

DEVELOPING TECHNOLOGY – BASED PASSENGER TRANSPORT SERVICES IN HO CHI MINH CITY, VIETNAM

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ABSTRACT

In modern society, technology is being widely applied in all fields of production, business and management. There are innovative technologies applied in passenger transport services, allowing transportation agencies to coordinate values through temporary access rights, exchanges and transactions of available products, services, information, finance, labor, etc. from owners to new users and to maximize economic benefits, achieving the goals set by the state. As a developed urban, it is necessary for Ho Chi Minh city to popularize passenger transport services using innovative and smart technologies for both people's needs and local economic development. In this study, on the basis of a theoretical framework on passenger transport services applying advanced technologies, the practice is analyzed to suggest policy adjustments for sustainable development of technology – based passenger transport services in the city.

Keywords: Transport services; Passenger transport; Technology- based; Vietnam.

1.0 INTRODUCTION

Vietnam is a Southeast Asian country with a population of 100.3 million people (GSO, 2023), ranked the 3rd in Southeast Asia and the 15th in the world, and managed by local administrative units of 63 provinces and cities (GSO, 2024). Vietnam's economic development is ranked the 35th in the world, with an average income per capita of about 4.280 USD/person (YN, 2024). It is the large population, the good basic transportation system, and the growing economy which consider advantages for passenger transport services applying technologies to fully blossom for the economic development and people's needs of travelling.

Of Vietnam's 63 provinces, Ho Chi Minh city, with the largest population, has been seen as the southern economic center of the country: In 2023, its population is nearly 14 million people, accounting for 7.1% of the country (GN, 2024); the average income per capita of is high, ranking the 6th in the country in 2023 (PIN, 2024); Good transportation infrastructure promote manufacture, commercial activities and satisfy people's needs of traveling. This is also considered favorable conditions for passenger transport services applying advanced technologies to be developed, which, at the same time, is the topic of interest in this study.

2.0 LITERATURE REVIEW

The term "transport service", in recent studies, has been interpreted as a field of organizing transportation activities/process that carries goods or people from one location to another. In other words, transport service is an organizational process, a combination of transportation and

other related service activities. Under this approach, people (passengers) are customers of transport services. In fact, passengers are divided into different groups, including ones travelling by air, waterway, and road. Road passenger transport service applying innovative and smart technologies is the matter of concern in this study.

Road passengers refer to travelers and their accompanied goods carried on with road transport vehicles. According to Vietnamese law, road transport sector includes non-business services and business services, of which the latter is a conditional business line (VNA, 2008). The strengths of road transport sector are the diversity of transport vehicles and flexibility in transport time. In addition, road transport activities can be carried out in different weather conditions. However, low – volume goods carriage, mainly accompanied goods of passengers and higher transportation cost are considered disadvantages of road transport sector in comparison with railway and waterway. Therefore, it can be seen that road passenger transport services, including transportation and other related service activities, concern the carriage of passengers and their accompanied goods from one location or another.

In our modern society, technology is being widely applied in all fields of production, business and management. New technologies are also applied in passenger transport services (in this study, called technology-based passenger transport services). Accordingly, the operation and related issues to passenger transport activities are carried out through an intermediary model (via the internet), in which the enterprise play the role of the value coordinator of temporary access rights, exchanges, and transactions of available products, services, information, finance, workforce, knowledge, resources, assets, etc. from owners to users in order that optimal economic benefits and the goals set by the state can be realized.

In terms of theoretical research and management practice, technology-applied passenger transport services demonstrate superior features and practical benefits to meet the mobility needs of individuals, businesses and the country. This means passenger transport services applying technologies help effectively utilize resources, increase tax revenue for the state budget, encourage scientific and technological development, provide more convenient options for passengers, and contribute to promoting the development of the sharing economy which, according to Schor, J.B. et al (2015) and Zervas, G. et al. (2017), has a huge positive impact on business activities and the whole society around the world. This can be briefly explained as follows:

- Firstly, technology – based passenger transport services attract workers' flexible participation in transport activities supported with transport vehicles and applied technologies, create job opportunities and promote economic and technological development.

In the sharing economy model, technology – based passenger transport services will gradually eliminate or reduce barriers to market entry such as investment capital of production resources and complex distribution networks; allow individuals to start up their own businesses, create job opportunities, and participate in the passenger transport market from available resources. Along with a full-time job, individuals can take advantages of their free time and underutilized skills to participate in the passenger transport market applying technologies, also known as the technology - based passenger transport service market. This means, (1) workers can take advantage of personal vehicles to participate in the technology - based passenger transport

service market; (2) workers can flexibly participate the technology - based passenger transport service market; (3) workers can earn extra income from participating in the technology - based passenger transport service market out of the working hours of their current official jobs; (4) workers can participate in the technology - based passenger transport service market in a way that is consistent with their own circumstances and personal characteristics (difficult economic condition; open and friendly person; and official job need to travel by personal vehicle on roads with potential for developing transport services, etc.); (5) in case of unemployment, workers can participate the technology - based passenger transport service market to make their living while finding opportunities to develop their careers.

Thus, technology - based passenger transport services allow suppliers (employees participating in the technology - based passenger transport service market) to have flexible working hours. This is one of the practical benefits of the sharing economy model. Direct suppliers can be proactive in their working hours while still ensuring income. That people use their skills to bring value to the community is also considered another benefit of the sharing economy. In addition, technology - based passenger transport services contribute to promoting the technology development in general and information technology in particular due to increasing needs for the use and analysis of customers' information.

- Secondly, technology - based passenger transport services help transform the economic structure in the direction of increasing science and technology content and bringing benefits to consumers - passengers.

Technology - based passenger transport services not only allow suppliers (employees participating in the technology - based passenger transport service market) to have flexible working hours, but also contribute to promoting technological development because these services, themselves, are more and more in need of using and analyzing customers' data. That (1) helps transform the economic structure towards increasing science and technology content and bring benefits to consumers - passengers; (2) diversify goods and services, increase passenger transport transactions in the market, promote competition, create motivation for the traditional economy (traditional transport services) to change to best serve passengers; (3) create changes in passenger behaviors (service registration behavior, service payment behavior using technology applications, etc.). Hence, developing technology - based passenger transport services will create new business opportunities based on digital platforms and new technologies; Attract investment capital from society when people participate in the technology - based passenger transport service market with the aim of serving customers - passengers and the national economic development.

The literature review provides this study a general view of technology - based passenger transport services and a basis to analyze and evaluate the practice of applying technologies into passenger transport services in Ho Chi Minh City, Vietnam.

3. The practice of applying technologies into passenger transport services in Ho Chi Minh City, Vietnam and recommendations

In fact, technology-based passenger transport services have been introduced in Ho Chi Minh City since December 2013 with the launch of EasyTaxi. However, booking taxis through technology applications and the concept of sharing economy, at that time, was not popular to

customers. The result is EasyTaxi didn't draw much users' attention and by 2015, this application withdrew from the Vietnamese market while Grab was set up and on the way of development. The cost of gaining market share of technology – based passenger transport services in Vietnam is considered as the main cause.

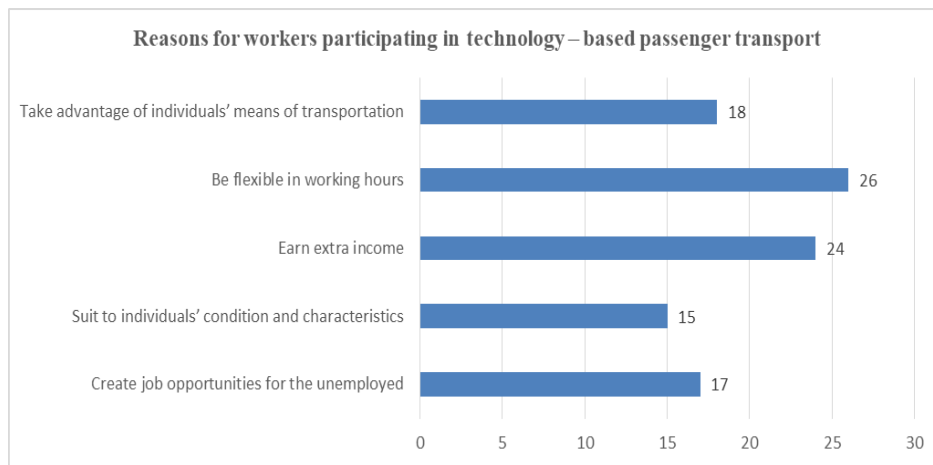
Grab entered the Southeast Asian market in 2012 with an initial starting point of 40 taxi drivers in Kuala Lumpur, Malaysia. In the Vietnamese market, including Ho Chi Minh City, Grab showed up in February 2014 with the original name GrabTaxi. In October 2014, Grab also continued to launch the GrabBike service. Since then, a variety of other services such as delivery, food delivery, phone card recharge under the brand Grab has been introduced to customers, creating a new way of making living for 9 million people in eight countries, including Vietnam. Another name in consideration was Uber in June 2014 in Ho Chi Minh City; however, after about four years of operation, Uber sold its shares to Grab and withdrew from the Vietnamese market.

Mai Linh was the first Vietnamese transportation enterprise to rapidly develop the Mai Linh Taxi booking application to shorten the time of booking, payment, controlling kilometers in 2015 so that customers' trust could be maintained to their services. The followers were VATO (March 2016), FastGo (June 2018), Be (December 2018), Xanh SM (April 2023), etc. which are growing fast in Vietnam in general and in Ho Chi Minh city in particular. At the end of 2023, there are 12 transportation service businesses applying technology still operating in the Ho Chi Minh city.

The appearance of technology - based passenger transport service businesses has basically met people's mobility needs; Provided services appropriate to different groups of customers, especially middle-income groups; Satisfied people's mobility needs with outstanding advantages of diversity in means of transportation (motorbikes, cars) and covered arrivals requested by customers, which can't be given by the public transport system. Moreover, the formation and development of technology – based passenger transport service businesses have revealed the limitations of traditional passenger transport services, which motivate traditional passenger transport service businesses to strive for innovation so that their competitive position with technology – based passenger transport service businesses could be created.

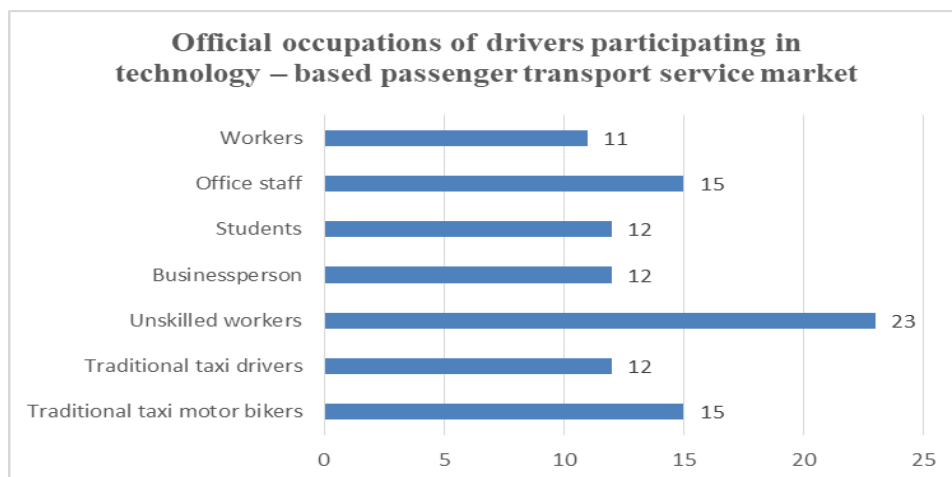
The practice of developing technology – based passenger transport services in Ho Chi Minh City has demonstrated their significant contribution to the economic and social development in the city. Specifically, technology-based passenger transport services have attracted workforce to flexibly participate in technology – based passenger transport service market and created more job opportunities, promoting economic development and technological development; helped transform the economic structure towards increasing science and technology content and bringing out passengers' benefits. A survey was conducted 300 drivers and 300 people ever employed technology – based passenger transport services in Ho Chi Minh City and it is found that workers can flexibly take part in technology – based passenger transport service market, suitable to their situations and characteristics (Figure 1, Figure 2).

Figure 1. Reasons for workers participating in technology – based passenger transport service market Unit: %



Source: Author’s survey results

Figure 2. Official occupations of drivers participating in technology – based passenger transport service market Unit: %



Source: Author’s survey results

The survey data (Figure 1, Figure 2) shows that workforce participating technology – based passenger transport service market may come from different occupational backgrounds and for different reasons. The majority of them are taking advantage of available vehicles, flexible working hours to earn extra income, suitable to their situations and characteristics. A small number of them are unemployed.

In practice, it can be seen that technology – based passenger transport service development has brought benefits to customers in Ho Chi Minh city. The survey results (Figure 1, Figure 2) also show that this development has attracted flexible participation of labor force in the technology – based passenger transport service market and created job opportunities, promoting economic and technological development. In details, drivers can take advantage of their personal vehicles to flexibly participate in the technology – based passenger transport service market, earn extra income in a way that suits their characteristics and circumstances and, in case of unemployment, maintain their income while finding their career development opportunities.

In addition, the development of technology – based passenger transport services in practice in Ho Chi Minh City has helped transform the economic structure towards increasing scientific and technology content, bringing benefits and creating customers’ satisfaction - benefits in service prices, convenience, customer care (Figure 3, Figure 4); diversifying goods and services, increasing the scale of passenger transport transactions in the market and promoting competition, motivation for traditional transport service businesses to change for their best services; creating changes in passengers’ behaviors - service registration behaviors and service payment behaviors using technology applications (Figure 5).

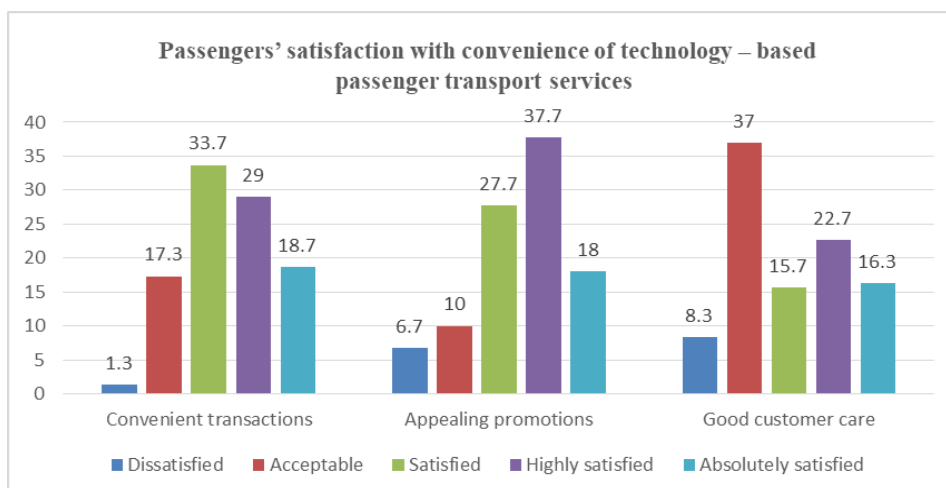
Figure 3. Passengers’ satisfaction with service price and quality of technology – based passenger transport services Unit: %



Source: Author’s survey results

It can be seen from the data that, in general, passengers are satisfied with the price and quality of technology-based passenger transport services: Over 60% of passengers are satisfied and highly satisfied with the price and quality of the services; Only 5.3% are dissatisfied with the price and 7.3% are dissatisfied with the quality of the services.

Figure 4. Passengers’ satisfaction with convenience of technology – based passenger transport services Unit: %

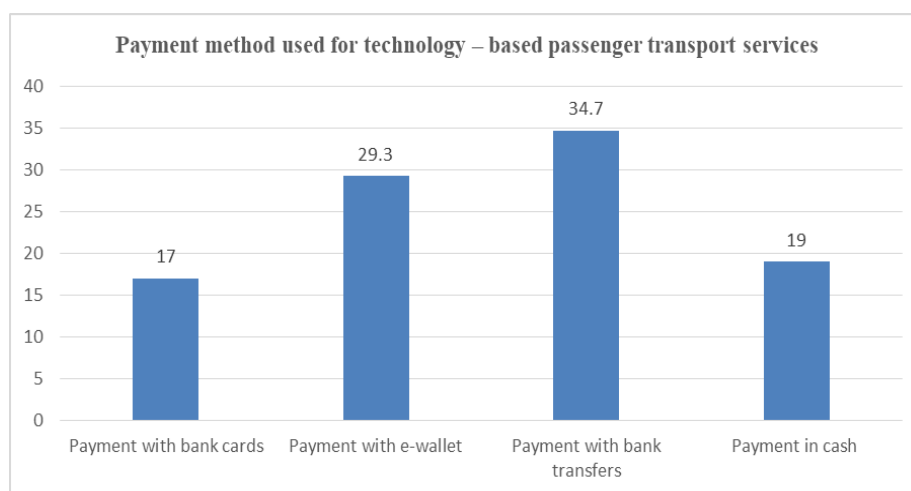


Source: Author's survey results

In addition to reasonable prices and guaranteed quality, passengers can also enjoy other benefits when transacting on the technology vehicle application platform. 37.7% 27.7% of passengers are satisfied and highly satisfied with promotions and transaction advantages. However, after-sales service and customer care still need to be improved when 37% of passengers reluctantly show their temporary acceptance and 8.3% reveal dissatisfaction.

Figure 5. Payment method used for technology – based passenger transport services

Unit: %



Source: Author's survey results

The majority of passengers use online payment methods: Over 80% of passengers often employ online payment methods including payment with bank cards, payment with e-wallet, payment with bank transfers; Less than 20% of passengers usually pay in cash.

It can be seen that, in Ho Chi Minh city, the development of technology – based passenger transport services has created new business opportunities based on digital platforms and new technology applications; Mobilized investment capital from individuals in the society and served the national economic development. Technology – based passenger transport services has brought out a new, flexible working method which can demonstrate partnerships but lack social benefits. This is completely different from traditional labor relations where employees contribute their expertise and skills to their organization, then receive both salary and other benefits; meanwhile, when participating in technology – based passenger transport service market, drivers must provide themselves means of transport, stand with additional costs and take associated risks.

Even though the unemployed's income from the technology – based passenger transport service market can be equal to that of salaried workers, but not as high as they expected due to the rapid growth of personal means of transport and the increasing participation of other employed workers in this market for their extra income. Even the unemployed's income is not stable and there may be some unexpected situations that can negatively affect their property,

health, and life such as road accidents, penalties for traffic violations, vehicle damage, theft, robbery. Many of the unemployed borrow money from banks, financial institutions or relatives to buy vehicles to take part in the technology – based passenger transport service market. This may lead to risks in case that their income from the technology – based passenger transport service market is unstable and less than the vehicle investment loan that they have to pay monthly.

This practice poses a question on state management activities of government agencies in Ho Chi Minh to develop the technology – based passenger transport service both as a stable - income job for the unemployed and a part – time job for salaried workers increase their income. To help solve this problem, the suggestion of researching, developing and implementing policies to encourage the growth of the technology – based passenger transport service. Specifically: (1) the subjects of support: the unemployed who are capable and wish to participate in the technology – based passenger transport service market; (2) support activities: providing loans with preferential interest rates for the unemployed to buy their labor tool – means of transportation. In case that the suggestion can be realized, it is hoped that state agencies in Ho Chi Minh city can not only partly solve the unemployment problem, but also increase tax revenue from the flexible workforce.

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