



Urban Planning and E-Commerce: Understanding the Impact During Pandemic Covid-19 in Jakarta

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Abstract

In this digital era, online shopping is a form of electronic commerce which allows consumers to directly buy goods or services from a seller over the Internet using a web browser or a mobile app. E-commerce appears gradually and can replace the existence of conventional markets. Especially, this behaviour increasing during this pandemic COVID-19. During the pandemic, there has been a change in habits and activities ranging from working from home, school from home to service trading activities starting to switch to an online service trading system. In order to manage sustainable urban planning, it is important to consider the likely effects of e-commerce. Increasing e-commerce can bring influence also impact to urban planning in a city. This research explores the consumer behaviour regarding e-commerce activities and the influence toward urban planning. DKI Jakarta is chosen as the study location and the policies related to the pandemic COVID-19 in Jakarta are also considered as a literature review. This research using expert judgement as a method of determining aspects of urban planning that are influenced by e-commerce activities and combining the analysis of planning documents and reports as well. Furthermore, e-commerce activities during pandemic COVID-19 in DKI Jakarta have several impacts in urban planning. The implication in urban planning still remains unclear since people still have hybrid consumer behaviour. Besides, it still takes a long time to see a significant impact toward e-commerce to urban planning in DKI Jakarta.

Keywords: Urban planning, e-commerce, correlation, impact, pandemic

1. Introduction

In these few years, people behaviour in shopping activities are change from offline shopping to online shopping. Although not everyone changes their behaviour to online shopping, but this is something that needs to be considered. This online shopping activity nowadays are known by e-commerce (Rahayu and Day, 2017; Yudhy, 2020). E-commerce is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the internet (Lestari, 2019; Aribawa, 2016). Indonesia is in first position of 10 countries with highest percentage of E-commerce usage, which is 88.1%. The e-commerce usage in 2021 increasing 25.9% than 2019. One of the factors causing this increase is pandemic COVID-19 so that people prefer stayed at home rather than go outside to buy something.

During pandemic COVID-19 in Indonesia, e-commerce helped Micro, small, and medium enterprises (UMKM) market their products online. UMKM are helped to market their products during the Covid-19 pandemic (Berkele and Worku, 2008; Alkhoraif et al., 2019; Ghatak, 2010). In March 2020, Indonesian Government issued a regulation regarding large-scale social restrictions aimed at reducing the movement of people so that the spread of COVID-19 can be controlled. During this time of social restriction, people are not allowed for doing mobility, no exception for shopping, both daily needs and other needs. This condition also encourages people to prefer online shopping through e-commerce. This changing behaviour is continued until this time. Bank Indonesia recorded that in 2021 this digital-based trading business is even projected to grow 33.2% from 2020. This fast growth indicates that e-commerce is becoming an important phenomenon with various potential impacts for the future development of cities (Pettersson et al., 2018).

Shopping, traditionally or e-commerce now, will generate transport of goods. If we look back on traditional shopping, it relates to what we called general supply chain (Chopra et al., 2013; Lulu, 2002). In this traditional supply chain, goods from manufacture are transported by logistics transport (plane, ship, train, or truck) to central distribution centre. A distribution centre can also be called a warehouse, a DC, a fulfilment centre, a cross-dock facility, a bulk break centre, and a package handling centre. These goods will continue transported to cross-dock which is sorted before distributing to store. In this traditional supply chain, people will buy the goods from store and making a trip to buy. In the other hand, e-commerce can be set up with an e-fulfilment centre where customer's orders are packed and sent to a parcel hub where sortation to a parcel delivery centre close to the consumer takes place. Less-Than-Truckload (LTL) networks are used for bulky or heavy goods. Urban fulfilment centres, supplied by the more centralised e-fulfilment centres, are used when delivery time is short. Final transport from the parcel delivery centre or LTL terminal to the consumer is known as the "last mile". This last mile is commonly serviced by van or light truck based at parcel sortation centres located near greater urban areas (Morganti et al., 2014).

The shifting of this supply chain from traditional supply chain to e-commerce can generate implications to urban planning. There are some implications on urban planning regarding this e-commerce activities (Visser and Lanzendorf, 2004) such as passenger transport, land use (including location of shop, logistic, hub or terminal), and freight transport. These aspects have potentially significant implications regarding to e-commerce activities. For example, the growth of e-commerce increasing traffic load from distribution vehicles and regional road transports (Morganti et al., 2014). The traffic has major influence on the routes of operations and the travel time required for each parcel. This also indicates the need to understand the component at which the freight vehicles are contributing to the urban traffic (Shukla and Raval, 2018). The traffic load also can give implications to transportation or land use. In the transportation system, the purpose of planning is to provide facilities for the movement of passengers and goods from one place to another or from various land uses. While on the land development side, the purpose of planning is to achieve the function of the building and must be profitable. Besides, e-commerce has a positive and significant effect on UMKM income as well (MacGregor and Vrazalic, 2005). Moreover, at the end of 2016, the Government inaugurated the XIV Economic Policy Package in the form of an E-Commerce roadmap. This policy package emphasizes the impact of the development of e-commerce on the economy. Currently, the e-commerce market in Indonesia still has great potential to be developed (Palsson et al., 2007).

In April 2020, DKI Jakarta's government release DKI Jakarta Governor Regulation Number 33 of 2020 concerning implementation of large-scale social restrictions in handling corona virus disease 2019 (COVID-19) in the province of the special capital region of Jakarta. This regulation prohibits people to make activities such as school/education, work, religious activity, shopping, activity in public area, and mobility. This condition causes people to have activity from home, including shopping activities. This also has an impact on increasing people using e-commerce for shopping.

Regarding the condition as explain before, the aim of this paper is to analyse the understanding of the impacts of e-commerce on urban planning as expressed in DKI Jakarta during pandemic COVID-19. This paper focusing on discussion of pandemic COVID-19 because the pandemic gives significant impact regarding e-commerce activity. The aim is pursued by addressing the following research questions: How is the description of e-commerce users in DKI Jakarta during the pandemic? What are the possible impacts as a result of using e-commerce in DKI Jakarta?

2. Methodology

This study focused on the DKI Jakarta case. In order to understanding what happened between urban planning and e-commerce, the method comprised preliminary survey to describe the demographic of e-commerce users and interview with expert in urban planning and economic development in the DKI Jakarta context.

To describe the demographic of e-commerce users, we reviewed the answers of 100 respondents who answered the questionnaire we provided. These respondents are limited to people who lived in DKI Jakarta and based on their shopping experiences last 3 months during this pandemic COVID-19. Through this preliminary research, we believe that our result has captured demographic pattern of e-commerce users in Jakarta.

Finally, the knowledge claims on the possible impact as a result of using e-commerce in DKI Jakarta are discussed by proposing the expert judgement to determine the related aspect in urban planning which is impacted using e-commerce. The experts were asked for their opinion on 4 aspects affected by the development of e-commerce. They answered the question by form and analyse with Analytical Hierarchy Process. The aspect affected by the development of e-commerce are shown on Table 1.

Table 1 Aspect affected by the development of e-commerce

No.	Aspect
1	Transportation (people)
2	Land use
3	Freight transportation
4	Economic (regional income)

Then, the expert also discussed the possible impact regarding those aspects. There are 4 experts who were asked for their expertise opinion: 2 (two) academics, 1 (one) urban planner, and 1 (one) expert from government. AHP requires comparison of one option (choice) with another (Bhatti et al., 2015). There are five choices with the lowest to the highest level used in this paper, in a row very unimportant, less important, moderately important, important, very important.

3. Result

The result in this paper is pursued by answering research questions as mentioned before. In this part of this paper, result will be divided into 2 sections according to research question.

3.1 Demographic of E-Commerce Users in DKI Jakarta

For customers, in this case is citizens, e-commerce behaviour depends on different variables, such as age, gender, social status, culture, lifestyle and interests, place of residence, technical maturity, and the availability of services. In this paper, some adjustments are applied according to correlation to urban planning. People were asked questions about gender, age, frequency of e-commerce usage, interest, reason for choosing e-commerce and understanding of the impact of the e-commerce. Figure 1 show the varying needs, attitudes, and preferences regarding e-commerce.

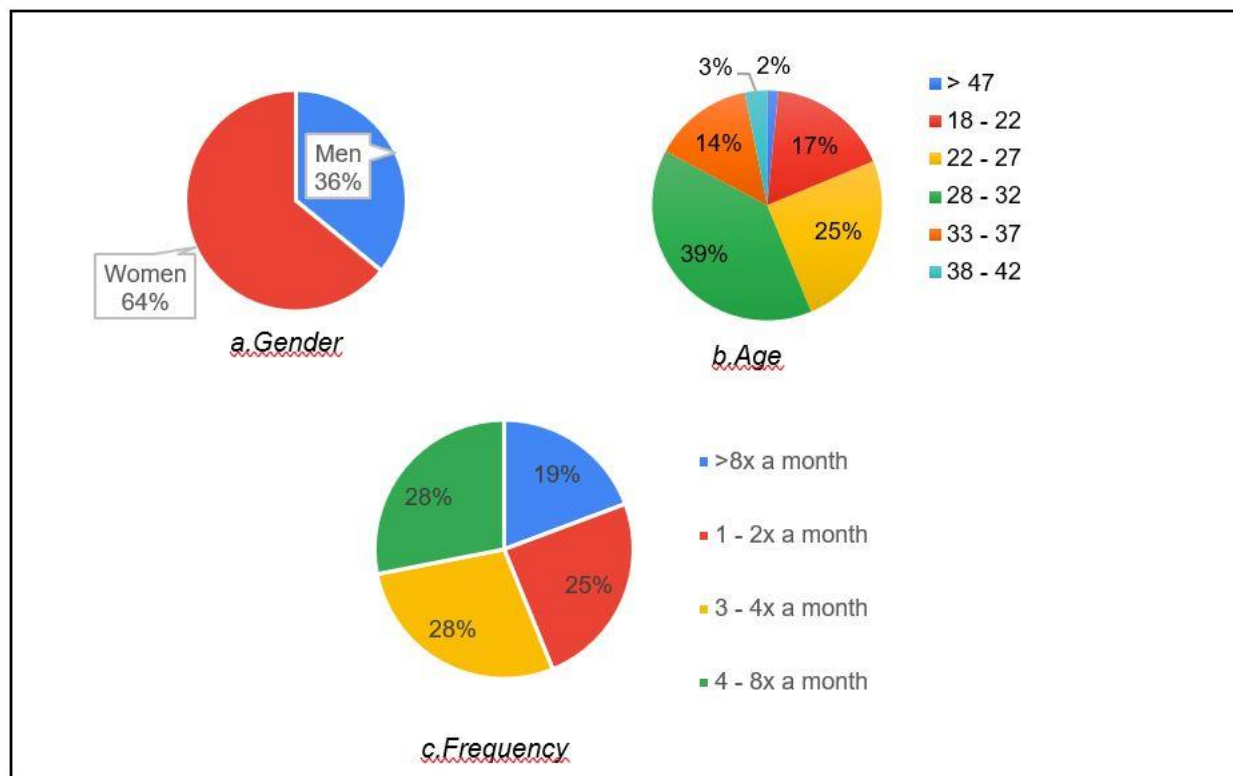


Figure 1. E-commerce User's Demographic in DKI Jakarta (a): Gender. (b): Age. (c). Frequency of using E-Commerce

E-commerce users are dominated by women as shown in Figures 1(a). This Supports the exists assumption that women are considered to like shopping more than men. Even in online shopping studies, women dominate men. Younger people around 28-32 years are generally more inclined than older people to make online purchases as shown in Figure 1(b). This shows that the millennial generation is a generation that is closer to the era of digitalization and technological change compared to the generation before them. From the survey, 28% people are make online purchasing 3-4 times a month and only 19% people are often making online purchasing for more than 8 times a month (see Figure 1(c)). This proves that online shopping is one of the current consumers behaviours. The people have different reasons and motivations for using e-commerce. Figure 2 show the reasons and what kind of people interest when making online purchasing.

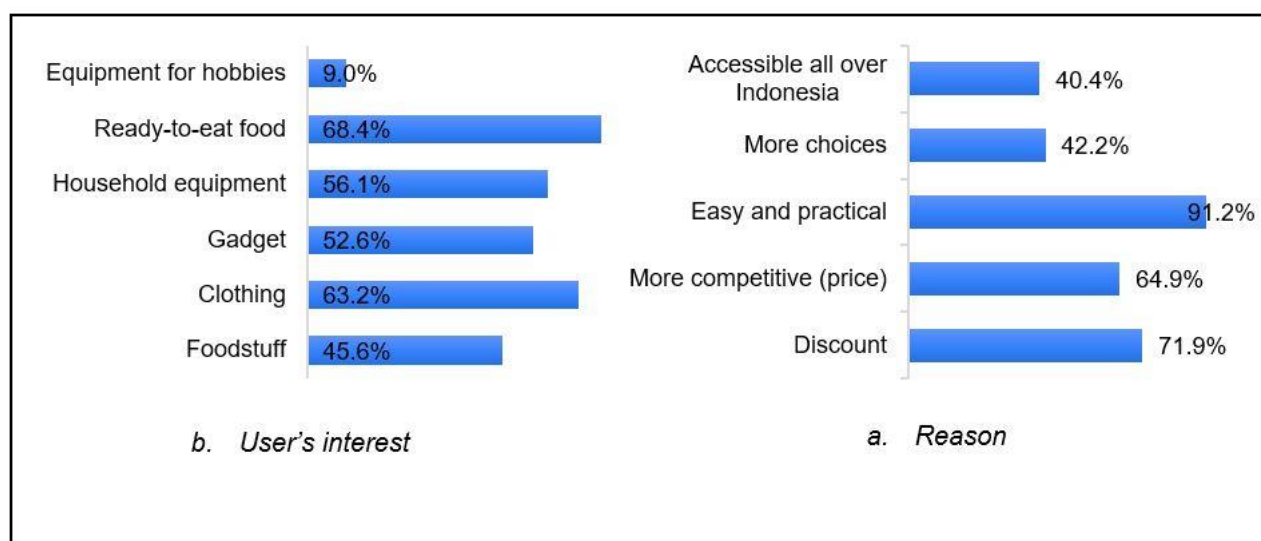


Figure 2. E-commerce User's Demographic in DKI Jakarta. (a): User's Interest. (b): Reason

Based on Figure 2(a), ready-to-eat food purchasing is more popular user's interest than others. This might happen because when pandemic COVID-19 people prefer to stay at home and waiting their ready-to-eat food coming to them rather than making trip to buy or cooking by their self. The same condition for clothing purchasing with 63.2% people are interest in this. It is because consumers avoid trying on clothes directly in stores. Besides, people are also interested in purchasing household equipment online. The number of people who work from home during this pandemic has given rise to new hobbies, one of which is completing household needs with household equipment.

Easy and practical aspect is the most important aspect for 68.4% people (Figure 2b). This is inseparable from the current condition of consumers who cannot be separated from the internet and are able to adopt information technology. Consumers can make purchases using only their fingers on a computer or mobile phone. Price is also important for some people, and e-commerce offers discount and competitive prices. Each e-commerce platform provides discount and competitive prices so that consumers can choose the most favorable price. It is undeniable that in accordance with the law of demand, the lower the price of goods, the more demand for these goods by consumers.

3.2 Understanding the Impacts as a Result of Using E-commerce in DKI Jakarta

Due to the implementation of clause 43 from Law Number 41 of 2009 concerning PLP2B, the government issued a governmental regulation regarding PLP2B incentives as stated in Government Regulation Number 12 of 2012 concerning incentives of PLP2B. The incentives can be given by the central government, the provincial government, and/or district/city governments. Based on clause number 7 of the governmental regulation, the types of incentives that will be provided by district/city government to the farmers are in the form: land and building tax relief; agricultural infrastructure development; financing to research and development of superior seeds and varieties; convenience to information and technology access; provision to agricultural production facilities; funding assistance for the issuance of land rights certificates; and/or an award for high achieving farmers.

3.2.1 Aspects Affected by The Development of E-commerce

In order to understand the impact of e-commerce to urban planning, we asked 4 (four) experts for their opinion on 4 aspects affected by the development of e-commerce. Every expert was asked by google form and the score were analyse by AHP software. Scoring is used to indicate a hierarchy or more impact on which aspects of the development

of e-commerce. Therefore, we can understand the impacts as result of using e-commerce in DKI Jakarta. The scoring result by 1st expert can be seen in Figure 3.

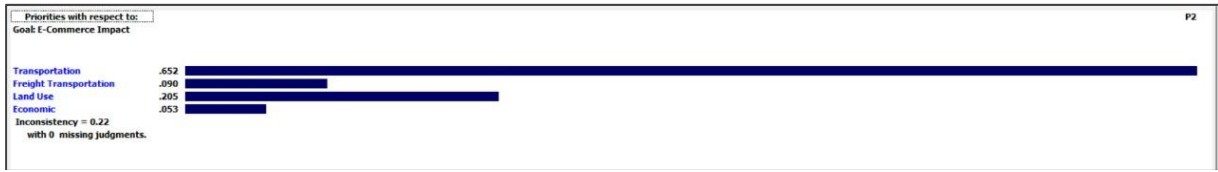


Figure 2 Scoring Result by 1st Expert

Based on Figure 3, transportation for people is the main aspect that is affected by e-commerce in 1st expert opinion with score 0.652. The impact on land use is considered more important than the impact on the freight transport. Besides, e-commerce does not have much impact on the economic aspect (in this case is regional income). The scoring result by 2nd expert can be seen in Figure 4.

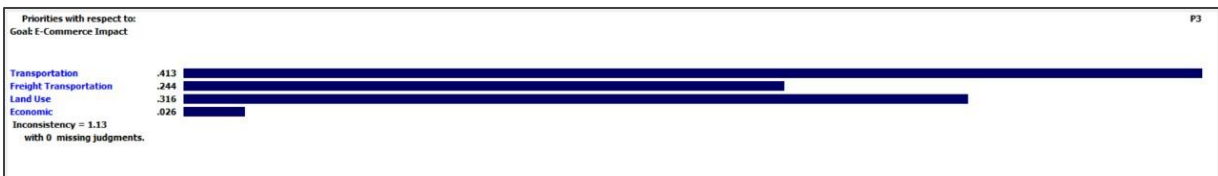


Figure 3 Scoring Result by 2nd Expert

From 2nd Expert's opinion, it can be inferred that transportation for people is the main aspect that is affected by e-commerce with score 0.413 and inconsistency 1.13. As same as stated by 1st expert, the impact on land use is considered more important than the impact on the freight transport. Thereafter, economic aspect is the last aspect affected by e-commerce with score 0.026. The scoring result by 3rd expert can be seen in Figure 5.

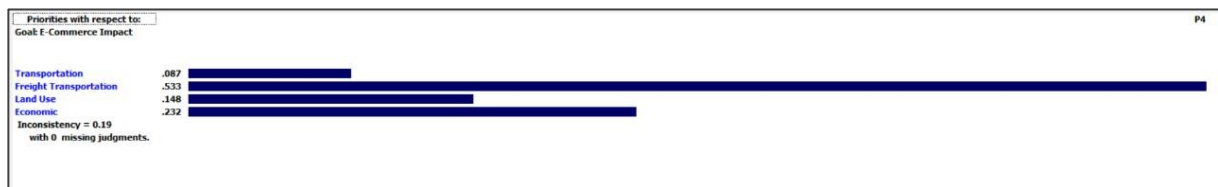


Figure 4 Scoring Result by 3rd Expert

The 3rd expert opinion stated that freight transport is the main aspect that is affected by e-commerce with score .533 with inconsistency 0.19. The impact on economic aspect is considered more important than the impact on land use, therefore e-commerce does not have much impact on the transportation for people.

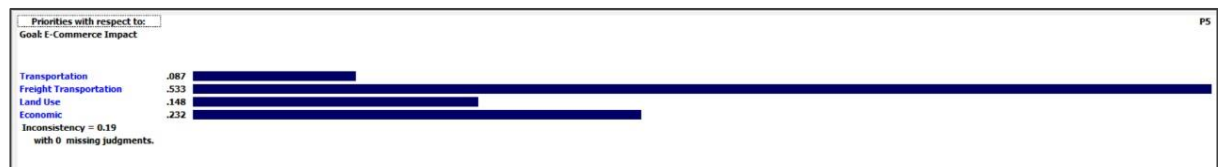


Figure 5 Scoring Result by 4th Expert

It can be inferred from Figure 6, that freight transport is the main aspect that is affected by e-commerce with score .533 with inconsistency 0.19. The impact on land use aspect is considered less important than economic thus e-commerce does not have much impact on the transportation for people.

From scoring result by 4 (four) experts above, the next step is to combine the four results into one unified analysis. The result is shown on Figure 7.



Figure 6 Scoring Result for AHP Analysis

Although from 4 (four) scoring results as mentioned before having different result and inconsistency, the combined scoring result has results that are not much different from the four previous results. Freight transport is the main aspect that is affected by e-commerce with score .366 and transportation for people is the 2nd aspect with score .254. It is referred to short term effects on transport patterns, where e-commerce can substitute, complement individual transport behaviour and modify or adjust freight transportation in logistics system of business (Pettersson et al., 2016). All experts agreed when the number of e-commerce users increases, there will be an increase in buying and selling so that the volume of logistics services will also increase. For individual transport, people (buyer) prefer to stay at home rather than going outside. Online shopping positively affected the frequency of physical shopping trips for buyer. There is a changing of transport behaviour from passenger transport to delivery by courier. In land use aspects, improvement or change of land into warehousing. Mix used will appear in the area for logistics needs. There is an increase in regional income, but there is still a need to deepen policies related to income tax. Because not all e-commerce has a trade license.

3.2.2 Understanding the Impacts of E-Commerce in DKI Jakarta during Pandemic COVID-19

During pandemic COVID-19, the government of DKI Jakarta has released several policies regarding people mobility according to health protocol. Those policies regulate community activities ranging from office activities, education, trade until entertainment activities. In April 2020, the Indonesian Retail Entrepreneurs Association (APRINDO) admitted that total spending fell by 20 percent to 30 percent per consumer during the implementation of the policy. It happened since most people choose to shop online. Linking literature with experts' opinion possible implications for urban planning are discussed in order to understand the impacts of e-commerce in DKI Jakarta during pandemic COVID-19.

a. Freight Transportation

The last segment of the supply chain is modified when trucks deliver the purchased goods either to a pick-up point or to the home of the customer. The growth of e-commerce risks increasing traffic load from distribution vehicles and regional road transports. As a result, many logistics service providers in Indonesia have recorded growth due to an increase in the volume of goods delivery. The increasing volume of shipments has resulted in many new logistics agents in Jakarta joining and opening logistics services. However, the obstacle during this COVID-19 is that the delivery of goods rarely reaches the customer's house. This is because many housing complexes have locked down their own areas, especially in DKI Jakarta. Nearly 80% of housing in Jakarta implements a regional lockdown. Besides, an intra-urban positioning of logistics hubs, relatively close to the end delivery point, will decrease the traffic load and support the use of more sustainable transport modes.

On the other hand, the transport trucks or small vans could take the place consumers travelling to shops. Since people are not doing mobility and prefer online shopping. Increased home delivery frequency will lead to an increase in freight traffic in residential areas means greater demand for parking spaces for delivery trucks.

b. Transportation for people

Online shopping positively affected the frequency of physical shopping trips for buyer. It might be a change of transport behaviour from passenger transport to delivery by courier. There is a change of travel distance since people prefer to stay at home and avoid travelling.

The main message from this growing body of literature is that the empirical evidence for the impacts on individual travel behaviour varies considerably. The rate of people visiting shopping centres in DKI Jakarta over the past 3 months has also increased gradually as the Government officially increases the capacity of visitors at shopping centres or malls from 25 percent to 50 percent in the PPKM zone level 4 area, in line with the expansion of the coverage of the trial area. This provision is one of the contents of the DKI Jakarta Governor Decree Number 987 of 2021 concerning Enforcement of Restrictions on Community Activities. In some cases, buying online cannot complements the shopping done at physical stores and thus does not reduce the total number of shopping trips made.

There is a changing passenger transport, yes it would be. But, since we still have hybrid consumer behaviour, transportation for individual people as an impact e-commerce cannot be a significant impact.

c. Land use

An increase in e-commerce should intuitively lead to a decrease of physical shop. Although shopping centres in Jakarta have been allowed to open with restrictions on the number of visitors, there are still many retailers or tenants who are out of business. From April to July 2021 almost 2,040 retail stores have closed due to the pandemic COVID-19. This closed retail has an impact on unfulfilled occupancy so that there will be abandoned buildings/shops/tenants.

On the other hand, logistics facilities will have different requirements for space and location as compared with more traditional set-ups. There will be an increase or change of land into warehousing. In the future, if e-commerce requires additional land, there will be a reduction in green land. Thus, buildings need to be adapted and constructed with more than one thing in mind. Mix used will appear in residential areas (housing zones: small, large, and medium) for logistics/stock goods needs. Because the cost of renting land is more affordable.

There is still no significant impact related to land use from this e-commerce development in Jakarta. Land use is long term/indirect accessibility effects. This is because land use takes a long time to see massive changes.

d. Economic

The effect of increased e-commerce on economic aspect remains unclear. E-commerce is evidence of technological developments in the world economy, using the internet in production activities, so that it can bring the increasing of economic productivity in countries that implement it. The development of e-commerce can indeed have a positive effect on economic growth, but only has a significant effect in the long term. There is an increase in regional income, but still a need to deepen policies related to income tax in Jakarta. Because not all e-commerce has a trade license

4. Conclusion

To the extent that correlation between e-commerce and urban planning as discussed in this paper, there are several impacts that might be occurred regarding the development of e-commerce in DKI Jakarta during pandemic COVID-19. Urban planning in DKI Jakarta is affected by aspects of freight transportation, transportation of people, land use and economic. Although the significant impacts remain unclear, but the pandemic COVID-19 have changed our perspective and behaviour regarding e-commerce.

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