Research of EV Customer Acceptance Index in China

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Abstract

This paper aims to develop the concept and assessment of Chinese EV- Customer Acceptance Index (hereafter refers to EV-*CAI*,), allowing more understanding on the past and future of Chinese EV marketing and consumer preference to help cities more prepared for EV introduction. By identifying and testing key motivators and inhibitors for EV-*CAI*, particularly those that affect the customers' attitude towards, and intention to use EV with new technology and new lifestyle, the current status of EV acceptance in China will be assessed for future improvement.

Our group has been following the Chinese '10 cities, 1000 vehicles' demonstration project for EV promotion and application for 3 years, focusing on comprehensive assessments of project results. All key aspects in the EV applying environment and operating system, particularly Customer together with Vehicle, Infrastructure, Service, Business model and Government policy has been analyzed and evaluated. The first 3-year round ended by 2012 '10 cities, 1000 vehicles' project implemented in 25 EV pilot cities in China supplied the most import and vivid practical data for the study.

Based on official data released, field investigation, survey, expert interview, data collection and analysis, our group comprehensively summarizes the most recent status of E-mobility in the pilot cities and some non-pilot cities, analyzes and assesses impact brought by the project on customers' awareness, willingness of EVs, figures out problems, makes recommendations and guidelines for city government, related OEMs, and customers themselves on improvement of EV-*CAI* to make a city better prepared for EVs in different using fields, both public transportation sector and private sector. Key dimensions and factors influencing EV-*CAI* will be measured to prepare Chinese cities better for the next wave of EV application.

Keywords: Public Education and Training, EV Pilot Cities, Marketing, Customer Acceptance Index

1 Introduction

The study in this paper is based on the close tracking and analyzing of EVs promotion and application in Chinese cities in recent 3 years, aiming to enhance cities' acceptance of EVs and promote low carbon transport system establishment by EVs application.

Data used in this study sources from the first 3-year-period of Chinese '10 cities, 1000 vehicles' demonstration project for EV promotion and application. In order to help the city build up a supporting environment for EVs application and make more and more people know, accept and use EVs, Chinese government has started the Chinese '10 cities, 1000 vehicles' demonstration project for EV promotion and application since Jan. 2009. When this project ended in 2012, there were actually 25 cities selected as pilot cities by the central government for EV pilot application. The promotion result of this state-led project has following features which has great relevance with customer acceptance study in this paper:

1. Leading power: Government. It was a top-to-bottom process that the central government raise requirements, formulate policies and conduct assessment and acceptance while city government were responsible for implementation.
2. Application fields: Mainly applied in public field. EV promotion in 25 cities originally focused on the pilot application in public field of city transportation including bus, taxi and special vehicles for logistics and post services. Later, 6 cities including Beijing are selected as pilot cities for EV private uses from the former 25 pilot cities to promote EV application in private using field.
3. Applied vehicle types: In China, Energy-saving and New Energy Vehicle (NEV) including Hybrid Electronic Vehicles (HEV), Electronic Vehicles (EV, pure EV and Plug-in HEV) and Fuel Cell Electronic Vehicles (FCEV). EVs studied in this paper only refer to pure EV and Plug-in HEV.
4. Application results：By the end of 2012，about 27,500 NEVs had been actually used in the 25 pilot cities with a completion ratio of the target set in 2009 around 25%. Among all NEVs used, pure EVs accounts for 38.6%, HEV accounts for 60.6%

Table 1：List of Energy Saving and New Energy Vehicles Pilot Cities (By 2012)

25 Pilot cities- Public Using	**6 Pilot Cities -Private Using**
The first batch /Start Time: February, 2009 13 cities : **Beijing**,**Shanghai**,Chongqing,**Changchun**,Dalian,**Hangzhou**,Jinan,Wuhan,**Shenzhen**,Changsha(with Zhuzhou, Xiangtan lately),Kunming, Nanchang, **Hefei**	6 cities: **Beijing, Shanghai Changchun, Hangzhou Shenzhen, Hefei** Start Time: April, 2010
The second batch /Start Time: June, 2010 7 cities: Tianjin,Haikou,Zhengzhou, Xiamen, Suzhou, Tangshan, Guangzhou	
The third batch /Start Time:（August, 2010） 5 cities: Shenyang, Huhehot, Chengdu, Nantong, Xiangyang	

School of Automotive Studies, Tongji University has been focused on technical R&D of automobiles in China for more than 10 years and established the department for NEV promotion and supporting environment research 3 years ago—Center for Automotive Industry (CAI). In recent years, CAI has taken numerous of research projects commissioned by national and local government or established by Tongji University, as well as a Sino-German collaborative project with GIZ, working on operation system and effects evaluation of the new energy vehicle demonstration in the city, new energy automotive industry and building related data platform. Besides, CAI also offers professional training and consulting. This paper concerning the customer acceptance of electric cars obtained different levels of assistance from these projects above.

2 Methodology

2.1 Concepts and Scope

This paper relies on the basic units of cities, in a city-by-city approach, conducts a comparative study of EV-*CAI* between part of the pilot cities and some

non-pilot cities.

The scope of the assessment in this paper refers to both the best practice cities among 25 pilot cities and some outstanding non-pilot cities. The Assessment is based on the data of EV promotion in China since Feb.2009 to Dec. 2012 (part of data extends to Mar.2013).

An EV in this paper only refers to a pure EV or plug-in HEV, other HEVs and FCEVs are excluded.

Considering the limited population of promoted pure EVs in the 3-year period project (less than 11,000 vehicles), which mainly concentrated in public fields like buses and taxi, as well as some in the private field. Therefore, customers in this paper refer to those involved in the 3 fields above.

2.2 Definition

Generally speaking, customers are the final-users of products and services. However, in this paper a broader description is considered according to different using fields because using style of EVs influences customers significantly. EV customers in public sector show quite different characteristics from those in private sector. As shown in figure 1, customers of E-Bus and E-Taxi consist of 3 groups individually, operating companies, drivers, and passengers while customers of E-Private refer to private EV owners and renters. Due to the private use of passenger EVs from rental companies just started in China and the scale is quite small, although this kind of EVs was accounted into private sector, the assessment of EV *CAI*-private will just focus on private owners but ignore the rental users currently.

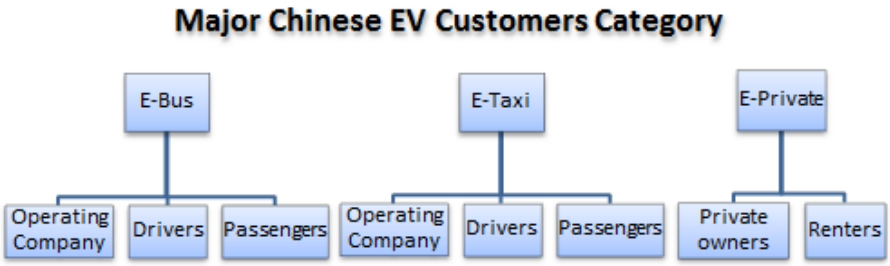

Figure 1: Description of EV customers in different using fields

EV-*CAI* in this paper is presented by customers' demand related to their cities' precondition, current attitude by their cities' EV application status, and potential intention. Based on theory of substitute goods, the default of benchmark to analyze factors influencing EV-*CAI* in cities is traditional combustion vehicles.

2.3 Data collection

Data of City Precondition, for instance the GDP per capita sourced from China Statistical Yearbook.

Data of Cities' EV, Infrastructure was collected from summary reports of those studied cities, expert interviews and surveys conducted by our study group as well. Data of non-pilot cities sourced from our team surveys.

Data of Cities' Customers feeling is according to records of our team surveys，including online survey, onsite investigation, data collection from Center for test drivers and riders, Shanghai International EV Zone.

2.4 Assessment model

With the research on China's EV promotion in recent years, CAI(Tongji University) has formed a basic framework(V+ISBCG[i]) for influential factors for the supporting environment needed for EV application in China. According to this framework, application of new vehicles like EVs is affected not only by vehicle technology itself, but the city's precondition and supporting environment as every dimension of ISBCG (including internal traits of customers). Analytic Hierarchy Process (AHP) is used to set dimensions and elements for each kind of customers. The dimensions in this study are mainly selected form city preconditions and frameworks of V+ISBCG. Criteria to identify, rate and weight dimensions and elements are based on research of Chinese EV pilot cities' practice and experts' suggestions. The most related factors with accessible

[i] **V** is short for Vehicle and **ISBCG** stand for Infrastructure, Service, Business model, Customer and Government policy.

data are considered and their influence power is scored to reflect the current Chinese status of customers' attitude for EVs. This model will be modified continuously with more important factors but data currently unavailable in future research.

3 Results and Discussion

City's precondition is viewed as an important dimension to analyze EV-*CAI* in all three fields, but the elements' influence power on different customer field differs from each other. For example, the city's air quality has larger effects on *CAI* in public fields than in private. Considering the fact that China's bus fleets usually has a feature of 'government pays for bus services', influential power of economic efficiency and profitability on E-Bus operating company is much smaller than on an E-Taxi operation company. According to the customers of bus, taxi and private use, *CAI* of the assessed cities are not very high. Citizens in these cities which are among the earliest in EV introduction and application, have much bigger opportunity to know and drive EVs than those cities where EVs are not aware yet. The propaganda and education of new lifestyle brought by EVs are getting more popular in the public with numerous and efficient methods. For example, there are specialized test drive centers for EVs in Shanghai and Beijing, with which survey and questionnaire on customers can be conducted. The channels and opportunity for customers to get EV information are increasing.

Status of EV-*CAI* in Chinese cities

Table 2: Number of EVs applied in major sectors in Chinese cities (by the end of 2012)[i]

EVs applied in Public sector						**EVs applied in Private sector**		
Cities		Number of E-Bus	Cities		Number of E-Taxi	Cities		Number of private EVs
10 of the 25 Pilot cities	Hefei	635	10 of the 25 Pilot cities	Beijing	650	Pilot cities of private purchase subsidy (6 in all)	Hefei	4315
	Shenzhen	279		Shenzhen	400		Shenzhen	214
	Chengdu	149		Haikou	280		Hangzhou	167
	Shanghai	120		Hangzhou	200		Shanghai	269
	Beijing	100		Tianjin	140		Beijing	0
	Xiangyang	90		Tangshan	50		Changchun	0
	Haikou	90		Guangzhou	6		-	-
	Dalian	81		Dalian	0		-	-
	Tianjin	70		Kunming	0		-	-
	Guangzhou	66		Chongqing	0		-	-
Total			Total			Total		
Non-pilot city Linyi* (Shandong Province)		145	Non-private city Xinxiang* (Henan Province)		100	-	-	-

3.1 Assessing model and status of EV-*CAI*-Private

Dimension	Elements	Criteria description and scoring standards (Scores of each elements is evaluated by its influence power on customer acceptance)						Scores of Cities				
								He fei	Shen zhen	Hang zhou	Shang hai	Bei jing
City Preconditions (Full score: 13)	Air quality	Heavier air pollution indicates urgency for EVs and scored higher						3	2	4	3	3
		Interval	Clear	Light	Medium	Heavy	Extra heavy					
		Score	1	2	3	4	5					
	urban per capita GDP	urban per capita GDP indicates urban economic level (unit: 1000 RMB)						2	8	6	6	6
		Interval	0-40	40-60	60-80	80-100	More than 100					
		Score	0	2	4	6	8					
Government policy (Full score: 21)	EV purchase subsidies	Subsidy offered by central & local government（unit: 1,000 RMB）						6	8	8	6	8
		Interval	0	1-30	30-60	60-100	More than 100					
		Score	0	2	4	6	8					
	Electricity subsidy	Whether there's subsidy for EV electricity use						3	5	5	0	0
		Interval	No		YES (by company)		Yes					
		Score	0		3		5					
	Free vehicle license	Whether there's free license for EV vehicle						0	0	0	5	0
		Interval	No				Yes					
		Score	0				5					
	Free parking	Whether there's free parking for EV vehicle in urban roads						3	0	0	0	0
		Interval	No				Yes					
		Score	0				3					
Vehicle Maintenance availability (Full score: 8)	Specialized maintenance service	Whether franchise 4S stores, specialized service company or vehicle OEM, battery companies offer maintenance:						2	2	2	4	2
		Interval	No	specialized service company or vehicle OEM			4S store					
		Score	0	2			4					
	Maintenance timeliness	Whether related spare parts, accessories prepared adequately						4	4	4	2	4
		Interval	None	Sometimes prepared			Always prepared					
		Score	0	2			4					
Vehicle information (Full score: 21)	Operation scale	How many EV vehicles in private sector						8	4	2	2	0
		Interval	0-200	201-500	501-1000	1001-2000	More than 2000					
		Score	0	2	4	6	8					
	EV net price	EV price minus subsidies by governments and corporates (unit: RMB)						8	2	5	5	5
		Interval	More than150,000		100,000-150,000		0-100,000					
		Score	2		5		8					
	Vehicle availability	How many brands' vehicles are available						1	2	4	4	1
		Interval	0	1	2	3	4	More than 5				
		Score	0	1	2	3	4	5				
EVSE availability and efficiency (Full score: 11)	Private charging piles	Whether there are policies supporting construction for private charging piles						0	6	0	6	6
		Interval	No		In consideration		Yes					
		Score	0		3		6					
	Number of charging piles per km^2	Interval	0-0.01	0.01-0.05	0.05-0.1	0.1-0.2	More than 0.2	3	5	2	4	3
		Score	1	2	3	4	5					
Residential factors (Full score: 26)	Purchasing power	Annual income per capita (unit: 1000 RMB)						2	10	8	10	8
		Interval	Less than 25	25-30	30-35	35 -40	More than 40					
		Score	2	4	6	8	10					
	Environmental awareness	2007 city ranking of residential environmental awareness (30 cities) :						4	6	4	6	8
		Interval	25-30	19-24	13-18	7-12	1-6					
		Score	0	2	4	6	8					
	Social propaganda and education	Number of propaganda and education activities						4	2	2	8	4
		Interval	1	2	3	4	More than 4					
		Score	0	2	4	6	8					
Total		Full score: 100						53	66	56	71	58

3.2 Assessing model and status of EV-*CAI*-Taxi

Dimension		Elements	Criteria description and scoring standards (Scores of each elements is evaluated by its influence power on customer acceptance)						Scores of Cities			
									B*	H	S	X
City Preconditions (Full score: 15)		Air quality	Heavier air pollution indicates urgency for EVs and scored higher						3	4	2	3
			Interval	Clear	Light	Medium	Heavy	Extra heavy				
			Score	1	2	3	4	5				
		Traffic congestion & Traffic Restriction	Heavier traffic congestion indicates urgency for Public transportation and scored higher						5	4	4	2
			Interval	Extra light	Light	Medium	Heavy	Extra heavy				
			Score	1	2	3	4	5				
		Parking lot availability	Difficulty to get vehicle parked in the city						5	4	4	1
			Interval	Extra easy	Easy	Medium	Difficult	Extra difficult				
			Score	1	2	3	4	5				
Operation Company (Full score :35)	Operation scale	E-taxi population	Interval	1-199	200-399	400-599	600-799	More than 800:	4	2	3	1
			Score	1	2	3	4	5				
	Government policy	E-taxi purchase subsidies	Interval	1-60,000		60,000-120,000		More than 120,000	5	3	5	5
			Score	1		3		5				
		Infrastructure subsidies	Proportion of subsidy in fixed assets						5	0	0	4
			Interval	0	0-5%	5%-10%	10%-15%	15%-20%	More than 20%			
			Score	0	1	2	3	4	5			
		E-taxi operation subsidies	Interval	No operation subsidy			With Operation subsidy		2	0	0	0
			Score	0			3					
		Non-financial incentives	Including free / low-rent land, free vehicle license, parking fee discounts, etc.						2	0	1	0
			Interval	1 policy	2 policies	3 policies	4 policies	More than 4				
			Score	1	2	3	4	5				
	Vehicle Maintenance availability	Specialized maintenance service	Whether franchise 4S stores, specialized service company or vehicle OEM, battery companies offer maintenance:						4	4	4	4
			Interval	No			Yes					
			Score	0			4					
		Maintenance timeliness	Whether related spare parts, accessories prepared adequately						3	3	3	3
			Interval	None	Sometimes prepared		Always prepared					
			Score	0	1		3					
	Operation profitability	Profitability of present operation	Interval	Lose money			Profitable		0	0	5	5
			Score	0			5					
Taxi drivers (Full score :25)	Vehicle performance	Driving range)/km	Interval	70-100	100-130	130-160	160-190	More than 190	2	1	5	3
			Score	1	2	3	4	5				
	EVSE availability and efficiency	Number of charging piles per km^2	Interval	0-0.01	0.01-0.05	0.05-0.1	0.1-0.2	More than 0.2	3	2	5	2
			Score	1	2	3	4	5				
		Number of battery swapping stations	Interval	1	2-3	4-5	6-10	More than 10	3	5	1	1
			Score	1	2	3	4	5				
		Charging(swapping) time/hour	Interval	More than 5	2-5	1-2	0.5-1	Less than 0.5	2	5	3	5
			Score	1	2	3	4	5				
	Net income	Relative income level	Compare to local drivers of conventional fuel taxis:						5	3	3	5
			Interval	Earn Less		About the same		Earn more				
			Score	0		3		5				
Passengers (Full score :25)	Residential factors	Purchasing power	Annual income per capita (unit: 1000 RMB)						4	4	5	1
			Interval	Less than 25	25-30	30-35	35 -40	More than 40				
			Score	1	2	3	4	5				
		Environmental awareness	2007 city ranking of residential environmental awareness (30 cities) :						5	3	4	2
			Interval	25-30	19-24	13-18	7-12	1-6				
			Score	1	2	3	4	5				
		Proportion of residents daily travel by taxis	Interval	0-5%:	5%-10%	10%-15%	15%-20%	More than 20%	2	2	3	2
			Score	1	2	3	4	5				
		Riding feelings	Riding comfortability of E-taxi compare to fuel taxis (considering noise, stability, gas smell, etc.)						5	5	5	5
			Interval	Less		equal	more					
			Score	1		3	5					
	Social propaganda and education	Activities held by Gov., NGO, OEMs, etc.	Number of propaganda and education activities:						3	2	2	1
			Interval	1	2	3	4	5				
			Score	1	2	3	4	5				
Total			Full score: 100						72	56	67	55

*: B,H,S and X are short for Beijing, Hangzhou, Shenzhen and Xinxiang.

3.3 Assessing model and status of EV-*CAI*-Bus

Dimension		Elements	Criteria description and scoring standards (Scores of each elements is evaluated by its influence power on customer acceptance)						Scores of Cities				
									H*	B	F	S	L
City Preconditions (Full score: 15)		Air condition	Heavier air pollution indicates urgency for EVs and scored higher						1	5	3	2	2
			Interval	Clear	Light	Medium	Heavy	Extra heavy					
			Score	1	2	3	4	5					
		Traffic congestion	Heavier traffic congestion indicates urgency for Public transportation and scored higher						2	5	2	4	2
			Interval	Extra light	Light	Medium	Heavy	Extra heavy					
			Score	1	2	3	4	5					
		Parking lot availability	Difficulty to get vehicle parked in the city						2	5	2	3	1
			Interval	Extra easy	Easy	Medium	Difficult	Extra difficult					
			Score	1	2	3	4	5					
Operation Company (Full score: 30)	Operation scale	E-bus population	Interval	1-50	51-100	101-200	201-300	More than 300:	2	2	5	4	3
			Score	1	2	3	4	5					
	Government policy	E-Bus purchase subsidies	Interval	1-500,000	500,000-1000,000		More than 1000,000		5	3	0	3	5
			Score	1	3		5						
		Infrastructure subsidies	Proportion of subsidy in fixed assets						4	5	1	0	0
			Interval	0	0-5%	5%-10%	10%-15%	15%-20%	More than 20%				
			Score	0	1	2	3	4	5				
		Land allocation	Low-rent or allocated land offered for E-bus fleet's parking and operation						5	0	0	0	5
			Interval	No			Yes						
			Score	0			5						
	Vehicle Maintenance availability	Specialized maintenance service	Whether franchise 4S stores, specialized service company or vehicle OEM, battery companies offer maintenance:						5	5	5	5	5
			Interval	No			Yes						
			Score	0			5						
		Maintenance timeliness	Whether related spare parts, accessories prepared adequately						5	5	5	5	5
			Interval	None	Sometimes prepared		Always prepared						
			Score	0	3		5						
			Score	0			5						
Bus drivers (Full score: 35)	Vehicle performance	Driving range /km	Interval	70-100	100-130	130-160	160-190	More than 190	3	2	5	5	5
			Score	1	2	3	4	5					
	EVSE availability and efficiency	Number of piles per km^2	Interval	0-0.01	0.01-0.05	0.05-0.1	0.1-0.2	More than 0.2	4	4	4	2	4
			Score	2	4	6	8	10					
		Number of battery swapping stations	Interval	1	2-3	4-5	6-10	More than 10	2	6	4	2	2
			Score	2	4	6	8	10					
		Charging(swapping) time/hour	Interval	More than 5	2-5	1-2	0.5-1	Less than 0.5	2	2	2	1	2
			Score	1	2	3	4	5					
	Working intensity and comfortability	Work intensity to drive the E-bus	Compare working intensity of driving the E-bus to the fuel bus						5	5	5	5	5
			Interval	Superior		Equal		Inferior					
			Score	1		3		5					
Passenger (Full score: 20)	Residential factors	Environmental awareness	According to 2007 city ranking of residential environmental awareness (30 cities) :						4	5	4	3	3
			Interval	25-30	19-24	13-18	7-12	1-6					
			Score	1	2	3	4	5					
		Proportion of residents daily travel by bus	Interval	0%-5%:	5%-10%	10%-15%	15%-20%	More than 20%	2	3	3	4	3
			Score	1	2	3	4	5					
		Riding feelings	Riding comfortableness of E-Bus compare to fuel bus (considering noise, stability, gas smell, etc.)						5	5	5	5	5
			Interval	Less		equal		more					
			Score	1		3		5					
	Social propaganda and education	Activities held by Gov., NGO, OEMs, etc.	Number of propaganda and education activities:						3	2	2	0	0
			Interval	1	2	3	4	5					
			Score	1	2	3	4	5					
Total			Full score: 100						61	69	57	53	57

*: H, B, F, S and L are short for Haikou, Beijing, Hefei, Shenzhen and Linyi.

3.4 Results of City EV-*CAI*

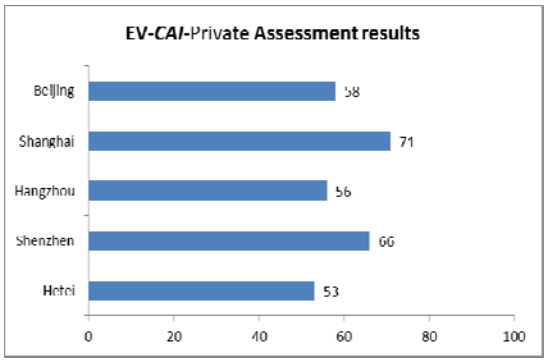

Figure 1: EV-*CAI*-Private

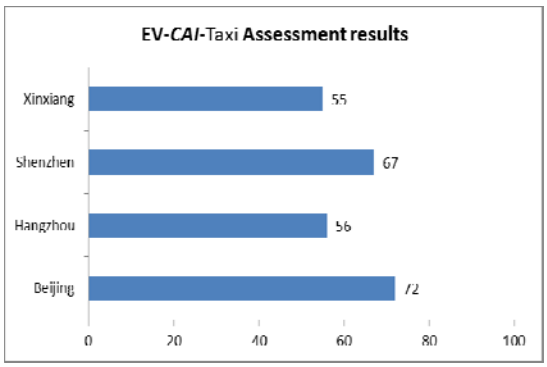

Figure2: EV-*CAI*-Taxi

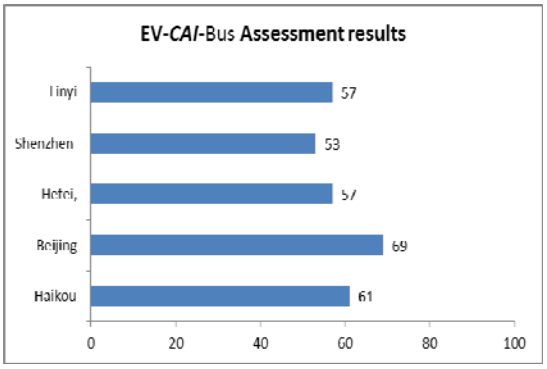

Figure 3: EV-*CAI*-Bus

4. Conclusion

In China, most people's understanding of the bottleneck for EV application in the city focuses on the product's maturity or infrastructure's availability and price while lacks concern of enhancing the awareness and acceptance of the actual buyers and users. EV products improvement and price decrease, together with the speeding up of infrastructure can help to enhance the EV-*CAI*, while the most important thing should be the analysis and motivating of customer demand with wider and more effective propaganda and promotion. For instance, nowadays a lot of EV related forums held in China, representatives of each dimension in framework of V+ISBCG attend while the customers are always absent. In usual, representatives of V+ISBG will imagine being the C while the actual willingness and needs of customers are seldom considered. Among those cities in which we took field surveys and communicated with the government department, a conclusion can be made that customer didn't take enough participation in planning, policy making and other aspects. The widely spread education activities of EV entrance to the residential area are rarely used in China. For most Chinese cities, with the awareness of government and relevant stakeholders, promoting charging piles into residential area by professional methods can be an attractive solution to break barriers of EV purchase and use of ordinary customers.

Currently, Chinese customers' acceptance of EV still remains in a plain level in spite of 3-year pilot project in 25 cities. As in past 3 years, the government and OEMs paid more attentions on EV customers in public sector. EV customer acceptance index in private sector is still very low in some huge cities. For example, although Beijing and Changchun are 2 of 6 pilot cities enjoying private purchase subsidies, the purchase of EV passenger cars in these two cities is zero. In the next round of the demonstration project, to improve EV customer acceptance index for private sector will be highlighted by cities.

Despite that current EV-*CAI* is not high, through the 3-year pilot application consumer awareness of low carbon transportation has been improved significantly step by step. According to the project team's survey and analysis in 2011[2], 66.3% of the

respondents have a purchase intension of EV after the test drive experience[3]. *Sinotrust's* survey[4] in the first half of 2012 indicates that more than 90% of the respondents have heard of the new energy vehicles. And 54.6% of the total would consider the future purchasing. This ratio will be increased to 80% if the price and policy is more reasonable. Consumers' understanding of new energy vehicles has significantly improved compared to the level prior to the demonstration project implemented in China.

Chinese government has made the plan in Apr. 2012: Total sale of BEV and PHEV will reach 500,000 by 2015, and the number is expected to increase to 5000,000 with a production capacity of 2000,000[5]. Considering the actual number of EVs in China (BEV & PHEV) is less than 20,000 by Mar. 2013, the future plan could only be carried out by the great enhancement of EV-*CAI*, especially in private field. Analysis of key factors influencing the customers' acceptance must be done to effectively mingle EV into the present city transportation system and cultivate customers and market.

The good news is that more and more cities are vigorously carrying out a variety of activities for customer cultivation. Beijing's 'electric Beijing' EV car-sharing rental experience was started, and Beijing has also made a plan to add 5,000 electric vehicles in 2013 including 3000 E- taxi and 2000 private EVs, build 6000 new charging pile and form a five kilometers charging circle. By the end of Jul. 2013, Beijing has sold its first batch of 500 EVs to private users who can get subsidies of 60,000 RMB from central government, 60,000 RMB from municipal government and another 20,000 from OEM, which means the actual price of the EV is 109,800 RMB; Purchasers will get further priority in charging piles application and construction. Other cities like Guangzhou, Tianjin and Xiamen, etc. are also making supporting policies or speeding up the layout of infrastructure and explore more application modes of EV like car-sharing to greet the great integration of EVs in the city by enhancing city's EV-*CAI*. Our group surveyed the "Beijing E-Partner event" in the end of June, 2013, customers' acceptance of a so-called rental EV hour by hour will be assess in the future.

Reference

[1] Summary reports from 25 pilot cities for '10 cities, 1000 vehicles' project, 2012

[2] 2011 user experience data of 'test drive center'in China (Shanghai) electric vehicles international demonstration zone

[3] Survey report of 'test drive center' in China (Shanghai) electric vehicles international demonstration zone

[4] SinotrustMotorlink. http://www.chnindustry.cn/zxnews/142352/

[5] Interview of expert in Beijing Municipal Commission of Science and Technology 2013

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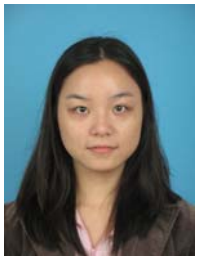

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Center for Automotive Industry (CAI) is a specific institute established in 2010 by School of Automotive Studies, Tongji University for the research of new energy vehicle industrialization, based on its Clean Energy Automotive Engineering Centre. Integrating various research resources of automotive, urban planning, transportation, energy, economy and management, CAI pays attention to development of overall automotive industrialization and focuses on new energy vehicle industrialization issues, especially on electric vehicle application environment, including infrastructure planning and efficiency evaluation, public policies, strategy and solutions. CAI conducts advanced research, consultancy, education and training, providing service on information, planning, evaluation, and solution for governments' decision, car manufacturers' and affiliated companies' business and EV market, contributing to the low-carbon and energy-saving society.