

Using Mobile Communication Technology to Improve Automobile Consumers' Values—A Location Based Commerce Case Study of Taiwan Yulon Nissan's TOBE Service

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Abstract

This study introduced a location based commerce case study of Taiwan Yulon-Nissan's TOBE® service. The TOBE, a brand new service platform for car drivers, is an innovative concept launched by Yulon-Nissan Motor Taiwan. The TOBE could provide car drivers useful services and instant messages enabled by mobile telecommunication and information technology including Global Positioning System (GPS), Global System for Mobile Communications (GSM), Short Messages Service (SMS) of GSM mobile phone, in-car computer, database, and other information technology. The TOBE service platforms include four parts, an information counter, a life counter, a traffic counter, and an e-interface set. The information counter provides real-time information includes news, weather report, etc. The life counter gives discounts messages and valet order service such as on-line shopping for souvenirs, flight and hotel reservation ... etc for daily life. The traffic counter provides scenic spot messages, roadway guide, exceeding the speed limit alarm, and tow-away alarms with the help of GPS. The e-interface set installed in the car includes an integrated GSM mobile module, an intelligent rear-view mirror and liquid crystal display (LCD) screen, and short-cut dial buttons on the driving wheel or audio panel. The e-interface set automatically provides anti-theft notice and collision report. This case study will introduce the TOBE and analyze the strategy implication of this innovation. The possibility of imitation of competitive rivals and the

sustaining of competitive advantage bring by TOBE would also be discussed.

Keywords: Mobile Commerce, Location Based Commerce, Mobile Information Technology, Mobile Telecommunication Technology, Global System for Mobile Communications (GSM), Global Positioning System (GPS), Automobiles

1. Introduction

In order to increase the value a car may provide to the car owners/drivers, the Yulon Nissan in Taiwan provide the TOBE service for most new Nissan car sell in Taiwan. Traditionally, moving is the main and the only function for cars. However, moving is only the process for the car owners/drivers to live. Enrich the life may be the final purpose of the car drivers to use a car. Improving the value a car may create to the car owners/drivers is the core concept of the TOBE.

Cars are designed to move. The functions and value a car create should be built upon the base of moving. Thanks to the advances of mobile information and telecommunication technology, the mobile commerce is now not impossible. The mobile technologies including Global Positioning System (GPS), Global System for Mobile Communications (GSM), Short Messages Service (SMS) of GSM mobile phone, in-car computer, database, and other information technology are the key enable the concept of the TOBE service.

Yulon Nissan, a car manufacturer in Taiwan, launched the TOBE service in June 2002. It is now equipped in most new cars sell by Yulon Nissan in Taiwan. This TOBE service provides car owners/drivers diversify information and services, including real-time information, news, weather reports, discounts messages, valet order service, in-car online shopping for souvenirs, flight and hotel reservation, scenic spot messages, roadway guide, roadside assistance, exceeding the speed limit alarms, tow-away alarms, integrated GSM module, anti-theft notices, and collision reports.

This study will introduce the TOBE service and analyze this innovation from the side of strategy. The possibility of imitation of competitive rivals and the sustaining of competitive advantage bring by TOBE would also be discussed.

2. What is the TOBE

TOBE® is a registered brand for the mobile service platform provided by Yulon Nissan Motor Co. Ltd. According to Yulon Nissan Motor, it means

“will be/ want to be.” It has a slogan of “Enrich Your Life.” It is provided to help the customers to develop different role in life.

In most time, car drivers spent the time on the thing they do not like. They are stuck in the cars and hope to do some things. However, the only thing they could do at that time is waiting until they get to the destination. Before they arrive the destination, they may spend a lot of minutes on finding a parking lot or a restaurant, be stuck in traffic jam for hours, get the over speed fine ticket. Some car owners may even have the terrible experience of losing the cars.

In addition, the car drivers may hope to go out for a sight seeing in the weekends. They may hope to know information about the nearing scenic spots. They may hope some one could help them to reserve hotel rooms or air tickets. They may forget a important memorial day and hope someone may help them to buy some followers or gifts.

In the past, the only thing the car drivers could do is to get to the destination quickly so that they could do other things. It would be wonderful if they could do something in the cars. The TOBE service makes this idea possible. The TOBE service provides car drivers useful services and instant messages enabled by mobile telecommunication and information technology. Followings are some details about the development, components and functions of the TOBE service.

2.1 Development of TOBE

Technology is one but not the only one critical factor for the TOBE service. It is called as TOBE service in this paper rather than TOBE system since that service play a major role in TOBE.

The TOBE development team was composed by three divisions of innovative R&D division, operation and business division, and customer satisfaction division. R&D division is only one part of the development team. The TOBE is not just an innovative mobile communication system; it is a set of in-car services enable by advanced information and mobile telecommunication technology.

The development of TOBE could look back upon the year 2000. At that time, it is just a model MVC 100 in-car computer integrating GPS receiver and Nokia 6150 GSM mobile phone. It provided instant price of security stock as well as location messages of dealers and maintenance workshop, gas station, and parking lot. In June 2002, it was renamed as TOBE with the third generation in-car computer called model MVC 500. In June 2003, the in-car

computer upgrade to MVC 700, the fifth generation for TOBE. This year the TOBE provides the functions of GSM intelligence communication, anti-theft security, automotive report for car collision, navigation, scenic point information, tow away notice, call center service, mobile transaction process, short message service, maintenance schedule alarm, and diversify life information. The in-car computer is now in the model of MVC 800.

2.2 Components of the TOBE

The TOBE compose of some information devices and services provided by the TOBE call center and enormous service providers. The in-car computer is the core for the TOBE. GPS receiver, GSM module, and sensors in the car provide input to in-car computer. GPS receives positioning data from satellites. GSM module lets the drivers could communicate with the call center by voice or short messages. The sensors provide data about the car. These data are sent to the in-car computer for future process. They could also be sent to the call center computers so that the call center could know the real situations of the car.

The TOBE uses head up display to display message in the front window of the car. It also displays messages in the mirror display system as well as liquid crystal display (LCD) screen. The hand-free phone in the car is also used for the car drivers to communicate with the call center. Figure 1 is a sketch for the TOBE.

3. Functions of the TOBE

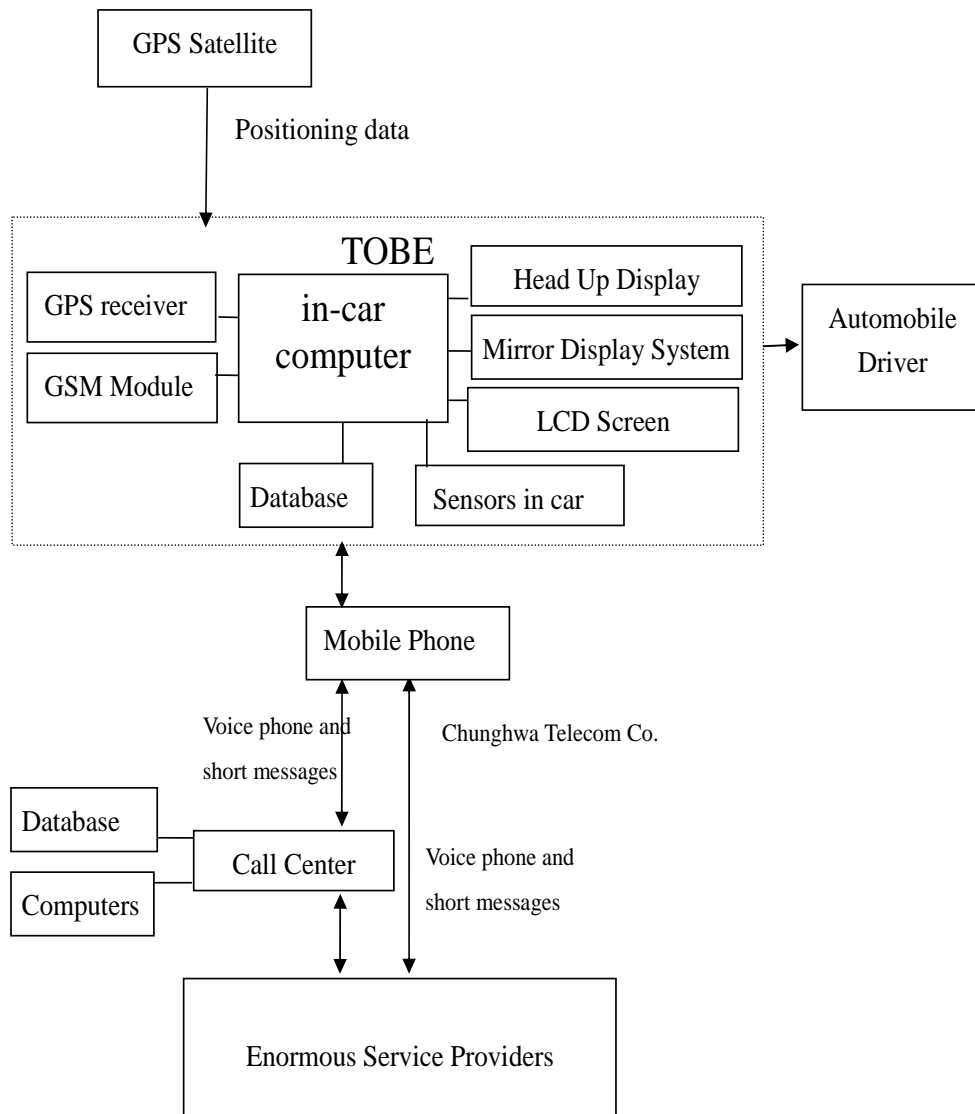
The TOBE service platforms include four parts, an information counter, a life counter, a traffic counter, and an e-interface set. Following are functions of these four parts.

3.1 Traffic counter

Traffic counter uses GPS to locate the car position and to provide messages and assistance. The TOBE will alarm the car drivers by beep or flesh plus display in the mirror display system or LCD displayer when the car approach the frequent car accident spot, over speed camera point, or preset scenic spot for food, restaurants, and entertainments, ... etc. At the time the TOBE provide alarm for preset scenic spot, car driver may push the button to get more voice or text messages about the scenic spot. This scenic spot was

delivered by voice or short messages of mobile phone. The car drivers may also push the button to talk with the call center, the call center attendants would answer the questions about the scenic spots according to the TOBE database.

Figure 1: Components of the TOBE



In addition, the traffic counter provides automatically anti-theft, tow away, and collision emergent report or notice. In the case of anti-theft security system does not be released and the car are still moving according to the GPS position data, the TOBE in-car computer will judge the possible reason for this unusual situation according sensors in the car. If the engine is still running, this may be a theft crime case or due to out of order of anti-theft security system. The TOBE will report to the car owner's mobile phone immediately by short messages. If the car owner still does not release the anti-theft security system after a moment and the car is still running, the TOBE call center will contact the car owner and/or report this suspected crime case to the police. However, if the car is moving while the engine is shut down, the car may be towed away rather than be stolen. In this case, the TOBE call center will send a short message to notice the car owner. In the case of collision in which the air bag starts, the TOBE will call the ambulance immediately.

3.2 Life Counter

Life counter provide valet service for daily life. Car drivers may push a hot button to talk to the call center of TOBE. The call center attendants would help to reserve or order the air ticket, hotel room, travel package, flower, souvenir and some others. In short, car drivers may go shopping in car.

3.3 Information Counter

Though a large database and Internet technology, the TOBE information counter could provide diversified information including real time news and weather report, jokes, stock price of security market, language learning, fortune-telling and astrology, beauty and reduce weight messages, health care messages, souvenir and fine food, special discount, and entertainment messages.

3.4 E-interface Set

E-interface set integrates advance electronic devices of the TOBE including: (1) GSM intelligence communication system; (2) Head Up Display (HUD); (3) Mirror Display System (MDS); (4) Location Position (LP) system; and (5) Automatic Vehicle Location (AVL) system.

Accord to Booz et al. (1982), there are six kinds of new products including new-to-the-world products, new-product lines, additions to existing product lines, improvements in revisions to existing products, repositioning products, and cost reduction products. The TOBE may be regarded as “an improvement in revision to existing products” since that in-car computer, GPS, navigation and GSM module are not a new-to-the-world products. The GPS has been used to track vehicles. Combining GPS with wireless devices allows travelers or drivers to find a restaurant, make a reservation, and receive directions to its location (Tarasewich and Warkentin, 2000). It is not an all new innovation since that some possible applications had been realized. For example, some Singapore taxi companies have used GPS to management taxis effectively. The GPS could help the taxi companies to immediately detect the nearest taxi to a particular customer, and identify each vehicle’s route and location (Liao, 2003).

Most car manufacturers equip these GPS or GSM modules as the optional equipments for their new cars. However, these rivals provide the hardware only. The services provided by the TOBE are new to the car drivers in Taiwan as well as worldwide. It is a new product which makes some improvements in revisions to the existing products of in-car computer, GPS, navigation, GSM module, and automobile related services.

4. The value created to Yulon Nissan by the TOBE

No doubt the TOBE provide value to car owners/drivers. The car owners/drivers are told that the TOBE is a “free” service. The car owners/drivers do not pay direct for the TOBE. However, they may still need to pay something. Table 1 listed the cost the car owners/drivers need to pay when using the TOBE service. First of all, the car owners need to pay more expensive car price. Second, they have to pay for the mobile telecommunication bill. Finally, they need to pay for the cost for the service they want the TOBE to provide or the product they buy. Most of these services and products are in the same prices which offered in the market. All these three cost are reasonable for most consumers which understand that the car should be more expensive if some functions are added, the cost for telecommunication bill should be paid by the drivers themselves, and the costs for the services and products should be charged if you asked the TOBE to provide.

Table 1: The cost the car owners/drivers need to pay for

1. More expensive car price.
2. Monthly fee plus minutes/seconds charge for voice and short message service (SMS) of mobile telecommunication. Each time the car drivers push the button to obtain messages from the TOBE or to talk to the call center, they need to pay the SMS charge or the voice phone charge to the mobile telecommunication company.
3. The expenses for the enormous services provide by TOBE.

Source: this study.

Although the car owners/drivers do not pay direct for the TOBE service, the Yulon Nissan Motor Co. still could receive some benefits from the TOBE. The first and the most important benefit is that the TOBE could improve product image so that the sale volume would increase. In addition, the Yulon Nissan would receive commission offered by the mobile telecommunication company and enormous service providers. The Yulon Nissan also could increase revenues of maintenance service. Finally, the car owners/drivers may satisfy to the TOBE service so that the repurchase rate may be improved. Table 2 listed the value the TOBE can provide to Yulon Nissan.

The TOBE is not a cost free service. The Yulon Nissan need to pay for the cost of in-car computer, cellar module, GPS receiver, sensors and other related devices although this cost could be transferred to the car buyers. Besides, the Yulon Nissan need to pay for the cost for R&D, for building and maintaining database, to operate call center, and to provide diversify services as Table 3 indicated.

Table 2: The value/revenues the TOBE can provide to Yulon Nissan

1. Increase car value and improve product image. The results would be increased sale volume.
2. Receiving commission offered by the mobile telecommunication company, Chunghwa Telecom. Customers need to pay the mobile telecommunication bill. Some proportion of these payments will contribute to TOBE's revenues.
3. Receiving commission offered by the service providers. Customers need to pay for the service they want TOBE to offer and the products they buy by the TOBE. Some proportion of these payments will contribute to TOBE's revenues.

4. Increase the customers' incentive to maintain car in authorized dealers periodically. The TOBE database could be update freely when the cars are maintain in the authorized dealers. This may enlarge revenues from maintenance business.
5. Increase the customers' loyalty. This may lead to high repurchase intention

Source: this study.

Table 3: The cost the Yulon Nissan Need to pay for TOBE

1. The cost of in-car computer with database, GSM cellar phone module, and GPS receiver.
2. The cost for R&D of the TOBE hardware, new services, and new functions.
3. The cost for building and maintaining database.
4. The cost need to operate call center.
5. The cost need to provide services.

Source: this study.

5. Five promises of the TOBE

To guarantee the outstanding performance of the TOBE service, the Yulon Nissan Motor Co. Ltd provides five promises as following for the first seven months of lunching the TOBE, June 2002 to December 2002:

Promise 1 - anti-theft guarantee: Yulon Nissan Motor will take the responsibility and cover the loss if the car with the TOBE is stole and the car has not be found in 30 days.

Promise 2 - excess speed warning: Yulon Nissan Motor will pay the fine ticket if the TOBE did not warn the drivers to slow down in advance for the roadside fixed over speed detection camera.

Promise 3 - tow away notice: Yulon Nissan Motor will cover the towing away cost if the car is tow away and TOBE does not notify car owner/driver the happen of tow away.

Promise 4 - collision report: Yulon Nissan Motor will pay the rent car cost if the TOBE does not report car collision to the car owner or/and emergent contact person.

Promise 5 – roadside service in time guarantee: If the car has accident or is out or order, once the car driver notify the TOBE call center, the staffs of call center will arrange immediate the executive roadside service immediate.

If the roadside assist attendants do not appear in the time the call center promise the car driver, Yulon Nissan Motor will pay the towing service charge.

5.1 The performances of the five promises

The performances of the five promises are glaring. Following are the details about the performances of these five promises. These five promises are still fresh in consumers' memory although they were valid in the period of June 2002 to December 2002 only.

Promise 1 - anti-theft guarantee: The rate of theft for car with TOBE is only 0.09% between June 2002 to December 2002. It is significantly lower than the average, 1.04%.

Promise 2 - excess speed warning: Only 21 (or 0.25%) TOBE car owners report that the TOBE did not warn the driver to slow down in advance for the roadside fixed over speed detection camera.

Promise 3 - tow away notice: Only 16 (or 0.19%) TOBE car owners report that TOBE does not notify car owner/driver the happen of tow away.

Promise 4 - collision report: the TOBE had report car collision to the car owner or/and emergent contact person when the collision happen for almost all cases.

Promise 5 – roadside service in time guarantee: The roadside assist attendants had appeared in the time the call center promise the car driver for almost all cases.

6. The entry barriers for rivals to provide similar service

Rivals may be motivated to enter the industry by the above-normal economic profits the pioneering or first mover firms earned (Barney, 2001: p. 79). By comparing the cost of entry into an industry with barriers and the cost of entry into the industry without barriers, a difference of the cost may be found. This difference is the “height” of the barriers to entry the industry as Barney (2001: p. 106) indicated.

The TOBE had launched into Taiwan market for years from June 2002. The rivals do not provide similar services still now, October 2004. Some entry barriers may exist to obstruct the rivals to enter into the market.

The concept of entry barriers were originally proposed by Bain (1956, 1968) and Porter (1980). There are a lot barriers to entry into a industry includes economics of scales, production differentiation, cost advantages

independent of scale, capital requirements, contrived deterrence, access to distribution channels, and government regulation of entry, according to Barney(2001: pp. 78-90) and Porter (1979, 1980). The TOBE built the barriers of economics of scales, production differentiation, and cost advantage independent of scale. Following are discussion about these three entry barriers the TOBE has built.

6.1 Economics of scales

In most situations, the volume of production or service is negative related to cost. Since the TOBE is installed in most of the new cars sell by Yulon Nissan Motor, the install base is continuing increase. The TOBE is pioneer or first mover and has entered the Taiwan market from June 2002. The high install base and the economics of scales for operating call center and other service make the TOBE cost saving comparing to the followers. The later the following auto firms entry into the market, the more the cost advantages the TOBE may create.

However, because the Yulon Nissan Motor Co. Ltd positions in the number three market share in Taiwan, the economic of scales might also be a source of weakness if the top two auto companies decide to provide similar service. The later the top two companies enter the market, the more install base the Yulon Nissan Motor may get so that this install base might be used to offset the possible disadvantages after the top two companies provide the similar services.

For the auto manufacturers or auto importers in Taiwan with fewer market shares than Yulon Nissan Motor, the economics of scales for the similar service might be a serious issue. Since that TOBE increase the value of driving a car, the customers may hope to pay more for a car with the TOBE service or pay less for a car without similar service. So there is a pressure came from customers for providing the similar service. In this situation, the economics of scales of the TOBE similar service would be a threat for these smaller auto firms.

6.2 Product differentiation

As Barney (2001: p.82) indicated, the pioneer firms may possess brand identification and customer loyalty that the other companies do not possess. This brand identification and customer loyalty may lead from production differentiation. The pioneer firm provides the different product to build brand

identification and customer loyalty. The new entrants not only have to absorb the cost associated with starting providing the service similar to the TOBE, but also absorb the costs associated with overcoming differentiation advantages of Yulon Nissan Motor, the pioneer firm. If the cost of overcoming these advantages is greater than the potential return from entering an industry, entry will not occur, even if the Yulon Nissan Motor is earning the profit from this differentiation.

The follower companies not only have to provide the service similar to the TOBE, they have to provide service with greater value than the TOBE or they have to recognize that they are follower in this service. This may hesitate about recognizing themselves as followers. In most situations, the firms may not recognize that they are followers especially when they are the top one or two market share owners. The results would be the delay of providing the similar services.

6.3 Cost advantages independent of scale

Compare to the new entrants, pioneer firm may have cost advantages which are independent of scale. According to Barney (2001: pp. 83-86), proprietary technology, know-how, favorable access to raw material, favorable geographic locations, and learning curve may be the possible cost advantages independent of scale for the pioneer firm. In the case of the TOBE, proprietary technology, know-how, and favorable access to raw material may be the possible cost advantages independent of scale.

6.3.1 Proprietary Technology

In that Yulon Nissan Motor owns more than 175 worldwide patents for the TOBE service, potential entrants need to develop their own substitute technologies to avoid infringement acts to patented technologies. Or they need to ask Yulon Nissan Motor to grant authorization for the patented technology. Both of these activities may be costly or/and time-consuming. The cost for rivals to provide similar service may be costly since that they do not own the proprietary technology.

6.3.2 Know-How

As Kogut and Zander (1992) mentioned, know-how which is built up by the pioneer firm may be more important entry barrier than proprietary technologies. New entrants do not own the know-how and are at a cost disadvantage position compared with pioneer. Since that the TOBE service

have launched into the market for years, there might exist some know-how which may build entry barriers for the new entrants.

6.3.3 Favorable Access to Raw Materials

If the pioneer could access to raw materials easily and cheaply, cost advantages may exist. The Yulon Nissan Motor is a member company or subsidiary of Yulon Group. Yulon Nissan Motor is a joint venture company of Yulon Group and Nissan. Conglomerate members of the Yulon Group include affiliated companies of different industries including textile, automobile, electronic, overseas business, and some other diversified business. For the automobiles industry, Yulon Group own three car makers include Yulon Nissan Motor which manufactures and sales Nissan cars and trucks, China Motor which manufactures Mitsubishi cars and trucks, and Yulon motor which manufactures Nissan cars and trucks and provides OEM manufacture for other auto companies. Yulon Group also own some companies for auto parts supply and auto dealers. Table A-1 in the APPENDIX listed Yulon Group affiliated companies for auto makers, parts suppliers, and dealers.

In addition to the car manufacturers and dealers, Yulon Group owns some companies for automobil related business as Table A-2 in the APPENDIX indicated. These related businesses might contribute as the fundament for the TOBE services. For example, Sin Etke Technology Co. provides GPS for the TOBE. The Yulon IT Solution Co. provides information system. The Shiang Shou Enterprises Co. provides roadside assistance for the TOBE. The Shiang Shou Enterprises Co.'s call center for the roadside assistance is the prototype for the TOBE. Shiang Shou Enterprises Co. is the leading roadside assistance company providing tow service. The TOBE's call center is now operated by Shiang Shou Enterprises Co. Kaplus Auto Leasing Co. provide car rental and lease service. All rental or leased cars in Kaplus Auto Leasing Co. are equipped with the TOBE. This may improve the quality of the rental cars service and reduce the theft rate of rental cars. Beside, the Shiang Shou Enterprises Co. and Hong Shuo Cultural Enterprises Co. publish a lot of travel publication. These contents of travel information are an important source for the TOBE scenic spot database. And the SinBourn Travel Co. is a travel agent providing travel service. If the car drivers call the TOBE call center for any assistance about travel, the SinBourn Travel Co. could provide service about travel.

The TOBE may help the related businesses of the Yulon Group to generate synergy. Nevertheless, for any rivals who hope to provide service

similar to the TOBE, they have to set up a lot of related businesses or to alliance with suppliers of these related service. Seek other suppliers to provide all these related service may be costly. This may lead to the cost disadvantage for the rivals. In addition, owning and establishing all these related businesses might be time-consuming for the rivals although the capital required to owning these related business companies is not a large economic burden for car manufacturers. If the rivals choose to establish the related businesses by themselves, the entry barrier may sustain for years to the date these related businesses start to operate.

7. Threats for the TOBE

7.1 Lower repurchase rate

Compare with other auto manufacturers, the repurchase rate for Yulon Nissan is lower. According to the market survey data provided by Yulon Nissan in Table 4, we could find that there is a slight improvement of repurchase rate from 20.50% to 23.60% for the year 2002 and 2003. This improvement for repurchase rate might refer partially to the equipping of the TOBE. However, the repurchase rates for Yulon Nissan are only half or two-thirds of Mitsubishi and Toyota.

Table 4: Repurchase Rates

	Repurchase Rates	
	2002	2003
Nissan (Yulon Nissan Motor Co.)	20.50%	23.60%
Mitsubishi (Chian Motor Co., a company of Yulon Group)	43.70%	36.10%
Toyota (Kuozui Motors Co.)	41.30%	37.80%
Ford (Ford Lio Ho Motor Co.)	21.60%	19.50%

Source: Market Survey of Yulon Nissan

The TOBE is not the panacea for cars sale. There are enormous factors which will impact the behavior for car purchases. Performance, quality, reliability and brand image of cars are all significant factors influencing the purchase and repurchase intention. The TOBE may increase the car value for owners and drivers. However, they still hope to buy a car with high quality, high performance, high reliability, and high brand image.

7.2 Lower market share

Yulon Nissan stands in the number three or four position of market share in Taiwan for years as Table 5, Table 6, and Figure 2 indicated. Due to the small market scale of Taiwan, the volume of Yulon Nissan is only 66,203 for 2003. Yulon Nissan now had diversity car models of Cefiro, Centra, March, Verita, X-trail and some other import cars as Table 7 indicated. Due to the economic of scales effect, the small volume made the Yulon Nissan higher manufacture cost when compare with the Toyota and Mitsubishi.

Table 5: Market Share of Cars in Taiwan

	Vehicles	Market Share	Rank
Toyota (Kuozui Motors Co.)	100,625	24.74%	1
Mitsubishi (Chian Motor Co., a company of Yulon Group)	87,708	21.56%	2
Ford (Ford Lio Ho Motor Co.)	67,857	16.68%	3
Nissan (Yulon Nissan Motor Co.)	66,203	16.28%	4
Other local car makers	45,823	11.27%	5
Import Cars	38,530	9.47%	6
Total	406,746	100.00%	

Source: Taiwan Transportation Vehicle Manufacturers Association, TTVMA, <http://www.ttvma.org.tw>

Table 6: Market Share of Domestic Manufacture Cars

	Yulon Nissan Motor Co.	Ford Lio Ho Motor Co.	China Motor Co.	Kuozui Motor Co.	Total Number of Domestic Made Cars
1994	13.63%	20.97%	26.55%	16.38%	410,182
1995	15.45%	23.99%	25.11%	16.73%	409,629
1996	17.75%	21.63%	21.19%	22.14%	364,241
1997	20.92%	19.02%	26.88%	18.90%	379,408
1998	20.83%	18.65%	27.42%	18.88%	404,683
1999	19.52%	14.98%	27.80%	21.79%	358,995
2000	20.09%	16.46%	25.70%	23.03%	356,694
2001	19.42%	15.98%	27.55%	24.05%	287,224
2002	16.43%	17.36%	29.31%	27.19%	343,909
2003	17.98%	18.43%	23.82%	27.33%	368,216

Source: TTVMA, <http://www.ttvma.org.tw>

Note: The import cars do not count for the market share percentages of this table.

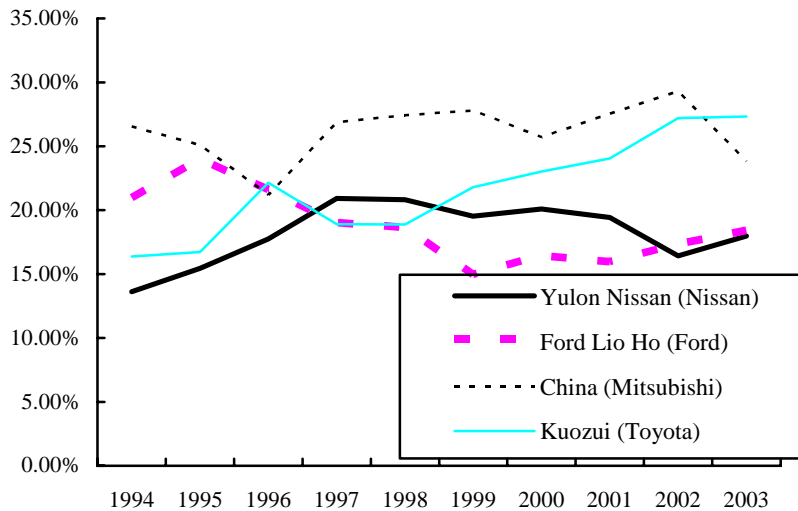


Figure 2: Market Share of Domestic Car Manufacturers

Table 7: Product Lines of Yulon Nissan

Types	Models
Cars	March, Verita, Sentra, Cefiro
Resort Vehicles or Minivans	Serena, X-Trail
Trucks	Cabstar, Udtruck

Note: In addition to the cars mentioned in the table, there are some other imported cars.

The Taiwan automobile industry is in the mature stage. The sale volume of automobiles does not increase recently as figure 3 pointed out. If the volume of automobiles sell in Taiwan decreases and the Yulon Nissan's market share does not increase, the disadvantage in economics of scales will continue or become more serious than before. This is a fundamental crisis to Yulon Nissan.

7.3 Rivals' imitation

There exist some entry barriers for the rivals to provide services similar to the TOBE, as mentioned above. However, most automobile manufacturers are large companies which own abundant capital. Once these rivals decide to entry into the market to provide services similar to the TOBE, the intensity of

competition of Taiwan automobile industry would raise. Since that the market share of Yulon Nissan in Taiwan is smaller than Mitsubishi, Toyota and Ford. A cost disadvantage of economic of scales might exist for the Yulon Nissan's TOBE.

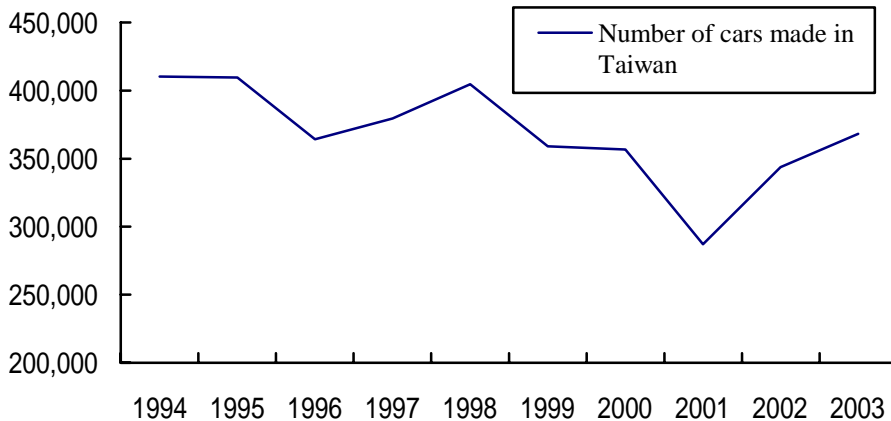


Figure 3: Number of Cars Made or Assembled in Taiwan

Source: TTVMA, <http://www.ttvma.org.tw>

7.4 Third parties to provide similar service

Since that technologies used for the TOBE are not a significant barrier, third parties may provide similar service to all car owners/drivers. If the third parties provide the similar service, they target market may larger than the TOBE service of Yulon Nissan. The cost of call center and other facilities for the TOBE similar service might reduce if the volume increases. The third parties may get a cost advantage due to the economics of scales. This may be a possible threat to the TOBE.

8. Opportunities for the TOBE

8.1 Worldwide opportunities

Although the TOBE service is now provide for Taiwan car owners/drivers, this business model could be used to all automobile

manufacturers worldwide. Since that the Yulon Nissan own know-how and patented technologies for the TOBE, other automobile manufacturers would need to pay for that patented technologies as well as know how if they hope to provide the similar services. This may be an opportunities for the Yulon Nissan.

8.2 Repurchase rate increases in the future

The TOBE has improved the value of a car and satisfy the car owners/drivers. The repurchase rate may increase in the future although it is lower than that of rivals. It is a long time work for improving the repurchase rate. People usually repurchase a car five or ten years late. The effect of the TOBE on the repurchase rate would be realized in ten years or longer.

8.3 Spin-off the TOBE as a third party provider

As the third parties could provide the TOBE similar services, the TOBE could also be changed as a third party service. The TOBE could be provided to all cars, new or old, Nissan or not Nissan. The Yulon Nissan may spin-off the TOBE as an independent mobile commerce service provider. Then the TOBE could provide service the all automobiles drivers as well as Nissan drivers.

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Appendix: Yulon Nissan company background

Yulon-Nissan is a joint venture company by Nissan of Japan and Yulon of Taiwan for Nissan brand automobile manufacture. Yulon Motor Co., Ltd, founded in 1953, is a Taiwan based company with capital of USD\$ 538 million which manufactures and sale cars and related parts. Nissan Motor Co., Ltd, found in 1933, with capital ¥605,813 million (as of March 2003) and 127,625 employees (including consolidated subsidiaries). Nissan is one of the largest automobile manufacturers in the world which sell 2,761,375 cars in 2002.

Yulon Nissan is a company of Yulon Group. Yulon Group is a large business group with conglomerate members in the industries of automobiles, textiles, electronic technology, overseas businesses, and other diversified businesses. The affiliated companies for the automobile industry of Yulon Group are listed in Table A-1 and Table A-2.

Table A-1: Yulon Group Affiliated Companies for Automobiles

Affiliated Companies	Business Scope
Yulon Motor	Car maker for Nissan
China Motor	Car maker for Mitsubishi
Yulon Nissan Motor Motor	Car maker for Nissan and others
ROC-SP	Parts supplier
ROC-Keeper Indu.	Parts supplier
Yue Ki Industrial	Parts supplier
Kian Shen Corp.	Parts supplier
China Ogihara	Parts supplier
Uni Auto Part Manufacture	Parts supplier
Uni-Calsonic Corp.	Parts supplier
China Engine Corp.	Parts supplier

Affiliated Companies	Business Scope
Y-TEKS	Parts supplier
Yushin Motor	Dealer
Yuchia	Dealer

Source: Yulon Group, <http://www.yulongroup.com.tw>

Table A-2: Yulon Group Affiliated Companies of Auto Related Business

Companies	Business Scopes	
Singan Co.	Distribution Channel	Integrating products and services of automobile-related businesses among the Yulon Group and providing the consumers with automobile-related services and one-stop shopping convenience under the same brand.
Sin Etke Technology Co.	GPS and IS	Provide Intelligent Transportation System with functions including GPS and PDA devices for drivers and network information system planning and services for customer service centers.
Yulon IT Solution Co.	IS	Corporate IT Infrastructure and Software Development Services
Sinqual Technology Co.	Maintenance Depot and parts supplies	Fast maintenance services for vehicles, sale of miscellaneous accessories, and computerized repair management systems.
Sinjang Co.	Used Car	Wholesaler and retailer of used cars. It is the largest used-car dealer in Taiwan with electronic auction systems transaction platform implementing vehicle verification/appraisal systems, and initiating an open transaction mechanism for used cars.
Taiwan Acceptance Co.	Car Loans	Car loans services. Brand-new car installments, brokerage for used car installments and leasing.
Newa Insurance Co.	Insurance	Automobile insurance, residential fire insurance, commercial fire insurance, transit insurance, engineering insurance, liability insurance, bond insurance and miscellaneous insurance products.

Companies	Business Scopes	
Shiang Shou Enterprises Co.	Roadside Assistance and Travel Publication	Provides round-the-clock services through its customer services center. Services include towing and roadside assistance, including provision of substitute car during the period of repair, and claims reports. Editing & publishing of travel monthlies, books, periodicals, and commercial printing.
Kaplus Auto Leasing Co.	Car Rental	Car rental services for enterprises and individuals. It is a leading car-rental corporation in Taiwan. It provides customers with various substitute cars during the period of repair and chauffeur services.
Hong Shuo Cultural Enterprises Co.	Travel Publication	Travel magazines. Editing & publishing of travel monthlies, books, periodicals, and commercial printing. It issues the most popular travel magazine in Taiwan, reporting about domestic and overseas travel information Collaborating with renowned publishers such as Bertelsmann China Co. and Beijing Guanghai Stationery Commodity Co.
SinBourn Travel Co.	Travel Agent	Domestic and international air ticketing, travel documents, hotel reservations, short-term study abroad scenarios, individual travel and group travel. It provides planning services for large scale domestic and overseas conferences, training, staff travel and leisure activities. It also provides domestic and overseas travel product information and on-line ordering service.

Source: Yulon Group, <http://www.yulongroup.com.tw>

