

Literature Review on Purchase Intention of Battery Electric Vehicles and Consumer Innovativeness

Qi Qiu^{1,4}, Ai Chin Thoo² and Zijuan Zhan^{3,4}

^{1,2,3}Faculty of Management, Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor, Malaysia, ⁴Business School, Jiangxi Institute of Fashion Technology, Nanchang, Jiangxi, China
Corresponding Author Email: qiuqi@graduate.utm.my

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Abstract

In recent years, battery electric vehicles has seen a sharp increase in both production and sales. Expansion of battery electric vehicles market will still be negatively impacted by range anxiety, charging anxiety, and safety anxiety. Therefore, it is important to spread knowledge about vehicles innovation and pay attention to customer innovativeness. However, just a few research have looked into how consumer innovativeness may influence consumers' market purchasing intentions. This study uses the content analysis method to analyze the articles related to the purchase intention of battery electric vehicles and consumer innovation from 2014 to 2023, determines the impact of consumer innovation on purchase intention, and finds that consumer innovation can be used as a key factor in predicting consumers' purchase intention of battery electric vehicles. The findings will aid in the government's and the automotive industry's understanding of the crucial part that consumer innovation plays in consumers' intentions to purchase battery electric vehicles. This study will also present helpful consumer-friendly insights for the market development of battery electric vehicles in order to achieve a seamless transition from fuel vehicles to electric vehicles.

Keywords: Purchase Intention, Battery Electric Vehicles, Consumer Innovativeness

Introduction

In recent decades, the shift of the transportation sector to a low-carbon path has intensified due to growing worries about climate change and energy scarcity. Electric vehicles (EVs) are seen as the leading trend in the future of the transportation industry. The market for such vehicles consists of battery electric vehicles (BEVs), plug-in hybrid electric vehicles (PHEVs), and other vehicles. The majority of the market share is held by BEVs (Lin & Wu, 2018). BEVs are vehicles that work on batteries and represent an emerging technological development that reduce CO₂ emissions and bring certain economic benefits (Schmalfuß et al., 2017). Furthermore, Lin and Shi (2022) has shown that the global need to control air pollution and achieve a low carbon transition from traditional vehicles to electric vehicles a critical step.

In order to promote the promotion of BEVs, this study aims to determine the purchase intention of battery electric vehicles and the impact of consumer innovativeness. Additionally, this paper also focuses on the relationship between consumer innovativeness and purchase intention of BEVs, and puts forward future research directions.

Literature Review

Purchase Intention of Battery Electric Vehicles

Purchase intention, which refers to customers' subjective tendencies toward a certain product, has also been demonstrated to be a key indication of consumer purchasing behavior (Chen et al., 2021; Hill et al., 1977; Ariffin et al., 2018; Kumar et al., 2017; Lu et al., 2016). Consumer purchase intention, as a fundamental element of consumer behavior, profoundly expresses whether a person is keen on a particular product, it is only a psychological awareness (Purwianti & Niawati, 2022). Moreover, purchase intention also affects consumers' action purchase decisions (Kumar et al., 2023; Sahu et al., 2020; Verma & Dewani, 2021).

Nowadays, many people are interested in green products. The main reason for this is that green products are more environmentally friendly than conventional or competitive products in production, use and end of life (Marcon et al., 2022). Moreover, green products satisfy intrinsic customer benefits while being perceived as less harmful to the environment, and green purchasing intentions will be seen as the driving force behind green behaviors (Sharma et al., 2022). When consumers buy products, consumers' green purchasing intentions lead to prioritizing green products (Moslehpour et al., 2022).

However, purchase green product is also viewed as a social dilemma that arises when customers make decisions because it may cause consumers inconvenience and expensive expenses (Fornara et al., 2016; Sun et al., 2022b). For example, along with the benefits of preserving energy security and lowering carbon emissions (Li et al., 2021b; Li et al., 2022), electric vehicles will also present challenges for consumers, including cruising range, slow charging, and high costs (Li et al., 2023).

That is why not all countries have a high level of consumer purchase intention on battery electric vehicles. Khan et al. (2020) illustrated that although Japan has a well-established hydrogen fuel cell vehicle technology, Japanese consumers prefer conventional vehicles. Buhmann and Criado (2023) shows that reputation-driven consumers in Spain believe that they are willing to purchase an electric vehicle only under high prices, due to the expensive purchase of BEVs is considered a status symbol. On the contrary, sales of electric vehicles are rising in various nations, including China, the United States, Norway, Germany (Brinkmann & Bhatiasevi, 2021).

Consumer Innovativeness

Midgley and Dowling (1978) shows that individual innovativeness mainly refers to individuals who adopt new products on their own and make creative selections without external influence (Zhang et al., 2020). Similarly, some scholars argue that consumer innovativeness refers to the intention of consumers to be willing to buy new and unique products, rather than always following past product choices or purchasing behaviors (Jørgensen et al., 2022; Siraj et al., 2022; Testa et al., 2020).

In addition, some scholars divide consumer change into different dimensions. For example, Li et al (2021a); Li et al (2021b) are divided into hedonist innovativeness and social innovativeness; Hwang et al (2020); Hwang et al (2019) believe that consumer innovativeness

motivation is function, hedonic, cognitive, social. The hedonist innovation reflects the willingness of consumers to take risks and try new things, while social innovation focuses on uniqueness, the functional dimension focuses on efficiency and practical aspects, and the cognitive dimension focuses on exploration and creativity (Hwang et al., 2019; Li et al., 2021b). These innovations will also alter how prospective customers see the benefits and drawbacks of adopting new products (Wang et al., 2022).

Research Methodology

Content analysis is one of the most common analysis methods, which can effectively analyze the situation of the field in order to understand the development trends in the field (Downe-Wamboldt, 1992; Hajek et al., 2022). This study included only English-language papers published in academic journals in the Scopus database between 2014 and 2023. Data mining takes place in 2023, with keywords such as "purchase intention", "battery electric vehicles", "electric vehicles", and "consumer innovativeness" used to search for studies. Keywords appear in the title and summary in the search and are sorted by relevance. Figure 1 shows all the steps to the selection of literature reviewed.

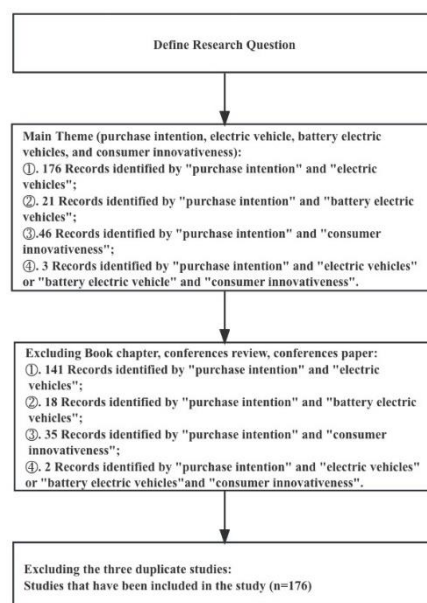


Figure 1. Flow Diagram for the Selection of Literature Reviewed

Results and Discussions

Content Analysis of Purchase Intention of Battery Electric Vehicles

According to Figure 2, there is some studies demonstrating purchase intentions of EVs and BEVs. Previous studies defines purchase intention of BEVs as the likelihood of BEVs purchase after taking into account product factors (such as technical attributes and costs), individual factors (such as psychological factors and personal characteristics), and social factors (Huang & Ge, 2019; Sun et al., 2022a). On the other hand, despite the fact that electric vehicles feature a drive unit made up of one or more electric motors, incorporating both electric motors and drive concepts utilizing internal combustion engines (Brinkmann & Bhatiajevi, 2021). In some studies, electric vehicles are also referred to as battery electric vehicles (Adepetu & Keshav, 2015; Barth et al., 2016; Beck et al., 2016).

Moreover, studies found that behavior intention of electric vehicles is strong among the majority of Chinese consumers (He et al., 2022; Huang et al., 2021). For instance, Tian et al.

(2021) shows that for Jinan people, only a few consumers know about electric vehicles, but most of the surveyed consumers are willing to buy electric vehicles in the future. Moreover, Habich-Sobiegalla et al (2018) discovered that Chinese citizens had the strongest intention to purchase electric vehicles when compared to Brazilian and Russian citizens. On the other hand, different provinces' residents have inconsistent intentions for electric vehicles. Li et al. (2023) summarizes the intentions of customers for electric cars in 20 provinces of China, electric vehicle sales suffer, and consumer intentions are negative when the city's temperature is exceptionally hot or cold.

Meanwhile, most of previous studies on the purchase intention of electric vehicles in China studies consumers in first-tier cities, such as Beijing, Shanghai, Guangzhou, Shenzhen (Lin & Wu, 2018). Inadequate studies have been done on China's other-tier cities. Nevertheless, previous study found that purchase intention of battery electric vehicles has a strong correlation with purchase behavior (Hoang et al., 2022). However, consumer intention to purchase an electric vehicle is not always guarantee to be translated into actual purchase behavior (Song et al., 2022). This could be a result of the fact that the cause of the shift in consumer behavior affecting electric vehicles is still unknown (Wu et al., 2019).

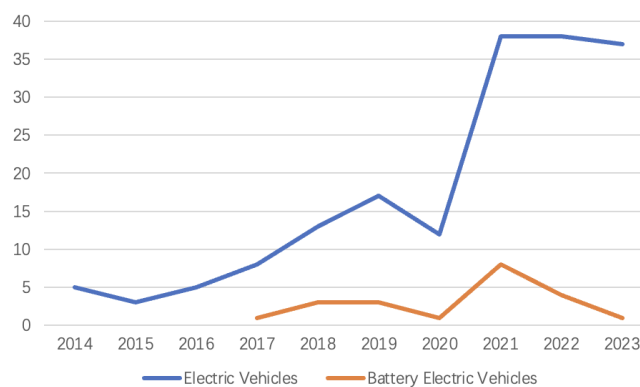


Figure 2. Number of Annual Publication in Purchase Intention of EVs and BEVs from Scopus

Content Analysis of Consumer Innovativeness

Consumer innovation is frequently utilized in consumer behavior because it takes into account the multidimensional view of the product that customers themselves have. The use of consumer innovation is displayed in Table 1. This table shows that it can be used in the electric vehicles, green products, organic food, robotic restaurant, and other fields. Additionally, consumer innovation appears to be crucial to the study of environmental protection and products using cutting-edge technologies. At the same time, the researchers found that consumer innovation does not consistently positively influence consumer behavior. For example, Siraj et al. (2022) found that sustainable labeling negatively influences consumer invention. Some scholars believe that only some dimensions of consumer innovation directly affect behavior (Hwang et al., 2020; Li et al., 2021a).

However, in most instances, people that are highly innovative will be more favorable toward new products (Chauhan et al., 2021; Liao, 2022). For example, past studies have shown that the emotional or hedonic properties of consumer innovation can influence the willingness to buy or adopt electric vehicles (Rezvani et al., 2015). Customers can improve consumer sentiment when they have a heart-felt understanding of the design, size, and aesthetics of electric vehicles. On the other hand, understanding the process of product innovation requires participants to obtain shared information by socializing with others (Wang et al., 2022). Similarly, China has introduced many policies to boost sales of electric

vehicles, but not all of them promote consumer behavior. Liao (2022) found that non-financial subsidies and intentions to adopt electric vehicles are not moderated by consumer innovation, but financial subsidies and intentions can be.

In general, if a product's innovative qualities live up to the consumer's expectations of innovation value, it may encourage them to adopt new product. As a result, consumer innovation also has a big impact on whether people choose to buy electric cars. This study find that consumer innovativeness can as one of the predictors of purchase intention to ascertain its function in marketing the Chinese electric vehicles market.

Table 1

Previous Literature on Consumer Innovativeness in Consumer Behavior Studies

| Authors | Constructs | Country | Findings |
|-------------------------|-------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Siraj et al. (2022) | Sustainable Labelling | China | Consumer innovativeness is negatively correlated with purchase intention |
| Liao (2022) | Electric Vehicle | China | Consumer innovativeness can effectively moderate financial policy and the adoption of electric vehicles |
| Chauhan et al. (2021) | Green Products | India | Personal innovativeness can effectively influence purchase intention of green products |
| Li et al. (2021a) | Organic Food | China | The social innovativeness dimension of consumers can directly affect consumers' green behavior, but hedonic innovativeness only has an indirect effect. |
| Dangelico et al. (2021) | Green Purchase Behavior | Italy | For consumers' green purchasing behavior, higher consumer innovation did not lead to higher satisfaction, willingness to pay premiums, and purchase frequency. |
| Li et al. (2021b) | Purchase Sustainable Products | China | Whether the relationship between consumer innovativeness and sustainable product purchasing behavior can be fully mediated depends on product involvement. And the mediating outcomes of social innovativeness and hedonic innovativeness will different. |
| Hwang et al. (2020) | Robotic Restaurant | South Korea | Consumer innovativeness that is driven by social, functional, or hedonistic motivations can have a favorable impact on the overall image. Consumer innovation that is cognitively motivated, however, cannot. |
| Zhang et al. (2020) | Smart Toys | China | A high level of consumer innovativeness can make the impact of perceived product innovativeness on perceived social value stronger |

| | | | |
|------------------------|-------------------------|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Al-Jundi et al. (2019) | New Product | United Arab Emirates | Consumer innovativeness drives consumers to purchase new products. Consumer innovation that is motivated by function, hedonism, or social concerns can All have a positive impact on consumer attitudes, while innovation that is motivated by cognitive concerns cannot. |
| Hwang et al. (2019) | Drone Delivery Services | Food Korea | |

Conclusions

This study's objective is to perform a thorough evaluation of the literature in order to determine where purchase intentions for BEVs stand right now. Battery electric vehicles are concerned by people because of their environmental protection attributes and the inclusion of new technologies. However, few studies have applied consumers' innovativeness to the purchase of BEVs, nor have they effectively used the advantages of new technologies of BEVs to encourage the developing of BEVs.

Therefore, this study measures the application of consumer innovativeness in consumer behavior and the possibility of effective use of purchase intentions in battery electric vehicles. In addition, the promotion of battery electric vehicles, grasping consumer psychological factors is the key. In future research, scholars could combine the cultural background of consumers to explore the influence of psychological factors on the purchase intention of BEVs.

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