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Leveraging Six Values for Company Performance: Adaptation of Sustainable Business Model Innovation Strategies in Chinese Electric Vehicle Brand Enterprises

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Abstract: Business model innovation is crucial for enhancing company performance. This study aims to investigate the relationship between the six dimensions of sustainable business model innovation and company performance among Chinese electric vehicle brands. A structural equation model is constructed based on a comprehensive literature review and hypothesis development. Using PLS-SEM, this study empirically analyzes questionnaire data collected from the top 12 electric vehicle brands in China to explore the relationship between these six core dimensions and company performance. The results indicate that innovation in "value proposition to customers", value creation, value delivery, and "value of residual" have a significantly positive impact on the performance of Chinese electric vehicle brands. However, value capture innovation and "value of after-sales service" innovation were not found to be statistically significant. This paper provides an in-depth analysis of the mechanism through which sustainable business model innovation impacts company performance, enriching the theoretical foundation of academic research in this field and broadening its practical applications in management.

Keywords: sustainable business model innovation; "value proposition to customers" innovation; value creation innovation; value delivery innovation; value capture innovation; "value of after-sales service" innovation; "value of residual" innovation; company performance; Chinese electric vehicle brand enterprise

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1. Introduction

The automobile, a product of human development and progress, has a history spanning over a century, beginning in 1886 when Karl Benz obtained the patent for the first modern gasoline-powered automobile. During this century, automobiles have greatly enhanced convenience, improved travel efficiency, extended travel distances, and played a crucial role in global economic development. However, traditional vehicles (TVs), primarily powered by internal combustion engines (ICEs) that use fossil fuels like gasoline and diesel, have significantly negative impacts on the environment, public health, the economy, and society. Notably, environmental issues such as greenhouse gas emissions, air pollution, and resource depletion have emerged as some of the most pressing concerns for humanity [1].

The challenges of climate change and global resource shortages have prompted a reevaluation of traditional individual mobility dependent on ICEs [2]. Electric vehicles (EVs), a prominent category of new energy vehicles (NEVs), have emerged as a key solution to address the oil and energy crises while also mitigating environmental pollution in the automotive industry.

The history of EVs dates back to the early 19th century, predating the dominance of ICE vehicles. Driven by growing environmental concerns and energy crises, EV technology has regained significant attention and experienced rapid advancements. The launch of the Tesla Roadster in 2008 marked the beginning of the modern era of EVs, igniting a global surge in their popularity.

China, the world's leading producer and seller of automobiles, has made rapid advancements in EV development. In 2021, global EV sales exceeded 6.5 million units, representing a 120% increase compared to 2020. Mainland China has captured nearly 50% of the global market share [3]. The rapid expansion of the EV sector in China has garnered worldwide attention.

China's rapid rise as a global leader in EVs is driven by strong government support and significant innovations in automotive companies' business models (BMs). Effective BMs are essential to a company's success, enabling it to capitalize on strengths, enhance performance, and secure competitive advantages [4]. Business model innovation (BMI) enables companies to stay competitive in fast-evolving economic environments by strengthening their capacity for value creation [5,6].

The EV industry, a pivotal sector for global sustainable development, is driven not only by the profound integration of technological innovation and environmental protection ideologies but also by enterprises' relentless pursuit of long-term sustainable development capabilities. In this context, EV brand enterprises must dynamically adapt to the ever-evolving market environments and competitive landscapes to secure a trajectory towards sustainable growth. While China's EV industry has experienced rapid expansion in recent years, fostering and expanding globally influential brands such as BYD, XIAOPENG Motors, and NIO, thereby becoming a significant propeller of the global EV industry's progression, it is crucial to acknowledge the severe survival challenges, including bankruptcy risks, confronted by some enterprises within the industry. Sustainable companies necessitate sustainable business models (SBMs) [7] designed to structure the value process to provide value to customers while capturing a portion of this value as revenue for the company [8].

This study focuses on the relationship between sustainable business model innovation (SBMI) and company performance (CP) among EV brand enterprises in China. We devised a framework encompassing six distinct dimensions of SBMI and conducted empirical research to gain a nuanced understanding of how these facets affect overall CP.

The remainder of this study is structured as follows: First, we present a literature review on the relationship between SBMI and CP, and then discuss the development of our research hypotheses and outline the research model. Next, we conduct data analysis, reporting on the measurement model and the structural model, followed by a discussion of our findings. In conclusion, we demonstrate that SBMI has a notable positive impact on enhancing CP. Specifically, we identify significant, moderately positive correlations between three dimensions of SBMI—"value proposition to customer" innovation (VPCI), value delivery innovation (VDI), and "value of residual" innovation (VRI)—and CP. Furthermore, the impact of value creation innovation (VCrI) is present but modest. In contrast, the effect of "value of after-sales service" innovation (VSI) is relatively weaker, while value capture innovation (VCaI) has a negative impact.

2. Literature Review

2.1. Business Model

The concept of a business model (BM) gained traction around the turn of the millennium [9]. The term "business model" first appeared in the academic literature in 1957 and gained prominence in the late 1990s [10]. Its rise was primarily driven by the adoption of digital technologies and the Internet [11]. Despite extensive discussion, there remains a notable lack of both theoretical and empirical knowledge in this area [12].

The term "business model" lacks a universally accepted definition due to its adaptation across various disciplines [13,14]. Timmers (1998) defined a BM as an architecture encompassing product, service, and information flows, along with the roles and revenue sources of different business actors. While comprehensive, this definition may not be straightforward [15]. Richardson (2008) simplified the concept by emphasizing the strategic role of a BM in outlining business operations, actions aimed at satisfying end-user demands [16], and revenue generation through value-added components [17,18].

A BM essentially addresses fundamental questions regarding customer value and how a firm generates profit by delivering value to customers at an appropriate cost [19]. This framework includes the processes of proposing, creating, delivering, and capturing value [4,20–22]. However, traditional BMs do not explicitly account for circularity in their design, which is predominantly oriented toward profit and economic viability [23,24]. Currently, sustainability is recognized as a central issue [25] and should be understood as a continuous process that adapts according to needs and contexts, rather than as a fixed goal [7].

2.2. Sustainable Business Model

Electric vehicles (EVs) play a critical role in the sustainability strategies of automotive companies. Sustainable enterprises align with the concept of sustainable development, which involves meeting present needs without compromising the ability of future generations to meet their own [7]. Such enterprises require a SBM [7].

A SBM structures the value process to provide value to customers while generating revenue for the company [8]. It outlines how a company creates, delivers, and captures value while generating positive effects and minimizing negative impacts on the environment and society [7,26]. Most definitions in the literature describe SBMs as revisions of the conventional Business Model (BM) concept [21], with the goal of integrating sustainability into their value propositioning, value creation, value delivery, and value capture activities. For instance, Geissdoerfer et al. (2018) incorporated sustainable value, proactive multi-stakeholder management, a long-term perspective, and sustainability solutions to BMs, transforming them into SBMs [21].

In the automobile industry, customers prioritize effective after-sales services as a key component of value for money [27]. Such services foster customer brand loyalty and are crucial predictors of future vehicle purchase decisions [28]. Providing reasonable after-sales services has become a fundamental aspect of automotive marketing strategies due to their short- and long-term benefits [27,29]. After-sales services are vital not only in the automobile sector but also across other industries, warranting consideration within the SBM framework.

Residual value is a significant parameter influencing purchasing decisions [30] and refers to the forecasted worth of a vehicle at a future point in time [31], indicates the price at which the vehicle can be sold after a certain period of use [30]. Narrowly defined, residual value is the estimated worth of the car at the time of resale [32]; broadly, it represents the price the owner can expect after the assumed useful life [33]. It is increasingly important not only for managers of car-sharing and leasing fleets but also for individual customers [30]. Since most new-car buyers do not keep their vehicles for their entire lifetimes, vehicle depreciation significantly affects the total cost of ownership and consumer purchase behavior [34].

EV customers express concerns about degraded battery performance (shorter electric range), rapidly evolving technologies, and frequent model upgrades, all of which may lead to lower residual values [35]. Low residual values can serve as a substantial market barrier to the widespread adoption of new EVs and should be integrated into the vehicle adoption analyses to more accurately reflect the total cost of ownership [35]. Therefore, EV brand enterprises should incorporate residual value into their SBMs to effectively influence consumer purchase intentions.

This paper argues that an SBM delineates how an organization proposes, creates, and captures value, providing a holistic view of organization operations [36] to maintain its competitive advantage and achieve long-term sustainability while being environmentally and socially responsible. An SBM encompasses the value proposition to customers, value creation, value delivery, value capture, value of after-sales services, and value of residual, collectively termed the "6V" model [37]. To sustain optimal performance, BMs should be critically evaluated from a dynamic perspective, acknowledging that internal or external changes over time may necessitate BMI or evolution [18].

2.3. Business Model Innovation

Business models (BMs) can be viewed as tools for creating competitive advantages and improving CP [4]. To maintain a competitive edge in a fluctuating business environment, BMs must evolve continuously, necessitating essential modifications to the firm's activity systems that ensure ongoing improvement [38]. BMI involves designed, novel, and non-trivial changes to the key components of a company's BM or the framework connecting these components [5,9]. Consequently, research on BMI can be approached through both the process and content of innovation [9]. Core aspects of BMI include value proposition, creation, delivery, and capture [21].

Research on the BMI process has expanded significantly [9], exploring antecedents, moderators, and outcomes [5,39]. For instance, Böttcher and Weking (2020) identified six categories of antecedents and seven potential outcomes of BMI [40]. Evers et al. (2023) conducted a systematic literature review that highlighted antecedents and outcomes of BMI within the context of firm internationalization [41]. It is evident that most researchers treat BMI as a holistic concept in their investigations.

However, a critical challenge in practical management lies in the difficulty of implementing comprehensive BMI within a short timeframe, particularly for established firms. Managers require a thorough understanding of the multifaceted aspects of BMI to prioritize which dimensions to address initially, enabling them to implement strategies that progressively encompass all relevant facets. Some scholars have proposed that BMI comprises components of value proposition innovation, value creation innovation, value delivery innovation, and value capture innovation [38,42,43]. As noted by Geissdoerfer et al., BMI represents the transformation from one BM to another, impacting the entire BM or specific components such as value proposition, value creation and delivery, and value capture elements, as well as the interrelations among these elements and the overall value network [21]. Therefore, research into BMI, focusing on its various component elements, is indispensable.

2.4. Sustainable Business Model Innovation

Sustainable products, services, and processes are intricately connected to the adoption, redesign, adjustment, and enhancement of BMs [38]. SBMI can be defined as the adaptation of a BM to overcome challenges within the organization and its external environment, thereby promoting advancements in sustainable processes, products, or services [44]. This process involves transforming a BM into one that is more sustainable. To establish a long-term sustainable competitive advantage, this transformation may require the creation of entirely new BMs or modifications to existing ones that creatively address sustainability challenges faced by stakeholders. As part of this adjustment, the components of the BM should be revised to incorporate new or enhanced sustainable value through the dimensions of value proposition, value creation, value delivery, and value capture [21,38].

Consequently, SBMI is structured around the principles of sustainable value innovation and its associated framework, which includes sustainable value proposition innovation, sustainable value creation and delivery innovation, and sustainable value capture innovation [38]. In alignment with the definition of SBM presented in this study, we argue that SBMI comprises several key dimensions: value proposition to customer innovation (VPCI), value creation innovation (VCrI), value delivery innovation (VDI), value capture innovation (VCaI), "value of after-sales services" innovation (VSI), and "value of residual" innovation (VRI) [37].

3. Hypothesis Development

3.1. "Value Proposition to Customers" Innovation and Company Performance of Chinese Electric Vehicle Brand Enterprises

Value proposition refers to the value embedded in the offered product or service [45]. It can form a hierarchy with economic value propositions at the most fundamental level, followed by functional, emotional, and symbolic value propositions [46]. Customers engage in a value exchange only if they believe the product or service meets their business or personal needs [47]. The value proposition to customers encompasses what the firm delivers to its customers, why they are willing to pay for it, and the firm's fundamental approach to competitive advantage [16].

Among automobile consumers, preferences vary: some focus on the price of vehicles, while others prioritize safety, and some consider how well the vehicle reflects personal identity and value, provided that price and safety criteria are met. Therefore, by helping firms extend their product/service portfolios and address new market needs, VPCI has been instrumental in enhancing CP [48]. Consequently, we posit that VPCI positively impacts the CP of Chinese EV brand enterprises.

H1: *"Value proposition to customers" innovation has a positive impact on the company performance of Chinese electric vehicle brand enterprises.*

3.2. Value Creation Innovation and Company Performance of Chinese Electric Vehicle Brand Enterprises

Value creation is often regarded as an essential function of a BM, as it forms the basis for satisfying customer interests [17] and emphasizes the value created for both the company and its customers, along with the underlying processes and activities [47]. Value creation activities are commonly considered in BM descriptions and analyses [47].

In this paper, value creation is defined as the process through which the company organizes, allocates, and leverages its resources and capabilities to provide its products or services to customers. We argue that value creation innovation (VCrI) refers to systematic and creative activities aimed at optimizing, upgrading, and even reshaping existing products or services to meet the evolving needs and expectations of the market, thereby enhancing customer value and the core competitiveness of the enterprise. New value creation approaches offer alternative means to strengthen CP [49]. Therefore, we contend that VCrI positively impacts the CP of Chinese EV brand enterprises.

H2: *Value creation innovation has a positive impact on the company performance of Chinese electric vehicle brand enterprises.*

3.3. Value Delivery Innovation and Company Performance of Chinese Electric Vehicle Brand Enterprises

Delivering value to customers is crucial. Customer value is a trade-off between what the customer receives—such as quality, benefits, worth, or utility—and what they give up to acquire and use a product, including price or sacrifices [50]. Notably, customer value is independent of price, which presents a distinct advantage [51], especially in the industrial sector.

Value delivery encompasses the processes and activities involved in providing value to customers through the delivery of products, services, or solutions [52]. This paper discusses value delivery in three aspects. First, in line with other scholars, we recognize that it includes processes and activities necessary to deliver the final offering. Second, it encompasses the processes through which a company communicates its cultural and product values, enabling consumers to know, recognize, and appreciate them in advance. Third, the value of both the product and the company should continue to be conveyed even after the consumer has made a purchase, thereby reaffirming their choice and enhancing their perceived value.

Effective value delivery can significantly enhance consumer perception and promote the purchase of products or services. For instance, in the luxury automobile industry, effective value delivery can motivate customers to purchase high-priced products, as they perceive these items to be worth considerably more. In this paper, we define value delivery innovation (VDI) as the process of adopting novel and efficient methods to accurately and vividly communicate the value of products and services to target customer groups. This approach aims to stimulate empathy, enhance the sense of value identification, and ultimately drive purchase decisions or continued usage. Therefore, we contend that VDI positively impacts the CP of Chinese EV brand enterprises.

H3: *Value delivery innovation has a positive impact on the company performance of Chinese electric vehicle brand enterprises.*

3.4. Value Capture Innovation and Company Performance of Chinese Electric Vehicle Brand Enterprises

Value capture refers to the mechanisms through which a company is compensated by customers and sustains itself through commercial activities [53]. It addresses how a firm generates revenue by considering various cost- and revenue-related decisions, such as margins, quality, and price strategies. Furthermore, value capture encompasses the selection and design of appropriate revenue streams and revenue models [54]. In this paper, value capture innovation (VCaI) is defined as the process of developing new methods to capture a greater portion of the value created by a company's products or services.

For EV companies, revenue and profit are derived not only from car sales but also from various sources, including vehicle software, charging networks, insurance, after-sale services, and batteries [1]. Therefore, we argue that VCaI positively impacts the CP of Chinese EV brand enterprises.

H4: *Value capture innovation has a positive impact on the company performance of Chinese electric vehicle brand enterprises.*

3.5. "Value of After-Sales Services" Innovation and Company Performance of Chinese Electric Vehicle Brand Enterprises

Service quality is essential for any provider, particularly in the automobile industry, where customers prioritize superior after-sales services to ensure value for money [27]. After-sales services play a vital role in supporting customers post-purchase and are crucial for gaining a competitive advantage, forming an integral part of any robust business strategy [27]. As a source of new revenue streams, after-sales services have become increasingly significant [55]. In the automobile sector, high-quality after-sales services are essential for ensuring value for money and have become integral to marketing strategies due to their short- and long-term organizational benefits [27].

In this study, "value of after-sales services" innovation (VSI) refers to the enhancement and improvement of services provided to customers post-purchase. This innovation aims to increase customer satisfaction, loyalty, and overall value by offering exceptional support, maintenance, and additional services. Therefore, we argue that VSI positively impacts the CP of Chinese EV brand enterprises.

H5: *"Value of After-Sales Services" innovation has a positive impact on the company performance of Chinese electric vehicle brand enterprises.*

3.6. "Value of Residual" Innovation and Company Performance of Chinese Electric Vehicle Brand Enterprise

The "value of residual" for a vehicle represents a projection of its future market value, indicating the anticipated price at which the user or another entity could sell the vehicle after a suitable period of use [30,31]. Depreciation refers to the decrease in a vehicle's value over time, measured by its residual value [34]. Given that the majority of new-car buyers do not retain ownership of their vehicles throughout its entire lifetime, vehicle depreciation becomes a crucial factor influencing the overall cost of vehicle ownership and shaping consumer purchasing behavior [34]. In this study, "value of residual" innovation (VRI) focuses on how businesses employ various comprehensive approaches and techniques to enhance the price performance and appeal of vehicles in the secondary market, while also ensuring that the vehicles are recycled and reused effectively after being retired from service.

EV customers express concerns about diminished battery performance, which leads to a shorter electric range, alongside the rapid evolution of technologies and swift model upgrades—factors that contribute to the lower residual values associated with EVs [35]. Low residual values may pose a significant market barrier to the widespread adoption of new EVs [35]. Therefore, we argue that VRI positively impacts the CP of Chinese EV brand enterprises.

H6: *"Value of residual" innovation has a positive impact on the company performance of Chinese electric vehicle brand enterprises.*

Combined with the above hypotheses, the conceptual framework of the study is illustrated in Figure 1.

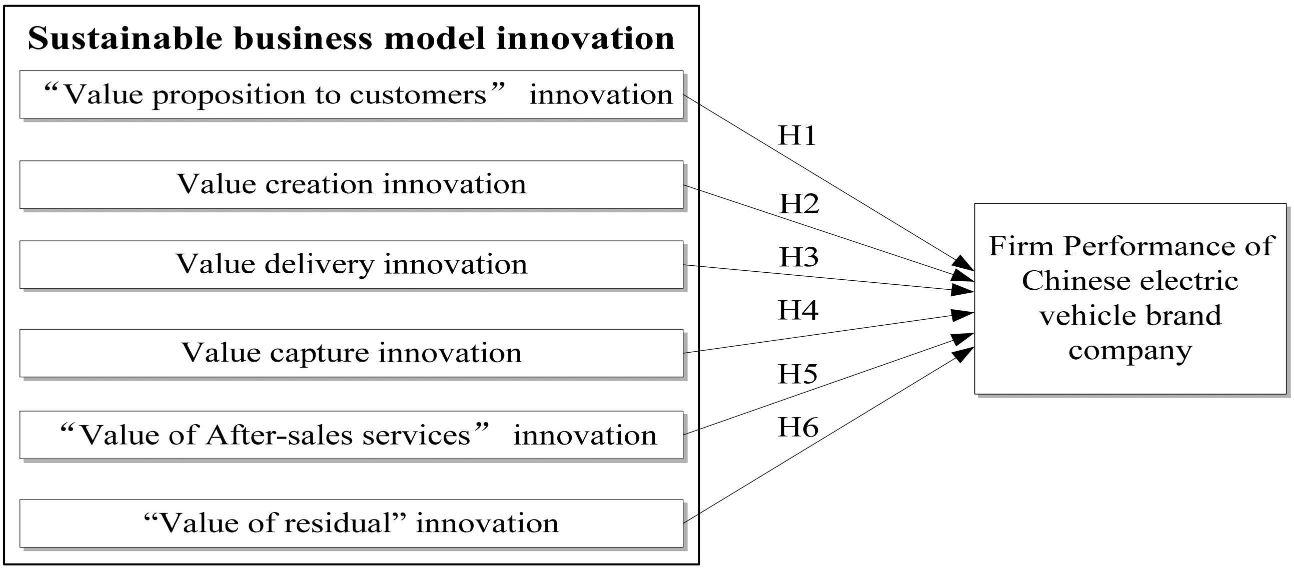

Figure 1. The conceptual framework of this paper.

4. Research Methodology

4.1. Measurement Model Development

The empirical data for this research were collected through a self-administered questionnaire comprising two sections. The first section aimed to gather demographic information, including gender, age, educational level, position level, and department. The second section assessed the "6V" and CP. Measurement items for VPCI, VCrI, VCaI, and CP were adapted from Clauss et al. [54], while items for VSI were sourced from both Clauss et al. (2019) and Langerak et al. (2004) [54,56]. The measurement items for VRI were developed based on a comprehensive review of the existing literature.

All items in the second section were measured using a five-point Likert scale (ranging from 1 = strongly disagree to 5 = strongly agree), allowing respondents to select answers that accurately reflected their opinions on each item.

4.2. Survey Administration, Sample, and Data Collection

The survey questionnaire was meticulously translated from English to Chinese, enabling its presentation in both languages to accommodate the target managers from Chinese EV brands during the data collection preparation phase. This approach ensured accurate and culturally appropriate communication.

Prior to the official commencement data collection, the researchers invited two managers from the Chinese automotive industry and three academics from Chinese universities to evaluate the survey questionnaire for validity and reliability. Additionally, a pilot study was conducted with 40 respondents from similar industries to validate the questionnaire's reliability and the efficiency of the data collection process. Following these rigorous steps, the final version of the questionnaire was prepared for the formal survey.

During the distribution phase, researchers targeted the top 12 Chinese EV brands based on production and sales volume. The questionnaire was distributed via an online platform to employees from these companies, specifically targeting individuals in managerial positions, resulting in 436 responses. To ensure data accuracy and reliability, researchers rigorously screened and eliminated problematic responses, retaining 392 high-quality and valid data points. This sample size is considered sufficient for subsequent statistical analysis, ensuring the representativeness and scientific rigor of the research findings.

4.3. Analytical Method and Data Analysis

Structural equation modeling (SEM) is a widely used methodology in the social sciences [57], as it allows researchers to simultaneously model and estimate complex relationships among multiple dependent and independent variables [58]. Therefore, PLS-SEM was employed to test the hypotheses in this paper. The collected data were coded in SPSS 26 for descriptive analysis, and SmartPLS v.4 was utilized to test the hypotheses.

5. Results

5.1. Demographic Profiles

Table 1 notes that 72.4% of respondents were male and 27.6% female, highlighting the gender imbalance within the manufacturing industry. The majority of respondents (58.9%) were aged 36–45, followed by 25% aged 26–35, 9.2% over 46, and 6.9% under 25. Most respondents held an undergraduate degree (68.9%), 18.9% had graduate degrees, 9.2% had qualifications below undergraduate level, and 3.1% held a PhD or higher. General managers comprised 69.6% of the sample, middle managers accounted for 24.5%, and top managers represented 5.9%. The majority of respondents worked in R&D (28.3%), Purchasing (21.9%), and Marketing (18.1%), reflecting the technical demands of the electric vehicle industry.

Table 1. Demographic profiles.

Variables	Category	Frequency	%
Gender	Male	284	72.4
	Female	108	27.6
Age	Under 25 years	27	6.9
	26–35 years	98	25.0
	36–45 years	231	58.9
	Over 46 years	36	9.2

Table 1. *Cont.*

Variables	Category	Frequency	%
Educational level	Below undergraduate	36	9.2
	Undergraduate	270	68.9
	Postgraduate	74	18.9
	Ph.D. graduate and above	12	3.1
Position level	Top manager	23	5.9
	Middle manager	96	24.5
	Under the middle manager	273	69.6
Department	Marketing department	71	18.1
	R&D department	111	28.3
	Purchasing department	86	21.9
	Production and manufacturing department	42	10.7
	Human resource department	13	3.3
	Finance department	9	2.3
	Others	60	15.3

5.2. Measurement Model

The measurement model was evaluated to establish the reliability and validity of the constructs, as presented in Table 2. The first step involves assessing indicator reliability, which indicates the communality of an indicator [59]. All factor loadings for the items in the model exceed the minimum acceptable value of 0.5. Although a loading factor value greater than 0.7 is ideal, signifying that the indicator is valid for measuring the construct, a loading factor value above 0.5 is still acceptable in empirical research [60].

Table 2. Reliability and validity analysis.

Constructs	Items Reliability	Internal Consistency Reliability			Convergent Validity
	Outer Loadings	Cronbach's Alpha	Composite Reliability (rho_a)	Composite Reliability (rho_c)	Average Variance Extracted (AVE)
CP1 <- CP	0.805	0.924	0.928	0.938	0.654
CP2 <- CP	0.813				
CP3 <- CP	0.814				
CP4 <- CP	0.825				
CP5 <- CP	0.827				
CP6 <- CP	0.807				
CP7 <- CP	0.879				
CP8 <- CP	0.685				
VPCI1 <- VPCI	0.816	0.909	0.910	0.930	0.688
VPCI2 <- VPCI	0.823				
VPCI3 <- VPCI	0.834				
VPCI4 <- VPCI	0.859				
VPCI5 <- VPCI	0.847				
VPCI6 <- VPCI	0.797				
VCrI1 <- VCrI	0.789	0.815	0.827	0.866	0.520
VCrI2 <- VCrI	0.788				
VCrI3 <- VCrI	0.729				
VCrI4 <- VCrI	0.621				
VCrI5 <- VCrI	0.691				
VCrI6 <- VCrI	0.697				

Table 2. *Cont.*

Constructs	Items Reliability	Internal Consistency Reliability			Convergent Validity
	Outer Loadings	Cronbach's Alpha	Composite Reliability (rho_a)	Composite Reliability (rho_c)	Average Variance Extracted (AVE)
VDI1 <- VDI	0.749	0.868	0.873	0.901	0.603
VDI2 <- VDI	0.772				
VDI3 <- VDI	0.756				
VDI4 <- VDI	0.804				
VDI5 <- VDI	0.757				
VDI6 <- VDI	0.819				
VCaI1 <- VCaI	0.708	0.887	0.901	0.914	0.643
VCaI2 <- VCaI	0.654				
VCaI3 <- VCaI	0.822				
VCaI4 <- VCaI	0.865				
VCaI5 <- VCaI	0.874				
VCaI6 <- VCaI	0.861				
VSI1 <- VSI	0.751	0.877	0.880	0.907	0.619
VSI2 <- VSI	0.791				
VSI3 <- VSI	0.787				
VSI4 <- VSI	0.832				
VSI5 <- VSI	0.783				
VSI6 <- VSI	0.772				
VRI1 <- VRI	0.791	0.884	0.887	0.912	0.633
VRI2 <- VRI	0.853				
VRI3 <- VRI	0.761				
VRI4 <- VRI	0.790				
VRI5 <- VRI	0.783				
VRI6 <- VRI	0.792				

Second, internal consistency reliability was examined to determine how indicators measuring the same construct are correlated [59]. Cronbach's alpha, composite reliability (rho_a), and composite reliability (rho_c) were utilized to assess internal consistency reliability [59]. All the relevant statistical values in this research fall within the acceptable range, exceeding 0.6 and remaining below 0.95. This indicates that the data and findings are reliable are valid for further analysis and interpretation. Reliability values of 0.95 and above may suggest the potential for undesirable response patterns, which could inflate correlations among the error terms of the indicators [59].

Third, the convergent validity of each construct was assessed. Convergent validity refers to the degree to which a construct converges to explain the variance of its indicators. The average variance extracted (AVE) was used to evaluate a construct's convergent validity, with a minimum acceptable value of 0.50 [59,61]. The AVE values in this study are all above 0.5. The data regarding the reliability and validity of constructs are presented in Table 2.

Discriminant validity was assessed by comparing the correlations among the latent variables with the square root of AVE [62] and using the Heterotrait–Monotrait ratio of correlations (HTMT) [63]. Both measures revealed values below the threshold of 0.9 [59,61]. Therefore, discriminant validity is established, as shown in Table 3.

Following the assessment of the measurement model, the next step is to evaluate the structural path to assess the path coefficients and their statistical significance.

Table 3. Fornell–Larcker Criterion and HTMT ratio.

	CP	VCaI	VCrI	VDI	VPCI	VRI	VSI
CP	**0.808**	0.561	0.773	0.764	0.741	0.703	0.733
VCaI	0.516	**0.802**	0.682	0.647	0.530	0.548	0.617
VCrI	0.683	0.592	**0.721**	0.762	0.747	0.609	0.822
VDI	0.693	0.578	0.647	**0.777**	0.641	0.641	0.738
VPCI	0.685	0.488	0.653	0.574	**0.830**	0.536	0.704
VRI	0.640	0.481	0.526	0.568	0.489	**0.795**	0.658
VSI	0.670	0.551	0.704	0.644	0.642	0.587	**0.786**

Note: Diagonal and bolded are the square roots of the AVE. Below the diagonal elements are the correlations between construct values. Above the diagonal elements are the HTMT values.

5.3. Structural Model

To test the hypotheses and perform path analysis, we utilized Smart PLS v.4 software. The evaluation was conducted using bootstrapping with a sample size of 10,000 and a significance level of 0.05. The structural model is illustrated in Figure 2, and the results of hypotheses are presented in Table 4.

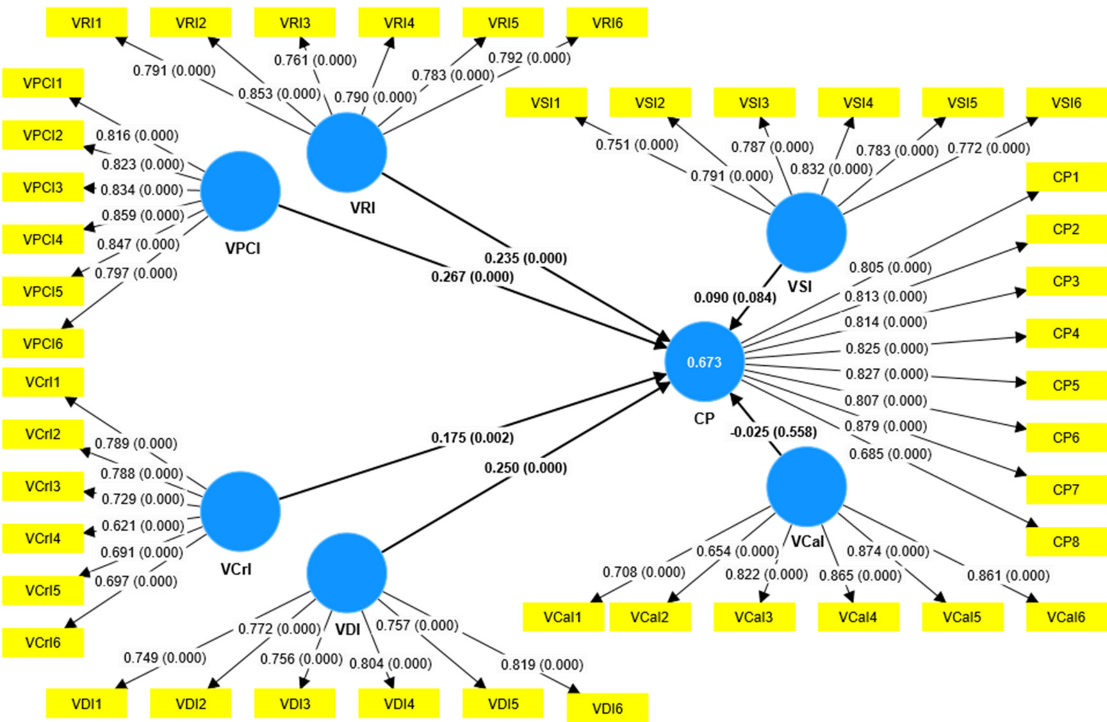

Figure 2. Structural model. Note: CP = Company Performance; VPCI = Value Proposition to Customer Innovation; VCrI = Value Creation Innovation; VDI = Value Delivery Innovation; VCaI = Value Capture Innovation; VSI = "Value of After-Sales Services" Innovation; VRI = "Value of Residual" Innovation.

The R^2 measures the variance which is explained in each of the endogenous constructs [64]. The R-Square for the generated results was 0.673, suggesting that 67.3 percent of the variance of CP could be explained by SBMI.

Table 4. Hypothesis results.

Hypothesis	Beta Coefficient	Standard Deviation	T Statistics	*p* Values	2.50%	97.50%	f^2	Results
H1:VPCI -> CP	0.267	0.041	6.488	0.000	0.188	0.350	0.107	Supported
H2:VCrI -> CP	0.175	0.056	3.125	0.002	0.064	0.285	0.036	Supported
H3:VDI -> CP	0.250	0.050	4.995	0.000	0.148	0.343	0.085	Supported
H4:VCaI -> CP	−0.025	0.043	0.586	0.558	−0.110	0.059	0.001	Not supported
H5:VSI -> CP	0.090	0.052	1.726	0.084	−0.010	0.193	0.009	Not supported
H6:VRI -> CP	0.235	0.042	5.558	0.000	0.150	0.316	0.098	Supported

H1: The results (β = 0.267, t = 6.488, $p = 0.000$) revealed that VPCI has a significant and positive impact on CP. This hypothesis was supported. H2: The results (β = 0.175, t = 3.125, $p = 0.002 < 0.05$) revealed that VCrI has a significant and positive impact on CP. This hypothesis was supported. H3: The results (β = 0.250, t = 4.995, $p = 0.000$) revealed that VDI has a significant and positive impact on CP. This hypothesis was supported. H4: The results (β = −0.025, t = 0.586, $p = 0.558 > 0.05$) revealed that VCaI does not have a statistically significant effect on CP. This hypothesis was not supported. H5: The results (β = 0.090, 1.726, $p = 0.084 > 0.05$) revealed that VSI has a weak and marginally non-significant positive effect on CP. This hypothesis was not supported. H6: The results (β = 0.235, t = 5.558, $p = 0.000$) revealed that VRI has a statistically significant and positive effect on CP. This hypothesis was supported.

6. Discussion and Conclusions

This paper examines the impact of SBMI on CP in Chinese electric vehicle brands. Utilizing the Smart PLS-SEM approach, the results indicate a statistically significant relationship between SBMI and CP, explaining 67.3 percent of the variance in CP. Specifically, VPCI (H1), VCrI (H2), VDI (H3), and VRI (H6) significantly influence CP. However, VCaI (H4) and VSI (H5) are not statistically significant.

Firstly, we will discuss the hypotheses H1, H2, and H3. The results indicate that VPCI, VCrI, and VDI have significant and positive relationships with CP, consistent with previous findings [1,54].

H1: VPCI focuses on deeply understanding and accurately identifying the most valued elements of the target customer group, aiming to build strong market appeal and encourage potential customers to choose products and services that precisely meet their demands and expectations. By creating a value proposition specifically tailored to a specific consumer segment, a business can differentiate itself from competitors, maintain a competitive edge over time, and directly promote economic growth through unique market positioning.

In the context of EVs, accurately capturing and effectively communicating the core value proposition to consumers can stimulate product sales and establish a positive brand image, leading to valuable word-of-mouth effects. This ultimately drives a comprehensive enhancement of brand value. Continuous innovation in consumer value positioning is essential for enterprises to optimize and upgrade their value propositions. By addressing unmet needs or offering innovative solutions to customer problems, enterprises can keep pace with market changes and evolving consumer preferences. This ensures that value propositions consistently meet and exceed consumer expectations, achieving a high degree of alignment and mutual benefit between consumer value propositions and corporate market strategies.

H2: VCrI significantly enhances corporate production efficiency, reduces unnecessary resource consumption and waste, and facilitates precise cost management and effective cost reduction. The manufacturing process of EVs is inherently complex and technology-intensive. Technological advancements and process optimizations effectively enhance production efficiency by eliminating redundant production steps and reducing resource expenditure, leading to lower production costs. This, in turn, increases company profitability, provides greater pricing flexibility, and improves market responsiveness, ultimately boosting CP.

H3: VDI, through creative marketing strategies and promotional tactics, enables enterprises to attract customers whose needs were previously inadequately addressed, thereby expanding into new market segments. Unique value delivery methods bridge the gap between customers and enterprises, precisely conveying the core value of products and services to targeted customers. This increases attention and discussion, enhancing the enterprise's brand influence.

Given the complex, technology-intensive, and substantial nature of EVs, innovative value delivery allows EV companies to showcase their product advantages, technological prowess, and environmental commitments more directly and vividly, fostering consumer trust in the brand. This trust is a pivotal factor in consumers' purchasing decisions. Moreover, diversified and innovative delivery channels not only minimize costs but also reach a broader spectrum of potential customers, further boosting CP.

Secondly, we will discuss VCaI (H4) and VSI (H5).

H4: VCaI does not have a significant effect on CP, which aligns with the findings of Clauss et al. (2019) [54]. Clauss argued that VCaI represents a systemic change that can disrupt the established system, necessitating mutual adjustments across various components. Without these adjustments, VCaI may result in local optimization, compromising overall performance. Local optimization issues can arise in three domains: functions, personnel, and partnerships. When the value capture model shifts, it requires diverse functional activities within the firm to adjust and realign with the new model.

The maturity of the EV market severely limits customer acceptance of new value capture models. For instance, consumers may not fully understand the workings and potential benefits of EV consumer finance due to a lack of familiarity with these financial products, which could hinder their effectiveness in promoting EV sales. Furthermore, even if some consumers adopt these innovative payment models, failure to meet repayment obligations as agreed upon will directly affect the financial health of enterprises. Additionally, the EV industry, as a highly integrated technological system, faces dual challenges in developing and applying its core component—battery technology. These challenges arise from technical complexity and high investment costs. This characteristic of high investment, combined with the difficulty of rapidly translating short-term technological breakthroughs and cost optimizations into substantial economic benefits, places significant pressure on EV enterprises in their pursuit of economic returns.

H5: VSI in EVs does not result in improved CP. Firstly, EVs exhibit significant differences in maintenance patterns compared to TVs. Due to the mechanical structure and fuel characteristics of TVs, they must adhere to established maintenance cycles and mileage thresholds to visit after-sales service stores, which constitutes an important source of after-sales service revenue. In contrast, the adoption of the electric drive system in EVs significantly reduces the daily operation and maintenance needs, particularly for regular maintenance items such as oil and filter changes. This reduction weakens the revenue stream for after-sales service stores in terms of regular maintenance, thereby limiting the direct enhancement of overall enterprise performance.

Secondly, the complexity and high cost of the battery system, which is the core technological component of EVs, present unique challenges for after-sales service and the economic performance of enterprises. As the energy storage and conversion core of EVs, battery performance directly impacts the overall performance and service life of the vehicle. However, the intricacies of battery technology makes diagnosing, repairing, and replacing batteries technically demanding and costly. When a battery fails, companies often face high repair or replacement costs, which are frequently difficult to fully recover through consumer charges. On the one hand, consumers maintain high expectations for EV battery performance while being sensitive to maintenance costs. On the other hand, market competition and brand image constrain enterprises' ability to significantly raise prices for battery maintenance service. As a result, the contribution to corporate performance growth remains minimal.

H6: VRI positively impacts CP. This relationship can be analyzed through two core dimensions that profoundly affect the efficiency and effectiveness of the used EV market, significantly promoting the enterprise's resource recycling and sustainable development strategy.

First, from the market remarketing perspective, maximizing the residual value of used EVs significantly stimulates the vitality and growth of the secondary EV market. market. This process extends beyond merely enhancing the market price of used vehicles; it also encompasses the diversified expansion and optimization of sales channels, thereby providing vehicle owners with more lucrative economic returns when reselling their vehicles. This enhancement directly benefits EV sales and establishes a positive market feedback mechanism, indirectly enhancing consumer trust, recognition, and loyalty to the EV brand by improving vehicle owners' satisfaction. When consumers observe that the EVs they purchase maintain strong value retention and circulation, they are more likely to choose and recommend the brand, leading to stable and continuous growth in market share and brand influence for the enterprise.

Secondly, VRI plays a crucial role in the recovery and reuse of the terminal residual value of EVs. By engaging in scientific and efficient dismantling and recycling of used EVs, enterprises can extract valuable materials, such as battery components and metal parts, for reuse or reprocessing. This practice not only reduces resource waste and environmental pollution but also opens new avenues for profit growth. More importantly, this commitment to resource recycling underscores the enterprise's dedication to environmental protection and social responsibility. In the context of a global emphasis on green, low-carbon, and sustainable development, such proactive corporate behavior in fulfilling social responsibilities will undoubtedly earn the respect and trust of a wider consumer base, further enhancing the enterprise's brand image and market competitiveness.

From the perspective of resource recycling and environmental protection, the recovery and reuse of the terminal residual value of EVs are integral to the green development strategy of enterprises. By extracting and reprocessing recyclable materials from used EVs, enterprises can decrease their reliance on new resources, lower production costs, and effectively alleviate the dual pressures of resource depletion and environmental pollution. This efficient resource recycling mode aligns with the global concept of a circular economy, greatly enhancing the company's social image and brand responsibility, and further strengthening its competitive advantage and brand attractiveness in the market. In the long run, this transformation of the BM based on sustainable development will yield more robust and sustainable performance growth for the company.

6.1. Theoretical Understanding

This paper is dedicated to comprehensively analyzing how Chinese EV brand enterprises impact their CP through SBMI, offering fresh perspectives and expanding theoretical boundaries in the academic field of SBMI theory and CP research. We constructed and empirically examined the relationship between the six core dimensions of SBMI and CP from the perspective of EV company managers. This study stands out from previous research, which focused on consumer perspectives, single or limited dimensions from the value chain, and economic, social, and environmental perspectives, addressing a notable academic gap.

Firstly, previous EV industry studies exploring BMI from the consumer perspective, while significant, are limited due to consumers' lack of in-depth understanding of internal operations and strategic adjustments. In contrast, our manager-centric approach allows for direct engagement with BMI operations and a more accurate assessment of its impact on CP, which are crucial for both emerging EV companies and traditional automobile brands seeking transformation and modernization.

Secondly, this study transcends traditional BMI research framework by systematically constructing a six-dimensional SBMI analysis framework: VPCI, VCrI, VDI, VCaI, VSI, and

VRI. This innovation deepens BMI understanding and reveals through empirical analysis the differentiated impacts of various SBMI dimensions on CP: VPCI, VCrI, VDI, and VRI significantly enhance CP, while VCaI and VSI exhibit more complex effects. Specifically, VCaI may negatively affect CP due to inappropriate strategies, whereas VSI does not yield significant performance growth in the short term. These findings enrich the theoretical framework of BMI and provide practitioners with detailed and comprehensive strategic guidance.

In conclusion, this study enhances the understanding of SBMI in EV brands by incorporating the managerial perspective and a multidimensional analytical framework. It also accurately depicts the specific impact mechanisms of different innovation dimensions on CP, offering valuable insights and references for both academics and industry practitioners.

6.2. Management Understanding

This paper analyzes the core issues of company management within the EV industry, particularly focusing on strategic pathways to enhance CP and achieve sustainable development. Given the unique and complex nature of the EV industry, its highly integrated supply chain and elevated manufacturing costs frequently result in significantly higher market prices compared to TVs, prompting some companies to adopt low-profit or even negative-profit sales strategies. Consequently, these strategies exert generalized pressure on CP. The core finding of this paper emphasizes that SBMI is crucial for overcoming these challenges and significantly improving the performance of EV brands.

Specifically, the empirical analysis reveals a significant and moderately positive relationship between VPCI, VDI, VRI, and CP. In contrast, the impact of VCrI is present but limited, while the effects of VCaI and VSI are relatively weak. Therefore, managers of EV brand enterprises should prioritize in-depth innovation in areas with substantial potential for performance improvement, particularly VPCI, to establish differentiated market positioning and competitive advantages.

Moreover, it is essential for managers to closely monitor the dynamics of the EV market and the evolving needs of consumers, accurately capturing and addressing the growing demand for personalized and unique value. This requires companies to integrate customer value concepts into product design and ensure that brand messaging and product values resonate with consumers through efficient value communication strategies. Additionally, enhancing the residual value of EVs through technological innovation and optimizing cost structure to reduce ownership costs has become a critical factor in attracting consumers.

It is noteworthy that, given the profound shifts in consumer demand, EV companies must reassess their traditional innovation strategies concerning after-sales services and value capture. Research indicates that EV consumers are less sensitive to after-sales service compared to those in the traditional automotive market. Additionally, VCaI does not significantly impact CP. Hence, managers can appropriately adjust resource allocation to minimize over-investment in these areas and instead concentrate on essential aspects of customer value creation and experience optimization.

Lastly, in response to the diversification and personalization of consumer demand, EV companies should leverage advanced technologies such as 5G and big data analytics to establish accurate market insight and a customer demand forecasting system. Through data-driven decision-making, enterprises can more accurately identify and respond to the unique needs of consumers, enabling personalized customization and precise delivery of customer value propositions. This strategy not only enhances customer satisfaction and loyalty but also fosters sustained growth and competitive advantages for the enterprise, ultimately supporting the achievement of long-term development goals.

6.3. Research Limitations and Future Research Directions

This paper offers valuable insights into the relationship between SBMI and CP within EV brand firms. However, several limitations warrant consideration for future research.

Firstly, while this paper examines the relationship between SBMI and CP from the managerial perspective within EV firms, future research could explore additional factors such as corporate strategy, organizational agility, and technological dynamic capabilities that may influence SBMI. Additionally, examining the mediating effects of SBMI could yield a deeper understanding of these relationships.

Secondly, the analytical methods employed in this research have certain limitations. Future investigations could incorporate more diverse methodologies, including case studies, longitudinal data analysis, and mixed methods that integrate both quantitative and qualitative approaches. These strategies would enable more accurate comparisons of the effectiveness of various EV brand enterprise concerning different aspects of SBMI, revealing unique pathways and contextual factors that influence SBMI.

Thirdly, although this study focuses on the EV industry, the theoretical and practical implications of SBMI extend to other high-tech, high-investment, or rapidly evolving sectors. Future research should assess the applicability of these findings in different contexts to evaluate the generalizability and specificity of SBMI's impact on CP.

Fourthly, an investigation into how different dimensions of SBMI affect key performance metrics such as brand equity, customer satisfaction, loyalty, and market share from the customer perspective could complement our understanding of SBMI's overall effects. Furthermore, exploring the implementation and optimization of innovative SBMs—such as customer engagement and co-creation—within the EV industry could provide additional insights.

Finally, while this study is grounded in data from mainland China, SBMI practices are implemented worldwide, each with distinctive characteristics. Future research can leverage the methodologies and frameworks established in this study to conduct cross-country comparative analyses of EV companies in varying cultural and economic contexts. Such studies would reveal commonalities and divergences in SBMI practices, thereby contributing valuable insights for the sustainable development of the global EV industry and other sectors.

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References

1. Li, Z.; Liang, F.; Cheng, M. Research on the Impact of High-End Ev Sales Business Model on Brand Competitiveness. *Sustainability* **2021**, *13*, 14045. [CrossRef]
2. Kley, F.; Lerch, C.; Dallinger, D. New Business Models for Electric Cars—A Holistic Approach. *Energy Policy* **2011**, *39*, 3392–3403. [CrossRef]
3. eMobility—In-Depth Market Insights & Data Analysis. Available online: https://www.statista.com/study/49240/emobility---market-insights-and-data-analysis/ (accessed on 9 February 2023).
4. Teece, D.J. Business Models, Business Strategy and Innovation. *Long Range Plan.* **2010**, *43*, 172–194. [CrossRef]
5. Foss, N.J.; Saebi, T. Fifteen Years of Research on Business Model Innovation: How Far Have We Come, and Where Should We Go? *J. Manag.* **2017**, *43*, 200–227. [CrossRef]
6. Pan, L.; Xu, Z.; Skare, M. Sustainable Business Model Innovation Literature: A Bibliometrics Analysis. *Rev. Manag. Sci.* **2023**, *17*, 757–785. [CrossRef]
7. Minatogawa, V.; Franco, M.; Rampasso, I.S.; Holgado, M.; Garrido, D.; Pinto, H.; Quadros, R. Towards Systematic Sustainable Business Model Innovation: What Can We Learn from Business Model Innovation. *Sustainability* **2022**, *14*, 2939. [CrossRef]
8. Böckin, D.; Goffetti, G.; Baumann, H.; Tillman, A.-M.; Zobel, T. Business Model Life Cycle Assessment: A Method for Analysing the Environmental Performance of Business. *Sustain. Prod. Consum.* **2022**, *32*, 112–124. [CrossRef]

9. Haftor, D.M.; Costa, R.C. Five Dimensions of Business Model Innovation: A Multi-Case Exploration of Industrial Incumbent Firm's Business Model Transformations. *J. Bus. Res.* **2023**, *154*, 113352. [CrossRef]
10. Osterwalder, A.; Pigneur, Y.; Tucci, C.L. Clarifying Business Models: Origins, Present, and Future of the Concept. *Commun. Assoc. Inf. Syst.* **2005**, *16*, 1–25. [CrossRef]
11. Costa Climent, R.; Haftor, D.M. Value Creation through the Evolution of Business Model Themes. *J. Bus. Res.* **2021**, *122*, 353–361. [CrossRef]
12. Vatankhah, S.; Bamshad, V.; Altinay, L.; De Vita, G. Understanding Business Model Development through the Lens of Complexity Theory: Enablers and Barriers. *J. Bus. Res.* **2023**, *155*, 113350. [CrossRef]
13. Seidenstricker, S.; Scheuerle, S.; Linder, C. Business Model Prototyping—Using the Morphological Analysis to Develop New Business Models. *Procedia—Soc. Behav. Sci.* **2014**, *148*, 102–109. [CrossRef]
14. Zott, C.; Amit, R.; Massa, L. The Business Model: Recent Developments and Future Research. *J. Manag.* **2011**, *37*, 1019–1042. [CrossRef]
15. Timmers, P. Business Models for Electronic Markets. *Elec. Mark.* **1998**, *8*, 3–8. [CrossRef]
16. Richardson, J. The Business Model: An Integrative Framework for Strategy Execution. *Strateg. Chang.* **2008**, *17*, 133–144. [CrossRef]
17. Åström, J.; Reim, W.; Parida, V. Value Creation and Value Capture for AI Business Model Innovation: A Three-Phase Process Framework. *Rev. Manag. Sci.* **2022**, *16*, 2111–2133. [CrossRef]
18. Wirtz, B.W.; Pistoia, A.; Ullrich, S.; Göttel, V. Business Models: Origin, Development and Future Research Perspectives. *Long Range Plan.* **2016**, *49*, 36–54. [CrossRef]
19. Magretta, J. *Why Business Models Matter*; Harvard Business School: Boston, MA, USA, 2002.
20. Böttcher, T.P.; Empelmann, S.; Weking, J.; Hein, A.; Krcmar, H. Digital Sustainable Business Models: Using Digital Technology to Integrate Ecological Sustainability into the Core of Business Models. *Inf. Syst. J.* **2024**, *34*, 736–761. [CrossRef]
21. Geissdoerfer, M.; Vladimirova, D.; Evans, S. Sustainable Business Model Innovation: A Review. *J. Clean. Prod.* **2018**, *198*, 401–416. [CrossRef]
22. Ritter, M.; Schanz, H. The Sharing Economy: A Comprehensive Business Model Framework. *J. Clean. Prod.* **2019**, *213*, 320–331. [CrossRef]
23. Joyce, A.; Paquin, R.L. The Triple Layered Business Model Canvas: A Tool to Design More Sustainable Business Models. *J. Clean. Prod.* **2016**, *135*, 1474–1486. [CrossRef]
24. Pollard, J.; Osmani, M.; Grubnic, S.; Díaz, A.I.; Grobe, K.; Kaba, A.; Ünlüer, Ö.; Panchal, R. Implementing a Circular Economy Business Model Canvas in the Electrical and Electronic Manufacturing Sector: A Case Study Approach. *Sustain. Prod. Consum.* **2023**, *36*, 17–31. [CrossRef]
25. Kurek, J.; Brandli, L.L.; Leite Frandoloso, M.A.; Lange Salvia, A.; Mazutti, J. Sustainable Business Models Innovation and Design Thinking: A Bibliometric Analysis and Systematic Review of Literature. *Sustainability* **2023**, *15*, 988. [CrossRef]
26. Lüdeke-Freund, F.; Carroux, S.; Joyce, A.; Massa, L.; Breuer, H. The Sustainable Business Model Pattern Taxonomy—45 Patterns to Support Sustainability-Oriented Business Model Innovation. *Sustain. Prod. Consum.* **2018**, *15*, 145–162. [CrossRef]
27. Adusei, C.; Tweneboah-Koduah, I. After-Sales Service and Customer Satisfaction in the Automobile Industry in an Emerging Economy. *Open Access Libr. J.* **2019**, *6*, e5167. [CrossRef]
28. Habib, M.D.; Sarwar, M.A. After-Sales Services, Brand Equity and Purchasing Intention to Buy Second-Hand Product. *Rajagiri Manag. J.* **2021**, *15*, 129–144. [CrossRef]
29. Shokouhyar, S.; Shokoohyar, S.; Safari, S. Research on the Influence of After-Sales Service Quality Factors on Customer Satisfaction. *J. Retail. Consum. Serv.* **2020**, *56*, 102139. [CrossRef]
30. Wróblewski, P.; Lewicki, W. A Method of Analyzing the Residual Values of Low-Emission Vehicles Based on a Selected Expert Method Taking into Account Stochastic Operational Parameters. *Energies* **2021**, *14*, 6859. [CrossRef]
31. Kim, M.; Choi, J.; Kim, J.; Kim, W.; Baek, Y.; Bang, G.; Son, K.; Ryou, Y.; Kim, K.-E. Trustworthy Residual Vehicle Value Prediction for Auto Finance. *AI Mag.* **2023**, *44*, 394–405. [CrossRef]
32. Wu, G.; Inderbitzin, A.; Bening, C. Total Cost of Ownership of Electric Vehicles Compared to Conventional Vehicles: A Probabilistic Analysis and Projection across Market Segments. *Energy Policy* **2015**, *80*, 196–214. [CrossRef]
33. Parker, N.; Breetz, H.L.; Salon, D.; Conway, M.W.; Williams, J.; Patterson, M. Who Saves Money Buying Electric Vehicles? Heterogeneity in Total Cost of Ownership. *Transp. Res. Part D Transp. Environ.* **2021**, *96*, 102893. [CrossRef]
34. Rush, L.; Zhou, Y.; Gohlke, D. *Vehicle Residual Value Analysis by Powertrain Type and Impacts on Total Cost of Ownership*; Argonne National Lab. (ANL): Argonne, IL, USA, 2022.
35. Guo, Z.; Zhou, Y. Residual Value Analysis of Plug-in Vehicles in the United States. *Energy Policy* **2019**, *125*, 445–455. [CrossRef]
36. Sinansari, P.; Putri, A.A.; Lopatka, A. Value of Sustainable Business Model in Mining Company: A Case Study. *Procedia Comput. Sci.* **2022**, *207*, 4142–4150. [CrossRef]
37. Xiaohui, Z.; Abdullah, R.N.; Lihua, L.; Jing, L. New Paradigm for Business Model Design and Innovation: An Insight of Product Lifetime Value Based on Electric Vehicle. *E3S Web Conf.* **2024**, *528*, 03007. [CrossRef]
38. Shakeel, J.; Mardani, A.; Chofreh, A.G.; Goni, F.A.; Klemeš, J.J. Anatomy of Sustainable Business Model Innovation. *J. Clean. Prod.* **2020**, *261*, 121201. [CrossRef]

39. Zhang, H.; Xiao, H.; Wang, Y.; Shareef, M.A.; Akram, M.S.; Goraya, M.A.S. An Integration of Antecedents and Outcomes of Business Model Innovation: A Meta-Analytic Review. *J. Bus. Res.* **2021**, *131*, 803–814. [CrossRef]
40. Böttcher, T.P.; Weking, J. Identifying Antecedents and Outcomes of Digital Business Model Innovation. In Proceedings of the ECIS 28th European Conference on Information System, Marrakesh, Morocco, 15–17 June 2020.
41. Evers, N.; Ojala, A.; Sousa, C.M.P.; Criado-Rialp, A. Unraveling Business Model Innovation in Firm Internationalization: A Systematic Literature Review and Future Research Agenda. *J. Bus. Res.* **2023**, *158*, 113659. [CrossRef]
42. Dai, Y.; Wang, Y.; Xu, B.; Wu, Y.; Xian, J. Research on Image of Enterprise After-Sales Service Based on Text Sentiment Analysis. *Int. J. Comput. Sci. Eng.* **2020**, *22*, 346–354. [CrossRef]
43. Pies, I.; Schultz, F.C. The Governance of Sustainable Business Model Innovation—An Ordonomic Approach. *Scand. J. Manag.* **2023**, *39*, 101246. [CrossRef]
44. Boons, F.; Lüdeke-Freund, F. Business Models for Sustainable Innovation: State-of-the-Art and Steps towards a Research Agenda. *J. Clean. Prod.* **2013**, *45*, 9–19. [CrossRef]
45. Kita, P.; Šimberová, I. Business Model Research Proposal: Novel Business Model Concepts Based on Sustainable Multiple Customer Value Creation in a Selected Country. Scientific Papers of the University of Pardubice. Series D, Faculty of Economics and Administration. 44/2018, 2018. Available online: https://www.academia.edu/69320143/Business_model_research_proposal_novel_business_model_concepts_based_on_sustainable_multiple_customer_value_creation_in_a_selected_country (accessed on 23 August 2023).
46. Yi, Y.; Wang, Y.; Shu, C. Business Model Innovations in China: A Focus on Value Propositions. *Bus. Horiz.* **2020**, *63*, 787–799. [CrossRef]
47. Freudenreich, B.; Lüdeke-Freund, F.; Schaltegger, S. A Stakeholder Theory Perspective on Business Models: Value Creation for Sustainability. *J. Bus. Ethics* **2020**, *166*, 3–18. [CrossRef]
48. Han, J.K.; Kim, N.; Srivastava, R.K. Market Orientation and Organizational Performance: Is Innovation a Missing Link? *J. Mark.* **1998**, *62*, 30–45. [CrossRef]
49. Heij, C.V.; Volberda, H.W.; Van, D. How Does Business Model Innovation Influence Firm Performance: The Effect of Environmental Dynamism. *Acad. Manag. Annu. Meet. Proc.* **2014**, *2014*, 16500. [CrossRef]
50. Bick, G.; Brown, A.B.; Abratt, R. Customer Perceptions of the Value Delivered by Retail Banks in South Africa. *Int. J. Bank Mark.* **2004**, *22*, 300–318. [CrossRef]
51. Hinterhuber, A. Value Delivery and Value-Based Pricing in Industrial Markets. *Creat. Manag. Super. Cust. Value* **2008**, *14*, 381–448. [CrossRef]
52. Burström, T.; Parida, V.; Lahti, T.; Wincent, J. AI-Enabled Business-Model Innovation and Transformation in Industrial Ecosystems: A Framework, Model and Outline for Further Research. *J. Bus. Res.* **2021**, *127*, 85–95. [CrossRef]
53. Müller, J.M.; Buliga, O.; Voigt, K.-I. Fortune Favors the Prepared: How SMEs Approach Business Model Innovations in Industry 4.0. *Technol. Forecast. Soc. Chang.* **2018**, *132*, 2–17. [CrossRef]
54. Clauss, T.; Abebe, M.; Tangpong, C.; Hock, M. Strategic Agility, Business Model Innovation, and Firm Performance: An Empirical Investigation. *IEEE Trans. Eng. Manag.* **2019**, *68*, 767–784. [CrossRef]
55. Majava, J.; Isoherranen, V. Business Model Evolution of Customer Care Services. *J. Ind. Eng. Manag.* **2019**, *12*, 1–12. [CrossRef]
56. Langerak, F.; Hultink, E.J.; Robben, H.S.J. The Impact of Market Orientation, Product Advantage, and Launch Proficiency on New Product Performance and Organizational Performance. *J. Prod. Innov. Manag.* **2004**, *21*, 79–94. [CrossRef]
57. Troiville, J. Connecting the Dots between Brand Equity and Brand Loyalty for Retailers: The Mediating Roles of Brand Attitudes and Word-of-Mouth Communication. *J. Bus. Res.* **2024**, *177*, 114650. [CrossRef]
58. Hair, J.; Alamer, A. Partial Least Squares Structural Equation Modeling (PLS-SEM) in Second Language and Education Research: Guidelines Using an Applied Example. *Res. Methods Appl. Linguist.* **2022**, *1*, 100027. [CrossRef]
59. Hair, J.F.; Hult, G.T.M.; Ringle, C.M.; Sarstedt, M.; Danks, N.P.; Ray, S. *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R: A Workbook*; Classroom Companion: Business; Springer International Publishing: Cham, Switzerland, 2021; ISBN 978-3-030-80519-7.
60. Purwanto, A.; Sudargini, Y. Partial Least Squares Structural Squation Modeling (PLS-SEM) Analysis for Social and Management Research: A Literature Review. *J. Ind. Eng. Manag. Res.* **2021**, *2*, 114–123. [CrossRef]
61. Russo, D.; Stol, K.-J. PLS-SEM for Software Engineering Research: An Introduction and Survey. *ACM Comput. Surv.* **2022**, *54*, 1–38. [CrossRef]
62. Fornell, C.; Larcker, D.F. Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *J. Mark. Res.* **1981**, *18*, 39. [CrossRef]
63. Dijkstra, T.K.; Henseler, J. Consistent Partial Least Squares Path Modeling. *MIS Q.* **2015**, *39*, 297–316. [CrossRef]
64. Hair, J.F.; Risher, J.J.; Sarstedt, M.; Ringle, C.M. When to Use and How to Report the Results of PLS-SEM. *Eur. Bus. Rev.* **2019**, *31*, 2–24. [CrossRef]