Consumer Adoption of Autonomous Vehicles in China: A Bibliometric Review of Intention Drivers and Perceptions

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***Abstract*—Autonomous vehicles (AVs) are playing an increasing role in digitally enabled transportation systems with the dramatic emergence of related technologies. Consumer adoption is arguably a key factor in the deployment of AVs in China. In this study, bibliometric analysis was used to explore intention drivers regarding consumer adoption of AVs and the role of consumer perception in the decision-making process from the perspective of Chinese consumers. The results revealed that consumer perception is a highly critical factor influencing the adoption of AVs. Moreover, most Chinese consumers were more sensitive to perceived losses than to gains. In addition, the main public focus was on highly intelligent shared AVs rather than family-use vehicles. These findings could help governments and enterprises gain a deeper understanding of consumer behavior in the Chinese market, which could be used as a reference for implementing measures to better accelerate the diffusion of AVs.**

Keywords*—Autonomous vehicles; diffusion of AVs; consumer adoption; consumer perception; Chinese market; bibliometric analysis

I. Introduction

Autonomous vehicles (AVs) have become regarded as one of the most active and promising innovations in the global market in recent years [1]. AVs are vehicles with the capability to guide themselves without human control [2]. The Society of Automotive Engineers (SAE) classifies autonomous vehicles into six distinct levels of driving automation, ranging from none to full automation. At Levels 4 and 5, these vehicles are driven almost entirely by AI, a process also known as unmanned driving [3]. Although AV-related industries and technologies are still developing and at their initial stage, the application of these vehicles is regarded as having considerable potential. Governments and the public believe these vehicles can perform successfully in promoting safety, reducing energy consumption, and improving traffic efficiency [4]. For example, the World Economic Forum (WEF) predicted that AVs would shape future urban mobility [5].

It is believed that China is experiencing one of the most rapid diffusion of AVs worldwide, with the expectation being that around 250,000 AVs equipped with Level 4 intelligence will be sold in 2034 [6]. Undoubtedly, consumer adoption is an important variable influencing this diffusion. Scholars have found that consumer adoption of AVs is driven by several factors. However, these factors may vary across cultures, market conditions, and policies. For example, studies in the USA found that environmental concerns, safety concerns, and costs contributed most to consumer attitudes towards AVs [7]. Therefore, to accelerate the diffusion of AVs in China, this study aims to identify the factors influencing consumer adoption intention and the perception-driven decision-making mechanisms behind AV adoption.

Although the Chinese AV market has attracted extensive academic research, this has primarily focused on technology development. Relatively few articles have conducted literature reviews from the perspective of consumers. Thus, the current study can bridge this gap and help determine what consumers are thinking and pursuing, as well as what they hate. It could also provide practical methods to accelerate the diffusion of this technology in China.

This study is organized as follows: In Section II, the development status of the Chinese AV market, consumer adoption intention, factors influencing consumer intention, and decision-making mechanisms involving consumer perception are presented based on the existing literature. The research questions of this study are then proposed. In Section III, the research methodology, data sources, search strategies, and screening and inclusion criteria are introduced. In Section IV and Section V, the results of two bibliometric analyses on factors influencing consumer intention to adopt AVs and consumer perception of AVs are presented and discussed. In Section VI, conclusions and implications are provided.

II. Literature Review and Research Questions

A. Development of Autonomous Vehicles in China

In 2019, McKinsey & Company [8] predicted that China would likely become the world's largest autonomous vehicle market and that two trillion dollars would have been generated in this market by 2040.

In the timeline formulated by McKinsey for the Chinese autonomous vehicle market, the adoption of Level 4 AV technology would start in 2027. In reality, this market has developed at a speed exceeding McKinsey's expectations. In 2024, China embarked on numerous pilot programs involving unmanned buses and taxis equipped with Level 4 intelligence [9].

Apart from its application in shared mobility, the automation of passenger vehicles is transitioning from Level 2

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(partial automation) to Level 3+ (conditional automation). According to a Counterpoint report in 2024 [10], China is going to become the primary driver in enhancing machine intelligence levels, with the number of its Level 3 passenger vehicles expected to exceed one million by 2026.

In the field of logistics, the unmanned delivery business in China is developing rapidly. During the Double 11 Shopping Festival in 2023, unmanned delivery vehicles equipped with L4 autonomous driving technology were introduced in multiple cities, such as Hangzhou, delivering around 800 parcels per car each day [11].

Based on a Renub Research report in 2025 [12], the Chinese autonomous vehicle industry is exhibiting a rapidly upward trend. In 2024, the AV market size reached 17.23 billion dollars. With a CAGR of 29.01%, it is predicted that the market size will increase to 170.57 billion dollars by 2033, as shown in Fig. 1.

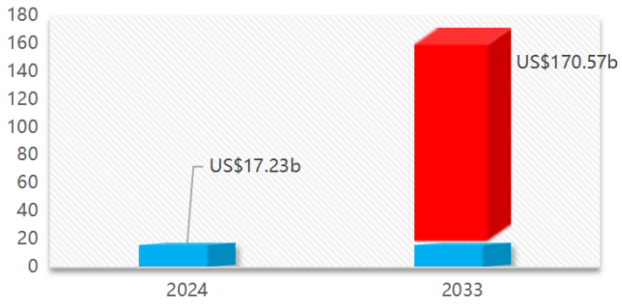

Fig. 1. Market size of autonomous vehicles in China (source: Renub Research).

B. Consumer Adoption Intention in the Chinese AV Market

Since autonomous vehicles are not yet widespread, it is challenging to obtain accurate and continuous data about the adoption intentions of consumers. However, by utilizing various commercial marketing company reports, it is possible to gain a basic understanding of consumers' attitudes in China.

Ipsos surveys from 2018 to 2022 [13], [14] demonstrated an obvious trend of increasing acceptance of autonomous vehicles in Asian countries compared to Western countries. Set against the global average, Chinese people have a higher intention to adopt autonomous vehicles. However, this intention is not exhibiting a significant upward trend.

According to these reports, the percentage of consumers in China who were willing to buy autonomous vehicles rose slightly from 46% to 51% between 2018 and 2022. This phenomenon is not an isolated case across Asia. In Malaysia, the proportion was 48% in 2018, so this country ranked second among all those surveyed. However, in 2020, only 47% of Malaysians believed that AVs would be a part of everyday life [15], as shown in Fig. 2.

C. Factors Influencing Consumer Intention to Adopt AVs

Market expectations appear to be far greater than the speed at which consumer willingness is increasing. Therefore, certain reasons must be limiting the growth of consumer adoption of AVs in China. Scholars have found that consumer adoption of AVs is influenced by many factors, including internal and external aspects.

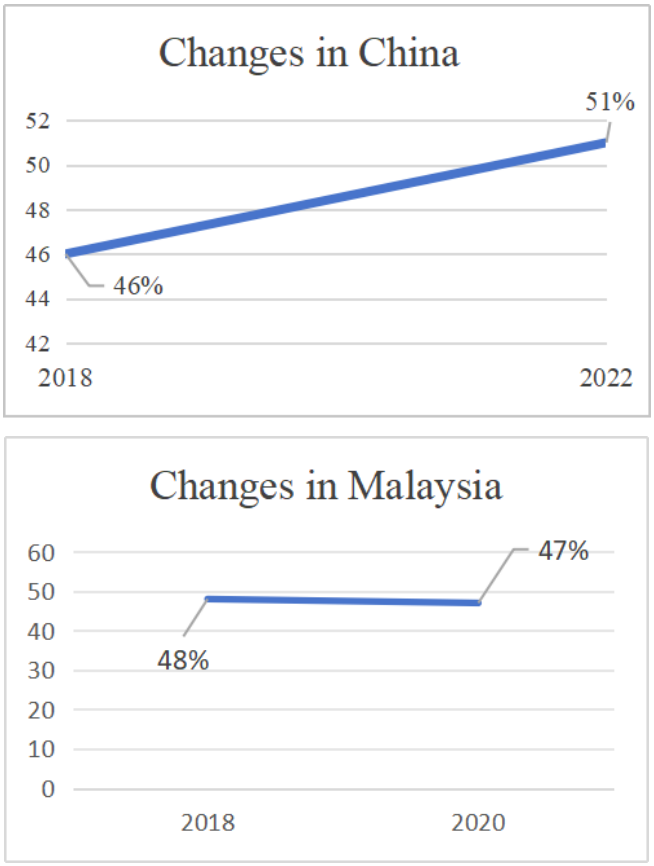

Fig. 2. Changes of intention in China and Malaysia (Source: Ipsos).

Topol š ek, Babić, Babić, and Cvahte Ojster š ek [16] revealed that the widespread adoption of autonomous vehicles was inevitable. Their research suggested that a series of factors influence consumer adoption intention of AVs, including safety, age, education levels, social influence, and consumer perceptions. Jing, Xu, Chen, Shi, and Zhan [17] investigated and compared the status of Europe and Asia, discovering that 13 factors, such as safety, influence acceptance of autonomous vehicles. On the other hand, Islam, Abdel-Aty, Lee, Wu, Yue, and Cai [18] showed that demographic traits appear to have no significant effect on consumer adoption intentions related to AVs.

A series of studies have revealed that consumer perception can explain how consumers make adoption decisions in the autonomous vehicle market. Chikaraishi, Khan, Yasuda, and Fujiwara [19] conducted a survey of public perceptions of AVs in Japan, finding that residents cared significantly more about perceived gains rather than losses in this market. This perception mechanism had obviously influenced AV acceptance in Japan. Meanwhile, Cai and Xiong [20] focused on AV-related privacy issues, revealing that when consumers faced these issues, they usually made a trade-off between perceived safety and perceived privacy risk. The scholars discovered that if consumers believed they were sharing data to improve safety, they would perceive more benefits than risks.

D. Decision-Making Mechanism with Consumer Perception

Scholars have developed a series of theories to explain the decision-making mechanisms with perceptions. Perceived Value Theory explores how humans determine their behavior based on the perceived value of goods or services, which is influenced by perceived gains and costs [21]. Bauer proposed Perceived Risk Theory, whose core idea is that any purchasing behavior involves uncertainty that makes consumers feel negatively, such as experiencing anxiety, worry, or discomfort, because individuals cannot predict the consequences of their decisions [22]. This theory focuses on the negative perceptions of consumers and how they function. The Value Acceptance Model (VAM) proposed by Kim, Chan, and Gupta clearly explains the decision-making mechanism as a trade-off between positive and negative perceptions. Its core concept is perceived value, which is determined by positive and negative perceptions [23], as shown in Fig. 3. These have been classified as perceived benefits and perceived sacrifices. The former include usefulness and enjoyment, while the latter include technicalities and fees.

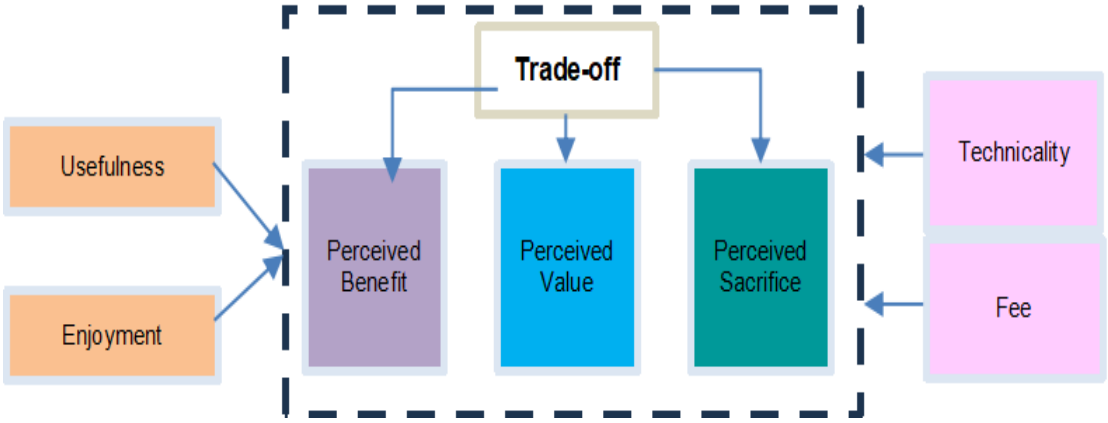

Fig. 3. Schematic representation of the VAM model.

To discover the decision-making mechanism of Chinese consumers in regard to autonomous vehicles, a deeper understanding of their perceptions is necessary. To explore the perceptions of these consumers, a bibliometric analysis was conducted.

E. Contributions of the Paper and Research Questions

The objectives of this study are to identify the intention of drivers regarding consumer adoption of AVs and understand the decision-making mechanisms behind AV adoption in China from the perspective of consumer perceptions, which would be achieved through bibliometric analysis. The study should enhance the understanding of Chinese consumer behavior within the government and enterprises, which can then propose better strategies to accelerate the diffusion of AVs.

Based on the research objective, the following research questions were proposed:

- What factors influence consumer intention to adopt AVs in China?
- In China, what are the consumer perceptions of autonomous vehicles?
- How can these perceptions influence the decision-making process of consumers?

III. Methodology

To determine the influencing factors of adoption intention and consumer perceptions of AVs in China, two bibliometric analyses were conducted using Bibliometrix [24].

A. Sources and Search Strategy

The data for both studies were extracted from the SCOPUS and IEEE Xplore databases, covering a 10-year period from 2016 to 2025. The following search keywords and rules were established for use in SCOPUS and IEEE Xplore, as shown in Fig. 4 and Fig. 5 for the two bibliometric analyses. The search string and keywords from Fig. 4 were applied to the bibliometric analysis of factors influencing consumer intention to adopt AVs in China; likewise, the search string and keywords from Fig. 5 were applied to the bibliometric analysis of consumer perception of AVs.

Database: Scopus

Search: (TITLE-ABS-KEY("autonomous vehicle*") OR (TITLE-ABS-KEY("autonomous car*") OR TITLE-ABS-KEY("driveless vehicle*") OR TITLE-ABS-KEY("driveless car*") OR TITLE-ABS-KEY("self-driving vehicle*") OR TITLE-ABS-KEY("self-driving car*")) AND (TITLE-ABS-KEY(intention) OR TITLE-ABS-KEY(will*) OR TITLE-ABS-KEY(accept*) OR TITLE-ABS-KEY(deci*))AND (TITLE-ABS-KEY("factor*") OR TITLE-ABS-KEY(influen*)) AND (TITLE-ABS-KEY(China) OR TITLE-ABS-KEY(Chinese) OR AFFILCOUNTRY(China)))

Database: IEEE Xplore

Search: ("All Metadata":China OR "All Metadata":Chinese) AND ("Abstract":"autonomous vehicle" OR "Abstract":"autonomous vehicles" OR "Abstract": "autonomous car" OR "Abstract":"autonomous cars" OR "Abstract": "self-driving vehicle" OR "Abstract":"self-driving vehicles" OR "Abstract": "self-driving car" OR "Abstract":"self-driving cars" OR "Abstract": "driverless vehicle" OR "Abstract":"driverless vehicles" OR "Abstract": "driverless car" OR "Abstract":"driverless cars" OR "Abstract": "unmanned vehicle" OR "Abstract":"unmanned vehicles" OR "Abstract": "unmanned car" OR "Abstract":"unmanned cars") AND ("Abstract":intention OR "Abstract":intentions OR "Abstract":willingness OR "Abstract":will OR "Abstract":accept OR "Abstract":acceptance OR "Abstract":decision OR "Abstract":decisions OR "Abstract":decide OR "Abstract":adoption OR "Abstract":adopt) AND ("Abstract":factor OR "Abstract":factors OR "Abstract":influence OR "Abstract":influences OR "Abstract":influencing)

Fig. 4. Search keywords and rules in databases for factors influencing intention to adopt AVs

Database: Scopus

Search: (TITLE-ABS-KEY ("autonomous vehicle*") OR (TITLE-ABS-KEY ("autonomous car*") OR TITLE-ABS-KEY ("driveless vehicle*") OR TITLE-ABS-KEY ("driveless car*") OR TITLE-ABS-KEY ("self-driving vehicle*") OR TITLE-ABS-KEY ("self-driving car*")) AND (TITLE-ABS-KEY (perceive*) OR TITLE-ABS-KEY (perception*)) AND (TITLE-ABS-KEY (user*) OR TITLE-ABS-KEY (consume*) OR TITLE-ABS-KEY (customer*) OR TITLE-ABS-KEY (driver*) OR TITLE-ABS-KEY (passenger*) OR TITLE-ABS-KEY (public*)) AND (TITLE-ABS-KEY (china) OR TITLE-ABS-KEY (chinese) OR AFFILCOUNTRY (china)))

Database: IEEE Xplore

Search: ("All Metadata":China OR "All Metadata":Chinese) AND ("Abstract":perception OR "Abstract":perceptions OR "Abstract":perceive OR "Abstract":perceived OR "Abstract":perceives) AND ("Abstract":user OR "Abstract":users OR "Abstract":consumer OR "Abstract":consumers OR "Abstract":customer OR "Abstract":customers OR "Abstract": driver OR "Abstract":drivers OR "Abstract":passenger OR "Abstract":passengers OR "Abstract":public) AND ("Abstract":"autonomous vehicle" OR "Abstract":"autonomous vehicles" OR "Abstract":"autonomous car" OR "Abstract":"autonomous cars" OR "Abstract": "self-driving vehicle" OR "Abstract":"self-driving vehicles" OR "Abstract":"self-driving car" OR "Abstract":"self-driving cars" OR "Abstract": "driverless vehicle" OR "Abstract":"driverless vehicles" OR "Abstract":"driverless car" OR "Abstract":"driverless cars")

Fig. 5. Search keywords and rules in databases for consumer perception.

B. Screening and Inclusion Criteria

To ensure the selected literature focused specifically on: 1) factors influencing consumer adoption intention regarding AVs and 2) consumer perceptions, with all the studies conducted in the Chinese context, the PRISMA model was employed for systematic literature screening. The final analysis included 107 and 87 qualified publications for Study 1 and Study 2, respectively.

C. Process for Extracting Records from Databases for Study 1

Initial searches yielded 1,027 publications, with 800 from SCOPUS and 227 from IEEE Xplore. To perform a preliminary screening of the literature, restrictions were applied based on the publication year, research area, document type, and language. Only studies published in English between 2016 and 2025 and within specific document types were included. Similarly, by limiting the research areas, studies that were highly relevant to the review topic were included. According to the inclusion criteria, the number of studies was 661 from SCOPUS and 192 from IEEE Xplore. The process and results are shown in Table I.

TABLE I. PRELIMINARY SCREENING OF LITERATURE FOR STUDY 1

Filter	SCOPUS	IEEE Xplore
Publication Year	2016-2025 (n = 800)	2016-2025 (n = 227)
Research Area	Computer science; Social sciences; Engineering; Business, Management and accounting; Decision sciences; Economics, econometrics and finance; Psychology (n = 744)	Autonomous Vehicles; Human Drivers; Self-driving; Automated Vehicles (n = 192)
Document Type	Article; Conference paper; Review; Book chapter (n = 739)	Journals ; Conferences; Early Access Articles; Magazines (n = 192)
Language	English (n = 661)	English (n = 192)

To further filter out less appropriate literature, the preferred reporting items for systematic reviews and meta-analyses (PRISMA) model was employed, the process of which is shown in Fig. 6.

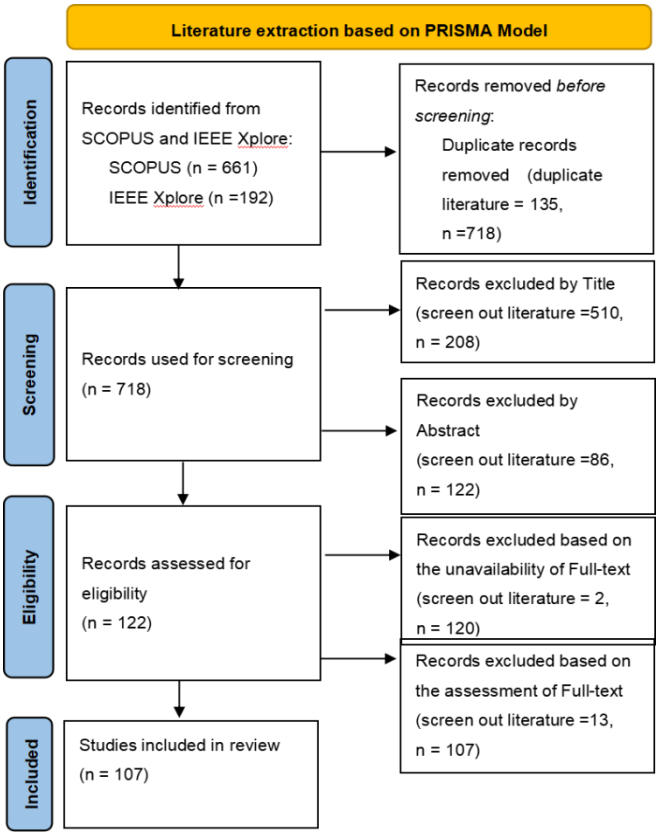

Fig. 6. Literature extraction based on PRISMA model for Study 1.

In the PRISMA Model, there were three crucial stages: identification, screening, and eligibility. At the identification stage, the records were imported into Zotero for identifying duplicate records. During the screening stage, the titles and abstracts of these studies were reviewed. Those that were not highly relevant to the review topic were excluded. At the eligibility stage, based on a full-text review, the studies were assessed. The studies of high quality were included.

After the screening process, 107 studies were selected and included in the subsequent analysis. Conducted over the past 10 years, they focused on factors influencing Chinese consumer adoption intention regarding autonomous vehicles.

D. Process for Extracting Records from Databases for Study 2

Initial searches yielded 890 publications (753 from SCOPUS and 137 from IEEE Xplore). Based on the publication year, research area, document type, and language, the literature was subjected to preliminary screening. We included studies published in English between 2016 and 2025 and within specific document types. Likewise, we selected studies highly relevant to the review topic by applying restrictions on research area. According to these inclusion criteria, 627 studies from SCOPUS and 123 from IEEE Xplore were selected. The process and results are shown in Table II. The PRISMA model was utilized to further screen for appropriate literature, with the process shown in Fig. 7.

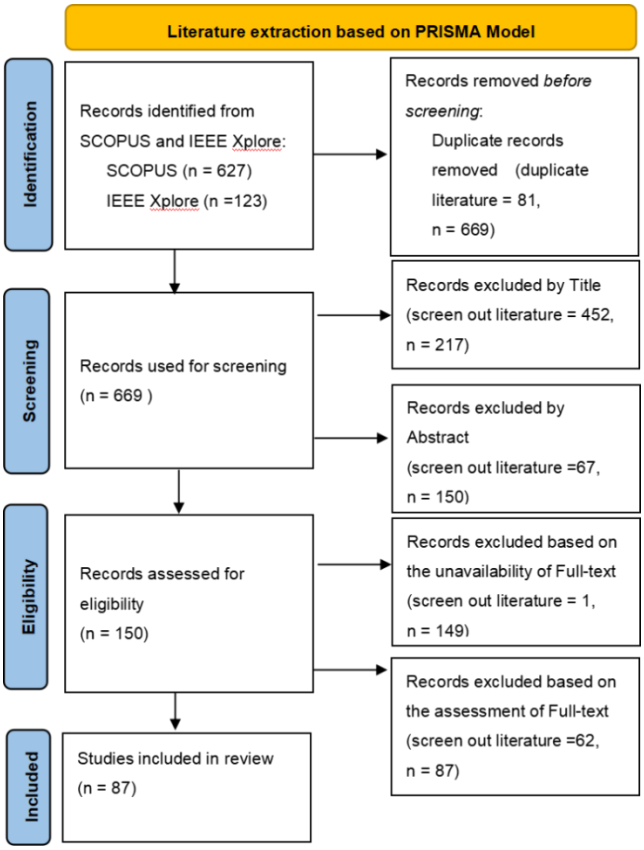

Fig. 7. Literature extraction based on PRISMA model for Study 2.

The studies were selected through three phases: identification, screening, and eligibility. At the identification stage, 750 records were imported into Zotero, and the duplicate records were excluded. During the screening stage, we reviewed the titles and abstracts of these studies and excluded those that were not highly relevant to the review topic. During the eligibility phase, we assessed the quality of these studies based on a full-text review.

After filtering, 87 studies were included in the following analysis. Conducted over a decade, they focused on Chinese consumers' perceptions of autonomous vehicles.

TABLE II. PRELIMINARY SCREENING OF LITERATURE FOR STUDY 2

Filter	SCOPUS	IEEE Xplore
Publication Year	2016-2025 (n = 753)	2016-2025 (n =137)
Research Area	Computer science; Engineering;social sciences; Business, management and accounting; Decision sciences; Economics, econometrics and finance; Psychology Neuroscience (n = 717)	Autonomous Vehicles;Human Drivers;Self-driving;Automated Vehicles(n = 124)
Document Type	Article; Conference paper; book chapter (n =684)	Journals ; Conferences; Early Access Articles; Magazines (n = 123)
Language	English (n = 627)	English (n =123)

IV. BIBLIOMETRIC ANALYSIS: FACTORS INFLUENCING CONSUMER INTENTION TO ADOPT AVS

A. Word Frequency Analysis

Table III shows the frequency and ranking of keywords related to the factors influencing the intention to adopt AVs in the existing literature. According to the results, perception plays a crucial role in influencing consumer adoption intention. The keywords related to perception appear more than 20 times, especially “perceived risk”, which is mentioned 10 times.

The high academic attention devoted to shared autonomous vehicles in China (related concepts were mentioned 13 times, as shown in Table III) demonstrates that consumers have begun to try specific categories of AVs.

The intelligence level of AVs, which is decided by the artificial intelligence with which a car is equipped, proved to be a key factor in consumer adoption intention (“highly autonomous vehicle” appears five times and “artificial intelligence” appears three times). However, AI is not merely a promoting factor in the consumer decision-making mechanism. On the one hand, it can improve consumers’ interest in AVs by making these vehicles smarter and more useful; on the other hand, Chinese consumers are concerned about the effects of anthropomorphism, which may confirm the existence of the uncanny valley theory [24], [26] in the field of autonomous vehicles.

TABLE III. MOST FREQUENT KEYWORDS RELATED TO INFLUENCING FACTORS FOR ADOPTION INTENTION

Words	Occurrences
Shared autonomous vehicle	13
Perceived risk	10
trust	8
Perceived safety	6
Highly autonomous vehicle	5
Perceived value	5
Artificial intelligence	3
Anthropomorphic	2
Covid-19	2
Culture and psychology	2
Mass media	2
Perception	2
Safety	2
Self-efficacy	2
Social influence	2

To increase the intention to adopt AVs among Chinese consumers, internal factors such as building trust (“trust” appeared eight times) and improving self-efficacy (“self-efficacy” was mentioned twice) are very important.

External factors also play an important role. The adoption intention regarding AVs can change due to specific situations, such as the COVID-19 pandemic. Moreover, Chinese culture and psychology, publicity from mass media, and social

influence considerations can influence consumers' behaviors toward AVs.

B. Trend Topic Analysis

According to the changing research trends on topics related to influencing factors shown in Fig. 8, consumer perception emerged as the most extensively researched topic in recent studies examining factors influencing consumer intentions, especially in relation to perceived risk, value, and safety.

Shared autonomous vehicles maintained high popularity and peaked in 2023, but they showed a declining trend in the following year. In contrast, discussions about highly autonomous vehicles have been steadily gaining momentum. This might be a result of recent large-scale pilots of Level 4 autonomous public transportation systems, which have helped change AVs from a concept to reality in consumers' cognition. Many forms of shared autonomous vehicles in China have high intelligence, such as unmanned buses, unmanned taxis and shared school buses. Due to their capacity to reduce driver costs and parking demands, these options are predicted to become the main transportation modes of the future [25].

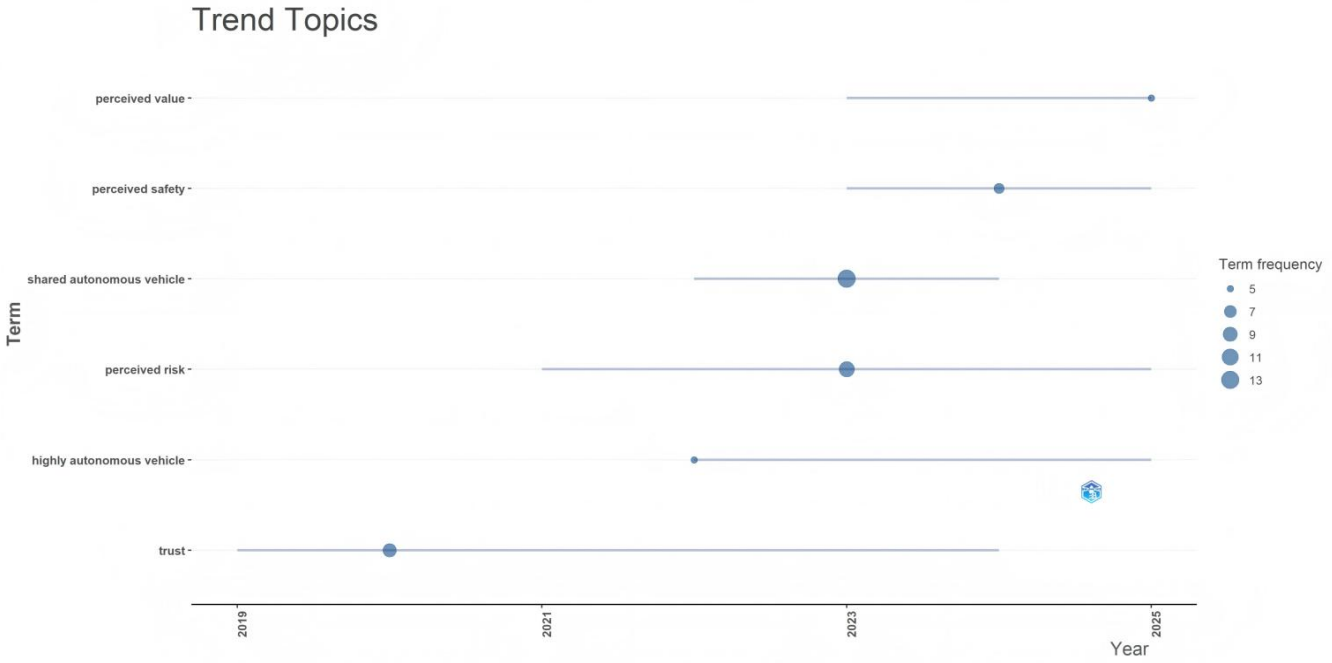

Fig. 8. Trend topics of influencing factors for adoption intention.

V. Bibliometric Analysis: Consumer Perception of AVs

A. Word Cloud Analysis

Fig. 9 shows that for articles related to China published between 2016 and 2025, a large number of consumers' perceptions were related to perceived risk. Words like "perceived usefulness" and "perceived benefit" are also mentioned frequently, according to Fig. 9, but at significantly lower frequency than "perceived risk". The figure also reveals that perceived safety is the category considered most among all the perception dimensions.

The Word Cloud Analysis of keywords also reveals that both internal and external factors are correlated with perceptions. From the perspective of internal factors, attitudes, trust, and demographic characteristics (terms such as 'female,' 'male', and 'adult') contribute the most. From the perspective of external factors, the most important roles are played by social media, as well as economic and social impacts.

Fig. 9 also indicates that current academic research mainly relies on surveys and questionnaires as research tools.

B. Frequency of Words over Time

To better explore how Chinese consumers make decisions based on perceptions, the synonym tool in the Bibliometrix was used to categorize keywords by theme. Frequency analysis over time was conducted related to consumer perceptions in the Chinese autonomous vehicle market, as shown in Fig. 10. This study grouped words about negative factors (like "perceived risk", "perceived cost", and "perceived loss") as "perceived loss", while positive words (like "perceived benefit", "perceived usefulness", and "perceived gain") were grouped as "perceived gain".

This analysis demonstrates a clear relationship between perceived gain and perceived loss. Although the frequencies of these two concepts were close to each other in 2018, they indicated different trends thereafter. The cumulative occurrence of "perceived gain" remained stable from 2020, while that of "perceived loss" obviously increased during the same period, surpassing that of "perceived gain" in 2022. Perceived safety, as the most-frequently considered dimension of perceptions, also revealed a significant upward trend since 2020, surpassing "perceived gain" in 2024.

Fig. 9. Word cloud of keywords related to consumer perception.

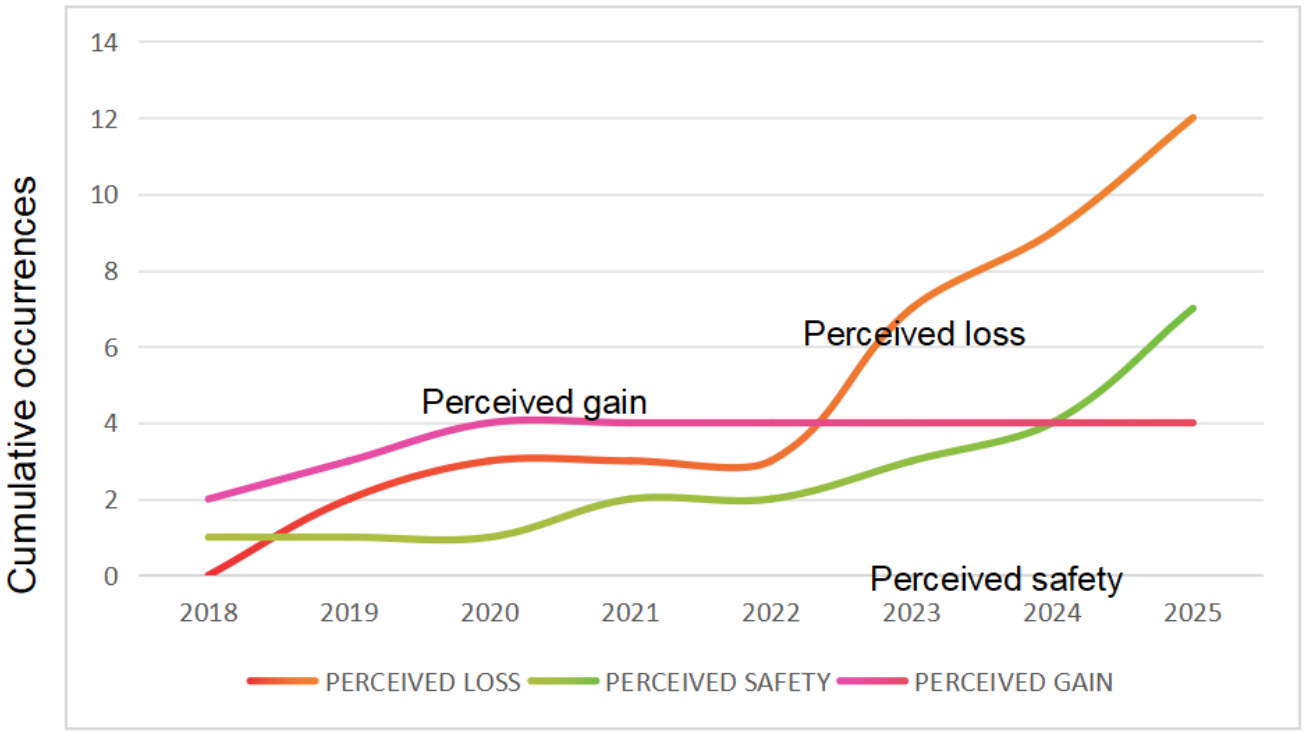

Fig. 10. Keywords' frequency over time related to consumer perception.

C. *Keyword Co-occurrence Network*

Fig. 11 shows a co-occurrence network related to Chinese consumers' perceptions of the autonomous vehicle market. On the one hand, it demonstrates strong relationships among perceived loss, perceived safety, traffic accidents, and demographic characteristics. The results suggest that Chinese residents, including different gender and age groups (female, male, young adults, middle-aged adults, and aged people), are more concerned about traffic risks caused by AVs than the safety they bring. This result is also an evidence proving that Chinese consumers are more sensitive to losses than to gains.

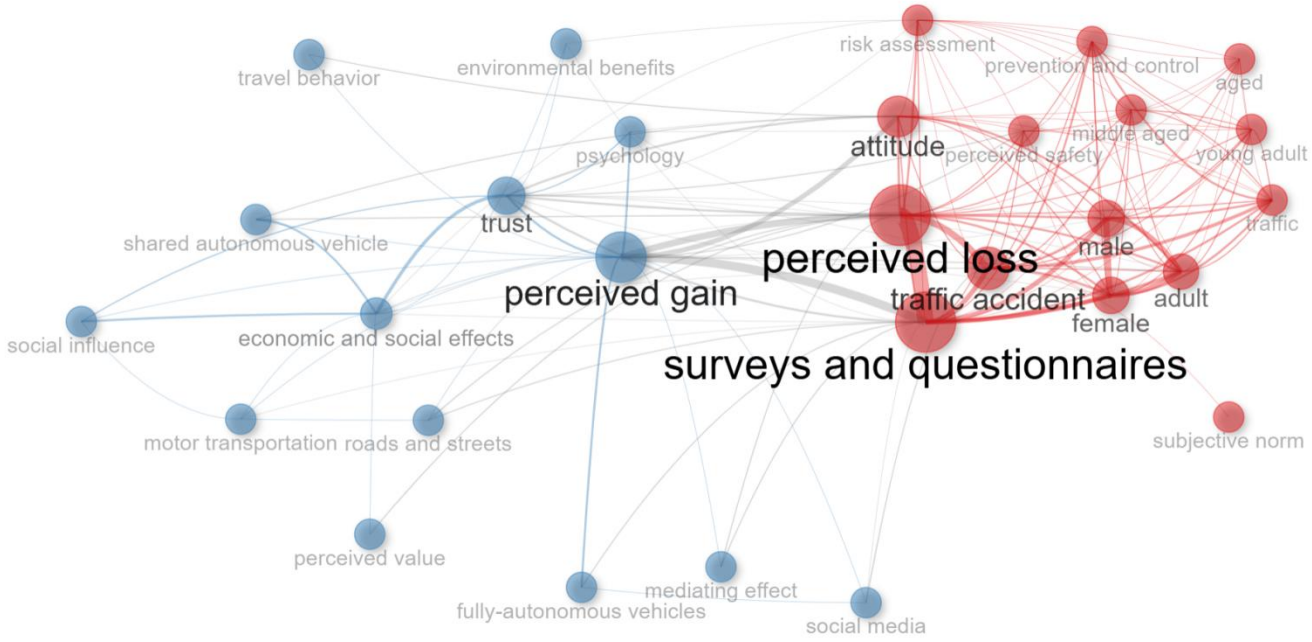

Fig. 11. Co-occurrence network related to consumer perception.

Furthermore, Fig. 11 shows that perceived gain has deep connections with economic and social effects, environmental benefits, and social influence in China. The term "share autonomous vehicle" is also in this category. This means that Chinese consumers develop more positive perceptions if they believe that, first, AVs can benefit society and the environment and, second, that taking shared autonomous vehicles is a reasonable and attractive option.

VI. Conclusion and Implications

In conclusion, the study has resolved all the research questions and demonstrates several points.

Through bibliometric analysis, numerous factors were found to influence Chinese consumers' adoption intention regarding AVs, including perception, intelligence level, trust, and certain external factors. Consumer perception seems the most important factor. The subsequent bibliometric analysis indicated the perception mechanism of Chinese consumers. The results showed that they judged perceived loss to be more serious than perceived gain. These consumers also showed significant concerns about perceived safety and the influence of AVs on both society and the environment.

Theoretically, this study systematically integrates literature on consumer adoption of AVs in the specific area of China, thus bridging a knowledge gap. In practical terms, this study can improve how governments and enterprises understand the behaviors and decision-making mechanisms of Chinese consumers in the autonomous vehicle market, thereby accelerating the diffusion of autonomous vehicle technology.

By reviewing the existing literature, we have identified the main trends and significant research gaps in the autonomous vehicle field in China.

First, there is a strong focus on shared autonomous vehicles. As one of the crucial application scenarios of AVs, it has received significant academic attention. However, based on the diffusion of innovation theory, purchasing and owning private AVs are also vital factors influencing the development of the Chinese AV market. Moreover, there is a need to expand the use cases for shared autonomous vehicles, not limited to school buses or robo-taxis.

Second, most empirical methods and tools for measuring consumer perceptions remain surveys and questionnaires. However, overreliance on this method could introduce biases, such as self-report bias, intention-behavior gap, and social desirability bias. Higher quality scales need to be developed, and additional empirical methods need to be applied in this field.

This study proposes that future research should expand the application scenarios of AVs, especially for private AVs and use cases for shared AVs, such as applications in rural areas. Additionally, other empirical methods, such as longitudinal studies and mixed methods, should also be used in this area to reduce bias.

Due to the limitations caused by the brief development duration of the autonomous vehicle industry and the geographical scope of this research, the number of documents included in the two bibliometric analyses were relatively small. Future research will aim to add other relevant documents, such as government reports, to provide stronger support for the conclusions. Additionally, empirical methods will be used to strengthen the conclusions in the future.

Acknowledgment

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