

Research on Business Operating Model of New Energy Battery Electric Vehicles Used as Urban Logistics Cars

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Abstract

Nowadays, because of air pollution, the lack of energy and the rising demand of motor vehicles, china's government has published much policy to encourage the development of the new energy car industry. However, it doesn't work as expected for the lack of effective business model of the market promotion of the new energy car industry. The development of urban public environmental protection and logistics industry call a stable demand of urban logistics cars; and the environment pollution and traffic problem provide a wide space for the market of battery electric vehicles used as urban logistics cars. This paper analyzes current circumstances and problems of the market of new energy cars, provides a business operating model of battery electric vehicles, which is setting up an individual operating company, and states different operating models with different subject of operation. Based on all these conclusions, the paper discusses the implementation condition, process, economic benefit and relative policy advice of business promotion model of the individual operating company with a topic of battery electric vehicles used as urban logistics cars, in order to commercialize them from the demand of the market.

Keywords: Battery electric vehicles, urban logistics cars, Business promotion

1. The Current Situation and Problems of the Market of New Energy Cars

Market demand and policy support provide a wide market prospect of new energy cars. According to latest statistic data, the market share of China's new energy cars in 2013 is 0.4%. For example, in Shenzhen city, from 2007 to 2011, the highest growth rate of motor vehicles is 18.9%, while the lowest is 12.5%. To reduce the nox emissions of motor vehicles vigorously, the "12th five-year" plan of Shenzhen city asks to control the growth rate of motor vehicles at about 12%. However, the conservative estimate growth quantity of motor vehicles was 3.45 million in 2013, which is 690 thousand beyond the local government's requirement. Nowadays, urban roads are always overloaded, and the air pollution is becoming heavier and heavier, therefore, our government and some scholars pay attention to the development of green energy and green traffic. From September 1, 2014, the new energy cars made in China were deducted purchase taxes and the government will provide some subsidies, which will promote the development of this market. However, during the process of commercializing of the battery electric vehicles, lacking of financial subsidies, new applications, high-tech and effective business operating model and some other problems will be the barriers of the commercializing of the battery electric vehicles.

During the promotion process, the battery electric vehicles can't solve the dilemma of relying on government's subsidies. In the front stage of promotion, the relative financial policy established by government is conducive to expand the market scale. Now, the new energy pilot of China is limited for only using buses. Besides, the strength of government's financial policy is not enough and it ignores the market demand, so it doesn't change customers' mind of new energy electric vehicles. The certainty of urban

roads is in favor of setting up the electric charge station of battery electric vehicles and the pilot of buses, but the demand of buses is limited, therefore the government should add other car types and expand the pilot range of commercial vehicles to support the promotion of commercial electric vehicle.

Besides, the charge facilities need to be improved. The high speed growth of cars and the limited business land in the city make it harder and harder to park cars. It is inconvenient and unsafe for customer to purchase electric vehicles and make it charged at home. However, all public charge stations are not as perfect as gas station, such infrastructure problems may be one of the reasons of customers' hesitation.

Some technical problems are the barriers of the promotion of electric vehicles, such as the high cost and limited sustainable time of the battery. The cost of the battery is about 100 thousand RMB, so if the customers buy or change the battery alone, it will cost too much. What's more, the charge and using efficiency of battery is related to temperature, which makes the distance per charge of battery one of the most concerned issues of customers. How to make the electric vehicles more efficient becomes the difficult problems of battery producers.

Because of lack of efficient business operating model, the promotion of electric vehicles is very slow. Although the government has provided more and more subsidies, including the discount price of license plate, and even canceled the purchase tax of new energy battery electric vehicles, the development of this very market is still slow. So the market promotion need an innovation of operating model, which means making every participator of this business model get profit and making customers more familiar with this product.

2. The Necessity and Feasibility of Setting up A Business Operating Company

According to the development history of electric vehicles both at home and abroad, commercial operation of electric vehicles influences on all areas of the whole society. Thus, the operation of electric vehicles need gather the automobile companies, accessories companies, energy supply companies and operation companies together, and form different operating model by different organization model and profit model [1]. New energy car industry alliance is one of the best options to promote the development of new energy car industry [2]. According to relative research conclusion, industry alliance can make a great corporation of the government, manufacture companies, universities, institutions and customers to transfer the scientific achievement and encourage the development of new energy cars. Leping Zhang *et al.* [3] say that we should differ different models by different construction subjects of charge facilities of electric vehicles, such as government-dominated, power company-dominated, social company(oil company)-dominated and customer-dominated, and analyze their advantages and disadvantages. Cheng Wang *et al.* [4] and Zhengqi Chen [5] classified three operation model types by different dominated subjects, and there were government-dominated type, R&D company-dominated type and operation company-dominated type.

According to current research papers and reality operating process, in promotion stage, the development of new energy electric vehicles usually relies on the policy support of government and the professional business management and operation of relative companies. Setting up an individual operating company is an innovation based on current business model of new energy electric vehicles and can meet the call of commercialization of new energy electric vehicles industry. Operating company-oriented business model is good at forming a scientific management system; meanwhile, different operating company may bring different advantages and resources to business promotion. The goal of individual operating company is reducing operating cost and expand market share during the whole market promotion [6]. Individual operating company is the leader

of the business operating of electric vehicles and the organizer of integrating of resources, so it can manage and plan the market operation of electric vehicles uniformly to speed the market promotion and application of battery electric vehicles.

Individual operating company can make multiple participates get profit. Getting profit is the terminal goal of business model, while the public-service-centered business model must take care of both economic and social profit. At this moment, the customers' cost is declining and the services of energy supply companies cover all over the country. So individual operating company can absorb more financings by integrating all kinds of resources effectively.

Individual operating company can reduce the pressure of government. In the first promotion stage, government's allowance is an important policy support of the commercialization of battery electric vehicles. However, with the development of business operating model and the expansion of its area, it will bring more and more pressure to government and reduce the effect of business operating model. The goal of the business operating model of electric vehicles is stimulating the development of this industry by meeting the demand of the market. Setting up an individual operating company is an innovation based on current business model of electric vehicles and can meet the call of commercialization of battery electric vehicles. The goal of individual operating company is planning the market strategy, managing the brand, quality, and service, and promoting the company to promote and apply the battery electric vehicles.

Individual operating company reaches the quantity goal by renting largely. As a communication media, individual operating company focuses on supplying better service and rising customer price [7]. Though purchasing battery electric vehicles, individual operating company rent the whole car to customers and supply relative after-sales services and information feedback. Therefore, customers can enjoy the battery electric vehicles with a lower purchasing price and without the worry about its quality and after-sales services.

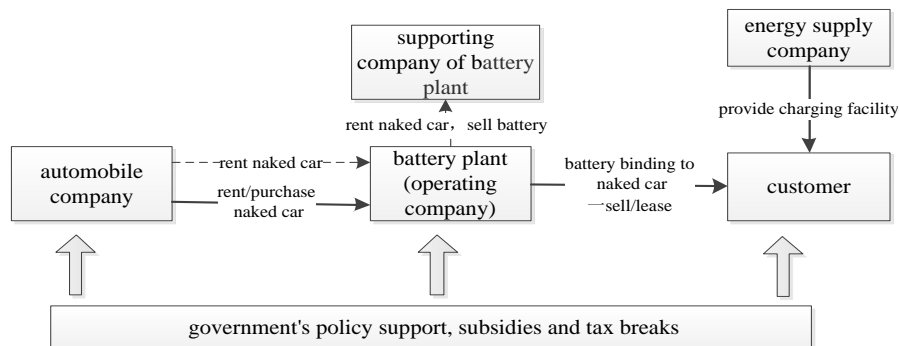


Figure 1. Operation Process of Battery Plants Acting as Operating Companies

3. The Body Analysis and Operation Process of the Business Operating Company

Among the participants of existing new energy electric vehicle business model ,that can act as the roles of operating companies are battery plant, power supply enterprises, automobile company, or an independent fourth party .

(1) Battery plants act as operating companies

In this pattern, battery plant takes charge of the lease/sale of the automobile or battery. Due to the battery as an important part of the electric car's overall value, battery enterprises can promote their own the battery technology upgrading and quality improvement. Battery lease digests part of the cost that the operation enterprises need to

buy battery, expanding the profit space, when the battery sales reach a certain amount, it can increase the profit of the enterprise.

Battery manufacturers are generally limited of money, it's hard to buy a large number of electric vehicles, so they can adopt the vehicle leasing mode, and then sublet together with the battery to the user. The shortcoming of this model is that the factories lack of operational management experience, and the management cost is higher as shown in Figure 2.

In the model of battery plants act as carriers, the powerful battery factory can purchase vehicle from automobile company, binding the battery lease or sale to the user, energy companies are responsible for providing users with charging facilities and services. Power limited battery factories can rent naked car from automobile company, and then bind batteries for second lease. Battery factories can also adopt the model of vehicle leasing and batteries purchase (As shown in Figure 2 the dashed part), that is to say, the battery plants as the operating company, internally purchase and sell batteries to supporting enterprises at low price, taking the form of internal digestion, self-marketing, then expand the sales of battery, drive the vehicle sales at the same time.

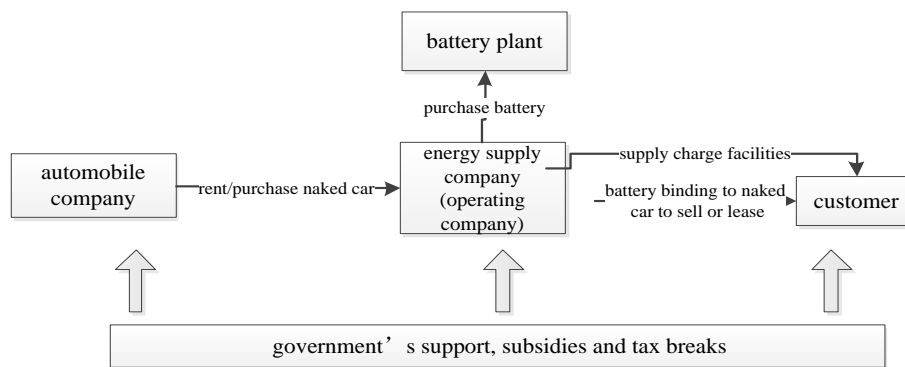


Figure 2. Operation Processes of Energy Supply Companies Acting as Operating Companies

(2) Energy supply companies act as operating companies

During the operating process of new energy electric vehicle, energy supply companies take responsibility of rent, charge and change of the battery as well as the construction of relative charge applications. As far as we can see, those kinds of energy supply companies include most of large state-owned energy companies, such as State Grid Corporation of China, China National Petroleum Corporation, Sinopec and so on. Oil companies have rich experience in marketing and own mature operating and managing model, which is in favor of the promotion of new energy electric vehicle [8]. In this kind of model, energy companies also can purchase or rent the whole cars from automobile companies and then sell or rent them to customers. When this rent event comes to a certain scale, it is effective to reduce the cost of battery. Energy supply companies own the advantage of professional service and have rich experience of changing, charging and recycling of the batteries. Because of the currency of battery product, energy supply companies can expand their market shares in this whole industry chain.

(3) Automobile companies act as operating companies

Automobile companies can supply large-scale electric vehicle lease service for customers, thus, as operating companies, automobile companies can meet the large-scale automobile cars demand of customers by purchasing pure electric vehicles in their own companies and supply relative after-sales service and information feedback at the same time. The customers can experience pure electric vehicles without high price and the worry about the quality and after-sales service of them. However, those individual

operating companies need to take huge lease risks because of the depreciation problems of large-scale lease issues.

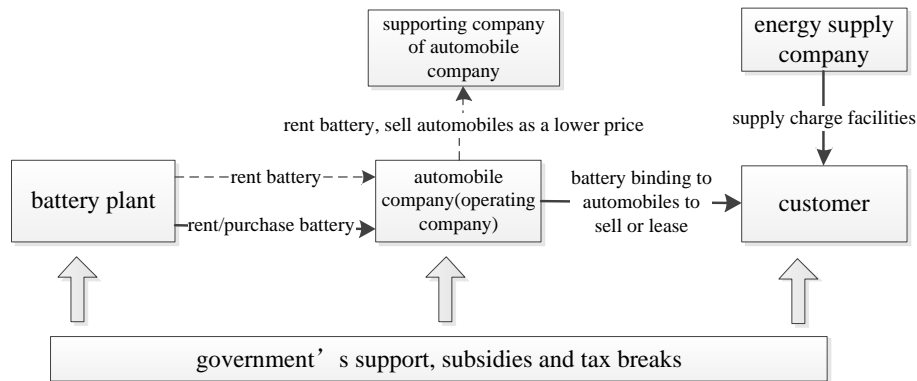


Figure 3. Operation Processes of Automobile Companies Acting as Operating Companies

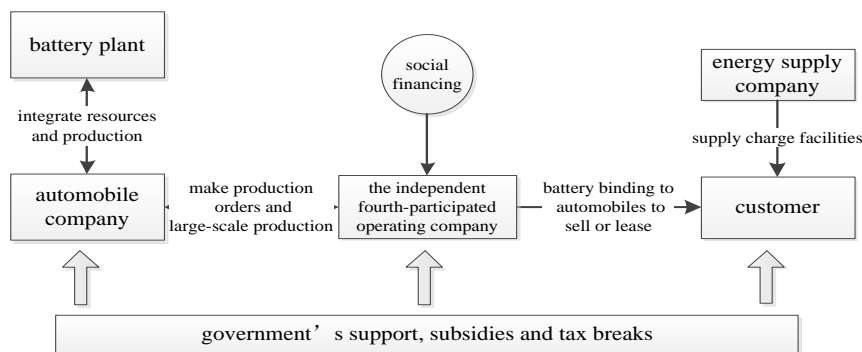


Figure 4. Operation Process of the Independent Fourth-Participated Companies Acting as Operating Companies

When automobile companies act as operating companies, they could take the sales model of “self-charge whole cars”, which means, they sell the all-assembled whole cars to customers and let themselves have the cars charged at home or at public charge applications. However, this kind of sales model may bring too much cost and inconvenience to customers, so the automobile companies may take the advantage of all resources to rent at a lower price and get a larger scale [9]. Meanwhile, the automobile companies can also lease batteries (shown as the dash line part in Figure4), and let the energy supply companies take the responsibility of changing and charging of the batteries. Because the whole cars can be manufactured and sold by the automobile companies, the automobile companies and customers can both get much profit with a lower cost.

(4) The fourth-participated companies act as operating companies

The Fourth-participated companies are the individual company organizations to operate the pure electric vehicles, which are consisted of social investors, large companies and energy supply companies. First, the social investors absorb the financings from all social fields by their social status and credit. Then, they purchase large-scale pure electric vehicles and sell or lease them to customers. Operators can make contrasts with relative energy supply companies and supply star treatment to the customers who buy or rent the pure electric vehicles from them.

In this model, as individual operating companies, the Fourth-participated companies can integrate social resources effectively and their investment is more flexible, which can lower the burden of the government. All participated companies consist of an organic

utility, in which, the automobile companies and the battery plants are strategic alliances, they combine the naked cars and batteries together and well them to operating companies, and the organic utility delegates the fourth-participated companies to operate and promote the pure electric vehicles. The comparison of those four operating models is shown in Table 1.

Table 1. Four Operating Models Comparing

Models	Advantages	Disadvantages
battery plants act as operating companies	promoting the technology and quality of batteries; reducing cost; expanding the profit space	poor independence; high management cost
energy supply companies act as operating companies	having advantages of power resource, network transportation, and technical standard; rich experience of management; lower cost of renting batteries	high management cost; likely to form monopoly market; going against to long-term development
automobile companies act as operating companies	having advantages of maintain the whole automobiles; owning the first-hand information to improve the quality of the whole automobiles	low degree of specialization; considerable risk
fourth-participated companies act as operating companies	independent management; flexible investment; good for unified management; reducing the pressure of government subsidies	high cost of initial investment; slow to get profit

The market promotion of the pure electric vehicles should start from meeting the customers' demand and purchasing power, and then combine all participators' profit and resources to build an effective business operating model. Different operating companies own different resources to stimulate the promotion of the pure electric vehicles and reach a large-scale profit.

4. Necessity of Pure Electric Urban Logistics Vehicle Promotion

(1)Because of the severer city environment, green energy has become indispensable to human life. A better society needs green commuting.

The scale city construction gradually damages the formation and upsets the balance of atmospheric circulation. Earth free breathing rhythm is disrupted. Every day a lot of cars creep on congested urban lanes with much tail gas behind. All kinds of industrial pollution cause fog and haze which appears in many areas of our country. People now come to understand the great harm of it. In order to protect our living environment, the government and relevant departments has sought for solutions at full steam. Take the cause of fog and haze into consideration, it is essential that citizens should green their commute.

Take a state II truck(350 kilometers one day,40 liters of oil for 100 kilometers) for example, if the driver can use the car less for one day, then 0.38 tons of carbon emissions can be reduced which is equivalent to 76 trees planted. Besides, it can also reduce 6.13 kilogram poisonous and harmful substance. If only odd or even numbered cars can on the road, then 3.8 tons of carbon emissions can be reduced which is equivalent to 760 trees planted. And it can also reduce 61.3 kilogram poisonous and harmful substance. If the truck is stopped using, then 7.94 tons of carbon emissions can be reduced which is equivalent to 1590 trees planted. Besides, it can also reduce 129 kilogram poisonous and harmful substance.

Take Wuhan city for example, vehicles has sales of 753 daily average in 2013 according to statistics [10].The car park in Wuhan is more than 1.6 million with a growth rate of 15% approximately. The annals says, about 10% of vehicles are "yellow label" vehicles, however, its emissions have a proportion of more than 50%.According to the statistics of Wuhan Environmental Protection Bureau, from January to October in 2013, days of bad air quality take a proportion of 51.3% , and in the 31 days of Oct. ,27 of them are with haze. Emission index of vehicles in Wuhan 2012 are shown in Table 2.

Table 2. Emission of Vehicles in Wuhan 2012

Emissions	Amount (thousand tons)	More than the previous year	Emission proportion of cars
NOX	48.4	4.30%	96.64%
HC	23.8	3.89%	89.11%
CO	200.7	4.30%	90.79%
PM	4.9	4.67%	98.20%

The importance of city logistics vehicles force substitutes for previous logistics vehicles. Pure electric city vehicles can divide into city logistics dedicated vehicles and city operation dedicated vehicles. City logistics dedicated vehicles comprise transport van, Punta cab, refrigerator car, insulated van and other vans, shown as Figure 5.

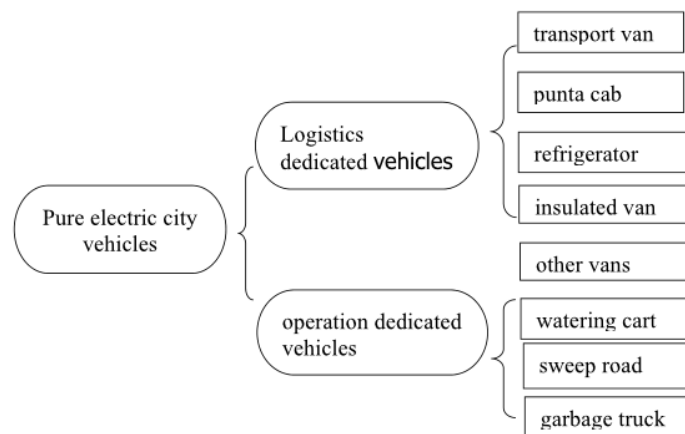


Figure 5. Kinds of City Dedicated Vehicles

City logistics vehicles can ensure the normal rhythm of the city life, such as the commercial distribution of goods, garbage transportation and so on. City logistics vehicles are important tools for urban supply and demand docking. They can maintain normal operation of urban production and living, involving logistics enterprises, wholesale, production enterprises and citizens' daily life. A market field involves the livelihood of the majority and social stability. For example, the formation of the system of freight market has promoted employment, re-plan the unorganized freight and improved logistics efficiency. The vast bulk and functional character of a truck aggravates the traffic jam and brings adverse effect to the appearance of city environment. The truck is an indispensable tool of logistics in all industries and play an important role in "the last kilometer" of urban logistics. If trucks are limited to use, it will cause adverse consequences undoubtedly. Restricted driving of trucks has impeded the docking of urban supply and demand. However, because of the necessity and great demand of city logistics vehicles, it is significant to find city logistics vehicles of new energy.

The carry of city roads is overload and the government has issued the limited driving policy. Urban logistics vehicles are severely constrained and the superblock is often rushed by them.

The loading capacity of a truck is very large. It is suitable for distribution of high-volume and overweight items. Because of its vast bulk, it should occupy large road surface and the drivers have blind spots, so that it can easily result in accident. Its vast bulk and big noise are discordant with the urban environment. In order to improve urban traffic condition and environment, trucks are limited by time or by road nationwide. Although there is a marked sign of forbiddance on road, trucks still often rush onto the road and cause serious traffic jam. This can't control in the blind spots.

City logistics vehicles are mainly used to transport commercial freight, urban trash and so on. Due to the scatter of the mall, supermarket and store, it needs to distribution from the unified storage. Domestic waste needs to clear upload and discharge to the specified treatment plant. Trucks are usually used to carry large commodity and garbage. Urban limited driving policy has brought restriction to the distribution of large commodity. In order to transport during the day, it needs to detour into the city. Then change the large truck into a small one. All these will increase the amount of cargo, the used amount of trucks and transportation costs.

5. The Premise and Main Content of Extension Pattern of Pure Electric Urban Logistics Vehicles

5.1 The Premise of Pattern Extension--There-Plan of Urban Logistics Area

The operation of independent operating companies of pure electric urban logistics vehicle needs a premise that is the planning of urban logistics area. The planning of urban logistics area can promote the demand of pure electric city logistics special vehicle. In order to reduce the carrying capacity of urban roads and ease the problem of urban environmental pollution, the city plan should gradually transit urban logistics circle outside the third ring road. It can reduce the amount of large load-carrying vehicles by the joint of urban pure electric logistics special vehicles and storage outside the urban. Urban supermarkets, furniture markets and stores of building materials have a large demand on logistics vehicles. They can locate their storage outside the third ring road by urban plan. Using pure electric logistics special vehicles to do the delivery work can greatly improve the demand of pure electric logistics special vehicles. At the same time, it can ease the problem of environmental pollution.

The re-plan of urban logistics area needs to found more operation company, professionally manage vehicles of different industries and different areas and promote different operation models. When the logistics area exceeds the third ring road, it can enlarge logistics area and form a

Encirclement surrounds the urban. It needs different operation companies to manage pure electric logistics special vehicles in the form of region division management so that can ensure the quality and efficiency of operation.

5.2 The Main Content of Extension Pattern of Pure Electric Urban Logistics Vehicles

The extension pattern of pure electric urban logistics vehicles is based on planning of urban logistics areas. Then it should locate the warehouse of all industries outside the third ring road and set different independent operating companies in the urban forbidden driving area to manage and operate the vehicles. The independent operating company's joint with heavy truck in the third ring road by scientific management and process. Pure electric urban logistics vehicles distribute the cargo to all the supermarkets, malls and

stores in the urban. Take Wuhan city for example, the specific logistics area plan and the location of independent operating companies are shown as graph 2. Trucks are forbidden inside the third ring road and many independent operating companies of urban logistics are found inside it. The pure electric urban logistics vehicles are leased in large numbers to drivers by companies' unified arrangement. Then, the drivers deliver the cargo to all the malls, stores and other destinations.

The operating company is independently managed by the fourth enterprise. It is comprised of battery factories, logistics operating companies and strategic investors. The setting of pure electric urban dedicated vehicles operating company should comply with the principle of mercerization, specialization and all-win. According to the actual operation condition, battery factories, the national grid corporation and whole-car firms can serve as the main operating company. If only one party acts as the main operating company, it won't meet and implement the principles of operating company's construction. Introducing the fourth party independent operating companies to the extension pattern of pure electric urban logistics vehicles is helpful to the mercerization development of pure electric vehicle industry.

The logistics company is able to integrate local logistics resources and responsible for demonstration operation of urban electric logistics vehicle. The logistics company controls huge logistics resources and channels and has rich experience in the industry, along with a certain influence. Logistics Company can bring impact on other companies in the industry by carrying out demonstration operation activities. This contributes to the popularization of electric vehicles.

As the core of operating companies, battery factory integrate and coordinate all the resources. Besides, it is responsible for technology upgrading and quality improvement of battery. The cost of power battery accounts for half of the cost of an electric vehicle. Battery factory, as the core of the operators, has the absolute advantage on battery technology upgrading, quality improvement and cost reduction. Thereby, it's helpful to internal digestion of costs, scale production and applied popularization of electric vehicles.

Strategic investors have advantages on capital, technology, management, marketing and personnel, so that they can promote industrial structure upgrading, enhance corporate core competitiveness and innovation capacity and expand the market share of their products. Strategic investors are responsible for operation and support of capital. Moreover they provide internal management mechanism of operation companies.

In the actual operation, we can draw lessons from taxi operation and management model. Independent operating company set up logistics and freight forwarding company and lease pure electric urban logistics vehicle to drivers for operation. Property and management rights of vehicles belong to independent operating company, or property rights belong to drivers and management rights belong to independent operating company, namely the separation of property and management rights. Tenant operations by contracting and leasing and pays contract fee, operating cost and other fees to the independent operating company. It can be divided into the following forms, shown in Figure 6.

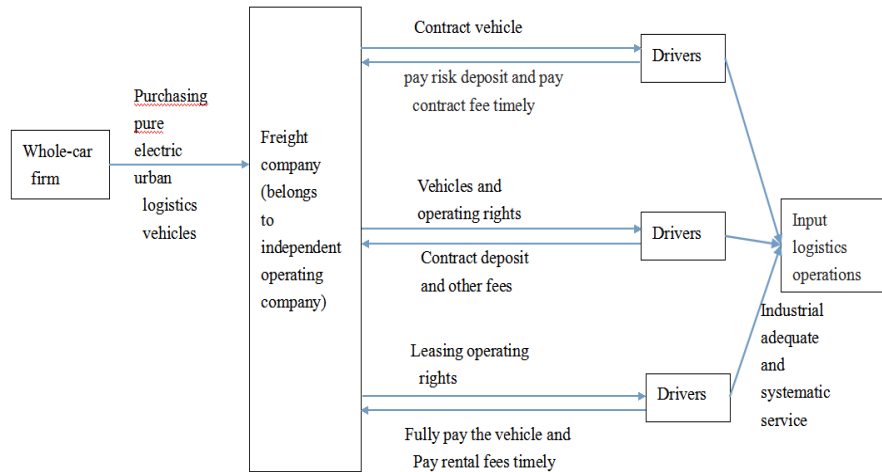


Figure 6. Operation Graph of Independent Operating Company

Independent operating companies financed the purchase of pure electric urban logistics vehicles and have free access to the franchise rights. By signing the relevant contract with the drivers, the electric logistics vehicles are contracted to the driver. The driver firstly pays the “risk deposit” and then pays the contract fee on time. In this mode, independent operating companies have property and management rights at the same time.

Independent operating company gets the franchise right at a high price through auction, then lea to the driver. The company pays all purchase costs. The costs borne by the contractor driver consists of two parts. One is the contract deposit according to the contract. The other is to pay monthly expenses, including contract fees, taxes, and vehicle testing fees. After obtaining the franchise right, independent operating company leases it to drivers. Then the drivers fully funded vehicles and pay various taxes and fees per month to the company. In this mode, the vehicle property rights belong to drivers and the operating rights belong to independent operating company.

6. Economic Benefit Analysis

6.1 Cost Analysis

In order to compare the benefit fore-and-aft use of pure electric urban logistics vehicles, the paper take a price of ¥250,000 Yuan mini-electric car for example. From the user's perspective, using the current highest market acceptance vehicle electrical separation mode, compare to the cost, shown as in Figure 7. The yearlong leasing price is based on the price difference between traditional vehicle fuel cost per year and electric vehicle power cost per year. Then rent the electric vehicle to customers at a discount rate, from the use-cost to encourage customers to use electric vehicles. The leasing costs are high. In order to ensure profits, making the difference between oil and power as a year leasing price. Since the battery buying mode is different among all operating companies, their cost is different. Installments will increase interest cost. In order to support the promotion of electric vehicles of the operating companies, deposit rate is used here. The models taken here are whole vehicle leasing and battery leasing. In addition to battery costs, whole vehicle leasing requires to pay the cost of buying the bare car. Battery leasing sales battery to customers, therefore only paying the cost of batteries.

Vehicle type		Energy consuming per 100 kilometers	price	Road haul per year	Cost of energy per year	Maintenance fee per year	Tax of vehicle and ship	Total fees
Minivan	Pure electric vehicle	20KW	0.66	150kilometer/day ×365days=54750	7227	2190	free	9417
Mini-truck	Fuel vehicle	8 liters	7.76	150kilometer/day ×365days=54750	33989	2190	480/year	36659

Figure 7. Cost of Logistics Vehicles

From the above comparison, it can be seen that a pure electric logistics vehicle can save ¥27242 Yuan (36659-9417=27242) compared with traditional fuel logistics vehicle a year. Take Wuhan city for example, as it stands, the number of electric vehicles increasing 230,000 per year, the annual cost can save about 7.1 billion Yuan.

Total mass	function	configuration	price	National government subsidy	Local government subsidy	Operating mode	Leasing price per year(ten thousand)	Time to reach break-even point(year)	Revenue after five years(ten thousand)
2.5 tons	Garbage collection	Battery pack 20KW, motor 20KW,driving range 100 km	25	6	6	Whole-vehicle leasing(fully pay)	2.72	4.78	0.6
						Whole-vehicle leasing(installment)	2.72	4.93	0.2
						Battery leasing(fully pay)	2.45	3.50	3.75
						Battery leasing(installment)	2.45	3.63	3.35
Leasing price per year=(cost of fuel per year-cost of power per year) ×90%(100%for whole-vehicle leasing) price difference between fuel and power is based on previous cost Revenue after five years=leasing price×5-purchasing price =leasing price×5-(bare vehicle price4.5×a+battery price8.5×b) whole-vehicle leasing a=1,battery leasing a=0(sell to customers) battery buying(fully pay)b=8.5 battery buying(installment)b=8.5×(1+deposit rate4.7%)									

Figure 8. Revenue Analysis About Five Years

6.2 Benefit Analysis of Operating Companies

Take a 2.5 tons electric logistics car for example. Operators buy a bare vehicle, leasing the battery, using the whole vehicle leasing mode. After five years, the revenue is ¥2,000 Yuan (Figure 8). The calculation is: $2.72 \times 5 - [4.5 + 8.5 \times (1 + 4.7\%)^5] = 2.72 \times 5 - 13.4 = 0.2$.

Operators buy batteries, using battery leasing mode. After five years, the revenue is ¥37,500 Yuan. The calculation is: $2.72 \times 90\% \times 5 - 8.5 = 3.75$.

Through analysis, it can be seen that, after five years' operating companies can basically make up the deficits and get surpluses. However, the profit is slender. Battery leasing mode is the optimal mode. With the improvement of electric vehicles quality, the cost increases. The government subsidy is constant. So, it takes companies a longer time to reach the breakeven point.

It's harder for operating companies to get profit in the promotion of medium-duty and heavy-duty electric vehicles. So, operating companies should posit their product as mini EV (electric vehicle).In the entire promotion process of operating companies, it needs government subsidy. At the same time, it should form a new operating mode through strategic alliances of relevant interest groups to attract social strategic investors and ensure the normal operation and sound development of operating companies.

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7. Policy Suggestions

Government should authorize franchise rights to operating companies and impose restrictions on the number of them. Besides, government can weaken industrial market competitiveness of operating companies through macro-control and strive for more profit space for them. Electric vehicles can be operated only after government approval and the issue of license plate. Moreover, government should raise market-entry doorsill and carrying ratio of urban dedicated vehicle. Because of the restriction of license plate, it has time value and market value. Then, it becomes part of the intangible property.

The government should standardize logistics operation system, rationally plan logistics area and promote electric vehicles to urban logistics vehicles. Manage vehicles from city center and make restrictions on driving to traditional vehicles. Make strict provisions of industrial vehicle and force electric vehicles to substitute the new city dedicated vehicles. Use pure electric vehicles instead of traditional vehicles gradually until there are no traditional vehicles on the road. Reduce the burden on the urban environment and road bearing pressure. City logistics vehicles are an important component of the city vehicles. They play an important role in the urban life and commercial aspects. Make city logistics area outside the third ring road and set up logistics district. Management city logistics vehicles from the entrance to the city can effectively control urban road vehicles. Making great changes on city logistics vehicles can improve the popularity rate of electric vehicles, relieve urban roads overload problems and air pollution. At the same time, it is helpful to the promotion of electric vehicles.

Support of related policy. Open advertising rights. Post ads on electric city business vehicles or install LED display, rolling-up ads. Advertising income belongs to operators. Erect green channels for new energy vehicles, giving priority for registration, inspection and other services of new energy vehicles. Research on fees reduction measures of pure electric vehicle road and bridge tolls, parking fees and some other fees. Price different from traditional vehicles, which fully demonstrates the advantages of pure electric commercial vehicles. Set aside dedicated parking space at city public parking, municipal parking lot and part of the downtown business district. Those are used for parking of electric vehicles. And the government should issue specific program to support it. Government should also issue preferential policies to support the charging infrastructures of new energy vehicle. Issuing charging price preferential policies and drawing up a plan of charging price at different time quantum so that can guide consumers to charge at power trough. Government should subsidize operating companies appropriately and the companies should reduce costs. Ensure latter market of operating companies has profit space through some other policies. Government should vigorously encourage operating companies to carry out the work.

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