

E-Commerce Growth and Development, Impact, and Challenges in Indonesia

Pertumbuhan dan Perkembangan E-Commerce, Dampak dan Tantangan di Indonesia

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Abstract. This paper focused on how e-commerce growth and development, impact, and challenge in Indonesia. This topic is quite interesting to discuss simply because digital law and business are quite new to Indonesian lawmaker. Overall, this paper also shows how the e-commerce regulation shape Indonesia digital trade law. Besides that, some of discussion also talk about how financial technologies provider involved on e-commerce growth. It is true that most e-commerce in Indonesia cooperates with fintech in terms of payment services. The growth and development of fintech somehow help e-commerce to grow and evolve. It is also important to discuss how the law support the e-commerce. Most of law area cover information and electronic transaction, intellectual property, and consumer protection. Not only that, but this paper also shows a real case involved three main e-commerce in Indonesia involving Go-Jek (ride-shared services and food deliveries platform), Tokopedia (marketplace), and Traveloka (travel and leisure). Finally, we also see how the main challenges such us human resources, funding, and cybersecurity will impact the e-commerce growth and development in Indonesia.

Keyword: e-commerce, financial technologies, information and electronic transaction

Abstrak. Makalah ini berfokus pada bagaimana pertumbuhan dan perkembangan e-commerce, dampak, dan tantangannya di Indonesia. Topik ini cukup menarik untuk dibahas karena hukum dan bisnis digital cukup baru bagi anggota parlemen Indonesia. Secara keseluruhan, tulisan ini juga menunjukkan bagaimana regulasi e-commerce membentuk hukum perdagangan digital Indonesia. Selain itu, beberapa diskusi juga membahas tentang bagaimana penyedia teknologi keuangan terlibat dalam pertumbuhan e-commerce. Memang sebagian besar e-commerce di Indonesia bekerja sama dengan fintech dalam hal layanan pembayaran. Pertumbuhan dan perkembangan fintech entah bagaimana membantu e-commerce untuk tumbuh dan berkembang. Penting juga untuk membahas bagaimana hukum mendukung e-commerce. Sebagian besar bidang hukum mencakup informasi dan transaksi elektronik, kekayaan intelektual, dan perlindungan konsumen. Tidak hanya itu, tulisan ini juga menunjukkan kasus nyata yang melibatkan tiga e-commerce utama di Indonesia yang melibatkan Go-Jek (layanan berbagi tumpangan dan platform pesan-antar makanan), Tokopedia (marketplace), dan Traveloka (travel and leisure). Terakhir, kita juga melihat bagaimana tantangan utama seperti sumber daya

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manusia, pendanaan, dan keamanan siber akan berdampak pada pertumbuhan dan perkembangan e-commerce di Indonesia.

Kata Kunci: *e-commerce, teknologi keuangan, informasi dan transaksi elektronik*

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1 Introduction

In recent years, there have been both high expectations and stimulating development in the e-commerce sector in Southeast Asia in general and in Indonesia in particular [1]. The blooming of start-up and financial technologies companies proves that Indonesia has a favorable environment for e-commerce business. By 2025, Indonesia is expected to account for 52 percent of the e-commerce market in the Southeast Asia region. McKinsey estimated that the value of the Indonesian e-commerce market will reach US\$150 billion by 2025 based on a report released in 2016. Additionally, Indonesia contributes to 4 per cent of total e-commerce sales around the world [2]. This essay will discuss three issues regarding e-commerce growth and development, impact, and future challenges in Indonesia.

Firstly, law and regulation will be our main discussion. It is true that Indonesia, as a developing country, lacks regulations and policies, particularly in e-commerce. We will explore primary rules in Indonesia, including Law No. 11/2008 on Information and Electronic Transaction, which was amended by Law No. 19/2016. The Law provides a legal basis for internet-related activities and transactions. In addition to the law, there is a Presidential Regulation No. 74/2017 on the Roadmap for National Electronic Commerce System which was revised with Government Regulation Number 80 of 2019 on Trading through Electronics. This regulation provides the basic legal framework for e-commerce business operations in Indonesia. Furthermore, we will talk about other laws related to e-commerce, including intellectual property and consumer protection.

Secondly, we will assess the e-commerce growth impact on Indonesia economies. It is interesting to note that e-commerce contributes to economy in general. Some of the crucial aspects of this are the number of e-commerce and users (buyer or seller) involved in the markets will influence the volume of transactions. Hypothetically, the higher the volume of transactions, the more significant impact on its economy. Not only that, but the e-commerce business model is also essential to determine the e-commerce growth, whether it is business to business, business to consumer, or consumer to consumer. I consider the type of business model will influence how e-commerce users interact with each other.

Thirdly, financial technologies (fintech) companies influence on e-commerce in Indonesia is enormous considering their contribution indirectly to assisting the growth of e-commerce. It is true that most e-commerce in Indonesia cooperates with fintech in terms of payment services.

The growth and development of fintech somehow help e-commerce to grow and evolve. It also eases the payment for customers when doing transactions. There is still some lack of trust for online transactions in Indonesia because the number of fraud and cybercrime skyrocketing in recent years. The fintech companies are expecting to create a safe and secure payment. By this means, fintech can assist e-commerce to grow in Indonesia. In addition, some fintech also facilitated the user with some credit usage to encourage them to do a transaction in the platform. It is interesting to see these features and discuss more the role of fintech.

Finally, the challenge for e-commerce in Indonesia will be added to this essay's final part. Some discussions will talk about limited skilled workers in information and communication technologies (ICT). This skilled worker varied from software engineers, software developers, coders, user interface/user experience designers, and many others in ICT sectors. I consider this type of job is the backbone worker for e-commerce. The lack of skilled workers in Indonesia will slow down the growth and progress of e-commerce. Furthermore, we will discuss some of Indonesia geographical conditions. It is considered as a county with a high cost to distribute logistics since archipelagic-topographical. Not only that but internet connection and ICT facilities are also being considered in this part of the essay. There are huge disparities between big cities and rural areas in Indonesia in terms of internet connection. Finally, cybersecurity is a part of the challenge and sensitive issue to discuss. There are a lot of cases in Indonesia regarding data leaks and cybersecurity. We will discuss how e-commerce providers secure their databases and how they manage the security. It is a challenge for the e-commerce business to maintain their data in high-level security. Since data leaks and cybersecurity often happen here in Indonesia, e-commerce providers need to convince their customers about their data privacy.

In conclusion, Indonesia's e-commerce growth and development are determined by several factors such as law and regulation, impact on economies, followed by fintech companies as the catalyst. The cybersecurity and future challenge are critically important for Indonesia to face and tackle to meet the projection for 52 percent of the e-commerce market in the Southeast Asia region.

2 Analysis and Discussion

2.1 Law and E-Commerce Development in Indonesia

Internet is more than extraordinary, and it is the heart of technology. It is hard to believe that only a few years ago, a few people in Indonesia believed in the prospect of the domestic e-commerce industry. In my view, e-commerce is the platform that provides selling and buying activities over the internet for goods and services either is business to business, business to consumer, or consumer to consumer. These online transactions can be done on smartphones, tablets, laptops, and other devices with internet connections. It is basically a sales activity that has been digitalized through the internet. E-commerce sales/revenues are defined as the sales of

goods and services where the buyer places an order, or the price and terms of sales are negotiated over an internet, mobile device (m-commerce), extranet, EDI network, electronic mail, or other comparable online systems [3]. Payment can be made online or offline, and it depends on the deal that occurs. However, e-commerce includes more than just the obvious example of internet shopping. Commercial activity includes not only sales but also matters such as advertising and the provision of information (price lists, timetables, etc.) to assist a commercial transaction [4]. By this means, the crucial thing about e-commerce are the sales in the platform and the provision of information for the users before making the transactions. So, it is clear that the e-commerce scope is extensively broad.

It is impossible to understand e-commerce law without at least some understanding of how it all works and, since most e-commerce is internet-based, how the internet works; some of the unique features of the internet need to be grasped. To illustrate the definition of e-commerce stated above, this hypothetical scenario provides a better understanding of e-commerce. Suppose a seller is using an e-commerce platform to sell cosmetics products. Following that, a buyer also uses the same e-commerce platform looking for skincare. The buyer uses the smartphone and scrolls down on the platform to look for the best products and fit the budget. All provision information about the skincare products should listing in the platform. Generally, the seller makes the basic information for the products, such as ingredients and usage instructions, along with the pictures. Not only that but the product's price and method of shipment can also be determined on the platform. In addition to this, upon checking out the product, the buyer can choose some payment method, whether it is credit cards, debit cards, or e-money. After the successful delivery from the seller to the buyer, the transaction is considered complete. All these processes from order, payment, and shipment are considered e-commerce activities.

It is interesting to state that e-commerce law is not only about the internet only. Based on the hypothetical scenario, there at least several areas of laws can be identified. First, how we regulate information and electronic transaction. It is a significant concern because the e-commerce platform uses the internet, and all transactions are online. Second, intellectual property is also part of the law involved. For instance, the platform should have the right to use the public and not interfere with other platforms regarding intellectual property. In addition, the products and services also should be legal to sell, and it is not had issues with intellectual property from the other buyer. Third, consumer protection is quite crucial for the products and services listed on the platform. For the e-commerce platform to grow and develop, its focus should be consumer oriented. Fraud and scams should be avoided at any time so the user, mainly the buyer, can trust the platform before doing any transactions. Fourth, payment system regulation is also being considered to regulate. It is very sensitive to regulate the payment for the transactions, especially electronic transactions. I consider this area should be comprehensive

and details oriented to regulate. Most of the issues arising involving e-commerce platforms are money issues, whether scams or seller fraud. The protection of consumers should collaborate in this matter as well. Concerning our main discussion, these four basic laws and regulations will be explored to determine Indonesia's e-commerce growth and development.

Generally, the development of information communications and technologies is faster compared to the development of law. It is almost impossible to regulate all the relevant laws and regulations before the technologies arise. The rate of innovation and acceleration in technologies is unstoppable. But somehow, the development of law tries to update its context to the current changes in technologies. It is exciting to observe and discuss laws involved and development technologies for e-commerce in Indonesia.

2.2 Information and Electronic Transaction

In Indonesia, all internet-related are falls under Law No. 11 the Year 2008 on Information and Electronic Transactions, which was partly revised by Law No. 19 the Year 2016 (IET Law) as well as Government Regulation Number 80 of 2019 on Trading Through Electronics Systems. In brief, the law provides the legal basis for all internet-based activities and transactions. Not only that but all of the information and document provided can be used as evidence. Despite the name, the Law does not provide specific measures for e-commerce or other internet-based economic transactions. Interestingly, the electronic transaction means legal activities conducted through computer and computer networks and other media. It focuses mainly on the contents of the information in internet-based media, which may bring criminal conviction to related parties, including platform providers.

It seems the IET Law coverage to general and not specific for e-commerce businesses. It is a challenge for the regulators to provide particular laws, policies, or codes that can be used for the e-commerce providers or even the users. Because the law is not specific and is still in the under-developing phase, there are several concerns about this issue. First, how to manage data localization requirements: whether stored domestically or internationally. It can lead to a requirement to use domestic IP numbers and servers in a data centre located in Indonesia. These issues are between data privacy and sovereignty or against common international practice about the free flow of data. Second, there is a consideration from the Indonesian government that all platforms should have representation in Indonesia. Third, all the e-commerce platforms have different business models and how all these platforms compile with sectoral regulations. For instance, Gojek and Grab, two leading e-commerce companies that provide ride-sharing, should comply with transportation laws and regulations. In addition, Tokopedia and Shoppe, two leading marketplaces, should comply with trade laws and regulations. If the Indonesian government cannot regulate this specific thing, the chance to grow the e-commerce business will lead to chaos without law and order.

To answer the uncertainty in laws and regulations above, there is a breakthrough from the Indonesian government. They launch some ambitious policies to boost the e-commerce growth in Indonesia. This policy under the economic policy package signed by the President of Indonesia, Joko Widodo, on his first term only two years after taking office.

In November 2016, the Indonesian government released the 14th economic policy package on the e-commerce roadmap. It states that Indonesia aims to create “1,000 technology entrepreneurs” with business valuations up to US\$10 billion. It also sets a target for the country’s e-commerce market to reach US\$130 billion by 2020.

Interestingly, this economic package policy main purpose is to attract foreign direct investment to Indonesia; the digital economy, including e-commerce business, is one area that is quite promising. The policy is quite comprehensive and detailed-oriented. The roadmap covers eight key areas: (i) funding, (ii) taxation, (iii) consumer protection, (iv) education and human resources, (v) communication infrastructure, (vi) logistics, (vii) cybersecurity, and (viii) the formation of committee for e-commerce roadmap implementation. Not all this coverage will be discussed. We will not talk about all of the areas, only some important issues along with the essay. There are only a few topics such as consumer protection on the law for e-commerce, education, and human resources on the challenge, cybersecurity. In addition to that, we also discuss the business valuation and e-commerce market impact in Indonesian economies.

2.3 Intellectual Property

In this subtopic, there are two things related to intellectual property: trademark and copyright. Before discussing trademark and copyright issues, the first point to note is that the domain name is for the e-commerce platform business. As we know, the e-commerce platform must follow specific intellectual property laws and regulations before going to the market. The consequences for damaging intellectual property, most notably, is fine to the party. But, before we examine trademark and copyright, it is important to understand the basic features of e-commerce itself, including domain name address and application.

Domain name continues to be crucial, and it is more significant today rather than the last or a decade ago—understanding how the domain work is required before discussing trademark and copyright. The form for a domain name exists under the World Wide Web (WWW). Understandably, setting up the domain is relatively easy and fast. There are many provider services to set up the domain name. But the challenging part to establishing a domain name it should make attractive, and no one has used the domain name address yet.

It is straightforward for any company, or indeed individual, to set up a website. There is little point in setting one up, however, unless people can be

persuaded to visit it. Yet there are countless millions of sites, and merely to add one more is akin to placing a needle into a haystack. Somebody might find it, but it is unlikely to attract attention. The site must advertise its presence. To have an attractive domain name is one way of doing this. Another is to make the site more visible to the search engines, such as Google, which increasingly are being used to locate pages on the www.

It is interesting to see how the domain name plays an important role in this matter. In order for the domain name to work, a user of WWW requests a web page from a server. For sure, the user should know the server's address, and the server should know which devices (smartphones, computers, or tablets) to send the web pages. In practice, the server's address is likely to be relatively permanent; the user's, on the other hand, might be set up just for the session by the Internet Service Provider (ISP). All of these addresses are mandatory for the system to work. It is the IP part of TCP/IP (Transfer Control Protocol/Internet Protocol) which deals with addresses. IP assigns numbers uniquely to identify each computer connected to the internet, and the numbers are in the form of four octets, separated by full stops. Because these numbers are difficult to remember, domain names are mapped onto them, making them relatively easy to remember. All of this is the only general flow of how the domain establishes and work. This was done initially by IANA (Internet Assigned Numbers Authority) and later by ICANN (Internet Corporation for Assigned Names and Numbers, set up in 1998), which sub-contracts the allocation of domain names for individual countries. In Indonesia, the organization registers domain addresses under *Pengelola Nama Domain Internet Indonesia* (PANDI).

Following that, there are two important points in terms of how domain names work. First, though some form of unique identification is necessary to allow the Web to work, domain names are a matter of convenience and are not essential to the free running of the WWW. The second point to note is that it is not necessary for domain names to be assigned by any particular body – it is quite possible to provide for competing systems of domain names.

In the first development, the e-commerce platform usually exists under a WWW platform before expanding to application. We can see this from most e-commerce platforms such as e-bay. Before they had an application, the first platform they had was under a WWW platform. Not only that, but in Indonesia, it shows a pretty similar pattern. For instance, the two most e-commerce sites, Tokopedia and Shoppe, started with WWW presence before application. Relating to the establishment, it is smooth and easy, and sometimes the dispute might occur. A dispute can usually arise because of the conflicting interest of both parties that want the same domain name. It is understandable simply because they might carry the same business name or the same initial. Supposed there are hypothetical companies named Argo Sumatra and Automobile Sumatra, both companies eager to register their e-commerce activities under a WWW presence with www.as.com, and the dispute can arise. Type of dispute might occur such

as domain name hijacking, reverse domain name hijacking, cybersquatting, and typosquatting. For depth understanding in terms of the definition, here is the explanation for the type of dispute that might arise.

Domain name hijacking involves the use of an attractive domain name, involving another company name, to attract visitors to the business site of the hijacker. Reverse domain name hijacking is where a trading company buys up all the possible domain names that it could ever want, including (for example) top-level country domains in countries other than its principal location. Cybersquatting was an activity that took place primarily in the early days of the WWW, where far-sighted individuals (usually) registered domain names with resemblances to large companies, with a view to selling them to those companies when they realised the need for a web presence. Typosquatting is similar to domain name hijacking, but with the name misspelt, again with a view to attracting custom to the site.

In Indonesia, the dispute settlement can be done through PANDI under *Penyelesaian Perselisihan Nama Domain* (PPND). PPND, a non-litigation dispute settlement body for a dispute over Indonesian internet domain names, handles domain name disputes related to trademarks, registered names, or regarding a matter of decency [5]. Interestingly, one of the reasons Indonesian saw many cases regarding the dispute is because of the growth of number domain registration. PANDI has overseen the registration of domain name increasing, and its growth is outstanding with a 45% increase, reaching a total of 135,000 registrants.

After understanding how the domain name works, type of dispute, and settlement dispute, the discussion continues about the intellectual property for e-commerce. The first issue is a trademark. Most cases on the domain name are allegations of trademark infringement. The purpose of registering the domain address was to protect owners. In Indonesia, the primary laws to regulate the trademark fall under Law No. 15 the Year 2001 about Trademark, replaced by Law No. 20 the Year 2016 about Trademark and Geographic Indication. In brief, Law No. 20 the Year 2016 includes defining a trademark, submitting a trademark registration, and rights obtained after submission. A domain address is considered a trademark because it is unique and can differentiate from others. For instance, if we type www.tokopedia.com, it will go to the e-commerce platform in Indonesia under Tokopedia, not other e-commerce companies.

In Indonesia, a famous case involved a giant technologies company based in the US and has set up a subsidiary in Indonesia. The well-known video streaming service Netflix found that netflix.id had been registered by an unauthorized Indonesian citizen using their well-known trademark, they brought the matter before the PPND. Netflix proved that the domain address under netflix.id was registered by an unauthorized party because it had already filled and

submitted its trademark in Indonesia. However, no proof of intent to sell was forthcoming, so Netflix made the accusation that netflix.id was a parked domain, with the registrant trying to prevent Netflix from registering and using the domain name in Indonesia. In his response, the registrant stated out that Netflix had not secured the domain address before. It is also argued that in the basic principle “first to file first to protect”, Netflix should be registered and submitted the netflix.id as soon as they were eligible to do so. The PPND, however, disagreed domain address under netflix.id transferred to Netflix’s ownership.

The second issue to note is copyrights. It is argued that one of the important in developing an e-commerce platform for application is the source code. I consider the source code as the copyrights. In Indonesia, the law that regulates the copyrights under Law No. 19 the Year 2002 about Copyrights was amended to Law. No. 28 the Year 2014 (Copyright Law). The law exists for the general issues about copyright, and it is not specifically for e-commerce. But, some of the material includes the source code, which can be related to the establishment of e-commerce or growth. It is important for the e-commerce business to secure their source of codes.

To sum it up, the WWW presence or application is important for e-commerce to operate. During their operation, the providers should consider most intellectual property laws such as trademark and copyright. A dispute might occur between conflicting parties, and the regulation for this depends on the jurisdiction. In Indonesia, both Law No. 20 the Year 2016 about Trademark and Geographic Indication and Law. No. 28 the Year 2014 about Copyright can be considered a legal document for e-commerce business providers upon their establishment and operation.

2.4 Consumer Protection

The consumer is the key in terms of e-commerce business. All e-commerce platforms should maintain protection for the customers. If the platform concentrates on customer satisfaction, the chance to attract more users also increases. There are several issues for e-commerce in terms of consumer protection, including fraud and scams. To reduce frauds and scams, we should provide security and trust in the e-commerce environment [6].

Frauds and scams can be varied to e-commerce business model and type. But a marketplace is the model where the high risk for scams and fraud occurs, especially business to consumer and consumer to consumer. Tokopedia and Shoppe are e-commerce platforms with business to consumer models, while OLX is famous for a consumer-to-consumer model. In terms of business to consumer model, the chance for frauds and scams is less than the consumer-to-consumer model.

Nowadays, dispute resolution for a minor issue can be made through an application. Many e-commerce business providers have a feature to settle disputes on their platform. It is one way to protect the consumers. For instance, the buyer places an order for a sports product, and a

particular seller's product matches the buyer's intention. After the delivery, there non-conformity specification for the product requested, and the buyer can ask the seller to replace the product through the platform or return the money. This dispute can be settled with the help of e-commerce providers as a neutral side. All the documents regarding the order will be carefully examined. If the seller insists that he delivered the right product, but the order book is stated differently. The seller can be banned from the marketplace and cannot continue doing business on the platform anymore. Sometimes, the e-commerce platform also holds the amount of money before the buyer states that the product or service conforms in most cases to prevent this type of issues arise.

A supportive legal environment is crucial to create trust online and secure electronic interactions between enterprises, citizens and public authorities. For sure, well-regulated consumer law activities can assist the growth and development of e-commerce businesses. The reason is that many people will feel secure to do the transaction online. The banned and punishment for the parties that neglect the obligation and breach damages for the consumer is also a good idea to keep the e-commerce platform secure. This method also prevents more fraud and scams.

In Indonesia, Law No. 8/1999 on Consumer Protection is the primary centralized basis regulation for consumer protection followed by IET Law for internet-related activities. In terms of e-commerce related, the Indonesian government recently issued a specific regulation for trading through electronic systems.

Recently, the Indonesian government enacted Government Regulation No.80/2019 Of Trading Through Electronic Systems (PP 80 Tahun 2019 tentang Perdagangan Melalui Sistem Elektronik), or PP PMSE governs several issues, including first, the party conducting the trading. Second, its requirements and implementation. Third, obligations of business actors. Fourth, proof of electronic trading transactions. Fifth, electronic advertisement. Sixth, electronic offering, acceptance and confirmation in an electronic contract. Seventh is protecting personal data and its payment system and delivering goods and services through online means. Eighth, exchange of goods or services and cancellation of purchases in electronic transactions. Ninth, dispute resolution, guidance and supervision for the parties involved with the electronic transactions [7].

In brief, the regulation covers all basic needs for e-commerce to perform. It is true that this regulation can spur the growth of e-commerce in Indonesia. Before this regulation was issued, there were no guidelines for e-commerce providers and users to seek a legal foundation for their activities. I consider the current laws and regulations for consumer protection for e-commerce activities is more than enough in Indonesia compared to intellectual property. But this can be

improved, and more revisions align with technology changes to provide better laws and regulations in the future.

2.5 Payment System

Indonesia's payment system is relatively underdeveloped and less sophisticated compared with those of its neighbouring countries. The most common payment system method for e-commerce transactions is bank transfer through ATMs with debit cards. But there is one innovation from most e-commerce business providers in Indonesia, and the payment can be made after the delivery, known as cash on delivery (COD). This method can assist people in rural areas where they have low access to banks or ATMs. Unlike many countries, internet banking, SMS banking, credit cards, and e-money are relatively small.

Table 1 Online Transaction Payment Mechanism

Payment System	Percentage	Number (million)
ATM	36.7	48.7
COD	14.2	18.8
Internet Banking	7.5	9.9
SMS Banking	1.6	2.1
Credit Card	2.5	3.3
E-Money	0.7	0.9

As of September 2017, there are 121 ATM and ATM/Debit Card operators, 32 for credit cards, and 26 for electronic money (e-money) in Indonesia. It is no surprise to see many operators because they dominated the payment system for e-commerce in Indonesia. But there has been a significant increase in the use of the cashless payment, e-money, and financial technologies. The shifting for cashless payment and financial technologies rapidly occurs in big metropolitan cities in Indonesia, mostly Jakarta, Surabaya, Bandung, and Medan. For e-commerce platforms, more and more cashless payments are available for users. The government of Indonesia also supports this shifting by campaigning the use of non-cash payments. Not only that, but the Indonesian government also issue a regulation for domestic national payment.

Indonesia issued Regulation No. 19/2017 on the National Payment Gateway (NPG). The NPG regulation, scheduled to be implemented in April 2019, requires foreign principals (VISA, Mastercard, and so on) to work with local switching companies (Artajasa Pembayaran Elektronik, Rintis Sejahtera, and Daya Network Lestari, among others). The four major banks (Bank Rakyat Indonesia, Bank Mandiri, Bank Negara Indonesia, and Bank Central Asia), representing 75 per cent of all domestic debit transactions, will act as the national principal switching companies.

After the Indonesian government issued a Regulation on the NPG, the e-commerce providers also implemented this rule on their platform by allowing the national card with NPG can perform the transactions. So, the option for the users is more varied. Initially, there was a rejection from many Indonesian because it's comfortable to use their debit or credit card with VISA or Mastercard. But now, since it is mandatory, more and more people use NPG. It is true that with well-regulated payment system available in Indonesia, it can help and assist e-commerce to grow.

2.6 E-Commerce Growth Impact on Indonesia Economy

It is interesting to see how e-commerce has opened the opportunity for many businesses, especially small and medium enterprises, to promote and sell their products and services. The e-commerce platform provides business owners and buyers easy access to do business transactions. The Indonesian government has a high expectation of the impact form e-commerce on economies considering its rapid growth. It is interesting to see the various business model and product services. We will discuss how e-commerce can impact the Indonesian economy.

Table 2: Key Local E-Commerce Players

Company	Product and Services	Type	Year	Owner/Founder	Investors
OLX	Online advertising	B2C, C2C	2005	Arnold Sebastian Egg and Remco Lupker	OLX Group
FJB Kaskus	Online advertising	C2C	1999	Andrew Darwis, Ronald, and Budi	PT. Dart Media Indonesia
Zalora Indonesia	Online shop	B2C	2012	Oliver Samwer, Hadi Wenas, and Cathrenie Sutjahyo	PT. Fashion Eservices Indonesia
Lazada Indonesia	Online shop	B2C	2012	Lazada Singapore	Alibaba
Bukalapak	Online marketplace	B2C, C2C	2010	Achmad Zaky	Emtek Group
Tokopedia	Online Marketplace	C2C	2009	William Tanuwijaya and Leontinus Alpha Edison	Alibaba
Blibli	Online shop	B2C, C2C	2010	Kusumo Martanto	PT. Global Digital Niaga (Djarum)

Elevania	Online Marketplace	C2C	2014	James Lee	PT. XL Axiata and SK Planet
Matahari	Online Marketplace	B2C	2015	Goh Yiping	Lippo Group
Gojek	Motorcycle ride-hailing Services	-	2010	Nadiem Makarim	Google, Temasek, Meituan-Dianping, and Tencent
Traveloka	Hotel and ticket purchase online	-	2012	Ferry Unardi, Derianto Kusuma, and Albert Zhang	Expedia, East Ventures Hillhouse Capital Group, and Sequoia Capital
Tiket.com	Airways and railways ticket	-	2011	Wenas Agusetiawan	-

E-commerce business models, types, and products and services vary in Indonesia. The variety can impact the economy in general because all the sectors touched by the e-commerce business will also be varied. The most noticeable impact is helping the small and medium enterprise business to gain more customers. It also creates a new job for many Indonesians, including in technology information or business services. At least, all this will impact economies at the micro and macro level in Indonesia.

In my view, e-commerce growth also attracts foreign direct investment to come. The market size also, more than 250 million and almost half of the Southeast Asia region, is also why e-commerce growth in Indonesia. As we can observe from the table above, giant technology companies are interested and invested in e-commerce business in Indonesia, including Alibaba, Google, and many others. For sure, the foreign direct investment from the western company can spur the growth of e-commerce in Indonesia. Furthermore, we will closely see and discuss how e-commerce impacts Indonesian economies, looking at three top giant e-commerce companies: Go-Jek, Tokopedia, and Traveloka.

2.6.1 Case Study: Go-Jek

Go-Jek launched out as a motorcycle ride-hailing bike company to eradicate the traffic jam in Jakarta. Currently, Go-Jek has over 200,000 drivers across 25 cities in Indonesia, and it is now the most notable tech company in the country [8]. At first, there was a rejection from a taxi company in Indonesia because Go-Jek is preferred to traditional car taxis. It is comfortable to order the ride rather than has to wait on the street. The features to track and see their driver location can help the users manage their time and schedule.

Interestingly, Go-Jek has expanded its business to Go-Car private car service; and formed a very promising partnership with a leading conventional taxi firm, Blue Bird. This business collaboration occurred after Blue Bird asked the Indonesian government for support. The Go-Jek operation killed their business since Blue Bird did not have the capabilities and resources to develop an e-commerce platform at that time. Go-Jek offered Blue Bird to join their platform. Any Go-Car order from the Go-Jek platform can be shared with Blue Bird. By this means, Blue Bird will provide their driver with a smartphone to pick up Go-Jek's order. After several years join with Go-Jek, Blue Bird set up their platform even though it is still behind Go-Jek. I consider the e-commerce platform somehow changing how businesses operate. But with some innovation and collaboration, e-commerce can save conventional any conventional business model.

Go-Jek is also developing its mobile payment business (Go-Pay) and is innovating to allow customers to access services such as document/packet delivery (Go-Send) and food order and delivery (Go-Food). After expanding their e-commerce platform features, Go-Jek gains an international reputation in the eye of giant technology. Tencent has invested around US\$150 million in Go-Jek, and global private equity firms KKR, Warburg Pincus, Farallon, and Capital Group Private Markets had invested US\$550 million in Go-Jek.

2.6.2 Case Study: Tokopedia

Tokopedia (www.tokopedia.com), a leading Indonesian e-commerce company, is one of Asia's biggest customer-to-customer (C2C) Internet companies and most promising start-ups. Not only that. But Tokopedia is one of the old e-commerce players in Indonesia, so it's reputable and trusted. Tokopedia allows individuals and business owners to open and manage their online stores for free. Its mobile app has been downloaded at least 10 million times with 1.3 billion page views per month.

Tokopedia also claims to have 1 million registered sellers on its platform, and the total number of products sold on the platform increased to 16.5 million per month. This data is proof that e-commerce growth can help the economies run. Similarly to Go-Jek, Tokopedia also attracts foreign investment, mainly from China. Tokopedia announced a US\$1.1 billion investment from China's Alibaba Group Holding on 18 August 2017, and the influences from the investors make Tokopedia's marketplace model is similar to Alibaba's Taobao platform.

2.6.3 Case Study: Traveloka

In October 2015, the International Air Transport Association (IATA) stated that Indonesia can expect an increase of 183 million new passengers by 2034. This prediction sounds logical if we observe the geographical condition where mainly is an island. Airways is one of the fast and reliable methods of transportation. This condition offers a massive opportunity for technology

start-ups, especially travel booking services, and Traveloka exist as Indonesia's No. 1 flight search booking service.

Traveloka's mobile application has been downloaded more than 20 million times, with total visits to its website on desktop and mobile in the first two quarters of 2017 amounting to 16.02 million. It is proof of how the e-commerce business in travel is also can grow. Not only the marketplace, but the consumer also show interest in e-commerce platforms focusing on travel sectors. There is no surprise why Traveloka obtained US\$350 million from Expedia in 2017, and this brought the amount it had raised to US\$500 million over 2016 to continue its business expansion.

2.7 Financial Technologies Influences on E-Commerce Growth

Compared to other ASEAN countries (such as Singapore, Malaysia, the Philippines, Thailand, and Vietnam), Indonesia has the largest e-commerce market and e-commerce business development compared to other ASEAN countries in the year 2018 [9]. One of the reasons for the e-commerce growth in Indonesia is the existence of Financial Technology (FinTech) companies in Indonesia. The most impact from FinTech is to provide better access for online transactions.

For e-commerce, fintech is what makes transacting online possible and convenient. Digital-native brands use all types of solutions to disrupt traditional retail. Fintech gives online shoppers more options than ever to pay online, no matter where they are and what device they're using. It's how you can buy a product that's halfway around the world on your smartphone [10].

In this context, the flow of digitalisation of the economy including FinTech has great potential to encourage more efficient allocation of economic resources and in turn encourage increased productivity and provide greater benefits for the community and e-commerce [11]. Before discussing how FinTech helps the growth and development of e-commerce business activity, it is important to analyse the legal framework in Indonesia for Fintech.

Bank Indonesia (BI) and the Financial Services Authority (FSA) apply regulatory sandbox provisions or pilot programs for start-up companies in the field of technology-based financial services (financial technology). A pilot program is a trial place for fintech companies before operating. The FinTech company should register their company within BI and FSA. After that, the FinTech is assessed by BI and FSA to determine their status. For example, the assessment of internal conditions such as management profiles and the management's reputation, the novelty and benefits of products, funding and legal consultants. Not only that, but regulators also assess the company's outer side, such as business competition and consumer protection,

information, education, and consumer dispute resolution. This trial will last with a maximum limit of 12 months. After that, BI determines FinTech status within three criteria: successful, unsuccessful, and other status determined by BI. Mainly, upon the successful pilot program, FinTech eagerly cooperates with e-commerce platforms in Indonesia to perform their business.

There are several solutions for FinTech to involved in e-commerce business platforms. Some of the features from FinTech are customer financing solutions, cash advance solutions, real-time payout solutions, and peer-to-peer money transfers [12]. First, FinTech can accommodate the customer necessity by financing their purchase. For example, the e-commerce platform users can use credit from FinTech to buy their needs and pay them later. Second, cash advance solutions are also a perfect fit for a business. For example, many SMEs need money to extend their business. This gap can fulfil by FinTech to support businesses by providing a loan. It is more preferred by many SMEs rather than going to the bank because it cost time and money. Third, a real-time payout solution is a blast for e-commerce businesses. Many platforms take several days to take out the money from their online shop. For instance, Tokopedia needs two working days for businesses to cash out their deposit. Fortunately, some of FinTech features a real-time payout for business so it can support business performance. Finally, for some consumer-to-consumer marketplaces, the transaction can be done with peer-to-peer transfer (P2P). It is more practical rather than going to transfer with a conventional bank. In addition to these amazing features, some FinTech charge the user less administration fee compared to banks and other financial institutions.

In Indonesia, the number of FinTech is rapidly growing. More than 150 FinTech start-ups are found in Indonesia, a growth of 78 per cent since 2015. As of May 2019, it is tracked that there are more than 250 FinTech companies was found in Indonesia, and the number is expected to continue growing in the years to come [13]. Some big players in FinTech that integrated with e-commerce business are *LinkAja*, *Go-Pay*, *OVO*, and *Shopee Pay*. To sum up, the growth and development of FinTech directly impact e-commerce business activities in Indonesia. The prediction made by McKinsey stated that the value of the Indonesian e-commerce market will reach US\$150 billion by 2025 is possible with the growth and development from both FinTech and e-commerce.

2.8 Challenges and Cybersecurity for E-Commerce in Indonesia

There are at least several challenges that Indonesia must deal with to grow and develop its e-commerce business. First, it is a limited skilled worker in information and communication technologies (ICT). There is a lack of professional human resources, especially engineers, coders, and platform developers. The main reason this happens is that Indonesia does not have sufficient education and training system.

The issue is not because of a lack of funds, as the Indonesian government allocates at least 20 per cent of the annual education expenditure. The fundamental problem is deep-rooted in the country's education and training system, with poor teacher quality, weak incentive system, lack of education training, lack of primary school facilities, low school retention rates, etc.

The Indonesian government aims to promote education and human resources to support the e-commerce sector to solve this. Specifically, there are several programmes to promote awareness and campaigns for the general public, consumers, SMEs, and the whole ecosystem of e-commerce, such as;

1. Education programmes on the use of e-commerce and industry development;
2. Mechanism and task force for developing the contents and executing the programmes;
3. Socialization of the types of illegal e-commerce products within the jurisdiction of Indonesia;
4. National awareness campaign of e-commerce through online and offline media; and
5. Promotion through informal campaigns (among others via the National Online Shopping Day).

The second challenge is Indonesia geographical conditions. It is true that as archipelago countries, the cost of logistics will increase. In response to this, the Indonesian government eagerly developed national roads and bridges, seaports, and airports to connect all the areas in Indonesia. This development has the purpose of lowering the cost of distributing logistics. Hoping it will impact on how e-commerce business operation especially for a marketplace. Lower cost in terms of logistics means a boost for e-commerce business provider to perform their operation.

Third, the internet connection and ICT facilities are still underdeveloped. It is pretty impacted for e-commerce business providers to perform their operations. A reliable high-speed internet network is vital for supporting rapid growth in the e-commerce business. The Indonesian e-commerce roadmap only provides a single programme under the telecommunications infrastructure. This programme includes the provision of free domain and speed of internet access that supports the growth of e-commerce and broadband infrastructure, already rolled out by July 2019. In addition to this, the Indonesian government has been developing the Palapa ring project. This project builds up a satellite that can help the internet speed and connection.

Fourth, cybersecurity is a part of the biggest challenge and sensitive issue to discuss. Due to high levels of fraud and cybercrimes, many potential consumers become reluctant to shop online. In view of this, there is a need for an effective mechanism to improve the protection of systems, networks and data in cyberspace. For this, the government must ensure the readiness

of relevant institutions to master a body of technologies, processes and practices designed to protect networks, computers, programmes and data from attack, damage or unauthorized access.

Supposed all of these challenges can be tackled and solved. There is no stopping Indonesia as a hotspot for the e-commerce market in Southeast Asia. But, achieving that is not an easy process. It is required from the Indonesian government commitment to create a detailed oriented legal framework for e-commerce business providers to follow. Not only from policies but funding can be allocated to build more facilities related to e-commerce business activity. On top of that, support and collaboration from the private sector, mainly technologies companies, can also help the government tackle all of these challenges.

3. Conclusion

We can conclude that Indonesia's e-commerce growth and development are determined by several factors, such as law and regulation, followed by the existence of fintech companies as the catalyst. The market size also contributes to how e-commerce business operations have grown over the last decade. The most notable impact for e-commerce growth is helping many SMEs business, create jobs and even attract foreign investment. Many leading e-commerce business providers receive investment from western companies to expand their operations. The challenge and cybersecurity are critically important for Indonesia to face and tackle to meet the projection for 52 per cent of the e-commerce market in the Southeast Asia region.

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