

Impact of E-Ticketing Application on Bus Transportation in Bandung

Eddy Soeryanto Soegoto
Departemen Manajemen
Universitas Komputer Indonesia
Bandung, Indonesia

Rudy Setiawan
Departemen Teknik Informatika
Universitas Komputer Indonesia
Bandung, Indonesia
rudysetiawan@email.unikom.ac.id

Rizky Jumansyah
Departemen Sistem Informasi
Universitas Komputer Indonesia
Bandung, Indonesia
rizkyjuman@gmail.com

Abstract—This study aims to determine the impact of the e-ticketing application system on bus transportation for the peoples of Bandung. To support the research, the method used was qualitative. The results show that there are some positive impact on the implementation of e-ticketing system, one of which is to increase public interest in public transport in order to reduce traffic jam that often occurs during this time. This is because the implementation of e-ticketing systems on public transportation provides convenience and comfort in ticket booking services, both for the peoples and for the providers of transportation services. Of course the convenience and comfort can encourage peoples to use public transportation in carrying out their daily activities.

Keywords— E-Ticketing, Application, System

I. INTRODUCTION

Bandung is the capital city of West Java Province which is known as one of the Metropolitan areas which has considerable urban activities, this causes Bandung to be one of the business centers, education centers, or tourist destinations in Indonesia. Viewed from the aspect of population, the number of population increases in Bandung every year increases, this is due to the birth and displacement of the population with the aim of education, trade, and improving the family economy. So that Bandung became one of the regions with the highest population in West Java [1].

From these aspects it can be illustrated that Bandung has a activity with high insensity which also encourages the high movement and mobility of people to travel both in the context of business activities, family needs, recreation or social activities. Bandung as a big city in Indonesia has a high need for transportation equipment in line with the overcrowding of the population, causing an increase in vehicle use. Putra (2013) [2] explains that the higher urban activities, it will increase the mobility of people and goods so that it will increase the need for one of the city's facilities and infrastructure, namely transportation, one of them is Bus. Bus is one of the modes of public transportation based on mass transportation that has the characteristic of transporting as many passengers as possible by promoting safe, fast, cheap and convenient services [3], therefore buses are quite popular with the people of Bandung in carrying out their daily activities.

The cost factor is relatively cheap, and the distance that is quite far and its capacity is quite large, making public bus transportation superior to other types of public transportation. Buses in Bandung consist of Trans Metro Bandung (TMB) and DAMRI. All of them are large-sized buses with rates ranging from IDR 5,000 for buses with a long-distance route. Basically the high use of private vehicles is the main cause of congestion, therefore the problem can be solved by shifting the use of private vehicles into public vehicles, if more people use public vehicles, the more effective use of the road will be. In other words, public transportation can be used as the main solution in overcoming traffic congestion.

In Bandung itself congestion is something that is often encountered every day, the main cause is the growth of high vehicles, especially private vehicles and not balanced with adequate transportation supporting facilities and infrastructure, one of which is the ticket booking system of the bus. One way that can be done in improving the facilities and infrastructure to support bus transportation in increasing community interest is by using e-ticketing.

E-Ticketing is one of the most important services in E-Commerce. An E-Ticket is a paperless electronic document used for ticketing travelers, mainly in the commercial airline industry. There are examples of Internet ticketing. E-Ticketing is "the foundation" which can reduce costs and improve customer service however in public transportation as a whole, especially the railway, metro, buses, implementation techniques have been mixed due to varying business environment and travel culture. E-Ticketing makes customers' lives easier, and that can make you their carrier of choice [4]. E-ticketing is an electronic document without a physical paper, airlines industry is using this the most. In this era, most of the major airlines are using Electronic ticketing. An e-ticketing model allows information to enter directly into the companies database. Consumers also allow check-in without showing a physical paper ticket. E-ticketing, the cost of terms of printing, mailing and reducing the need for power in terms of decreasing the employee work. [5].

E-ticketing or electronic ticketing is the way to fund the sales process of tourist travel activities without having a paper ticket [6]. E-Ticketing reduces ticket processing costs, eliminates paper forms and increases the flexibility of passengers and travel agents in making changes to travel

schedules [7]. E-ticket systems must contain elements providing security and ensuring privacy. Depending on the specific application of the e-ticket, those requirements may vary significantly. In case of vehicle e-tickets, security and counterfeit protection is crucial, in other cases client's anonymity is far more important [8].

In public transport, e-ticketing systems are not only means of payment but process huge amount of information which offer a large range of possibilities to make public transport easier to use, to manage and to control. They offer as well opportunities to introduce integrated pricing structure that are not easy to implement with traditional payment tools. Electronic ticketing technologies are classified according to the way they are used for payment [9]. E-ticketing have become such an important issue of concern for organizations in recent years as efforts to expand e-ticketing progress. Specifically, the issue of customer satisfaction in e-ticketing has become a central issue of focus, prompting organizations to investigate the specific variables that shape customer outcomes when choosing e-ticketing options. Using this as a foundation for investigation, the current research utilizes customer satisfaction as the dependent variable to assess what specific independent variables (customer technical support, infrastructure, data security and/or user-friendliness) shape customer satisfaction in decision-making when it comes to purchasing an e-ticket [10].

In the public transport service industry, it will grow further if it is supported by a ticket revitalization system using internet facilities that are conducted online. Online ticket reservations make it easy for users of public transport services in a variety of things, for example, such as the ease of finding travel schedule information and the price of the ticket. In addition, users can make ticket reservations anytime and anywhere without having to come directly to the terminal or other conventional ticket booking places. This research was conducted to one of the bus transportation service providers in Bandung where the bus transportation services are still making ticket sales offline ie passengers are required to buy directly to the ticket sale place. This study aims to determine the impact of the application of the e-ticketing system on bus transportation for the peoples of Bandung.

II. METHOD

The method used in this research was qualitative research methods, which through this method gave priority to process problems and meanings/perceptions. This research is expected to show a variety of qualitative information with a description of the analysis that is researched and meaningful, understanding and recognizing the characteristics of qualitative research will make it easier for researchers to take the right direction and path. In the development of qualitative research which is increasingly rich in variety, this research has the flexibility of its form and strategy. The creation of qualitative researchers in various fields that are relatively new to this researcher allows the formulation of its characteristics not to be definitive [11].

In addition, the data collection techniques in this study used the interview method directly to related parties, namely one of the bus public transportation service providers in

Bandung to find out the procedures that have been running. Observation methods by making direct observations to the field, and literature study methods by studying, researching various literature sourced from various books, journals and internet sites.

III. RESULTS AND DISCUSSION

3.1. Private Transport Users in the City of Bandung

Basically the purpose of holding public vehicles is to facilitate all activities carried out by the community. In addition public transportation can also reduce traffic congestion because one public vehicle can accommodate many passengers. For the growth of vehicles in Bandung itself has increased an average of 11% every year. This resulted in overcrowding in a number of road segments in Bandung.

According to data collected from the Department of Transportation Bandung, currently two-wheeled vehicles in the city as much as 1.25 million. While the four-wheeled amounted to 536 973 units. With this amount, the streets in Bandung experience density at certain hours. The condition will be even more dramatic when entering the weekend. Various motorized vehicles from various cities crowded the streets in this city of around 2.5 million people.

Transportation problems such as congestion must be resolved immediately to help facilitate mobility. One solution to solving this problem is to use public transportation as a means of transportation. The use of public transportation is far more efficient in terms of space use than public transportation. If the more and more people use public transportation, the use of highways will be more effective.

To increase public transport users, what must be done is to improve their services first. Service improvement will be very important to attract the public to switch from private vehicles and use public transportation. This transition can reduce the growth of private vehicles and can reduce congestion.

There are at least 1.25 million vehicles in the city and of these about 94% are registered as private vehicles. The comparison chart between the use of private vehicles with public transport can be seen in the following figure 1:

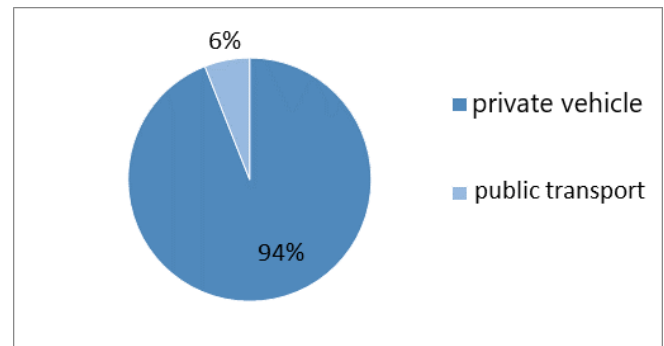


Fig. 1. Comparison of Use Personal and Commercial Transport

Currently there are 39 urban transportation route in the city with a number of as many as 5,521 public transportation vehicles. Then, there is the public bus, which reached 2,946 units. This means that public transportation in the city of

Bandung is around 1% of the total number of motorized vehicles in the city which in the afternoon has a population of around 2.5 million.

Related to these problems, it can be assessed that as part of the community still does not have the awareness to switch to using public transportation, this phenomenon makes public transport become a burden because all people want their existence to be seen by competing that they are able to use their own vehicles.

Damri has also made a number of efforts to increase public interest in using public transportation starting from new transportation and other facilities that can make passengers comfortable. When mentioned about the ticket sales administration, Damri agreed that using an online system would increase the public's interest in returning to using public transportation because of its ease.

Therefore, one effort that needs to be done to reduce vehicle density in the city of Bandung is to increase mass public transportation services by implementing an e-ticketing system, besides that it must also be supported by an increase in road network.

3.2 Ticket Administration Services in Public Transportation

One of the processes that many people often do before making a trip or departure is ordering tickets, ordering is done by ordering directly to the nearest agent, but the ordering process is less effective in terms of time and cost. So it can make people reluctant to use public transport.

One of the factors that causes public interest in public transport is service to passengers, public transport in Bandung, on average still using full human labor, is ticketing or ticket sales. There are still many public transport officers who are still arrogant, unfriendly, indifferent and unprofessional in doing their jobs. Transport drivers also sometimes speak harshly and do whatever they want to their passengers. Not including that occur in the field today is the passenger must pay the fare when passengers were already in the bus, it will be an obstacle when the charge inside the bus is full, not to mention when passengers pay with a great money, it means the conductor must give returns to passengers where such that these things can be a constraint in terms of time. With the online ticket booking, each passenger can access to get a variety of good information, schedule information until the price offered.

3.3. Impact of Using E-ticketing

The e-ticketing system will give us quick and easy access to bus transportation. The e-ticketing system is also completely safe. E-ticketing has many positive effects, including:

- 1) Reducing costs associated with printing letters and tickets.
- 2) Reducing labor related to printing letters and tickets
- 3) Security is guaranteed because it barcode validation and eliminates the possibility of fake or duplicate tickets

- 4) Ordering e-ticketing by consumers means knowing how many consumers of the company, because the company stores consumer data in the company's database
- 5) Provide additional information that needs to be known to customers
- 6) Providing the ability to advertise, can increase the company's income by delivering ad space on the company's social portal

With all the impacts and benefits obtained from the use of e-ticketing, it can encourage people to return to using public transportation. Of course, it takes time to change people's culture in terms of transportation use from private vehicle use to being using public transportation. However, this must be started now for a better future.

3.4. Stages of Online Ticket Booking

To get an e-ticket for bus use there are steps that must be followed by prospective passengers, including:

1. Prospective passengers open the website of the bus transportation service provider to get booking information and bus departure schedules
2. Prospective passengers choose the bus according to the desired destination and time
3. Prospective passengers input data needed in booking bus tickets
4. Prospective passengers make a reservation after entering the necessary data
5. Prospective passengers make payment for bus tickets that have been booked
6. After completing the payment, the next step is to confirm by printing the ticket booking proof

The online ticket booking system above can be described in the form of a flow chart as shown in Figure 3 below:

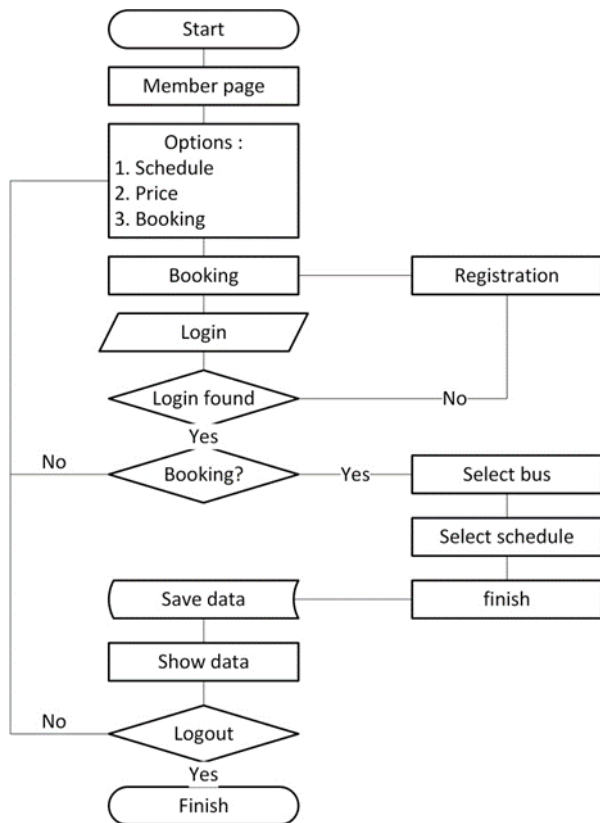


Fig. 2. Flow Chart Online Ticket Booking

3.5. Things that are Needed in Implementing E-ticketing

As things supporting the implementation of e-ticketing them can be explained as follows:

1. Availability of technology to support this system so that it can run well, it is necessary to have internet and media network technology through an adequate web.
2. Availability of devices to support the running of e-ticketing, namely the need for computer or mobile media and internet networks that can be accessed and reached to achieve and run e-ticketing. In addition, a scan tool is also needed by officers to scan tickets from passengers as a step to validate the ticket.

In addition to these needs, regular maintenance of the system is also needed so that the system can continue to be used.

IV. CONCLUSION

From the discussion of the results of research on the impact of the application of e-ticketing on bus transportation in Bandung, some conclusions can be drawn, based on the results of calculations on questionnaire data collected from the people of Bandung. It was found that 80.5% of respondents stated that e-ticketing was very help and facilitate respondents from starting to order bus tickets to travel to the destination. Because with the application of e-ticketing the respondents can see the bus departure schedule and ticket availability which can reduce the time needed

compared to the manual system that has been running before. With this e-ticketing system providing many benefits and convenience in its implementation which can affect people's lifestyles, 70% of respondents stated that the presence of e-ticketing system services in bus transportation can restore interest in returning to using public transportation in carrying out all its activities.

ACKNOWLEDGMENT

We want to show our gratitude to Universitas Komputer Indonesia that have provided insight and expertise that are very helpful in research.

REFERENCES

- [1] Statistik, B. P. (2007). Bandung dalam angka. BPS: a Report on the Survey of BOS.
- [2] Kadir, A. (2006). Transportasi: Peran dan Dampaknya dalam Pertumbuhan Ekonomi Nasional.
- [3] Permana, F. Y. (2016). Analisis Faktor Yang Mempengaruhi Permintaan Jasa Angkutan Umum Bis Damri Cabang Bandung (Studi Kasus Trayek 09 Cicaheum-Leuwipanjang) (Doctoral dissertation, Fakultas Ekonomi Unpas).
- [4] Alfawaer, Z. M., Awni, M., & Al-Zoubi, S. (2011). Mobile e-ticketing reservation system for Amman International Stadium in Jordan. *International Journal of Academic Research*, 3(1), 848-852.
- [5] Kiong, T. P., Gharleghi, B., Yin-Fah, B. C., & Lim, M. K. (2014). Electronic Ticketing in Airline Industries among Malaysians: The Determinants. *International Journal of Business and Social Science*, 5(9).
- [6] Setiawan, E. B. (2015). Analisis Pengaruh Nilai Teknologi Informasi Terhadap Keunggulan Bersaing Perusahaan (Studi Kasus Pemanfaatan E-Ticketing Terhadap Loyalitas Pengguna Jasa Kereta Api). *Jurnal Sains dan Teknologi Industri*, 12(2), 204-211.
- [7] Pramesti, R. (2012). Pengaruh Penerapan E-Ticketing Terhadap Loyalitas Konsumen di PT Garuda Indonesia (Persero) Tbk.
- [8] Kos-Labędowicz, J. (2014, October). Integrated E-ticketing system-possibilities of introduction in EU. In *International Conference on Transport Systems Telematics* (pp. 376-385). Springer, Berlin, Heidelberg.
- [9] Oloyede, M. O., Alaya, S. M., & Adewole, K. S. (2014). Development of an Online Bus Ticket Reservation System for a Transportation Service in Nigeria. *Computer Engineering and Intelligent Systems*, 5(12).
- [10] Qteishat, M. K., Alshibly, H. H., & Al-ma'aitah, M. A. (2014). The Impact of E-Ticketing Technique on Customer Satisfaction: an Empirical Analysis. *Jistem-journal of information systems and technology management*, 11(3), 519-532.
- [11] Aman, "Metodologi Penelitian Kualitatif," *Diklat Penulisan Skripsi Mahasiswa Pendidikan Sosiologi*, Mei 2007.