

Study of Indonesian Railway Service's Consumer Behavior in Accessing Information and Communication Technology of The 4.0 Era

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Study of Indonesian Railway Service's Consumer Behaviour in Accessing Information and Communication Technology of the 4.0 Era

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Abstract— In the era of 4.0, the development of infrastructure of the railroad transportation system is facilitated by the use of Information and Communication Technology. This is in line with the increasing needs of users of railway transportation. The train is one of the modes of transportation for Indonesians. Frequency of land transportation users is experiencing an upward trend as service improves as well. Many users of train services in the period of January-July 2018 reached 242.93 million passengers. It leads to another problem as the ease of users in accessing railroad facilities have not been fulfilled. One of the accesses in need is the availability of Information and Communication Technology. This study aims to determine the behaviour of train users in accessing available Information and Communication Technology. The methodology is based on a behaviour survey of train users. The survey was conducted with 59 respondents at the train station. The result of the study shows that train users need easy information technology services access as part of significant service in supporting transportation activities.

Keywords— Behaviour, Information and Communication Technology, Railroad, Service

8

1. Introduction

PT Kereta Api Indonesia (Persero) is a State-Owned Enterprise that provides, regulates, and manages rail transportation services in Indonesia. KAI was established on June 1, 1999. The vision and mission are to become the best railway service provider that focuses on customer service and meets stakeholders' expectations, organizes railway business and supporting business businesses through the best business practices and organizational models to provide high added value for stakeholders and environmental sustainability

based on four main pillars: Safety, Timeliness, Service and Comfort. PT KAI's Corporate Culture is of integrity, professionalism, safety, innovation and excellent service [1]–[5]. Based on corporate culture PT KAI strives to create and enhance innovation in serving its customers. One service innovation that is carried out in a facility that uses information technology. Information technology services include information on ticket sales, parking services, information technology on departures and arrivals of trains.

2. Literature Review

Based on corporate culture PT KAI strives to create and enhance innovation in serving its customers. One service innovation that is carried out in a facility that uses information technology. Information technology services include information on ticket sales, parking services, information technology on departures and arrivals of trains. This is in line with the progress of the era in the form of information technology era 4.0. The development of information technology in Indonesia's railways has developed very rapidly. Several studies on information technology have been carried out such as research on the use of the Internet of Things as a management solution for motorcycle transportation [6]. The use of information technology has made it easier for humans to carry out their activities. This study aims to determine the behaviour of railroad users towards the available information technology facilities. Hopefully, this research is that the train user community is increasing. Some previous studies conducted a study of community satisfaction with railroad transportation modes,

community satisfaction was concerned with services to facilities and infrastructure and the tariff policies applied to use rail transportation services [7][8], [9]. The method used by Importance-Performance Analysis (IPA), knowing the suitability of the Ability To Pay and Willingness To Pay rates for paying for rail transportation services and determining the suitability between the service and the current tariff. The results of the analysis of the IPA method show that there are 3 service attributes, namely (1) Availability of safety and health facilities, (2) Condition of toilets at stations and on trains, (3) Availability of facilities for disabled passengers. The results of the ATP study analysis of the percentage of respondents who were able to pay rates more than the average current rate were 4.7%. Based on the correlation between ATP and income, the regression equation $Y = 0.0058X + 30453$ with X is the average income of the respondents, which is Rp. 14,250,000,- so that the average ATP regression is Rp. 113.103,-. While for the analysis of PAs it is known that the percentage of respondents who want to pay tariffs more than the current prevailing average rate is 26%. And the regression equation obtained $Y = 0.0014X + 38743$ with X is the average income of respondents, namely Rp. 14,250,000,-. So that the regression average WTP is Rp. 407,293,-. Based on the results of the ATP and WTP analysis, it shows that the community is still less capable and less willing to pay the applicable tariffs. Furthermore, the results obtained from PT. KAI obtained BOKA rates of Rp.412,500,-. While the current average tariff is Rp.485,000,-. The BOKA tariff itself is the minimum tariff limit that can be paid so that operators continue to get profits by existing regulations. Thus the difference between the two tariffs can be used or allocated to improve service quality services that are considered lacking in the Bima Executive Train. Research on PT KAI's efforts to improve service quality and the supporting and inhibiting factors faced. The use of trains as mass transit will reduce emissions that occur [10]. Transportation is the activity of moving goods (cargo) and passengers from one place to another [14].

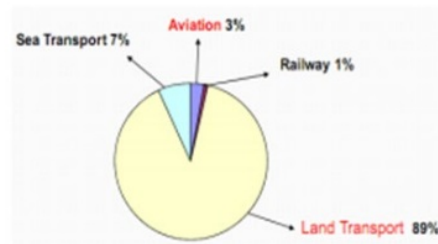


Fig. 1: Transportation emissions in Indonesia

Trains have advantages compared to other transports, namely for long distances to transport humans as well as transportation goods and support such as motorbikes.



Fig. 2: Free motorcycle transport facility

Source:http://ppid.dephub.go.id/files/dataka/Laptah_2014_edit.pdf



Fig. 3: Motorcycle transport facility

3. Methodology

The methodology is based on behavioral survey of train users. The survey was conducted with 59 respondents at train station. Survey data is made with google sheets so that it is flexible in conducting survey activities.

Survey data are directly recorded and qualitative answers can be identified from the results of survey questions.

Some survey questions carried out include:

1. Do you feel comfortable with the train service

facilities at the station?

2. How often do you buy train tickets through online applications in 1 year?
3. How often do you or you buy train tickets through online self-service in 1 year?
4. How often do you buy train tickets through the station's online engine in 1 year?
5. How often do you or you buy train tickets through the station ticket counter in 1 year?
6. How often do you use station parking facilities in 1 year?
7. What vehicle do you use to depart or return to the train station?



Fig. 4: Customer Survey Method



Fig. 5: Online Ticket Payment Method

4. Analysis And Results

Based on the survey questions asked, the respondent comfortably answered 91.5 % and was not comfortable answering 1.7 %.

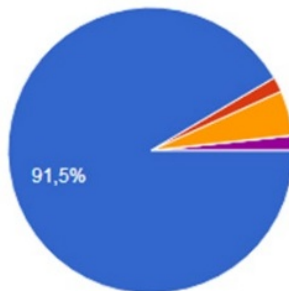


Fig. 6: Facilities at the station

Based on question survey data using online applications 3 times is 35.6% and never 27.1%

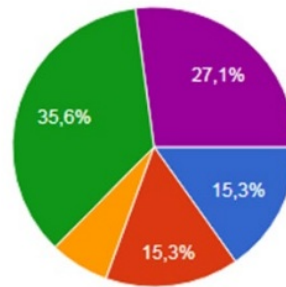


Fig. 7: Online applications

Figure 8 shows purchasing train tickets through online self-service has the highest interest of 13.6% on 1-time purchases while 74.6% has never done it at all

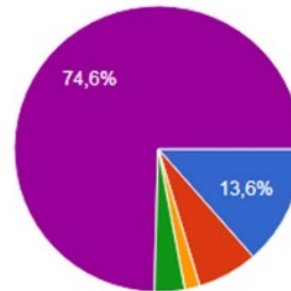


Fig. 8: Online self-service

Figure 9 shows purchases through the station's online machine show the highest interest of 10.2%, at least 1 time purchase while 76.3% are not interested

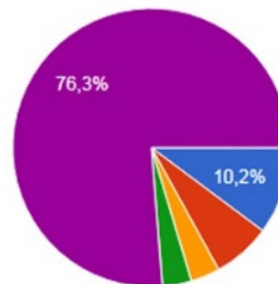


Fig. 9: The station's online engine

Figure 10 shows 44.1% of passengers are still happy to make purchases through ticket counters, otherwise 27.1% never do

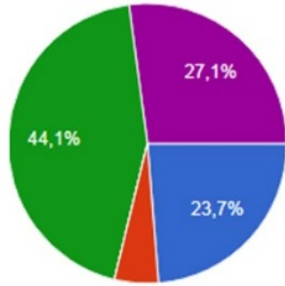


Fig. 10: The station ticket counter

Figure 11 shows 30.5% of visitors park as much as 3 times, 33.9% do parking 1 time otherwise 23.7% do not park

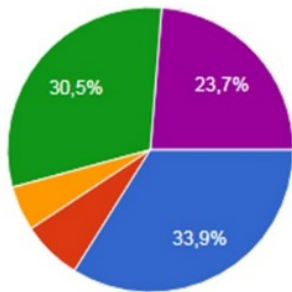


Fig. 11: Parking facilities

Figure 12 shows Own motorbikes 45.8%, Own cars 6.8%, Taxi 3.4%, Motorbikes Online 23.7 and Cars online 20.3%

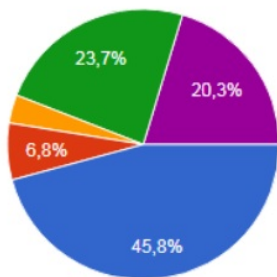


Fig. 12: Vehicle used to station

In this study showed that 1.7% of passengers aged <17 years, 62.5% of passengers aged 17 <x <35 years, 15.3% of passengers aged 35 <x <45 years, 13.6% of passengers aged 17 <x <35 years, 6.8% of

passengers aged <58 years old

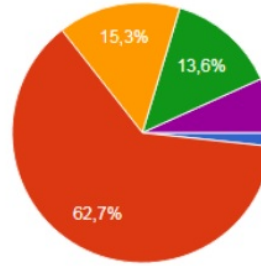


Fig. 13: Age of passengers

In the figure 14 shows that 37.3% of passengers are non-government employees, 32.2% do not work, 27.1% are self-employed, 3.4% are government employees

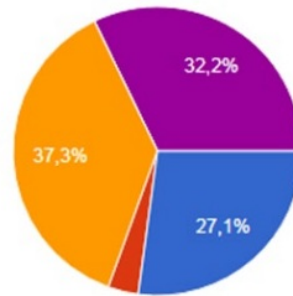


Fig. 14: Passenger Profession

In this study, the majority of railroad passengers with high school education were 59.3%, undergraduate 25.4%, junior high school (SMP) 10.2% and elementary school 5.1%.

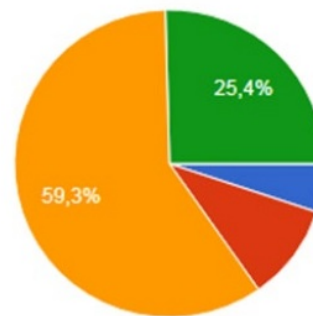


Fig. 15: Education

2 5. Conclusion

Based on the results of the study the conclusions are as follows:

1. Most train passengers have used available facilities, especially those based online.
 - using online applications 3 times is 35.6%
 - Online self-service through the highest interest of 13.6% on 1-time purchases
 - Online machine show the highest interest of 10.2%
 - 44.1% of passengers are still happy to make purchases through ticket counters
 - Motorbikes Online 23.7 and Cars online 20.3%
2. The age of the passenger is more mature, 17 <x <35 years, 62.5%, while the age of > 58 years is 6.8%
3. More high school passenger education is 59.3% while undergraduate is 25.4%
4. Most passenger profession is 37.3% of passengers are non-government employees, 32.2% do not work, 27.1% are self-employed, 3.4% are government employees

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References

- [1] R. Y. Cavana, L. M. Corbett, and Y. L. Lo, "Developing zones of tolerance for managing passenger rail service quality," *Int. J. Qual. Reliab. Manag.*, vol. 24, no. 1, pp. 7–31, 2007.
- [2] D. N. Fitriana, "Inovasi Pelayanan Publik BUMN (Studi Deskriptif tentang Inovasi Boarding Pass System dalam Meningkatkan Kualitas Pelayanan Kereta Api PT KAI di Stasiun Gubeng Surabaya)." 2014.
- [3] W. Septianita, W. A. Winarno, and A. Arif, "Pengaruh Kualitas Sistem, Kualitas Informasi, Kualitas Pelayanan Rail Ticketing System (RTS) terhadap Kepuasan Pengguna (Studi Empiris pada PT. Kereta Api Indonesia (PERSERO) DAOP 9 Jember)," *e-journal Ekon. Bisnis dan Akunt.*, vol. 1, no. 1, pp. 4–56, 2014.
- [4] H. Samuel and N. Wijaya, "Service quality, perceive value, satisfaction, trust, dan loyalty pada PT. Kereta Api Indonesia menurut penilaian pelanggan Surabaya," *J. Manaj. Pemasar.*, vol. 4, no. 1, pp. 23–37, 2009.
- [5] T. Litman, "Valuing transit service quality improvements," *J. Public Transp.*, vol. 11, no. 2, p. 3, 2008.
- [6] S. W. Mudjanarko, S. Winardi, and A. D. Limantara, "Pemanfaatan Internet of Things Sebagai Solusi Manajemen Transportasi Kendaraan Sepeda Motor," in *Prosiding Seminar Nasional Aplikasi Teknologi & Prasarana Wilayah (ATPW)*, 2017, vol. 5.
- [7] A. A. Afiyat, B. Rosalina, M. Z. Arifin, and A. Wicaksono, "Kajian Kinerja Pelayanan Dan Tarif Kereta Api Eksekutif Jurusan Malang–Jakarta (Studi Kasus Kereta Api Eksekutif Bima)," *J. Mhs. Jur. Tek. Sipil*, vol. 3, no. 2, p. pp-603, 2015.
- [8] E. Nathanail, "Measuring the quality of service for passengers on the Hellenic railways," *Transp. Res. Part A Policy Pract.*, vol. 42, no. 1, pp. 48–66, 2008.
- [9] Z. Yuzhe and A. Bo, "Quality of service improvement for high-speed railway communications," *China Commun.*, vol. 11, no. 11, pp. 156–167, 2014.
- [10] D. E. Pramyastiwi, "Perkembangan Kualitas Pelayanan Perkeretaapian Sebagai Angkutan Publik Dalam Rangka Mewujudkan Transportasi Berkelanjutan (Studi pada PT Kereta Api Indonesia Daerah Operasi 8 Surabaya)," *J. Adm. Publik*, vol. 1, no. 3, pp. 61–69, 2013.
- [11] H. P. Sari and L. Setiartiti, "Willingness To Pay Perbaikan Kualitas Pelayanan Kereta Api," *J. Ekon. Stud. Pembang.*, vol. 16, no. 2, pp. 200–209, 2015.
- [12] B. R. Sumantri and W. Herijanto, "Analisis Kinerja Operasional Kereta Api Sriwedari Ekspres Jurusan Solo-Yogya," *J. Tek. ITS*, vol. 3, no. 1, pp. E1–E6, 2014.
- [13] Y. Yuliansyah, "Meningkatkan Response Rate Pada Penelitian Survey Suatu Study Literature." Penerbit Change Publications, 2016.
- [14] Hermanto Dwiatmoko, 2020, Applying Important Performance Analysis for Jabodetabek Commuter Train Services, Faculty of Engineering, University of Mercu Buana Indonesia, Vol. 9, No. 2, April 2020, *International Journal of Supply Chain Management (IJSCM)*

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