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ỨNG DỤNG XE ÔM VÀO GIAO HÀNG CHẶNG CUỐI TẠI VIỆT NAM

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Tóm tắt

Sự phát triển như vũ bão của ngành Thương mại điện tử Việt Nam đang gây ra tình trạng thiếu hụt nhân viên giao hàng trầm trọng. Từ thực tế đó, bài nghiên cứu đề xuất sử dụng xe ôm như một nguồn lực cộng đồng đóng vai trò người giao hàng trong quy trình giao hàng chặng cuối. Với hai mô hình mới được đề xuất là ứng dụng xe ôm truyền thống vào giao hàng hỏa tốc và ứng dụng xe ôm vào giao hàng tại kho, nhóm nghiên cứu đã thực hiện khảo sát đối với 295 xe ôm, 283 chủ doanh nghiệp thường xuyên sử dụng dịch vụ giao hàng hỏa tốc và phỏng vấn chuyên sâu các chuyên gia của doanh nghiệp vận chuyển. Kết quả cho thấy tính khả thi lớn và mức độ sẵn sàng tham gia mô hình cao của xe ôm và doanh nghiệp khi vừa giải quyết được vấn đề thiếu

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nhân lực, vừa tận dụng thời gian và không gian xe nhàn rỗi của xe ôm, vừa mang lại lợi ích cho cả 3 bên: doanh nghiệp - xe ôm - khách hàng.

APPLYING THE CROWD OF MOTORCYCLE TAXIS TO LAST MILE DELIVERY IN VIETNAM

Abstract

The rapid growth of Vietnam's e-commerce industry causes a huge shortage of deliveryman. Therefore, the research suggests using motorcycle taxis as a crowdsourcing that plays a role similar to deliveryman in last mile delivery. With two proposed new models, which are the application of traditional motorcycle taxis for express delivery and the application of motorcycle taxis for in - warehouse delivery, the writers conducted a survey for 295 motorcycle taxi drivers, 283 business owners who usually use express delivery service and in-depth interviews with experts of delivery companies. The results show the great feasibility and high willingness to participate in this model of motorcycle taxis and businesses because they both solve the problem of lack of human resources, make use of the time and space of motorcycles and bring benefits to all 3 participants: businesses - motorcycle taxis - customers.

Keywords: Last mile delivery, motorcycle taxi, express delivery, warehouse delivery, deliveryman

1. Introduction

According to the report of Facebook and Bain & Company "Vietnam: New E-Commerce Hotspot in Southeast Asia by 2026" (2021) stated: Vietnam's e-commerce will have a huge growth in the future. It is predicted that by 2026, Vietnam will become the fastest growing e-commerce market in Southeast Asia. In 2022, the annual growth rate is 20% and 57 - 60 million Vietnamese will use online shopping. In 2023, Vietnam will be ranked in the group of 5 countries that have the highest e-commerce growth rate (according to Emarketer). As reported by Lazada Vietnam: "Vietnam's e-commerce is entering a new stage of development, focusing on sustainable development based on the combination of market and sustainable technology development: The driving force behind the digital economy". This rapid growth has put a strain on the last-mile delivery system, as there is a shortage of delivery resources.

A representative of Bach Hoa Xanh shared: "The business is trying to increase its capacity to deliver 100,000 orders per day if it has more shippers. However, this number only meets a third of customer demand. It can be seen that the pressure from a large number of orders has led to a serious shortage of delivery resources, thereby causing a dilemma for shipping businesses when they have to race in terms of time to handle the volume of packages. More and more goods to be delivered.

To deal with the above problems, the question is how to solve the current last-mile delivery problem. According to the survey results, the majority of motorcycle taxis drivers, both motorcycle taxis drivers and traditional motorcycle taxis drivers, have relatively empty time between trips. Moreover, they have to ride frequently everyday, they are very familiar with routes, and can know

the shortest routes to shorten the distance, thereby optimizing time. It can be seen that taking advantage of the transport capacity of this group of people will contribute to an increase in the number of deliverymen.

Therefore, the researchers decided to choose the topic "*Applying the crowd of motorcycle taxis to last mile delivery in Vietnam*" with the aim of proposing the construction and design of two new models of operation process: Traditional motorcycle taxis - Express delivery model and Motorcycle taxis - Warehouse delivery model. Since, it's come up to propose solutions for businesses as well as application publishers to solve the trouble of drivers, customers and delivery enterprises.

2. Theoretical basis

2.1. The concept

2.1.1. Motorbike taxis

Traditional motorcycle taxis are a transportation service that transports people and accompanying luggage by motorbike from the place where the customer waits to the place the customer wants. Technology motorcycle taxis is a service developed from the traditional form of motorcycle taxis, but they catch customers through applications installed on phones such as Be, Grab, Gojek, ...

2.1.2. Last mile delivery

According to Olsson, Hellstrom and Palsson's research paper on the Structure of Last mile supply (2019), last mile delivery is the last step of the overall supply chain, it means the process of delivering goods from a distribution center or warehouse to the final recipient location. The above process is calculated from the step where the shipper receives the parcel from the nearest warehouse and successfully delivers it to the customer.

Applying crowdsourcing in last-mile delivery

The application of crowdsourcing in last-mile delivery is an activity when an individual has not undergone professional training, has free time and on a voluntary basis to undertake the delivery of goods to consumers. Crowdsourcing used in last-mile transportation can be motorcycle taxis, taxis, or other public means such as buses, trams, ...

2.1.3. Application of motorbike taxis for last-mile delivery

The application of motorcycle taxis – Last mile delivery is a variation of community delivery. However, unlike the community delivery, which is used by individuals without professional training, free of time and voluntary to receive freight, the application of Mortorbike taxi - Last mile delivery is a motorcycle taxis operating model that utilizes its idle resources (including time and/or free space on the vehicle) to transport packages. This helps reduce delivery time, utilizes transportation capacity as well as benefits all three parties: Business - Customer - Shipper.

2.2. Participating factors and last mile delivery processes

2.2.1. Participating factors

In the motorcycle taxis process, there are 4 factors involved including: motorcycle taxis, means of transport, customers and technology.

In the last mile delivery process, the participating actors include: Warehousing, warehouse staff, order management system, means of transport, delivery staff and consignees. Factors in each country will be influenced differently from many objective factors in that country from demographics, economy, infrastructure conditions to laws. Therefore, in different countries, last mile delivery may have different applications or variants of suitable applications.

2.2.2. Delivery processes in last mile delivery

a) Standard delivery process

Step 1: Categorize products

Step 2: Confirm the status and hand over the order to the delivery staff

Step 3: Ship the goods

Step 4: Finish the Last mile delivery process

b) Express delivery process

Step 1: Prepare and check the goods to be sent

Step 2: The order is assigned to the delivery staff

Step 3: Ship the goods and finish the delivery process.

3. Classification

3.1. Traditional motorbike taxis – Express delivery

The well - known application of motorcycle taxis in delivery nowadays is the application of technology motorcycle taxis to express delivery that means shippers receive purchase orders through a platform on smartphones. This platform was created by the technology motorcycle taxis enterprise.

In Vietnam, the colab between Grab and Shopee allows orders to be delivered in less than 1 hour within a certain area. However, this model has only taken place on a small scale with the main subject being technology motorcycle taxis, not making use of idle human resources like traditional motorcycle taxis. Therefore, with the model of motorcycle taxis application in express delivery that the writers want to mention in the topic is the target group of traditional motorcycle taxis with the model: Traditional motorcycle taxis - Express delivery.

3.2. Motorcycle taxis – Warehouse delivery

Applying motorcycle taxis on Warehouse delivery is when motorcycle taxis come to the warehouse at the beginning of the working day, sign for delivery of a certain amount of orders during the day, and carry passengers simultaneously. This is a new model when it has not been

widely applied around the world in general and in Vietnam in particular. The model is best applied to motorcycle taxis that only work in a few fixed areas. At that time, motorcycle taxis can receive orders with a bill of lading range of about 5 km and deliver packages in combination with daily carry passengers. This model applies to both traditional motorcycle taxis drivers and technology motorcycle taxis drivers.

4. Research methods

The authors use a combination of two research methods: qualitative and quantitative. The method of data collection for secondary data is from official information sites and well-known scientific research journals. Primary information was collected through sociological surveys using convenience sampling methods.

Since the study has not determined the overall sample size, the research team uses the Cochran formula to calculate the minimum sample size for each survey subject to be 270. After selecting invalid answer sheets from 850 issued, the authors obtained 295 survey responses to motorcycle taxis drivers and 283 votes from shop owners who regularly use express delivery services. So, it can be concluded that the sample size obtained has met the minimum sample size condition.

5. Current status of motorbike taxis application for last-mile delivery in Vietnam

5.1. Vietnamese factors that affect the application of motorbike taxis in last-mile delivery

In Vietnam, there are four areas that influence how last-mile delivery works optimally.

In terms of demographics, the explosive growth of e-commerce puts pressure on last-mile delivery. In contrast, the motorbike taxi industry develops due to abundant human resources and often free time. Therefore, taking advantage of the transportation capacity from motorbike taxis will promote the development of last-mile delivery services nationwide.

In terms of technology, the level of scientific and technical development when applied to last-mile delivery has not been systematically linked between delivery businesses. At the same time, delivery technology, information management systems and inter-enterprise order management have not yet appeared. Therefore, to avoid security risks, perfecting technology will be a big challenge if the above model is widely applied in Vietnam.

In terms of economics, according to the OECD, Vietnam is one of the most open economies in the world (in terms of GDP trade share), creating conditions for new trends to penetrate into the economy and society. In particular, a market that has made great strides in recent years is last-mile delivery, which is also receiving new trends from countries around the world such as crowdsourcing, specifically the application of motorbike taxis.

In terms of laws and regulations, it can be said that the current Vietnamese law is creating favorable conditions for the development of last mile delivery services without issuing many complicated regulations and laws. However, limitations in management and control of information, protection of consumers and carriers are the cause of many difficulties in resolving conflicts when conflicts occur.

5.2. Sociological investigation

The researchers collect primary information about the current situation of the trend Motorbike Taxis - Last-mile Delivery in Vietnam through questionnaire surveys for motorbike taxi drivers; shop owners who have demands for express delivery and businesses providing transportation services. At the same time, researchers conducted in-depth interviews with the managers of the transportation service providers.

5.2.1. From the perspective of motorbike taxi drivers

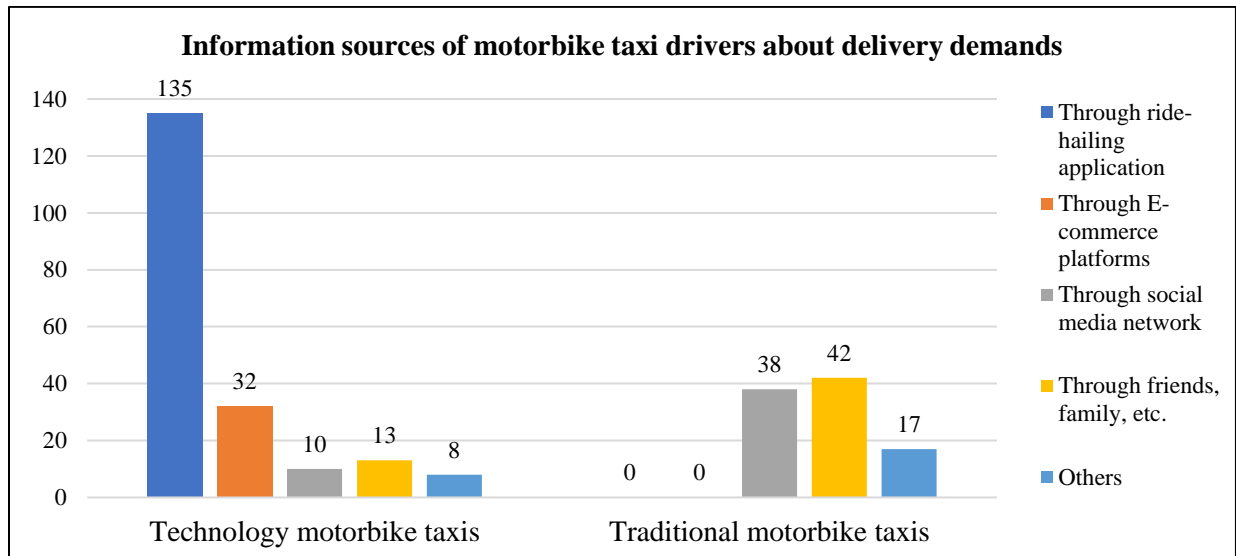


Figure 1: Information sources of motorbike taxi drivers about delivery demands

Cre: Survey by researchers

It can be seen that the ability of traditional motorcycle taxi drivers to approach customers is less than that of technology motorcycle taxi drivers. Because they work for enterprises, technology motorcycle taxis are provided with information from the application which are newer, more updated and faster than other information sources. This has created a big difference in the accessibility to order information between traditional motorcycle taxis and technology motorcycle taxis.

5.2.2. From the perspective of businesses providing transportation services

According to statistics, Vietnam has very large shipping enterprises with the number of warehouses up to thousands of units across the country, however, there are constantly new post offices and shipping routes that are expanded to meet the demand of delivery/receipt goods. On average, each shipping unit is responsible for nearly 250,000 orders per day. Thereby, the authors believe that the pressure on the carrier is increasing. Many people encounter overload, delivery is not timely, so they decided to “Shut down the application to rest”. That has been putting pressure

on other carriers to deliver. The shortage of human resources, especially during big promotional occasions, has negatively affected customer satisfaction, business revenue and the health of employees.

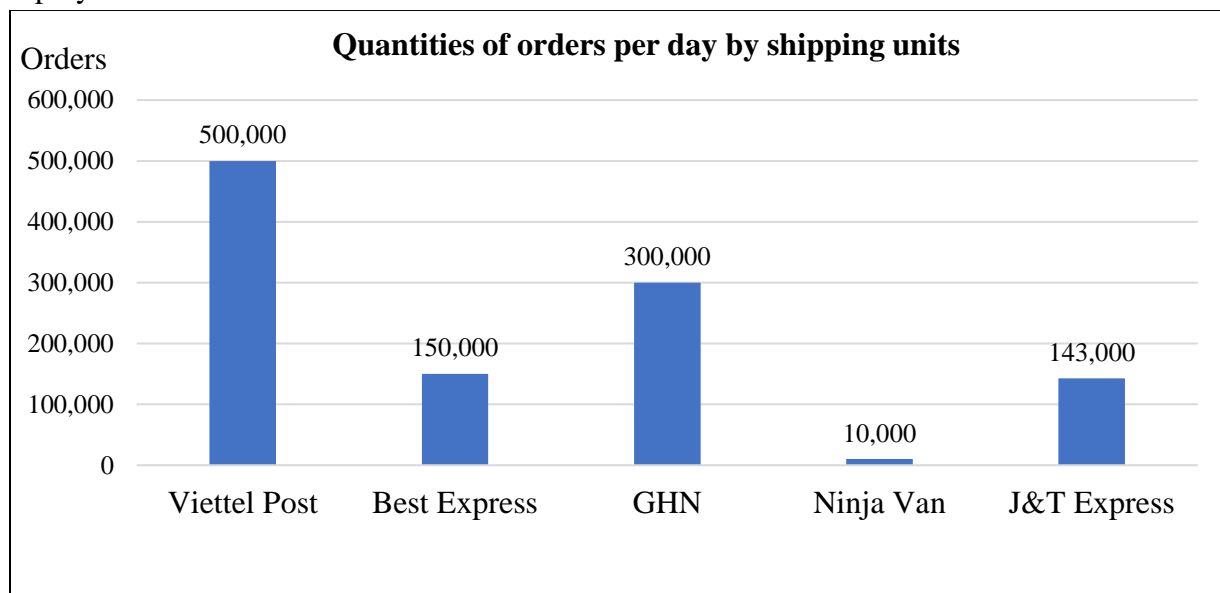


Figure 2: Quantities of orders per day by shipping units

Cre: Synthetic

5.2.3. From the perspective of shop owners who have demands for express delivery

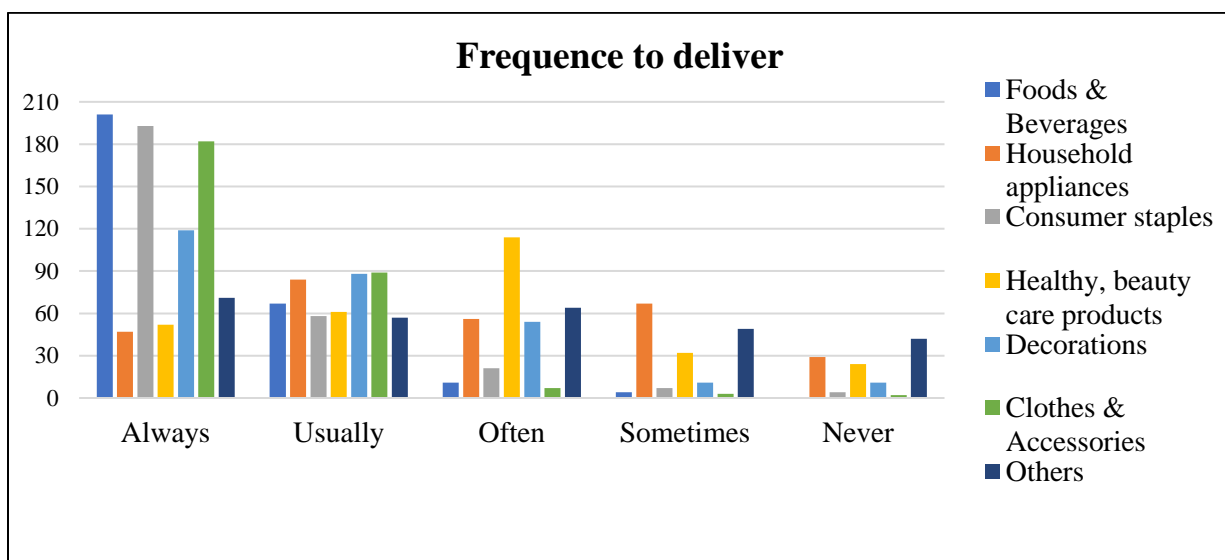


Figure 3: Frequency to deliver

Cre: Survey by researchers

Through a survey of 283 stores, the research team found that stores in the food and beverage, consumer goods, fashion, etc. industries often have demands for express delivery, especially shops that apply online business forms. In addition, the quantity of orders of these industries is often very large and usually concentrated in a period of the day (break time, meal time, ...) Therefore, if you take advantage of the spare resources of traditional motorcycle taxis for express delivery of the above items, it will contribute to reducing overload, saving a lot of cost and time.

5.3. Evaluation of the current situation of Motorcycle taxis – Last-mile delivery

5.3.1. Evaluation opportunities when applying the Motorcycle taxis – Last-mile delivery model

a) Traditional motorcycle taxis – Express delivery model

According to the survey, most drivers realize the potential of this model such as: increasing income for motorcycle taxis (88.66%), reducing costs for cosigners (100%), and taking advantage of labor resources. idle activity (97.94%), reducing costs for consignees (76.29%).

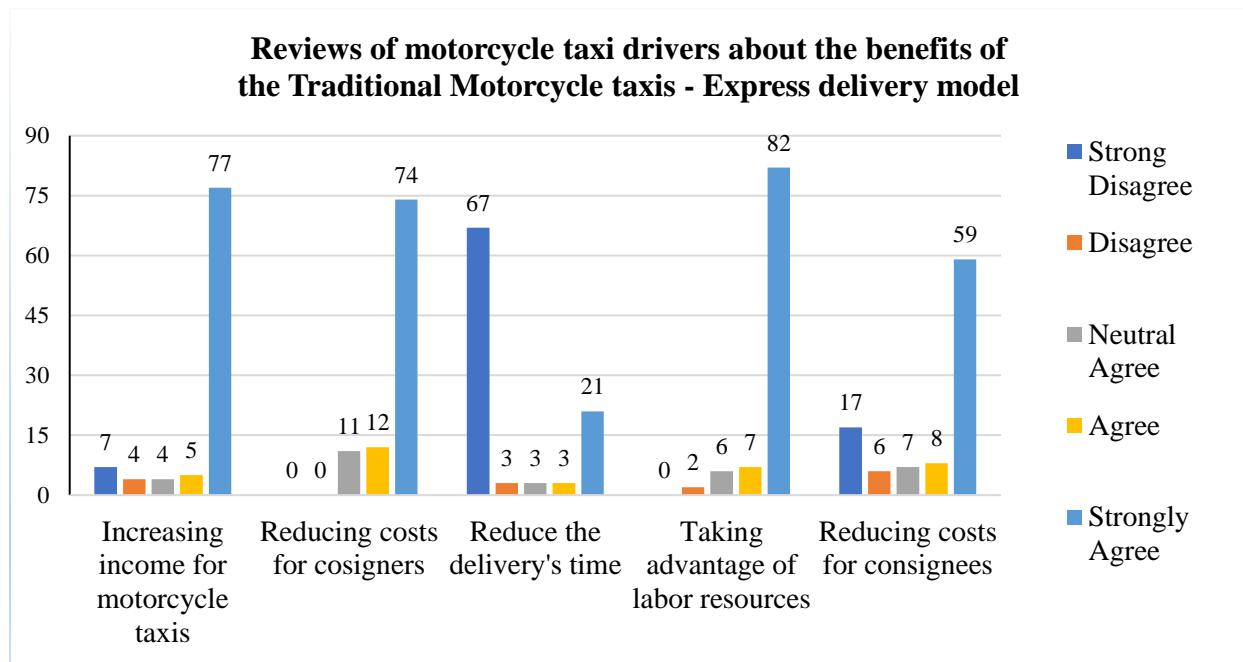


Figure 4: Reviews of motorcycle taxi drivers about the benefits of the Traditional Motorcycle taxis - Express delivery model

Cre: Survey by researchers

Through the survey, the research team received a high rate of consent to participate in the model when up to 59.66% of traditional motorcycle taxis were willing to participate in this application model.

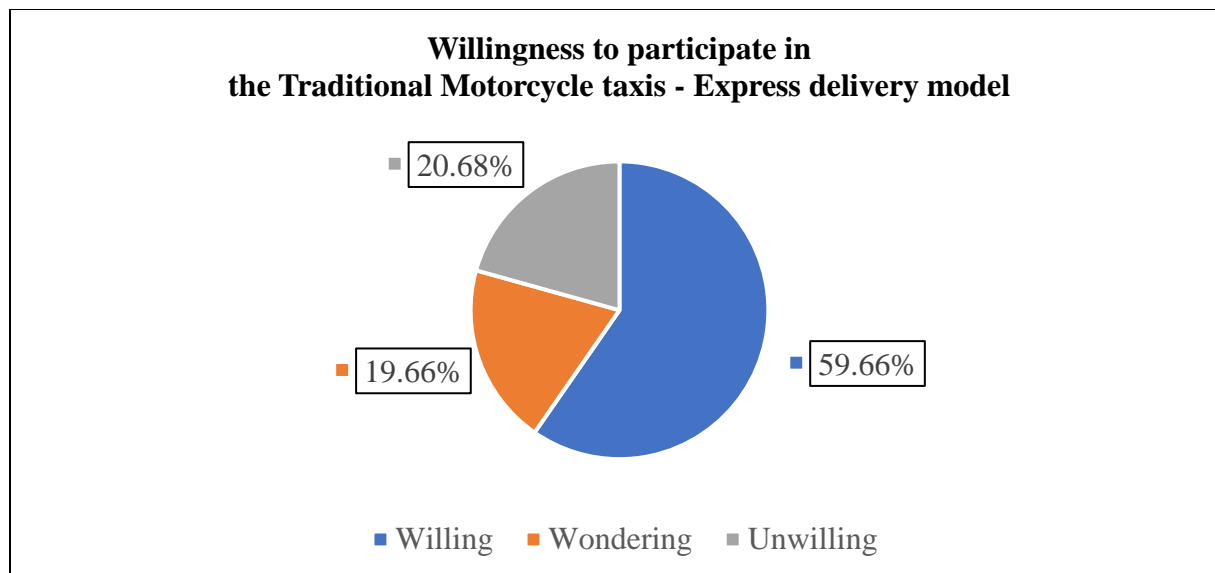


Figure 5: Willingness to participate in the Traditional Motorcycle taxis - Express delivery model

Cre: Survey by researchers

Based on the feedback on the level of approval for the Traditional motorcycle taxis - Express delivery model, the majority of shop owners see the benefits of this model such as: saving time on ordering and delivery, reducing costs for both store owners and buyers, and flexible express delivery time.

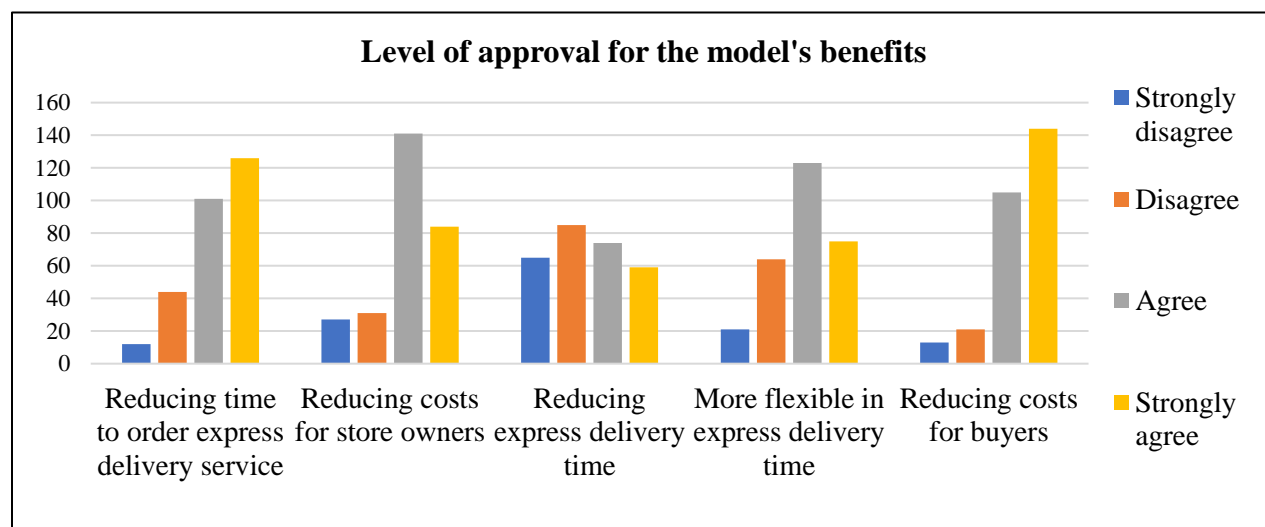


Figure 6: Level of approval for the model's benefit

Cre: Survey by researchers

Therefore, the authors consider that the development opportunity of this model is huge.

b) Motorcycle taxis – Warehouse delivery model

According to the survey, most of the free time between two rides is above 15 minutes (91.9%). For this period, the driver can fully receive an order from 7.5 to 30 km.

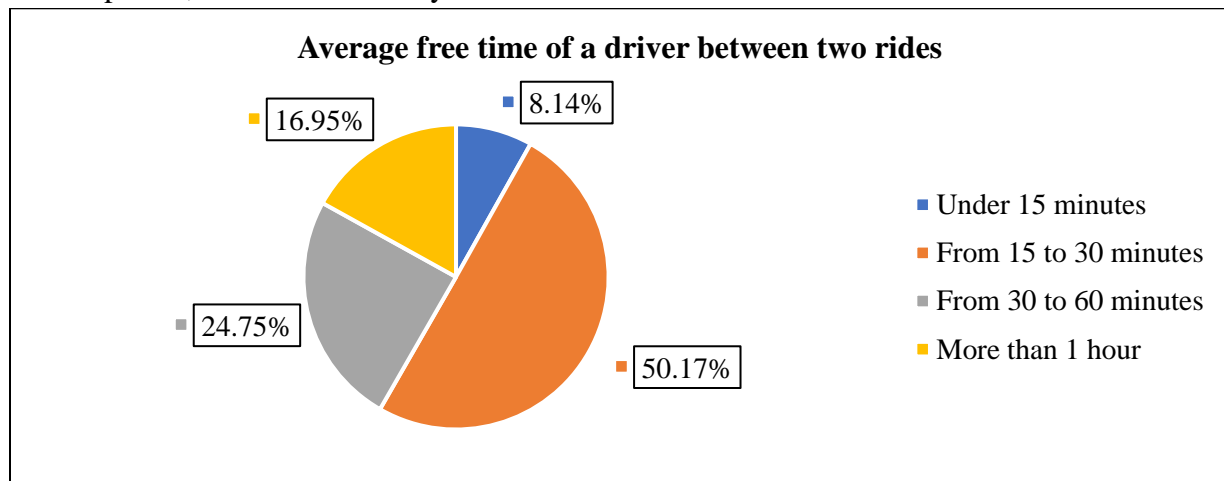


Figure 7: Average free time of a driver between two rides

Cre: Survey by researchers

The survey results show a positive signal when up to 58.31% of drivers are willing to participate in the motorcycle taxis – Warehouse delivery model for the reason that they expect to increase their income and do not want to waste their free time, ...

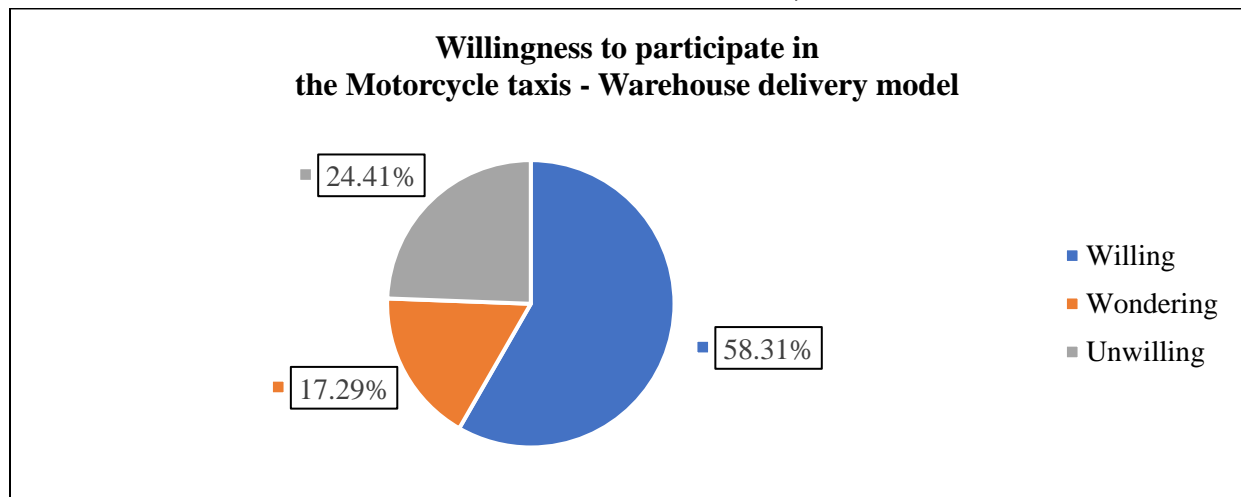


Figure 8: Willingness to participate in the motorcycle taxis – Warehouse delivery model

Cre: Survey by researchers

Transport service providers also acknowledge the benefits that the motorcycle taxis – Warehouse delivery model brings such as: increasing human resources, increasing service delivery capacity, increasing benefits and the relationship between parties. With those advantages, it can

be seen that the motorcycle taxis - Warehouse delivery model is completely suitable and has potential for development for the current situation of Vietnam.

5.3.2. Assess the challenge when applying the motorcycle taxis – Last-mile delivery model

When assessing the challenges when applying the motorcycle taxis - Last-mile delivery model, the authors based on the perspective of motorcycle taxis drivers, store owners and transportation service providers. For shop owners, the authors only mention the challenges of the Traditional motorcycle taxis - Express delivery model; for businesses, only mention the motorcycle taxis – Warehouse delivery model.

a) Challenges when applying the Motorcycle taxis – Last-mile delivery model from the perspective of motorcycle taxis drivers

From the answers of the motorcycle taxis, the research team can summarize into four main groups of challenges. Firstly, the challenge of technology and information sources and delivery demand clues because traditional motorcycle taxis drivers do not exchange their information with any third parties. In addition, the problem of technology because adding a new service will change part or all of the process that is already very familiar to users.

Second, the challenge of laws and regulations, because in Vietnam, there are still no clear laws on rights, insurance, and safety in transporting customers and goods. Along with that, the regulations of the transportation service providers have not yet created favorable conditions when some current businesses have regulations that do not allow motorcycle taxis to carry out simultaneous passenger and delivery activities because of concerns about the customer experience.

Third, the challenge of benefit sharing. In order to develop the model of motorcycle taxis - Last-mile delivery, it is necessary to consider how benefits are distributed harmoniously between the parties, as well as to solve the problem of sharing benefits between motorcycle taxis drivers and their delivery people. So, it is important to find the benefits divided methods between the two parties in the most optimal way.

The fourth is the challenge of experience, including the experience of customers and motorcycle taxis drivers. For customers, they will have to worry about their goods being lost or damaged when they are delivered to traditional motorcycle taxis drivers. Along with that, the time gap between orders will make the order delivery time longer than expected and may affect the work of customers. Regarding the experience of motorcycle taxi drivers, they all have common concerns about order overload, bulky and fragile goods, long waiting times for customers and the risk of customers not receiving goods.

b) Challenges when applying the motorcycle taxis - Last-mile delivery model from the perspective of people who have delivery needs

The authors surveyed shop owners about the challenges that the trend of Traditional motorcycle taxis - Express delivery may face, the results can be seen: although there are still some

potential challenges such as difficulty in linking customers with customers. demand for motorcycle taxis drivers, risk of loss of goods, no insurance for the store, etc., but, this application still has great potential for development in the future.

c) Challenges when applying the motorcycle taxis - Last-mile delivery model from the perspective of transport service providers in Vietnam

A motorcycle taxi driver when participating in this model will be subject to the simultaneous management of both the transport business and the transportation service providers, leading to concerns about management technology and differences in labor regulations between the parties. Enterprises said that the quality of the other party's labor and service provision is a big concern when cooperating with another company.

In addition, delivery businesses are also concerned about the division of interests of the parties and the legal corridor. The distribution of benefits can be divided into two main categories: Collaboration between transportation companies and traditional motorcycle taxis and cooperation between transportation companies and technology motorcycle taxis. The division of responsibilities of the two businesses towards the driver is also very complicated because at present there is no specific law or regulation for this cooperation model.

6. Solution of applying motorcycle taxis to last-mile delivery

6.1. Models proposal of applying motorcycle taxis to last-mile delivery

6.1.1. Model proposal of Traditional motorcycle taxis – Express delivery

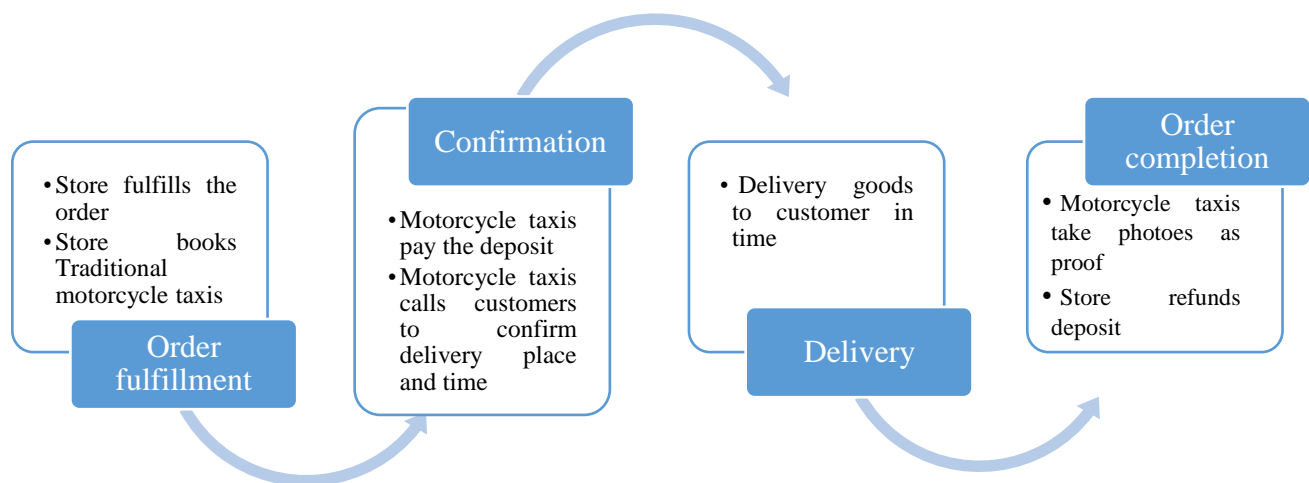


Figure 9: Traditional Motorcycle taxis - Express Delivery model

Cre: Synthetic

Stage 1: Store fulfills the order and books MT from the intermediary platform. The MT bases the decision to take the order or not on its place.

Stage 2: The MT picks up the goods and calls to confirm the time with the customer. After receiving a booking from the intermediary platform, the MT needs to go to the pickup location, check the goods and pay the deposit.

Stage 3: The MT delivers goods within the specified time and ensures the goods are intact.

Stage 4: Complete the order.

6.1.2. Proposal model of motorcycle taxis – Warehouse delivery

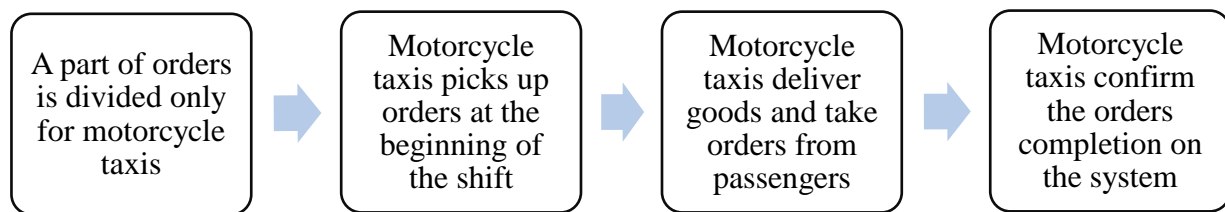


Figure 10: Motorcycle taxis – Warehouse delivery model

Cre: Synthetic

Stage 1: The system divides goods into two separate parts: One for MT and one for the delivery staff of the delivery company.

Stage 2: MT arrives at the warehouse to receive goods at the beginning of the shift.

Stage 3: MT combines delivering goods and taking passengers' orders.

Stage 4: MT confirms order completion on the system

6.2. Solutions to obstacles when applying motorcycle taxis to last-mile delivery

6.2.1. Solutions of technology

For both models of MT application to last-mile delivery, technology plays an important role, acting as a bridge between customers, motorcycle taxis, and businesses. In order to optimize information management, avoid loss, and reduce the risk of information loss, the author proposes two solutions: Applying Sandbox to manage information and applying Blockchain to optimize management systems. Moreover, it is necessary to minimize operations on smartphones to facilitate MT, especially elderly MT.

For the Traditional motorcycle taxis - Express delivery model, building an intermediary platform is such a big challenge. Therefore, the authors recommend building an application that connects shop owners who demand express delivery services with traditional MT via Andromo, a platform that allows creating free applications.

6.2.2. Legal and regulatory solutions

In both models, it is compulsory for Traditional MT and Technology MT to provide enough official information: Citizen identification and driver's license. Additionally, they also need to take pictures of the goods when they pick it up from the receiving location and when they finish delivering it as proof to be resolved in case complaints arise.

In the Traditional motorcycle taxis - Express delivery model, the shop owners must provide business information such as citizen identification and business registration. In addition, they must ensure that the delivery goods are legal and be responsible under circumstances of violating laws. In the motorcycle taxis - Warehouse delivery, ride-hailing enterprises need to ensure the distribution of profits according to a clear agreement (specific proportions in Section 6.2.4).

6.2.3. Solutions for customer experience

To apply the model of Traditional motorcycle taxis - Express delivery successfully, MT is required to turn on GPS navigation throughout the whole process, from the point of receiving to the point of finishing the order. This action makes way for the recipients to track their orders. Besides, in order to increase the shop owner's reliability, the authors recommend the MT advance the deposit based on the value of the order or the agreement between the two parties. The recipients, moreover, need to update their personal information correctly and receive the goods as per the previous agreement. Customers who do not receive the goods more than 10 times will be banned from the system.

For the other model: Motorcycle taxis - Warehouse delivery, the authors recommend that each MT in this application add a storage container behind the saddle. Adding this container not only increases the storage space, but also does not take any place in the saddle area. However, adding a storage container to the motorbike needs to comply with Clause 4, Article 19, Circular 46/2015/TT-BGTVT.

6.2.4. Solutions for benefit sharing

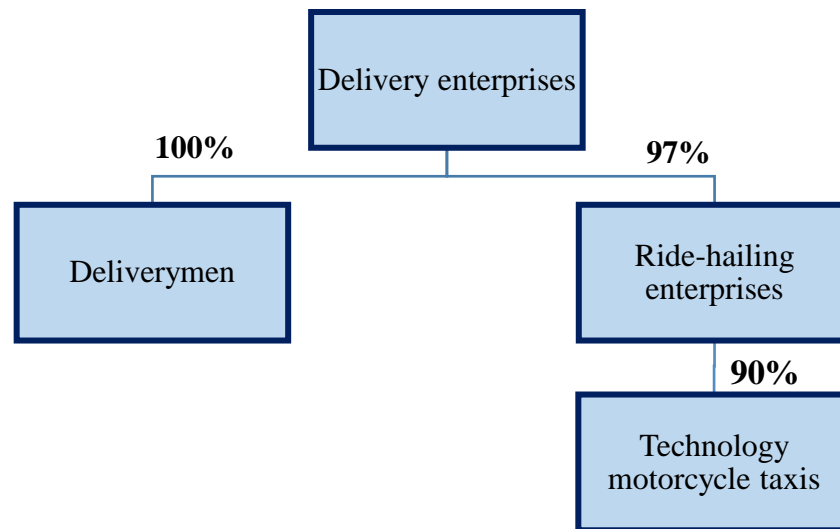


Figure 11: Benefit sharing

Cre: Synthetic

The first share-out comes to the benefit between delivery companies and the providers of ride-hailing services. The authors suggest that the profit sharing ratio for the delivery businesses is 3%, which means that the company will have an additional 3% of the amount from each time they apply the motorcycle taxis - Warehouse delivery model. 97% of the whole amount they pay for a delivery man will now be transferred to the ride-hailing enterprises.

Secondly, the authors propose a tripartite benefit sharing model, including delivery enterprise, provider of ride-hailing, and technology motorcycle taxis. With each order, the ride-hailing company receives 7% of the total delivery cost for each order and then pays 90% of the remuneration remaining for the MT. Instead of receiving a 100% payment, the same as an ordinary delivery man working for a delivery company, the MT will receive 90% of the total amount. The proposal ratio is completely reasonable, as a MT delivering goods from a warehouse cannot have the same benefits as full-time warehouse staff and workers.

7. Conclusion

From research and survey, in order to solve the job overload of the last mile delivery industry and the excess of personnel of the motorcycle taxis industry in Vietnam, the research team proposes two models: Traditional motorcycle taxis - Express delivery and motorcycle taxis - Warehouse delivery. The survey results also show the potential for development of these two models when both the Traditional motorcycle taxis - Express delivery and the motorcycle taxis - Warehouse delivery receive the expectation of both businesses, store owners and drivers. However, based on the current situation in Vietnam, along with the challenges and problems when implementing the two models mentioned above, the authors have proposed proposals and solutions

to solve the challenges and increase opportunities for development of two models as well as planning to test the effectiveness of the methods in practice.

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