

FACTORS AFFECTING CONSUMERS DECISION BEHAVIOR TO PURCHASE DIGITAL AUTONOMOUS VEHICLE IN SHENZHEN CITY

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การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อ (1) เพื่อศึกษาประชากรศาสตร์ที่ส่งผลต่อความพึงพอใจของลูกค้าในรถยนต์ขับเคลื่อนอัตโนมัติในเซินเจิ้น (2) เพื่อศึกษาปัจจัยส่วนประสมการผลิตที่ส่งผลต่อความพึงพอใจของลูกค้าในรถยนต์ขับเคลื่อนอัตโนมัติในเซินเจิ้น

การวิจัยเป็นการวิจัยเชิงปริมาณ ประชากรเป็นผู้บริโภครถยนต์ขับเคลื่อนอัตโนมัติในเมืองเซินเจิ้น กลุ่มตัวอย่างคือลูกค้าในเมืองเซินเจิ้น ประเทศจีน ใช้วิธีการสุ่มเฉพาะ โดยใช้แบบสอบถามเป็นเครื่องมือในการรวบรวมข้อมูล สถิติที่ใช้ในการวิเคราะห์ ได้แก่ ค่าร้อยละ ค่าเฉลี่ย ส่วนเบี่ยงเบนมาตรฐาน

ผลการวิจัย พบว่า (1) ตัวแปร เพศ อายุ การศึกษา อาชีพ และรายได้ต่อเดือน ภาพรวมมีอิทธิพลต่อการเลือกซื้อรถยนต์ขับเคลื่อนอัตโนมัติ พบว่า ส่วนใหญ่พบว่าส่วนใหญ่เป็นเพศหญิง อายุไม่เกิน 30 ปี และเป็นพนักงานบริษัท (2) ปัจจัยส่วนประสมทางการตลาดของผู้คนที่อาศัยอยู่ในเซินเจิ้น ซึ่งประกอบด้วย สินค้า ราคา สถานที่ และโปรโมชั่น มีความสัมพันธ์กับการเลือกซื้อสินค้าออนไลน์ทุกด้านโดยมีความสัมพันธ์ในระดับต่ำถึงสูง และมีทิศทางสหสัมพันธ์ในเชิงบวกอย่างมีนัยสำคัญทางสถิติที่ระดับ 0.05

คำสำคัญ: รถยนต์ขับเคลื่อนอัตโนมัติ เมืองเซินเจิ้น

ABSTRACT

The objectives of this research were (1) to study demographics affecting to customer satisfaction in autonomous vehicle in Shenzhen. (2) to study the manufacturing mix factors affecting to customer satisfaction in autonomous vehicle in Shenzhen.

The research is quantitative research. The population is consumer of autonomous vehicle in Shenzhen city. The sample group was customers in Shenzhen, China. Use a specific randomization method. By using questionnaires as a tool to collect data. The statistics used in the analysis were percentage, mean, standard deviation.

Major Findings: (1) There are gender, age, education, occupation and monthly income variables. The overall picture influences consumers' choice of autonomous vehicle in Shenzhen. It was found that most of them were female, under the age of 30, and were company employees. (2) Marketing mix factors of people living in Shenzhen which consists of product, price, place and promotion. There was a correlation with the selection of buy products online in all aspects with a low to high correlation and has a positive correlation direction statistically significant at the 0.05 level.

Keywords: Autonomous Vehicle, Shenzhen city

Research Background

Today's era has long since transitioned from the industrial period with its emphasis on manufacturing technology to become a digital economy. The inception of the digitalisation concept has been facilitated by the realisation of global interconnectivity. Consequently, the inception of the theory of digital transformation can be attributed to the year 1980, owing in part to the proliferation of personal computers. As hardware and software continue to advance

at an accelerated rate, digitalisation has progressively integrated itself into the forefront of socioeconomic transformation. The incorporation of data from personal mobile phones, computers, and other intelligent devices into people's daily lives and jobs commenced. As a result, nations across the globe are compelled to focus on the proliferation of advantages resulting from digitalisation as the war on information technology serves as an effective instrument for attaining national competitiveness in the realms of science and technology. Despite the fact that each nation lacks a precise definition of digital transformation and instead determines its own course of action based on national circumstances, this does not preclude nations from locating, developing, and formulating plans and documents to support their digital endeavours. The United States pioneered the introduction of the term "digital twins" in 2003; Germany and Japan subsequently adopted the term. The United States' approach is centred on advanced manufacturing sectors, including robotics in industry, cybersecurity, STEM (science, technology, engineering, and mathematics) education with a manufacturing focus, artificial intelligence, and ecosystems associated with cutting-edge technologies. In 2015, Made in China 2025 introduced the notion of digitisation tailored to the domestic economic framework, thereby positioning China marginally later. The objective, similar to that in the United States, is to enhance the nation's technological competitiveness through increased technological innovation and the realisation of technological scope expansion. Three documents—the National Internet Plus Action Plan, the National Informatisation Plan for the 13th Five-Year Plan, and the Internet Plus Action Plan—facilitated a swift societal transformation over the subsequent two years. The State Council Circular on the Issuance of the Development Strategy for the Construction of Digital China signifies the literal elevation of digital transformation to the level of national strategy, which is an extremely significant development.

Society's objectives, coupled with the evolution of national strategic planning priorities over time, have compelled China, and the automotive sector in particular, to pursue digitisation. The process has been restructured and reorganised as a result of digitisation, from R&D to fabrication. From an analogical standpoint, the autonomous vehicle faced significant pressure to

remain current in various aspects prior to the advent of digitalisation. For this reason, the automotive sector has been presented with substantial opportunities as a result of its digitisation. The autonomous vehicle has increased its technological innovation efforts in response to consumer demand for customization and intelligent services, multi-demand and multi-style, pre-sales and after-sales consulting services, and pricing. As a result, the market has become increasingly competitive, with all companies vying for a portion of the action. Car R&D is facing significant pressure to enhance R&D efficiency and reduce costs. In the manufacturing process, intelligent production scheduling is being pursued to replace the use of paper and pen, while the supply chain strives to achieve traceable data condensation. In the marketing process, omni-channel and digital malls are being implemented to form an intelligent service system. Few studies have examined the optimisation point for automotive enterprises in the context of digital transformation.

In accordance with the Carbon Summit and Carbon Neutral (Dual Carbon Plan), which are significant ecological initiatives, the automotive sector must advance rapidly in the directions of electrification, intelligence, internet connectivity, and sharing. In order to ensure the autonomous vehicle maintains a high standard of development, automotive companies must actively engage in the development of digital transformation while simultaneously leveraging their digital capabilities to nurture the skills and competencies that are in demand today. With this in mind, my aspiration is for this dissertation to commence by examining the manufacturing process as a whole within the autonomous vehicle. Subsequently, it should delve into certain prospects that digitalisation has already presented to the industry at any given moment. By doing so, it will furnish future researchers with a comprehensive foundation and established advancements against which to gauge their own investigations, while also furnishing a benchmark against which to draw comparisons when novel developments transpire in the future. Furthermore, I am intrigued to posit a hypothesis regarding the autonomous vehicle's prospective ability to adapt to evolving circumstances and sustain innovation-driven

optimisation, with the dual objectives of enhancing customer satisfaction and technological competitiveness.

1.2 Research Objective

1.2.1 To study demographic affecting to customer satisfaction in autonomous vehicle in Shenzhen.

1.2.2 To study the marketing mix factors affecting to customer satisfaction in autonomous vehicle in Shenzhen.

1.3 Research Scope

Summary of artificial intelligence

The concept of artificial intelligence (AI) has emerged as a significant catalyst for businesses, enabling them to integrate technology and business innovation. This integration empowers organisations to effectively navigate the challenges they encounter in the marketplace and transform them into a competitive advantage. artificial intelligence (AI) encompasses a wide range of industries and sectors, prompting numerous scholars worldwide to define the topic and engage in comprehensive research on its various facets. This phenomenon has played a significant role in the swift advancement of digital technology, hence increasing public consciousness regarding the effects of digitalisation and the imminent obstacles it presents. Due to the timeliness and extensive scope of the subject matter, numerous contemporary literature reviews on AI have undertaken the task of compiling and synthesising close to 1,000 scholarly publications. However, it is important to note that certain articles pertaining to this issue may have been inadvertently omitted due to constraints such as authors' time limitations and the specificity of their research focus.

Hence, the comprehensive examination of AI transformation poses challenges, necessitating the selection of the automotive sector within the manufacturing industry for a detailed research. This study will primarily focus on analysing the elements that influence the development of

both sectors as the central component of investigation. The examination of the fundamental reasons and obstacles of artificial intelligence in the automobile industry can be approached from a global standpoint, focusing on macro-level factors.

1.3.1 Content Scope

The implementation of artificial intelligence is the driving force behind the autonomous vehicle's evolution. Coordination of the emerging industrial ecology necessitates the capability to establish a global presence for state-owned new energy and artificial intelligence vehicles and to propel the manufacturing sector on an international scale. The successful reduction of specific technological obstacles in the realms of infrastructure, technology, industrial ecology, and cybersecurity is contingent upon comprehensive, pervasive digitalisation. This paper explores the divergence between the autonomous vehicle of today and its past self in terms of manufacturing. It also evaluates the reason why the traditional manufacturing society's emphasis on innovation within the autonomous vehicle. In summary, the digital era of today enables enterprises to accomplish various optimisation objectives, which are not confined to a specific process, product, or sector from an enterprise macro perspective, but rather encompass the entire industry. This article examines the ways in which artificial intelligence has empowered processes, decreased expenses, and increased productivity in the autonomous vehicle.

Artificial intelligence in the autonomous vehicle has evolving characteristics. Digital transformation, despite its vastly different technological advancements from those of the industrial revolution, continues to be a monumental revolution with the same objective as the industrial revolution: accelerating the development of customer experience technology. In order to remain current with the evolving demands of consumers in contemporary society, it is reasonable to anticipate that further significant transformations will be necessary in the future. In light of the present convergence of manufacturing and digitalisation, consider how automotive companies can make greater use of AI to foster innovation.

Independent:

Artificial intelligence is an emerging capability that has the potential to bolster development and survival in the digital age through the utilisation of data elements' potential, the alteration of entire production and way of life processes, the acceleration of business operations, and the capture of novel forms of value derived from reconstruction, creation, and delivery. Digitalisation enables conventional businesses to leverage digital innovation in order to enhance the efficacy of internal transformations, thereby transforming them into data-endogenous organisations from the outside. This emerging economic paradigm, which has been shaped by advancements in hardware and information technology, signifies the advent of the artificial intelligence in both society and industry.

1. Demographic

Studying the basics of consumers is paramount for companies making products, as they make products and pricing strategies to satisfy consumers and need to harvest customer trust to build a target demographic. Nowadays, automotive companies need to systematically use scientific methods to utilise and tag existing customer data to keep product iterations up to date. The construction of consumer profiles can guide product development. Demand analysis of the user's driving habits and posture can be used to develop personalised driving requirements that meet the needs of each type of customer, and also to identify brand new product features that are not being met. For different types of potential customers, user satisfaction can also be predicted to optimise marketing services to tap potential groups and reduce communication costs. The maintenance of user relationships can be properly analysed through the segmentation of user habits to create customised requirements adapted to users with different driving postures. Differentiate the different states of target users, such as gender, age and other divisions of user labels, to reach the deepest needs of consumers.

2. 7Ps theory

The marketing mix of 7Ps is based on the expansion of the 4Ps. 4Ps marketing theory was first proposed by E. Jerome McCarthy in 1960, and has since been widely used in modern corporate marketing practices. 4Ps include: products, prices, place and promotions. The 4Ps include: products, prices, place, promotions and strategies, which are called the controllable factors that can influence the marketing of a company. Mike Caesar (1981) recombined the 4Ps based on the theory and formed the 4Ps marketing strategy. It is mainly a means for companies to be able to flexibly adjust their sales policies. For example, through flexible pricing, promotional activities, maximum rebates and other countermeasures to stimulate consumption, improve sales and increase sales. Make the product from production to marketing process profit maximisation. Products and services are mainly from the point of view of the enterprise reverse thinking, the purpose of the product is to be able to solve what problems for consumers, from the problem-driven point of view of the design of product content. This reverse-led product thinking is reflected in product design, quality, performance, packaging and market positioning. Price is one of the most important reasons why consumers choose a product. Setting a pricing strategy for a product also requires a comparison with competitors to determine what product route to take. Promotional channels in the form of coupons, advertisements, social media, digital marketing, etc. reach out to the target customer base, and the feedback is used to adjust the marketing plan, increase service satisfaction of the existing customer base and stimulate more potential customers. Where the product needs to be sold is the problem of enterprises need to spend more time to do market research. 4P theory, Booms and Bitner in 1981 proposed to increase the three service factors, including people, packaging, process. people means not only refers to the customer and the customer, but also contains all the contact with the people. In the development of the sales team to create a good team, focusing on customer relationship management. Bright packaging and design can impress people who have no knowledge of the product, provide some valuable information or unusual design drawings can attract more customers. Process is to focus on the sales staff to make the product life cycle process more clear, which makes the sales staff quickly understand the process, so that they can focus more on serving customers.

The 7Ps marketing mix theory does not stand alone, but relies on the company's marketing strategy to be more valuable.

Dependent : customer satisfaction

Enterprises should pay attention to the interaction and dynamic change process between the enterprise and customers and related stakeholders. Using customer relationships and accumulated information labels, they can provide customised services to customers from the dimension of 7Ps to achieve customer satisfaction reach. This can maintain existing customer resources and also develop new user groups because of the brand effect.

The population sample of this study were consumers who purchased autonomous vehicle in Shenzhen, Guangdong Province, China.

The sample group in the study was consumers who have been following the autonomous vehicle for a long time or who have purchased over two cars.

Sample sizes were determined from Taro Yamane's formula (1973) at 95% confidence level and tolerances of 5% sample selection were accepted 400 total.

1.3.2 Time Range

November 1, 2023 to January 31, 2024

1.4 Definition of specific terms

Artificial technology, supply chain, value chain, digital twin technology, simulation technology, smart scheduling tools, meta-universe, cloud storage

1.4.1 the marketing mix is Digital whole-process control

such as Intelligent Outbound Marketing, Visualisation of factory scheduling, Artificial Driving, Intelligent Navigation, Intelligent Route Planning, Intelligent Supply Chain , Voice Recognition Control, Driving Behaviour Analysis, Data Analytics Prediction, Vehicle Remote Control, Intelligent Dispatch

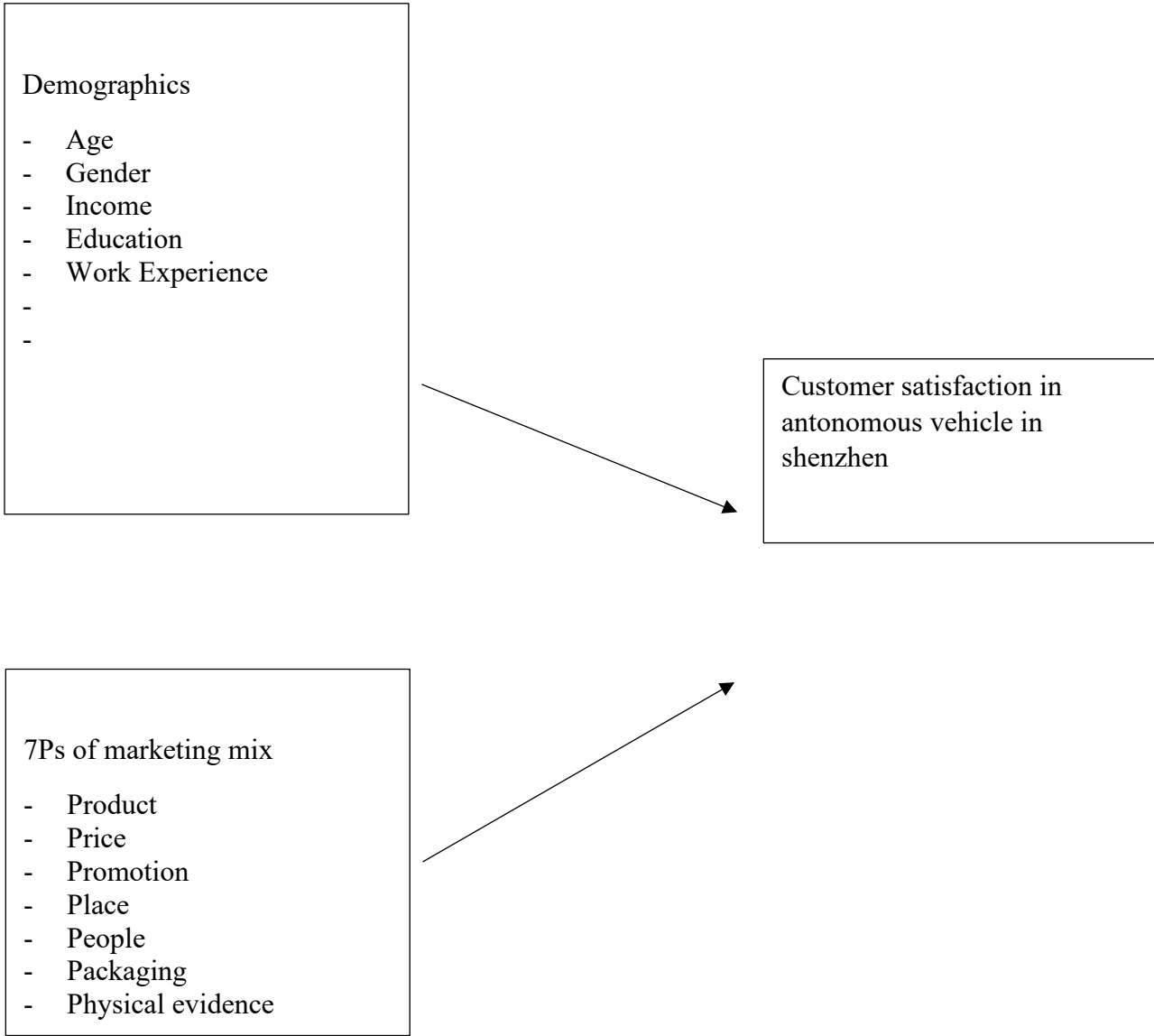
1. The product is Artificial Driving.

2. The price is 250000 RMB.

1.5 research framework

Independent variable

Dependent variable



Literature Review:

The topic in this research is analyze the drive and development of digital transformation in the Autonomous vehicle. Making the research results useful and achieving the established literature review is divided into 5 parts:

2.1 Theory of the demographic

2.2 Theory of the manufacturing mix factors

2.3 Theory of customer satisfaction

2.4 Scope of study

2.5 Related research

Research Methodology

The population studied in this study were customers in Shenzhen who purchased vehicle.

The sample group in the study was customers in Shenzhen who purchased vehicle.. Sample sizes were determined from Taro Yamane's formula (1973) at 95% confidence level and tolerances of 5% sample selection were accepted 405 total.

Formula $n = N/(1+Ne^2)$

When

n = number of samples

N = population

E = tolerance between the sample and the accepted population mean, set to 0.05.

Therefore, replace the value with the formula :

$$n = \frac{18730000}{1 + (18730000)(0.05)^2}$$

The number of samples n is 399.991458 \approx 400.

Research Tools

The study subject The influencing factors of consumer trust in food delivery business in China. By using a questionnaire to collect information from a sample as follows.

1. The general information of the interviewees is the senior management, middle management and grass-roots employees of Guangdong semiconductor listed companies;
2. The respondent's opinion is to evaluate the effectiveness of the company's human resources management activities. The Likert scale is used to divide them into five levels, namely 5=strongly agree, 4=agree, 3=neutral, 2=disagree, 1=strongly disagree.
3. Suggestions

Data Collection Methods

The data collected by the researchers in this study are as follows:

1. Collect the primary data of the questionnaire from the sample group.
2. Secondary data, researchers collect data from the study of relevant documents

The Statistics Used in Data Analysis

Descriptive statistics analysis. Questionnaire part 1 used the frequency, percentage, and mean and questionnaire part 2 used the mean and standard deviation to describe general information from the sample and analysis of opinion data, independent variables, and dependent variables.

In analyzing the data, the collected all scores to find the mean and the standard deviation of the sample based on the criteria by which the question is a rating scale, which is divided into 5 levels.

Conclusions

According to the data, the monthly salary of the respondents is concentrated between 15000+ and 8001-10000. In this income range, people care more about the product features of AI cars. Relying on the brand effect and influence of the product, and are more inclined to buy cars online. Price is not the most important influencing factor and there is no particular interest in the packaging and promotions of the car. For AI driving cars, consumers are more concerned about environmental protection and comfort.

The world's automotive industry is facing an unprecedented change and car companies are starting to develop transformation strategies driven by the digitalisation trend. Improving product quality and competitiveness and creating quality services to customers have become the key focus of the automotive industry. Digital transformation can bring new opportunities for car companies. Digital transformation is a new type of revolution based on the evolution of digital transformation, which promotes the technological and economic advancement of society as a whole and assists manufacturing companies in creating new value assets. Digital transforms the physical world into a digital model that describes the laws of the world. Automotive companies use models to help them develop new business models and technological competitiveness. The automotive industry has gradually shifted from a product-

centric model to a customer-centric, top-to-bottom digital transformation around the user's whole life centre, which is mainly embodied in the R&D end, production end and marketing end, creating a new model from "product" to "product+service". The new model of "product" to "product+service" has been created. Under the opportunity of digital transformation, AI car has gradually become a hot issue of social concern. The exploration of the theory of AI car is mainly based on customer satisfaction as a starting point, through the 7P theory of channel operation to expand the target point of demographic economics. Every ring and every stage of the AI car needs digitalisation, which has spawned scholars to carry out the root cause analysis of digital transformation.

The drivers of digital transformation of car companies are mainly attributed to four categories, policy, culture, economy, and technological development. This is closely related to consumers, enterprises and markets. Since the United States began to put forward the digital transformation to the present, there are constantly adapting to the situation of each country's policy has been put forward to support the transformation of enterprises and society, car companies as the first industry of manufacturing industry naturally also has a lot of relevant laws to support. The issue of adapting to the times and accelerating change has led to an influx of financial resources into the automotive industry. Culturally, more people are beginning to recognise the importance of making a difference. It is also clear that the rapid development of the economy and technology has led to a shift in consumer demand for personalised cars. People are paying more attention to detailing and the driving experience. For example, smart voice, embedded navigation, and technological look and feel. Cars have become a necessity for families, which has led to more time spent on designing and developing automotive products to gain consumer acceptance. Consumers are no longer satisfied with homogenised products and more and more demanding product demands are being made. Economically from 2018, the global economic macro growth rate fell back. The automobile market has changed from an incremental market to a stock market, and the market of traditional automobile companies is divided by new energy vehicles. The competition in the industry has intensified and the growth

trend of economic development has become slower and the competition in the industry has become more and more intense.

The most important reason that drives the automotive industry is technology. Currently, a new wave of digital technologies are being widely used in the automotive industry. For example, 5G, Big Data, Cloud Computing, Digital Twin, Artificial Intelligence, Big Models, Meta Universe, etc. are applied to various modules of the automotive industry. The whole process from development, design, production and marketing opens up the integration of traditional manufacturing and digitalisation. Technology as a fundamental competitiveness drives the continuous evolution of AI-driven cars, which is about to reshape the way the whole society gets around. Artificial Intelligence Driving actively chooses the opportunity of digital transformation because there can be a newer layer of innovation in management, supply chain, marketing, and product innovation. Digital transformation allows for greater internal harmony, more communication opportunities, and promotes more potential business opportunities and customer demographics as it builds competitiveness. For organisations, it can help automotive companies to identify real-time points of opportunity and also respond quickly to consumer needs. It can also lead the green concept as a major manufacturing industry to adapt to the globalisation policy. Internally, it can reduce costs and increase efficiency, and effectively and strategically adjust the focus of work. However, in the face of digital transformation, there are still some problems that need to be solved. For example, information security leads to excessive transparency, so that enterprises need to invest more costs in risk control, in addition to the need to take into account the protection of user privacy and security. The dynamic market requires car companies not only to keep up with the pace of the times, for the Chinese market also need to continue to make up the gap between other developed countries.

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