Global and China Intelligent Vehicle Personalization Technology Development Report, 2020

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STUDY GOAL AND OBJECTIVES

This report provides the industry executives with strategically significant competitor information, analysis, insight and projection on the competitive pattern and key companies in the industry, crucial to the development and implementation of effective business, marketing and R&D programs.

REPORT OBJECTIVES

- To establish a comprehensive, factual, annually updated and cost-effective information base on market size, competition patterns, market segments, goals and strategies of the leading players in the market, reviews and forecasts.
- To assist potential market entrants in evaluating prospective acquisition and joint venture candidates.
- To complement the organizations' internal competitor information gathering efforts with strategic analysis, data interpretation and insight.
- To suggest for concerned investors in line with the current development of this industry as well as the development tendency.
- To help company to succeed in a competitive market, and

METHODOLOGY

Both primary and secondary research methodologies were used in preparing this study. Initially, a comprehensive and exhaustive search of the literature on this industry was conducted. These sources included related books and journals, trade literature, marketing literature, other product/promotional literature, annual reports, security analyst reports, and other publications. Subsequently, telephone interviews or email correspondence was conducted with marketing executives etc. Other sources included related magazines, academics, and consulting companies.

INFORMATION SOURCES

The primary information sources include Company Reports, and National Bureau of Statistics of China etc.

Abstract

Our Global and China Intelligent Vehicle Personalization Technology Development Report, 2020 highlights the analysis and summary of personalization status of mainstream auto brands at home and abroad.

We select, analyze and summarize 19 typical auto brands: Audi, BMW, Mercedes-Benz, Volkswagen, Toyota, Honda, Nissan, Buick, Ford, Geely, SAIC, GAC, Changan Automobile, Great Wall Motor, BYD, Chery, NIO, Xiaopeng Motors, and Weltmeister. The personalized functions we study include: theme (center console display, instrument panel), interface (switching mode, adjustable position of function, addition/reduction of function), ambient lighting (settings of color, brightness, area and mode), musical light show, IVI image (2D/3D switching, optional style), speech (wake-up words, owner's nickname, tone language, language style, AI training, language recognition), interior hardware interaction, fragrance system, active recommendation (music, audio book, parking, refueling), active reminder (traffic restriction, traffic violation, life services), smart devices, custom headlights, and exterior interaction.

Location		Function		Definition
Interior	IVI system	Theme		Offer user-defined themes of center console or dashboard, with at least 2 options available
		Interface		Allow for the adjustment of positions of APPs/functions on the interface, or addition/reduction of APPs/functions
		Ambient lighting		Offer user-defined color, brightness, etc.
		Musical light show		Integrate ambient lighting with music
		IVI image		Offer user-defined intelligent voice image feature, style, etc.
		Speech		Offer user-defined wake-up words, broadcasting speech timbre, broadcasting speech dialect, etc., or allow for custom settings of problems and related controls
		Interior hardware interaction		Enable active interaction between hardware devices (e.g., strip lights) in different scenarios
		Custom button		Enable custom functions controlled via some button on the steering wheel or center console system
		Fragrance system		Offer optional odors or odor concentrations
		Active recommendation	Music	Actively recommend by voice according to user preferences, or display recommendations on software homepage
			Audio book	Actively recommend by voice according to user preferences, or display recommendations on software homepage
			Parking	Navigate to the destination parking lot, recommend parking spots
			Refueling	Remind users of refueling/charging when fuel/electricity is low, and recommend gasoline stations/charging piles
		Active reminder	Traffic restriction	The system actively broadcasts traffic restriction information, or the navigation system alerts users to traffic restriction and avoids restricted roads
			Traffic violation	Actively broadcast or display violations
			Life service	Actively broadcast or display life care information, e.g., weather, air quality, holiday, and birthday
		Others		Others
	Smart devices			Enable custom interactions between vehicle, smart home appliances and smart watch, for example, setting leave-home/go-home mode
Exterior	Headlamp			Enable custom settings of lighting and flashing mode, and adjustment of position of headlamps through IVI system, etc.
	Exterior interaction			Allow for exterior information interactions, e.g., charging information displayed on window, and different flashing modes (LOGO and taillight) for welcoming guests

This report takes exterior interaction and active recommendation functions as examples to introduce specific personalized functions of an intelligent vehicle.

The wider use of artificial intelligence leads to a shift in IVI service model from passive IVI service instructed by human to active acquisition of information by IVI system and active recommendation to human. In future, the ever deeper fusion of IVI system and third-party service software will come with more mature algorithms and more data accumulated, realizing a service model where more functions can be engaged in an active way.

Music and audio book recommendation

There are currently two leading modes of music and audio book recommendation.

The first is the recommendation feature built in music and audiobook software. Open the software and recommendations will come into sight, a common mode integrated into vehicle software of most auto brands. For example, Kuwo Music for Audi cars offers daily, ranking, Ximalaya FM, and high quality content recommendations; BMW QQ Music recommends daily content and new songs.

The second is the active speech-enabled recommendation according to user habits, preferences or scenarios, which is adopted by Mercedes-Benz, Buick, Ford, Geely, Great Wall Motor and BYD. For instance, Buick judges what users like based on scenarios and their habits, and pushes such as music; Ford IVI system recommends music, radio and point of interest, etc according to user habits; BYD IVI system recommends programs according to what the user often tunes in, sends news during the commuting time, and pushes songs and life programs on weekends and holidays.

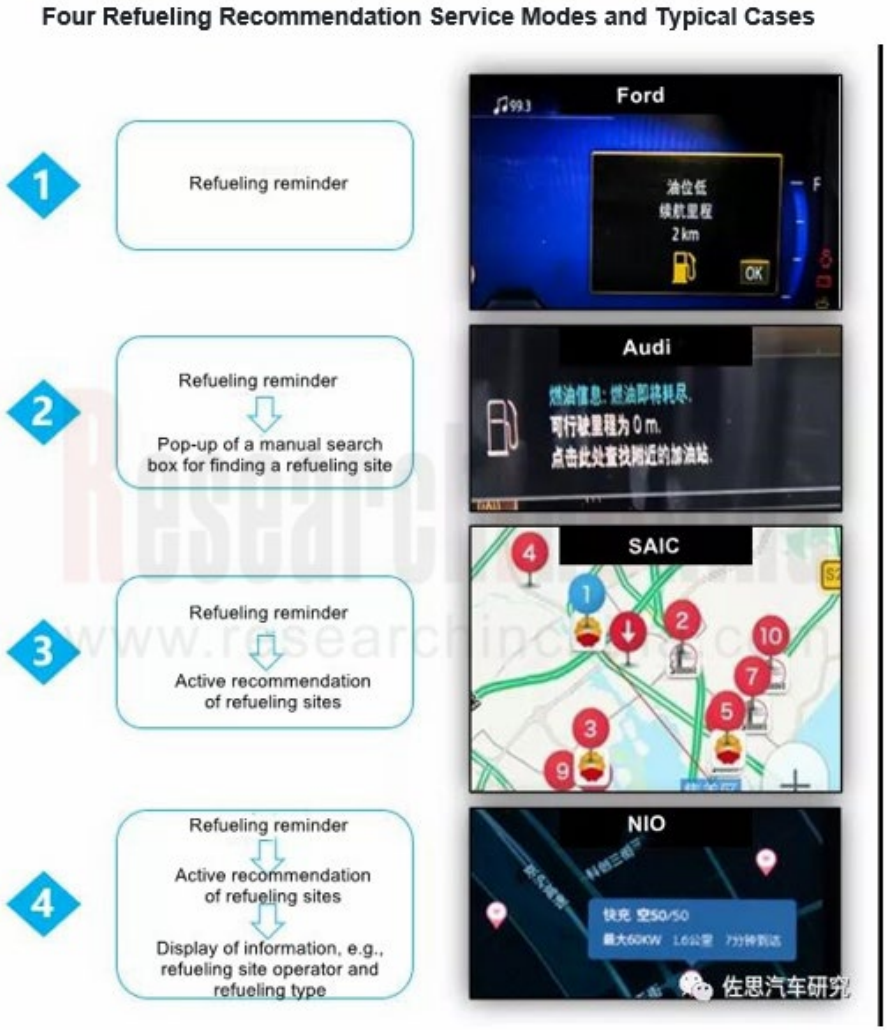
Parking recommendation

Parking recommendation refers to recommendation of several nearby parking lots available to the user via a pop-up window from the navigation map in the IVI system before arrival at the destination, for example, SAIC's IVI navigation system actively recommends 4 parking lots around the destination; Honda's IVI navigation system enables active pop-up of recommended parking lots when approaching the destination.

Refueling recommendation

Refueling recommendation can be divided into four modes by way to offer services:
1) when fuel/electricity is low, the system gives a refueling reminder;
2) when fuel/electricity is low, the system gives a refueling reminder, with an active pop-up of a manual search box for finding a refueling site;
3) when fuel/electricity is low, the system gives a refueling reminder and automatically recommends refueling sites available to the user;
4) when fuel/electricity is low, the system gives a refueling reminder, automatically recommends refueling sites available to the user, and displays details of the sites, such as operators and refueling types.
In future, the third and fourth modes will prevail.

Four Refueling Recommendation Service Modes and Typical Cases



Life service recommendation and reminder

Life service recommendation and reminder feature is gathering pace, and by content is led by: safety, environment, important event, behavior habit and preference reminders. For example, SAIC's Banma system actively recommends the route to the cinema as the user starts up the car within two hours before the film begins with tickets bought on Tao Piao Piao platform, and also the playlist or music about the film after the cinema lets out; Alipay applet introduced into Xpeng IVI system will proactively ask whether the user needs a breakfast reservation or not when the car detects he/she will go to work.

Life Service Recommendation Features in IVI Systems of Some Mainstream Auto Brands

Type	Safety Reminder	Environmental Information Reminder	Important Event Reminder	Recommendation Based on Behavior Habit and Preference	Others
Content	Not close the door/window, not fasten seat belt	Weather forecast, air quality, etc.	Birthday, holiday, anniversary, insurance expiration, etc.	Frequently visited locations, food, cinema, etc.	Traffic flow reminder, forgotten mobile phone reminder, etc.
Toyota	√	√			
Nissan		√		√	
Buick	√	√	√	√	√
Ford		√			√
SAIC					√
Great Wall Motor	√				
BYD	√		√		
Chery	√	√	√	√	√
Xiaopeng Motors		√	√		

Source: ResearchInChina

Exterior interaction personalization

Exterior information interaction refers to display of such information as vehicle status (e.g., charging), LOGO, welcoming and various prompts using lamps, windows or exterior display devices.

In Xpeng P7's case, the connection between lamp signal system and audio system enables interior ambient lamps and exterior lighting sets to flicker synchronously with musical rhythms.

Weltmeister interactive window projection: when the user gets close to the car with a phone in hand, he/she will be recognized via Weltmeister ID, and the projector on the inside of the exterior rearview mirror will project welcoming message, remaining battery power, range and other information on the window; when the use gets off the car, others can interact with the car through the projection on the window which displays state of charge for example.

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