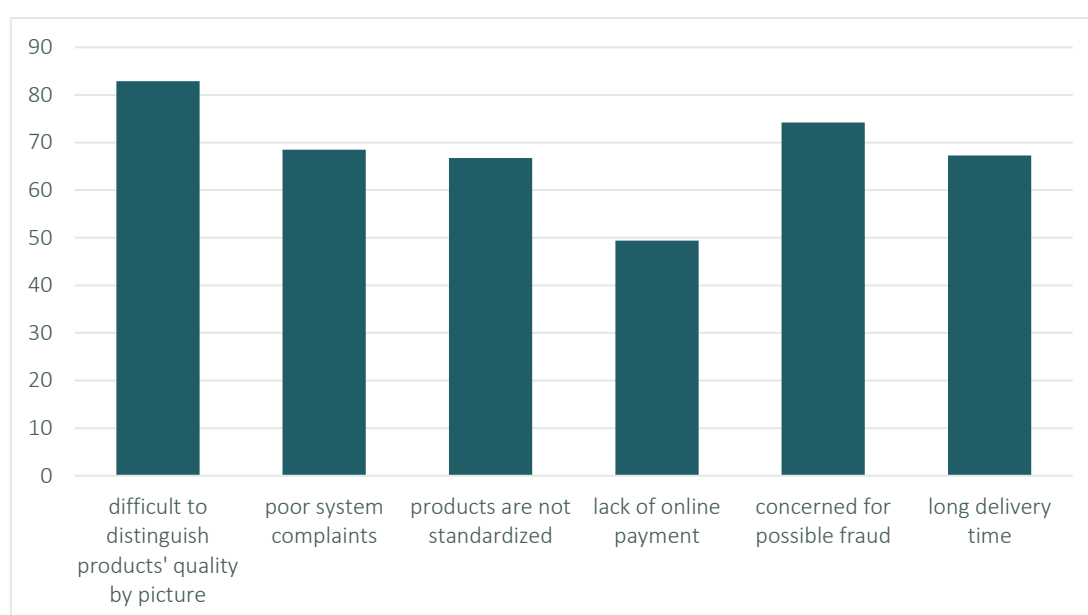
One interesting factor to explore further is the availability of products in the respondents’ areas. Around 89% of respondents stated this to be one of the reasons for choosing online platforms. Geographically, the percentage of respondents who live outside Java who stated they wanted to shop online due to a lack of products nearby was slightly higher (90%) than respondents who live in Java (88%). This is quite reasonable as Indonesia’s industries are very concentrated in Java. However, there was also quite a number of people in Java who stated this reason. This might be because some products that Indonesian consumers are looking for are not produced locally, or are imported products.

Figure 20: Motives of Online Consumers to Use Online Commerce



Looking at the obstacles in conducting online commerce, 80% of online consumers believed that it is still hard to know enough about a product's quality based on the pictures provided by online sellers. They also remain worried about possible fraud, such as getting fake products or products that are not in line with their specifications. Payments are no longer a major problem for online trading, even for those with no access to banking services, as payments can be made through third-party agents such as convenience stores or post offices. Most of those who experience problems with payments are located in rural areas. The same customers also face issues related to delivery time. More than 70% of consumers in rural areas found that long delivery times held them back from shopping online. This again indicates how infrastructure and supporting services are crucial in further developing e-commerce. Indonesia's relatively poor logistics services need to be improved to allow more people in rural and isolated areas to take part in online commerce activities.

Figure 21: Perceptions of Barriers to Online Commerce




6 Summary and Recommendations

This study provides an empirical analysis of some characteristics of online commerce in Indonesia, and the impacts on businesses and consumers. It draws some findings from the data collected by surveys of businesses in several areas and of residents. Some findings from the survey and analysis confirm several general preconceptions on e-commerce. However, by looking at quantitative information, the study provides a deeper understanding of and new perspectives on various issues related to e-commerce.


Here are some major findings from the study.

- E-commerce in Indonesia has grown rapidly over the last five years. While the real size of online-based trading remains unclear, data from the country's four biggest e-commerce platforms collected by BI shows that the sector grew by 156% in 2018, reaching Rp 140 billion.
- While the sector has grown quickly, the number of online businesses remains small. According to data from the Economic Census 2016, the proportion of online business is below 4%. They are



mostly located in Java, where infrastructure and supporting services are better than in the rest of the country. Most online firms are small or micro businesses, although the level of online activities is high among large companies.

- Being online increases firms' performance as it allows them to expand their markets and increase their consumer bases. Our survey suggests that businesses increase their sales and profits by operating online. On average, the sales growth of our online respondents was 12.8% higher than those not operating online.
- While we can see improvements in the performance of online firms in all types of business, micro and small retailers seem to enjoy the biggest benefits: the sales increase of online micro firms can reach 30%. While being online is also favorable for manufacturers, their sales increase is much lower than the average, at around 10%, while retailers can increase sales by 19%.
- While the benefits of being online are more significant for micro and small firms, the "cost" of not being online is also more obvious for them. A majority of respondents say that their business performance, sales and profits have declined since online commerce began to grow notably four years ago.
- Contrary to the general conception that being online might reduce operational and marketing costs, our respondents find that their costs increase. The increase is related to the cost of having an online presence, such as maintaining websites, online shops on e-commerce platforms, or delivery handling. Many of them needed to hire new employees to adequately handle such activities. The cost increase, however, is covered by the rise in sales, which is higher if a business has employees to exclusively handle online activities.
- The costs of being online also include higher promotional costs. A majority of respondents say that they need to frequently participate in promotional events on e-commerce platforms by offering discounted prices. They also reveal that most of time, they have to bear the cost of promotion themselves, not the e-commerce platforms.
- Looking at the consumer side, the study also analyzed characteristics of online consumers. Comparing data collected over the past four years, we can see that the number and proportion of online consumers increased steadily. The figure, however, remains relatively small. Our national survey carried out in 2019 recorded that only 21% of Indonesians had shopped online at least once in the previous year. Most of them are young, educated, with a higher income level, living in urban areas of Java. These characteristics also highlight the importance of infrastructure and supporting services for e-commerce development.
- Our survey shows that integrated e-commerce platforms are gaining popularity: More than 62% of respondents shopped online through the platforms, while previous studies highlighted the importance of other online platforms, such as social media or websites. New online consumers, who are quite significant in number, also prefer to complete their transactions through integrated platforms. The recent development of online payment services and better facilities provided by e-commerce platforms might explain this trend.
- The simplicity of transactions and availability of products are the most common reasons for people to choose online shopping. Online commerce provides an opportunity for consumers to source goods from distant areas. The percentage of respondents who live outside Java who stated they wanted to conduct online trading due to a lack of products nearby was slightly higher (90%) than respondents who live in Java (88%). But those consumers also find considerable challenges in conducting transactions due to long delivery times and a lack of access to payment services, which again underlines the role of infrastructure and supporting services.




From those findings, several policy options that can be envisioned for the future development of e-commerce in Indonesia.

- Infrastructure development and the availability of supporting services remain the most important factors. With internet penetration still around 60%, the benefits from online commerce cannot be optimally realized. Moreover, internet penetration is not evenly distributed across the country, while the speed remains slow and tends to be unreliable. The Palapa Ring project aspires to connect 514 regencies and cities through a broadband connection and provide faster communication services throughout the country by 2019.⁵ According to the Communications and Information Ministry, the project will address the huge digital divide in the country. However, the government should realize that the future of the internet might come from cellular networks. Creating a more competitive environment for cellular services, including supporting bottom-up strategies to build cellular networks in rural areas using open-source technologies, would help to improve digital connectivity and e-commerce development.
- In addition to internet connection, e-commerce depends upon two supporting services: financial services for payment and financing, and logistics services for the efficient delivery of products. Despite many initiatives to improve financial inclusion in Indonesia, access to financial services remains relatively low. A lack of financial access is one of the reasons why many consumers are still reluctant to use e-commerce, in particular for platforms with integrated payment systems. This is also one of the reasons behind the proliferation of social media-based online trading that allows for payments to be settled outside of the system.
The current proliferation of digital payments has the potential to increase financial inclusion. This allows the use of mobile networks and apps to settle payments, including for e-commerce transactions. However, in order to substantially increase financial inclusion, policy and regulatory frameworks for digital payments need to have a new approach. Currently, digital payment services are required to use the existing networks of financial institutions, which requires consumers to have access to financial instruments in order to use the services. This prevents a greater role for the technology in expanding financial coverage.
- Delivery and logistics services are key for e-commerce transactions. However, delivery services depend upon the availability of sea and air transportation in addition to land transportation. Currently, direct air transportation routes are limited to several big cities, such as Jakarta and Surabaya in Java or Makassar in Sulawesi that act as hubs to other cities. Delivering goods outside Java can take more than 10 days and sea freight costs can exceed \$1,000 for a 20-foot container.⁶ Allowing for more competitive transportation and logistics services would help create efficient and affordable delivery facilities for e-commerce.
- Our findings also show that being online requires businesses to have the ability to conduct new sets of tasks, such as online marketing, packaging and complaint handling. Acquiring this new skill

⁵ Ayomi Amindoni, "Palapa Ring will improve connectivity in Indonesia: Jokowi", The Jakarta Post, 30 September 2016. <http://www.thejakartapost.com/news/2016/09/30/jokowi-says-palapa-ring-will-improve-connectivity-in-ri.html>

⁶ World Bank, "Indonesia's Connectivity and Logistics Challenges: Findings from World Bank advisory work for IPC", 10 December 2015. <http://isd-indonesia.org/wp-content/uploads/2015/12/Indonesia-Services-Dialogue-IPC-The-World-Bank.pdf>




is necessary for businesses operating through online commerce. The new tasks often entail new employees and additional time. In addition, the cost of conducting business may also increase as companies enter online trading activities. While providing training might answer the need for new skills in utilising online platforms for MSMEs, businesses also often find that dealing with online commerce might consume too much of their time, especially for micro and small manufacturing businesses that need to focus on the production and innovation of their products.

An alternative for them to access online commerce is to create business groups that act as online marketers for businesses/producers that lack the time, capacity and workers required for online activities. Such digital entrepreneurs/marketers would allow more businesses to access online commerce and obtain the benefits of a wider market and more diverse customers. The government and other related stakeholders, e.g. universities and the private sector, can help to groom entrepreneurs who could facilitate MSMEs entering online commerce.

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Appendix 1

Firms' Survey Method

We used the purposive sampling (a non-probability sampling type) method for our sample firms' selection. The method was chosen as we did not have full population data for online firms and offline firms, which makes it hard to conduct a random sampling method. Furthermore, it is more suitable for our research objective. The survey aimed to capture the performance of online firms and offline firms. Thus, we tried to give a similar proportion for their size (medium and large vs micro and small), and their sector (manufacturers and retailers) in order to have a better view at the micro level or firm scale.

In addition, we also used data from CSIS' manufacturing survey to construct econometric modelling in order to have more observations and representativeness in large and medium firms in our model. The method used in the manufacturing survey was quite similar to the e-commerce survey, of purposive sampling.

Table 2: Sample Firms' Proportion Across Cities

Area	Freq	Percent
Jakarta	367	33.3
West Java	337	30.58
East Java	398	36.12

Table 3: Descriptive Data Related to Firms' Performance (sales growth)

Variable	Mean	std deviation
salesonlinefirms2015	18.38	24.84
salesonlinefirms2016	20.49	26.88
salesonlinefirms2017	25.14	28.68
salesofflinefirms2015	9.50	22.14
salesofflinefirms2016	8.01	25.91
salesofflinefirms2017	8.67	29.78

Appendix 2

Consumers' Survey Method

In addition to the firm surveys, we also conducted household face-to-face surveys to complement this paper. We used multistage random sampling as a method for this survey. To select the respondents, we considered several aspects, such as: the proportion of population in each province; proportion in urban and rural areas for the sample based on BPS data; and proportion of men and women. At first, we intended to have 2,000 respondents. But, after conducting validity and verification checks, only 1,960 data respondents could be used for further analysis. All these respondents were proportionately spread across 34 provinces in Indonesia, to have a better picture of Indonesia's condition, as shown in the table below.

Table 4: Share of household respondents in 34 provinces

No	Province	Frequency	Percent
1	Aceh	40	2.04
2	Bali	21	1.07
3	Banten	70	3.57
4	Bengkulu	10	0.51
5	Yogyakarta	30	1.53
6	Jakarta	80	4.08
7	Gorontalo	10	0.51
8	Jambi	29	1.48
9	West Java	350	17.86
10	Central Java	280	14.29
11	East Java	320	16.33
12	West Kalimantan	40	2.04
13	South Kalimantan	30	1.53
14	Central Kalimantan	20	1.02
15	East Kalimantan	30	1.53
16	North Kalimantan	10	0.51
17	Bangka Belitung	10	0.51
18	Riau Island	10	0.51
19	Lampung	60	3.06
20	Maluku	10	0.51
21	North Maluku	10	0.51
22	West Nusa Tenggara	40	2.04
23	East Nusa Tenggara	40	2.04
24	Papua	40	2.04
25	West Papua	10	0.51
26	Riau Island	40	2.04
27	West Sulawesi	10	0.51
28	South Sulawesi	60	3.06
29	Central Sulawesi	20	1.02
30	Southeast Sulawesi	20	1.02
31	North Sulawesi	20	1.02
32	West Sumatra	35	1.79
33	South Sumatra	60	3.06
34	North Sumatra	95	4.85
Total		1,960	100

Appendix 3

Table 5: E-commerce Regression Model for Each sector City

	(6) sales	(7) sales	(8) sales	(9) sales
online	12.119*** (1.173)	8.909*** (1.439)	13.313*** (1.225)	16.477*** (4.277)
lngdp	1.740*** (0.439)	1.671*** (0.441)		
micro	2.08 (5.109)	1.675 (5.021)	-0.814 (4.959)	-1.287 (5.020)
small	5.626*** (1.802)	5.920*** (1.799)	6.312*** (1.525)	6.079*** (1.536)
medium	4.505*** (1.100)	4.776*** (1.103)	4.263*** (1.113)	4.165*** (1.127)
manuf	1.076 (1.668)	1.012 (1.669)	0.572 (1.740)	0.459 (1.743)
d2016	-0.871 (1.167)	-0.935 (1.166)	-0.670 (1.184)	-0.697 (1.185)
d2017	0.547 (1.235)	0.444 (1.236)	0.892 (1.261)	0.879 (1.262)
Jakarta	6.115*** (1.778)	4.343** (1.915)		
EastJava	12.936*** (1.120)	12.070*** (1.298)		
online*Jakarta		6.935** (2.898)		
online*EastJava		3.109 (2.450)		
garmen			-2.694 (2.04)	-3.037 (2.307)
footwear			-7.650*** (2.369)	-6.473** (2.641)
electronic			5.99* (3.175)	7.309** (3.615)
automotive			-3.112 (2.423)	-2.585 (2.557)
fnb			0.72 (2.147)	1.346 (2.331)
rubber			-1.658 (2.461)	0.574 (2.653)
online*garmen				-0.885 (4.713)
online*footwear				-5.386

				(5.216)
online*electronic				5.883 (7.327)
online*automotive				-3.951 (7.097)
online*fnb				-3.742 (4.879)
online*rubber				-13.151** (5.933)
_cons	-22.94*** (5.209)	-21.29*** (5.246)	5.497** (2.598)	5.20* (2.672)
N	2546	2546	2550	2550
adj. R-sq	0.098	0.099	0.067	0.069

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001



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