

The selection of public transportation modes in industrial era 4.0

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Abstract

Industrial Revolution 4.0 opens opportunities as well as challenges for an industry, the opportunity is to develop market share to be broader with the internet while the challenges are conventional methods that need to be changed to become easier because of the needs of consumers to keep up with the times. These changes have an impact on the economic field, especially business. Not only globally, Indonesia also experienced a lifestyle change in consuming products and services that are currently not free from the use of internet platforms. Transportation services are currently one of the industries that are undergoing rapid changes. The reduced interest of passengers using conventional transportation has caused transportation modes to lose the market share that they have had for a long time, which also has an impact on the sales they get. The purpose of this study is to analyze the decision to use public transportation modes by millennial generation passengers. This study used a survey method and case study design with a qualitative approach. The population and sample in this study are consumers using public transport services aged 18-37 years or millennial generations. The results of this study explain that millennial passengers prefer online transportation modes than conventional transportation modes. If conventional transportation wants to remain competitive in this industry, they are likely to need to cooperate with the private sector as well as the government as a regulator by making rival applications as a competitive advantage.

Keywords: Transportation mode; industry 4.0; service buying decision; passengers behavior; millennial generation; public transportation service

INTRODUCTION

At this time almost all industries experienced significant changes, these changes spurred the owners, managers as well as all the ranks involved in an organization in developing a system that had been carried out previously from the conventional way to wireless automation (Radanliev et al., 2019). This is usually called a new era of industry 4.0, the industry is the introduction of internet technology into an industry (Gabriel & Pessl, 2016). Industrial revolution 4.0 opens opportunities as well as challenges for an industry (Arifianto & Himawan, 2018), the opportunity is the development of a broader market share with the internet while the challenge is that conventional methods are changed to become easier because the market needs keep up with the times (Supriyanto & Anggraini, 2018). The lifestyle and workings of humans have fundamentally changed since the advent of the industrial revolution 4.0 (Schwab, 2017). Unlike the previous industrial revolution, this 4th generation industrial revolution has a more complex domain, scope and complexity (Agus & Ridwan, 2019). Some fields that have undergone renewal thanks to technological advancements include: artificial intelligence robots, nanotechnology, biotechnology, quantum computer technology, blockchain (such as bitcoin), internet-based technology, and 3D printers (Sutandra & Sulaiman, 2019).

These changes have an impact on the economy, especially business (Suwardana, 2017). Currently more business transactions are carried out on the internet compared to physical, reports from Nielsen Company that globally fashion or clothing sales on the internet reach 58% while physically only 42%, besides that there are other examples of ticket sales as many transportation services 55% is done online while the remaining 45% of transactions are done physically (The Nielsen Company, 2017). Not only that, physical sales have decreased quite dramatically and even Nielsen also reported sales of consumer goods such as cosmetics, food, raw food ingredients, medicines as well as increasing online with an average number of transactions of 25% while the rest is still physical at 75% (The Nielsen Company, 2017). Not only globally, Indonesia also experienced a lifestyle change in consuming products and services that are currently not free from the use of internet platforms (Fitria, 2015). At present almost all companies are competing to provide services through applications that are connected to the internet (Eva, 2007). Not only a product sold by using internet channels and applications, but services are currently included in the corridor (Amajida, 2016). For example, in Indonesia Go-Jek is one of the providers of online transportation services, then Sejasa is a provider of interior and exterior home improvement services, while Moselo is a service provider in the creative field (flower arrangement, gift making and souvenirs), and still many start-up companies are engaged in services (Livano & Herdinata, 2014).

The industry in transportation services is undergoing rapid changes (Pratama, M, & A, 2017). These changes do not only cover the way producers provide services to prospective customers, but the way of consumption also changes (Anindhita, Arisanty, & Rahmawati, 2016). All of these changes resulted in the emergence of several problems for transportation services that did not keep up with the changes (Novantirani, Sabariah, & Effendy, 2015). The loss of market share, a decline in consumer confidence, and a decrease in income in the industry has become a frightening specter for transportation service providers who do not have a base and network on the internet (Wahyusetyawati, 2017). Based on the results of pre-interview interviews with 8 respondents with an age range of 18-37 years, it was found that 7 respondents preferred online mode of transportation because it was faster and more convenient while 1 person chose conventional transportation because the prices were more economical. The reduced interest of passengers using conventional transportation has caused transportation modes to lose the market share they have had for a long time, also impacting on the income they get every day. This problem is enough to make regulators and conventional service providers confuse finding a way out, if this is not anticipated then there will be a possibility of the loss of the conventional transportation industry slowly (Hamdan, 2018).

There are some previous studies that discuss the purchasing decisions of transportation services, namely (Djakfar, Indriastuti, & Nasution, 2010) explaining the choice of modes of transportation for students who go to their places of school, (Rahman, 2009) describes the choice of modes of transportation to deliver consumers between city or district,, (Widiarta, 2010) examines transportation

use for workers, (Toar, Timboeleng, & Sendow, 2015) examines the use of transportation services in cities, and (Wicaksono, 2014) examines factors that influence using transportation modes. Other findings explain that the choice of transportation mode is not only focused on public transportation but also on travel agencies, there is also a choice of purchasing decisions (Nakamura & Abe, 2016), in other studies also suggesting that alternatives to urban transportation make alternative choices for passengers (Büyüközkan, Feyzioğlu, & Göçer, 2018). Then, the existence of several criteria for producers in the transportation industry makes a difference in determining the purchasing decisions of transportation services in the metropolitan area (Zak, 2017). Whereas in this study will discuss the purchasing decisions or the selection of public transportation modes in the industrial era 4.0. In this study, the researcher intends to analyze service purchase decisions in using public transportation modes both conventional and online based by millennial generation passengers in the industrial era 4.0.

METHODS

The method used in this study is a survey with a case study design, this method is used to reveal service purchase decisions by millennial consumers related to the use of transportation services. The city of Tasikmalaya was the place chosen for this research. Whereas the subjects in this study are consumers or users who often use both conventional (ojek, pedicab, taxi and urban transportation) and online transportation services (online taxis and online ojek). The object of this research is the decision to buy or use transportation services. The characteristics of the speakers in this study were users of transportation services with ages 18-37 years. The sampling technique used is snowball sampling, the technique is used in research with a qualitative approach because it requires the same answers from all interviewees interviewed. The type of data used is primary data with data collection techniques using interviews. The data analysis technique used in this study is induction analysis. Induction analysis generally explains in advance what will then be explained about more specific findings. The only variables examined in this study are service purchase decisions with indicators of the desire to use products / services, the desire to buy products / services, prioritize the purchase of a product / service and willingness to sacrifice to get a product / service (Chang, Hsu, & Chung, 2008).

RESULT AND DISCUSSION

Based on the results of interviews with all informants, it was found that the millennial generation consumers preferred the mode of online transportation rather than conventional transportation modes. Basically, online transportation with conventional transportation is in the same form, only the difference in the way the operations are. Conventional transportation has the same form as motorbikes and cars, as well as online transportation. The location of the difference is only in the production process and consumption. In the process, requests are made through applications on smartphones, as well as the process of receiving orders made on these devices. This is the reason why consumers in the millennial generation prefer online transportation rather than conventional. Millennials consumers are so adept at operating the latest technologies such as computers and cellphones, this is one reason why they really need online transportation services. They also stated that the convenience offered by online transportation modes is better than conventional transportation. It only takes a few button massages, so there is a process of consuming online transportation services online.

There are so many modes of transportation in the city, in the city of Tasikmalaya itself there are motorcycle taxis, city transportation, rickshaws, taxis and mini buses. But the umpteenth number of modes of transportation that operate millennials prefers to use online transportation modes. They explained that if they use conventional ojek they need to find from a place of residence to the base with uncertainty whether there are motorcycle taxis available to deliver, besides the previously unknown tariffs make consumer complaints using conventional transportation modes. Whereas for city transportation, it has the weakness of consumers who have to look for these transportation routes, although the tariff is lower than other modes of transportation, this is still a shortage in city transportation. Millennials assume that finding routes and waiting for city transportation in uncertain circumstances is a weakness that cannot be tolerated. Another conventional mode of transportation is becak, actually pedicabs are included in traditional modes of transportation but until now they are still maintained. Traditionally considered because its operation still uses human power, the disadvantage of

becak why millennials do not want to use this type of transportation is the use of a considerable amount of time because the average speed of a becak is only 20km / h, which is more expensive than other modes and can only be used by only two passengers. Next to a taxi, a taxi is a type of car transportation with a slightly different look. Taxis actually have a positive image in all consumers, including millennials, but there are disadvantages of these are the most expensive rates compared to other modes of transportation and difficulties in ordering. A decade back ordering using telephone numbers is one of the most innovative reservations for transportation services, but there are problems in remembering and writing down so many contact numbers that consumers must keep. The mode of mini bus transportation is usually used for areas far enough from urban areas with a distance of approximately 30km. This mode of transportation is used only for those who travel far enough, the disadvantages of this mode of transportation are poor service and improper facilities. From the results of the presentation, millennials want to use transportation modes that have a fast ordering method, with rates that have been previously known, picked up to a pickup point that has been adjusted, representative facilities, flexible and comfortable mileage. All of these needs are only found in online transportation modes that are assisted by technology in the form of applications embedded in smart phones.

Since the presence of online transportation modes in Indonesia for the first time, they still use exchange instruments in the form of physical or currency. But now they have provided two options for payment methods, which can be either currency or physical money (metal and paper) and electronic money (currency that has been converted into money on a digital account). The payment is used to facilitate all transactions and provide services that are very fast in making transactions. Millennials have a desire to trade in the use of online transportation services quite enthusiastically. Apart from the reasons previously explained, they always have the desire to use it. They always want to transact in this type of transportation. This is because they have other advantages, namely being able to use payments using electronic money. Electronic money embedded in this online transportation application can not only be used for transactions when using transportation services, but can be used as a payment medium at some merchants such as convenience stores. This makes electronic money stronger than cash money, the money is easy to use and intangible so passengers do not need to have difficulties in making transactions. The facilities that continue to be developed by application developers make the level of desire of millennials to transact continue to increase in the use of transportation. On the other hand, with conventional modes of transportation, they cannot provide this facility, allowing difficulties in increasing the desire of millennials to transact. The resource persons explained that the use of currency is sometimes a problem when transportation service providers do not have change, sometimes many passengers are victims of unsuitable change. Although this is not a major weakness, this weakness is still seen as an inconvenience for millennials as passengers in transportation services.

Of the many modes of transportation available, millennials explained that they prioritized the first online transportation mode in deciding to use transportation services rather than conventional. They assume that the mode of online transportation has excellent facilities and value. Millennials use conventional transportation modes only when in an emergency such as the absence of signal and network on smart phones, the range of online transportation modes that do not cover all areas of the city, run out of battery power on smart phones and run out of unexpected internet data packages. Whereas in the future they will still decide to use online transportation modes. From this incident, it can be seen that the positioning strategy of online transportation modes is so strongly embedded in the minds of millennial consumers. Just as at present the existence of a smartphone with the internet is more important than other things, it cannot be replaced by other needs. Millennials have some reasons for prioritize their needs, this is because until now services like now only appear and the market responds positively. In fact, some resource persons also explained that they prioritized using online transportation modes rather than private vehicles because they were related to out-of-pocket costs such as fuel oil and vehicle parking costs which sometimes exceeded the cost of using online transportation.

In the aspect of willingness to sacrifice, the resource person explained that they were very willing to sacrifice time, money and energy to get this transportation service. One example of the disadvantages of online transportation is that passengers and service providers need to have a device first, namely a smart phone that has been installed by a transportation service provider. Whereas passengers who do

not have smart phones cannot conduct transactions and consumption of these services. However, the millennial does not feel any objection or even pressure in buying a smart phone. This is because they need these tools for other needs such as job requirements, entertainment needs, information search needs and other needs found on smart phones. In addition to smart phones, what must be provided is an internet data package to operate the application at the time of booking because without an internet data package the application will not be able to operate. Again, millennials reveal that internet data packages are not a big obstacle because now the smart phones they have will always be connected to the internet at all times. It can be concluded that they feel the sacrifices that have been made are not worth the benefits they get afterwards. Even though you have to have a smart phone and internet data package that is active at any time, it feels that the value exceeds expectations.

CONCLUSION

Millennials are a generation that is used to technology, now this generation is in the productive age. With the growth of this generation, computer and internet-based technology industries are growing. With this change, the entire industry also changed the way production of its products and services. In the service industry, especially transportation, it is currently undergoing major changes because the productive market share is currently controlled by millennials. While the industries were changing, the way consumption for this generation also changes. At present the consumption of food that consumers usually come to the shop slightly changes to using food ordering and storage services. This happens because the time efficiency is felt for consumers. This is in line with transportation services that have been operating for a long time, now the way consumption of transportation services has changed online even though service providers and consumers do not know each other. This consumer behavior has changed since the entire system has made this efficiency work, as well as the decision to purchase transportation services is currently undergoing a fairly rapid change. Millennials prefer to transact using online transportation modes rather than conventional transportation. Various facilities and benefits are provided for the convenience of passengers so that market share continues to grow and develop. But these changes and developments have an impact on conventional transportation, which is currently losing market share, because they cannot compete with online transportation modes. If this is allowed, then this incident will not be much different from the home phone which was once the belle of telecommunications services replaced by cell phones, walkman replaced by ipod and music on demand applications, and various other things that will be replaced by the times. Actually, this can be anticipated if the conventional transportation service providers jointly collaborate with the private sector as well as the government to be able to make similar but still different applications as suppliers of the services they have. This is an effort to maintain the conventional transportation industry in order to remain competitive.

REFERENCES

- Agus, A., & Ridwan, M. (2019). Pemetaan Objek Wisata Alam Kabupaten Kepulauan Selayar Berbasis Sistem Informasi Geografis Arcgis 10.5. *PUSAKA (Journal of Tourism, Hospitality, Travel and Business Event)*, 1(1), 45–50. <https://doi.org/10.33649/pusaka.v1i1.12>
- Amajida, F. D. (2016). Kreativitas Digital Dalam Masyarakat Risiko Perkotaan: Studi Tentang Ojek Online “Go-Jek” Di Jakarta. *Informasi*, 46(1), 115. <https://doi.org/10.21831/informasi.v46i1.9657>
- Anindhita, W., Arisanty, M., & Rahmawati, D. (2016). Analisis Penerapan Teknologi Komunikasi Tepat Guna Pada. *Seminar Nasional INDOCOMPAC*, 2, 712–729.
- Arifianto, E. Y., & Himawan, R. (2018). STRATEGI PENGEMBANGAN INDUSTRI KREATIF KERAJINAN TOPENG ERA INDUSTRI 4.0. *Seminar Nasional IENACO - 2018*, 567–574. Surakarta: Universitas Muhammadiyah Surakarta.
- Büyükköçkan, G., Feyzioğlu, O., & Göçer, F. (2018). Selection of sustainable urban transportation alternatives using an integrated intuitionistic fuzzy Choquet integral approach. *Transportation*

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- Research Part D: Transport and Environment*, 58, 186–207.
<https://doi.org/10.1016/j.trd.2017.12.005>
- Chang, H. H., Hsu, C.-H., & Chung, S. H. (2008). The antecedents and consequences of brand equity in service markets. *Asia Pacific Management Review*, 13(3), 601–624. Retrieved from <https://open.uct.ac.za/handle/11427/20258>
- Djakfar, L., Indriastuti, A. K., & Nasution, A. S. (2010). Studi Karakteristik Dan Model Pemilihan Moda Angkutan Mahasiswa Menuju Kampus (Sepeda Motor Atau Angkutan Umum) Di Kota Malang. *Jurnal Rekayasa Sipil*, 4(1), 37–51.
- Eva, A. (2007). Persepsi Penggunaan Aplikasi Internet Untuk Pemasaran Produk Usaha Kecil Menengah. *Seminar Nasional Aplikasi Teknologi Informasi, 2007(Snati)*, 1907–5022. <https://doi.org/1907-5022>
- Fitria, E. M. (2015). Dampak Online Shop Di Instagram Dalam Shopaholic Di Samarinda. *E-Jurnal Ilmu Komunikasi*, 1(3), 117–128.
- Gabriel, M., & Pessl, E. (2016). Industry 4 . 0 and Sustainability Impacts : Critical Discussion of Sustainability Aspects With a Special Focus. *ANNALS of Faculty Engineering Hunedoara – International Journal of Engineering*, 14(2), 131–137.
- Hamdan, H. (2018). Industri 4.0: Pengaruh Revolusi Industri Pada Kewirausahaan Demi Kemandirian Ekonomi. *Jurnal Nusantara Aplikasi Manajemen Bisnis*, 3(2), 1. <https://doi.org/10.29407/nusamba.v3i2.12142>
- Livano, A., & Herdinata, C. (2014). Peran Karakter Passion Dan Market Sensitivity Dalam Startupbusiness Udifer Bags. *Prosiding Seminar Nasional: Economic Globalization Trend & Risk for Developing Country*, 1–15.
- Nakamura, H., & Abe, N. (2016). Tourist decisions in renting various personal travel modes: A case study in Kitakyushu City, Japan. *Tourism Management*, 55, 85–93. <https://doi.org/10.1016/j.tourman.2016.02.005>
- Novantirani, A., Sabariah, M. K., & Effendy, V. (2015). Analisis Sentimen pada Twitter untuk Mengenai Penggunaan Transportasi Umum Darat Dalam Kota dengan Metode Support Vector Machine. *E-Proceeding of Engineering*, 2(1), 1–7.
- Pratama, M. G., M, W. B., & A, K. (2017). Analisis Deskriptif Konsumen Dan Mitra Pengemudi Pada Jasa Transportasi Online Ride Sharing. *Jurnal Sains Dan Seni ITS*, 6(2), 2–5. <https://doi.org/10.12962/j23373520.v6i2.23108>
- Radanliev, P., De Roure, D. C., Nurse, J. R. C. C., Nicolescu, R., Huth, M., Cannady, S., & Montalvo, R. M. (2019). New developments in Cyber Physical Systems, the Internet of Things and the Digital Economy – future developments in the Industrial Internet of Things and Industry 4.0. *University of Oxford*, (March), 1–11. <https://doi.org/10.13140/RG.2.2.14133.93921>
- Rahman, R. (2009). Studi Pemilihan Moda Angkutan Umum Antar Kota Menggunakan Metode Stated Preference. *SMARTek*, 7(4), 229–243.
- Supriyanto, S., & Anggraini, O. (2018). Penguatan Kapasitas Usaha Perikanan dalam Pengembangan E-commerce di Kabupaten Bantul. *Proceeding of Community Development*, 1(2017), 173. <https://doi.org/10.30874/comdev.2017.23>
- Sutandra, L., & Sulaiman, S. (2019). Analisis Layanan Teknologi Komunikasi Klinik Fisioterapi Siti Hajar. *QUERY: Jurnal Sistem Informasi*, 3(April 2019), 36–45.
- Suwardana, H. (2017). Revolusi Industri 4. 0 Berbasis Revolusi Mental. *JATI UNIK : Jurnal Ilmiah Teknik Dan Manajemen Industri*, 1(2), 102–110. <https://doi.org/http://ojs.unik-kediri.ac.id/index.php/jatiunik/article/view/117/0>
-

- The Nielsen Company. (2017). *What's in-store for online grocery shopping*. (January), 37. Retrieved from [http://www.nielsen.com/content/dam/niensenglobal/de/docs/Nielsen Global Connected Commerce Report January 2017.pdf](http://www.nielsen.com/content/dam/niensenglobal/de/docs/Nielsen_Global_Connected_Commerce_Report_January_2017.pdf)
- Toar, J. I., Timboeleng, J. A., & Sendow, T. K. (2015). Analisa Pemilihan Moda Angkutan Kota Manado – Kota Gorontalo Menggunakan Model Binomial-Logit-Selisih. *Jurnal Sipil Statik*, 3(1), 27–37. Retrieved from <https://ejournal.unsrat.ac.id/index.php/jss/article/view/6790>
- Wahyusetyawati, E. (2017). Dilema Pengaturan Transportasi Online. *Jurnal RechtsVinding*, (April), 1–4. Retrieved from <https://rechtsvinding.bphn.go.id>
- Wicaksono, S. (2014). *Analisa Faktor-faktor yang Mempengaruhi Pemilihan Moda Transportasi Penduduk Kerja di Kecamatan Sukmajaya Depok Menuju Tempat Kerja dengan Menggunakan Metode Analytic Hierarchy Process*. 1–18.
- Widiarta, I. B. P. (2010). Analisis Pemilihan Moda Transportasi untuk Perjalanan Kerja. *Jurnal Ilmiah Teknik Sipil*, 14(2), 218–225. Retrieved from <https://ojs.unud.ac.id/index.php/jits/article/view/3638>
- Zak, J. (2017). Multiple-Criteria and Group-Decision Making in the Fleet Selection Problem for a Public Transportation System. *Transportation Research Procedia*, 27, 43–52. <https://doi.org/10.1016/j.trpro.2017.12.102>