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Environmental Regulations, Green Marketing, and Consumers' Green Product Purchasing Intention: Evidence from China

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Abstract: With the strengthening of social environmental regulations, consumers' green products purchasing intention is also increasing significantly. Simultaneously, green marketing activities have developed into a vital factor affecting consumers' green products purchasing intention. The first research aim of this paper is to reveal the important relationship between environmental regulation and consumers' green products purchasing intention. Furthermore, another research aim is to reveal the role of green marketing in environmental regulation and consumers' green products purchasing intention. To achieve the above purpose, we primarily employ regression analysis, threshold effect analysis, spatial spillover effect analysis, and heterogeneity tests. We come up with some conclusions. First of all, environmental regulations could enhance consumers' green product purchasing intention. With the reinforcement of environmental regulations, consumers' green product purchasing intention could be effectively elevated. Secondly, green marketing is a positive mediator of the environmental regulations that affect the consumers' green product purchasing intention. By enhancing their green marketing capabilities, businesses could also strengthen consumers' green product purchasing intention. Lastly, in different regions of China, the impact of environmental regulations and green marketing on consumers' green product purchasing intention varies. In the Eastern region, the influence of environmental regulations on consumers' green product purchasing intention is most prominent. However, green marketing exerts the greatest impact on the consumers' green product purchasing intention in the Western region. In addition, this paper provides significant insights for the managers in making management decisions. This is beneficial for enhancing consumers' green product purchasing intention.

Keywords: environmental regulations; green marketing; consumers' green product purchasing intention; multiple regression

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Citation: Li, X.; Wang, C.; Li, D.; Yang, D.; Meng, F.; Huang, Y. Environmental Regulations, Green Marketing, and Consumers' Green Product Purchasing Intention: Evidence from China. *Sustainability* **2024**, *16*, 8987. https://doi.org/10.3390/su16208987

Received: 24 August 2024
Revised: 4 October 2024
Accepted: 14 October 2024
Published: 17 October 2024

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1. Introduction

In the contemporary era of globalization, environmental issues are increasingly prominent. Environmental concerns have become a focal point of international attention. Many countries have introduced various environmental regulatory policies to address the severe environmental challenges [1]. For instance, China has explicitly set development goals for 2030 to achieve "carbon peaking" and for 2060 to achieve "carbon neutrality" [2]. This target underscores a comprehensive promotion of sustainable development. It encompasses a series of stringent environmental standards and regulations [3]. These policies not only exert profound impacts on enterprises' production but also profoundly reshape consumers' perceptions and behaviors. Moreover, environmental regulations, as a vital policy instrument, exert a potent constraint on enterprises' environmental performance [4]. Environmental regulations also compel enterprises to prioritize environmental protection

and adopt more eco-friendly production methods [5]. At the same time, green marketing is gradually evolving into a crucial strategy for companies in market competition. Many enterprises attract consumers by emphasizing the environmental attributes and sustainability of their products [6]. However, the emergence of green marketing is not a coincidence. In China, it represents a necessary choice for businesses when confronted with the escalating consumer demand for eco-friendly products [7]. Additionally, consumers' green product purchasing intention plays an important role in this trajectory. An increasing number of consumers are now focusing on the environmental footprint of products [8]. They also hope to pay premium prices for environmental alternatives [9]. This inclination is particularly pronounced among the younger generation of consumers. They exhibit a heightened awareness of sustainable practices and a stronger inclination towards selecting green brands [10].

There is quite close interconnection among environmental regulations, green marketing activities, and consumers' green product purchasing intention [11]. When enterprises are subject to strict environmental regulations, they are more likely to transmit environmental protection information through green marketing [12]. In addition, some governments also encourage managers to conduct green marketing activities through policies such as subsidies. These measures could also increase consumers' green product purchasing intention. In essence, environmental regulations, green marketing, and consumers' green product purchasing intention stand as crucial subjects in contemporary research [13]. Examining the interplay among these three elements is of paramount importance in addressing global environmental concerns and driving sustainable development. This paper aims to illuminate the intrinsic connections and mechanisms at play among these factors. It contributes towards the establishment of a greener and more sustainable future.

There are three objectives in this paper. Firstly, we hope to elucidate the impact of environmental regulations on the consumers' green product purchasing intention. The influence of the environmental regulations on the consumers' green product buying intention is rather intricate. At the same time, we aspire to delineate the specific mechanisms through which environmental regulations affect the green products purchasing intention. Secondly, we hope to illuminate the mediating effects of the green marketing by which environmental regulations influence the customers' green product purchasing intention. Green marketing plays a mediating role during how environmental regulations impact the customer green product purchasing intention. Through theoretical and data analysis, we seek to reveal the specific processes through which green marketing exerts its influence. Lastly, we want to investigate the influence of environmental regulations in China's different areas on the customer green product purchasing intention. In China, the environmental regulations and consumers' green product purchasing intention varies across different regions. Therefore, we seek to explore the impact of characteristics of environmental regulations in different regions on customers' green product purchasing intention.

The subsequent arrangement is outlined as follows. Section 2 reviews the literature. It draws conclusions about the relationships among environmental regulations, green marketing, and consumers' green product purchasing intention. Section 3 details the theoretical model and research hypotheses. It primarily constructs the theoretical basics while proposing research hypotheses among relevant variables. Section 4 presents the research design. This part mainly includes explanations of variables, data, and empirical models. In Section 5, we show the results. This section comprises the baseline regression analysis, the intermediate effect, the nonlinear threshold effect, the spatial spillover effect, the regional heterogeneity, and the robustness analysis. Section 6 presents the conclusions, contributions, and limitations. This section encompasses conclusions, implications, contributions, limitations, and future directions.

2. Literature Review

2.1. The Relationship between Environmental Regulations and Consumers' Green Product Purchasing Intention

There exists an obvious relationship between environmental regulations and consumers' good purchasing intention [14]. Both interact and collectively propel the processes of green consumption and sustainable development. Environmental regulations serve as governmental mechanisms for environmental protection. Simultaneously, these regulations also function to regulate and guide corporate production through legal regulations. As a result, they further influence the supply of green goods in the market and consumers' purchasing intention [15]. The consumers' green product purchasing intention refers to consumers' inclination when making purchases of goods and services [16]. The enhancement of this inclination also prompts businesses to offer more green products. Thus, it creates a nice cycle [17].

Firstly, the reinforcement of environmental regulations could directly stimulate the elevation of consumers' green product purchasing intention [18]. Stringent environmental standards constrain businesses' production activities. They could propel companies to increase environmental investments and manufacture products that are more environmentally friendly [19]. Consequently, consumers hope to access product options that align with environmental standards. Simultaneously, environmental regulations could reinforce consumers' intention to choose green products [20]. Consumers are inclined to purchase products that align with environmental requirements, thereby driving market demand on green goods [21]. Furthermore, the enhancement of consumers' green goods purchasing intention can optimize the environmental regulations [22]. As key players in the market, consumers' purchasing behavior directly impacts firms' production and the market competitive landscape. When the demand for green products rises among consumers, businesses would be more proactive in producing eco-friendly goods [23]. At the same time, corporations would also adhere to pertinent environmental regulations. Such shifts in market demand would prompt governments to place greater emphasis on environmental concerns [24]. The relevant authorities would further enhance environmental regulations, refining pertinent laws and statutes [25]. It could ensure the protection of the consumers' intention.

There is an obvious relationship between environmental regulations and consumers' green product purchasing intention [26]. Strengthened environmental regulations could incentivize businesses to produce more eco-friendly goods. Consequently, firms could effectively meet consumer demands and enhance consumers' propensity to engage in green purchases [27]. Nevertheless, the bolstering of consumers' intention toward green purchases would also prompt businesses to ramp up the production of green goods. This, in turn, would propel governments to intensify environmental regulations. Such interplay fosters green consumption, propelling society towards a more environmentally conscious and sustainable trajectory [28]. Thus, it is imperative for governments, businesses, and consumers to collaboratively forge a symbiotic interaction. This dynamic relationship can enlarge the scale of the green consumption. It also achieves the sustainable development objectives of the economic and social realms.

2.2. The Relationship between Environmental Regulations and Green Marketing

There exists an obvious relationship between environmental regulations and green marketing activities. These two factors jointly propel businesses towards a green economy [29]. Environmental regulations are the governmental means of managing and supervising corporate environmental conduct. They guide companies' production and marketing activities through legal measures, thereby influencing firms' green marketing strategies and product positioning [30]. In addition, green marketing emphasizes environmental protection and the development in the processes of product design, production, and sales within businesses [31]. Simultaneously, green marketing also involves attracting consumers and enhancing product brand image by communicating environmental messages [32].

Initially, environmental regulations directly impact a company's green marketing strategy [33]. Stringent environmental laws mandate compliance with eco-friendly standards, reducing pollution emissions, and conserving resources. This could drive the eco-friendliness of a company's production processes [34]. Therefore, businesses should increase their investment in environmental technologies and green production to create more environmentally friendly products. Simultaneously, companies would also emphasize the eco-friendly characteristics of their products during the promotion and marketing processes. In addition, businesses transmit environmental information to consumers through green advertisements and eco-friendly promotional methods [35]. By cultivating an eco-friendly image, businesses attract consumers to choose green products. Consequently, the reinforcement of environmental regulations would compel companies to prioritize green marketing. This could drive them towards the transformation into green products and green markets. Furthermore, green marketing practices could facilitate the improvement of environmental regulations [36]. The heightened awareness of consumers regarding environmental conservation and the increasing demand for green consumption are continuously rising. Therefore, in order to meet market demands, businesses must continuously introduce green products and services. Simultaneously, companies should underscore the environmental characteristics of their products during the marketing process to convey eco-friendly concepts. Green marketing could drive the green transformation of businesses. This also prompts governments to pay more attention to environmental protection. Governments could further enhance the management intensity of environmental regulations to ensure the implementation of companies' environmental commitments [37]. Additionally, consumer recognition and demand for green products would also prompt governments to pay closer attention to environmental issues. This also optimizes the effectiveness of environmental regulation enforcement [38]. Furthermore, governmental oversight of companies' environmental practices could ensure the quality of green products in the market [39].

There is an obvious relationship between environmental regulation and green marketing. The strengthening of the environmental protection regulations could compel businesses to emphasize the environmental attributes of their products during the marketing process. Thus, it would drive the advancement of the green marketing. In turn, the development of the green marketing could also facilitate the enhancement of environmental regulations. This virtuous cycle could propel businesses towards a transition to a green economy. Therefore, it is imperative for governments, businesses, and consumers to collaboratively strive towards establishing a robust environmental regulatory framework. The concerted effort could also catalyze the advancement of green marketing, ultimately realizing the goals of sustainable economic and social development.

2.3. The Relationship between Green Marketing and Consumers' Green Product Purchasing Intention

There is a relationship between green marketing activities and consumers' green product purchasing intention. Together, they could propel the dissemination of green products in the market [40]. Furthermore, green marketing entails the emphasis on environmental sustainability throughout the product design, production, promotion, and sales processes of businesses [41]. Simultaneously, businesses attract consumers and enhance their brand image by disseminating environmental messages and cultivating an eco-friendly image. Consumers' green product purchasing intention refers to their inclination to consider environmental and social responsibility factors when purchasing goods. Strengthening this inclination prompts businesses to produce and offer more green products [42].

Firstly, green marketing initiatives directly influence consumers' green product purchasing intention. By utilizing green advertisements and eco-friendly labeling, businesses communicate the ecological attributes and advantages of their products to consumers [43]. Simultaneously, companies shape an eco-friendly image by emphasizing the environmental ethos of their products. This strategy aims to attract a larger consumer base towards choosing green products. Consumers could develop trust in the company's environmental

commitments and the eco-friendly characteristics of its products. Consequently, it could elevate their willingness to purchase green products [44]. Thus, the effective implementation of green marketing could stimulate consumers' green product purchasing intention. Green marketing also serves to steer consumers towards green products. It also fosters the widespread adoption and promotion of environmentally friendly products in the market. Furthermore, the strengthening of consumers' green product purchasing intention would drive companies to engage more extensively in green marketing initiatives [45]. As consumer awareness of environmental issues escalates, businesses would increasingly underscore the eco-friendly attributes of their products. They would also disseminates environmentally conscious principles throughout their marketing endeavors. Simultaneously, the growing demand from consumers for green products would prompt companies to launch a greater number of eco-friendly promotional campaigns. This would also enhance the cultivation of their green image. Consequently, the bolstering of consumers' green product purchasing intention could propel companies to more vigorously engage in green marketing efforts [46]. Moreover, companies would also increasingly emphasize environmental principles in their product design, production, and marketing processes. This also drives them towards a transition to a greener direction [47].

There is relationship between green marketing and consumers' green product purchasing intention. The execution of green marketing initiatives could ignite consumers' inclination towards green product purchasing intention. Simultaneously, it could promote the proliferation and dissemination of eco-friendly products in the market [48]. Moreover, the bolstering of consumers' green product purchasing intention would also prompt companies to engage more extensively in green marketing activities. Therefore, businesses should actively pursue green marketing initiatives, disseminate environmental messages, and craft eco-friendly images. This approach could effectively inspire consumers' green product purchasing intention. Furthermore, consumers should also heighten their awareness of eco-friendly consumption, and collectively propel the advancement of a green economy [49].

Previous scholars have delved into issues regarding environmental regulations, green marketing, and consumers' green product purchasing intentions. They lay a crucial research foundation for subsequent studies. However, there are still some shortcomings in the scholars' research. First of all, there is a scarcity of studies that concurrently investigate these three variables. There is an abundant body of literature on the relationship between environmental regulations and green marketing, but there is a paucity of research exploring the connection between consumers' green product purchasing intentions and these factors. Secondly, studies that consider green marketing as a mediating variable are relatively scarce. Many scholars tend to investigate green marketing as either an explanatory or dependent variable. Few scholars have explored green marketing as a mediating variable. Thirdly, there is a shortage of research examining the relationship between environmental regulations and consumers' green product purchasing intentions in Chinese different regions. Most scholars predominantly study the relationship between environmental regulations and consumers' green product purchasing intentions from a macro perspective. However, fewer studies focus on specific regions within China. To address the aforementioned gaps, this paper will comprehensively assess the relationship between the environmental protection regulations and consumers' green product purchasing intentions. Furthermore, this paper will also consider the green marketing as a mediating variable. We will also investigate the intrinsic relationship between environmental regulations and consumers' green product purchasing intentions in various regions of China.

3. Theoretical Framework and Research Hypotheses

3.1. The Influence of Environmental Regulation on Green Marketing

The components of green marketing activities encompass green brand image, green products, the green advertising, and green recycling [50]. Environmental regulations exert profound and multidimensional impacts on green marketing.

Firstly, for green brand image, environmental regulations compel companies to meet higher environmental standards and requirements. They compel companies to proactively take actions to enhance their green performance, thereby shaping a more appealing green brand image [51]. Additionally, companies demonstrate green commitment by actively participating in environmental projects and publicly showcasing their environmental achievements. This could also strengthen consumer recognition and goodwill towards the brand [52].

Secondly, in the realm of green products, environmental regulations directly propel the greening process of products. Green products refer to products with minimal environmental impact in the processes of production, use, and disposal. These products typically exhibit low carbon emissions, resource consumption, and pollutant emissions. At the same time, they are also produced and recycled in sustainable manners. Green products could help mitigate adverse environmental impacts and foster sustainable development. To comply with environmental regulatory requirements, companies must increase efforts and enhance production processes. Simultaneously, companies need to utilize more environmentally friendly materials to produce products with lower environmental impacts. This not only enhances the green attributes of the products but also strengthens their competitiveness in the market [53]. Furthermore, environmental regulations also compel companies to conduct a more comprehensive green assessment of the entire lifecycle of their products. This includes considerations for environmentally friendly practices such as raw material sourcing, production processes, usage phase, and post-disposal treatment. Here, the impact on green products means the influence on the environmental protection properties of green products. In other words, we want to discuss the impact of environmental regulations on the green properties of products. The green attributes of the product, here, cover a larger range. Organic agricultural products show green properties. The production process of the product without the emission of pollutants can also present the green attributes of the product [53]. In addition, the raw materials needed to produce the product can be environmentally friendly and not consume non-renewable resources. Some consumable products can degrade themselves in the short term without polluting the environment. These are the environmental attributes of green products. Therefore, we want to study the environmental regulations' impact on these green attributes of products.

Thirdly, green advertising is significantly influenced by environmental regulations [54]. When companies engage in green advertising campaigns, they must communicate the green characteristics of their products more accurately and authentically. This is because stringent regulatory environments do not permit false or exaggerated claims in advertising. Consequently, the content of green advertising becomes more pragmatic, conveying more valuable information to consumers. Simultaneously, under the affection of the environmental regulations, relevant advertisements would pay more attention to promoting the green characteristics of goods. Furthermore, enterprises would also increase the development of green characteristics of products, thus contributing to the advertising and publicity of green attributes of products. It could be seen that the development of environmental regulations would promote advertising to strengthen the promotion of green characteristics of products to a certain extent.

Fourthly, green recycling is significantly influenced by environmental regulations [55]. The green recycling of products refers to the process of recycling and reusing used products. In the process of green recycling, discarded products are collected for recycling, undergo processing, and are then reprocessed into new products or raw materials. This approach enables the reuse of resources and reduces negative environmental impacts. Green recycling helps reduce waste emissions and lower energy consumption. Furthermore, green recycling extends the utilization period of resources, promoting the development of a circular economy. By promoting and implementing the green recycling of products, resource waste can be reduced, the environment protected, and sustainable development goals achieved. Therefore, with the strengthening of environmental regulations, the societal willingness for green recycling would also increase, indicating a positive relationship between the two [56].

Based on the aforementioned analysis, we put forth the following hypotheses:

H1a. *Environmental regulations show a positive influence on green brand image.*

H1b. *Environmental regulations show a positive impact on green products.*

H1c. *Environmental regulations show a positive effect on green advertising.*

H1d. *Environmental regulations have a positive impact on green recycling.*

3.2. The Influence of Environmental Regulations on Consumers' Green Product Purchasing Intention

Environmental regulations show a vital impact on consumers' green good purchasing intention [57]. Initially, these regulations stimulate businesses to produce a greater array of environmentally sustainable goods. These items exhibit enhanced eco-friendly attributes, prompting consumers to show a greater propensity towards purchasing them when presented with choices [58]. Furthermore, environmental regulations could enhance the requirements for businesses to disclose environmental information. Additionally, they also enable consumers to gain a clearer understanding of the environmental impacts of products. These include resource consumption and pollution emissions during the production process [59]. Moreover, strict environmental regulations foster a societal atmosphere that prioritizes environmental conservation. Within this milieu, consumers' environmental consciousness continually strengthens. In this way, consumers would pay greater attention to the environmental implications of their consumption behavior. This heightened awareness translates into concrete purchasing actions, encouraging them to more actively opt for green products [60]. Thus, environmental regulations elevate consumers' awareness and acceptance of green products through various means. Simultaneously, environmental regulations also exert a positive impetus on consumers' green product purchasing intention. Building upon the aforementioned analysis, we posit the following research hypothesis:

H2. *Environmental regulations have a positive influence on consumers' green product purchasing intention.*

3.3. The Impact of Green Marketing on Consumers' Green Product Purchasing Intention

Green marketing shows an impact on consumers' green product purchasing intention. Specifically, elements within green marketing each influence consumers' inclination towards green purchases. These elements are green brand image, green products, green advertising, and recycling initiatives [61]. First of all, the green brand image conveys a company's environmental values and social responsibility to consumers. A company with a positive green brand image makes consumers feel its respect and protection towards the environment. Consequently, the company earns consumers' favor and trust [62]. However, consumers tend to prefer brands that have established a quite positive green image. Furthermore, it signifies a form of quality identification that could significantly stimulate consumers' green product purchasing intention. Green products serve as the core carriers of green marketing. When consumers choose green products, they perceive the environmental benefits based on the characteristics of the products themselves. High-quality green products could meet consumers' dual needs for quality and environmental protection. This, in turn, enhances consumers' green product purchasing intention [63]. In addition, green advertising plays a crucial role in information transmission and guidance [64]. Through green advertising, companies could intricately showcase their green brand image and the advantages of green products to consumers. Vivid and authentic green advertisements have the ability to capture consumers' attention. They allows consumers to understand the value of green products and strengthening their confidence in them. This, in turn, effectively promotes consumers' green product purchasing intention. Moreover, green recycling is an essential link in the green marketing chain. By establishing a sophisticated

product recycling mechanism, companies could show consumers the completeness of a product's lifecycle [65]. Consumers would perceive that choosing such products is good for the environment during use and ensures the proper disposal after consumption. This holistic green experience would strengthen their willingness to purchase and lead them to be more willing to pay for green products [66]. Thus, these four aspects of green marketing collectively influence consumers' green product purchasing intention. Building upon the aforementioned study, we posit the following research hypothesis:

H3a. *Green brand image has a positive impact on consumers' green product purchasing intention.*

H3b. *Green products show a positive impact on consumers' green product purchasing intention.*

H3c. *Green advertising shows a positive impact on consumers' green product purchasing intention.*

H3d. *Green recycling shows a positive impact on consumers' green product purchasing intention.*

Based on the research of previous scholars, we construct a theoretical research model. The specific model contents and the relationships of research hypotheses are shown in Figure 1. On one hand, environmental regulations directly show a positive impact on consumers' green purchasing intention. In other words, optimizing environmental regulations could effectively enhance consumers' green products purchasing intention. On the other hand, environmental regulations also influence consumers' green products purchasing intention based on green brand image, green products, green advertising, and green recycling. This implies that environmental regulations could further drive consumers' green products purchasing intention by leveraging these four aspects. To evaluate the effectiveness of this theoretical model, we combine the relevant data and empirical methods to further test the theoretical model.

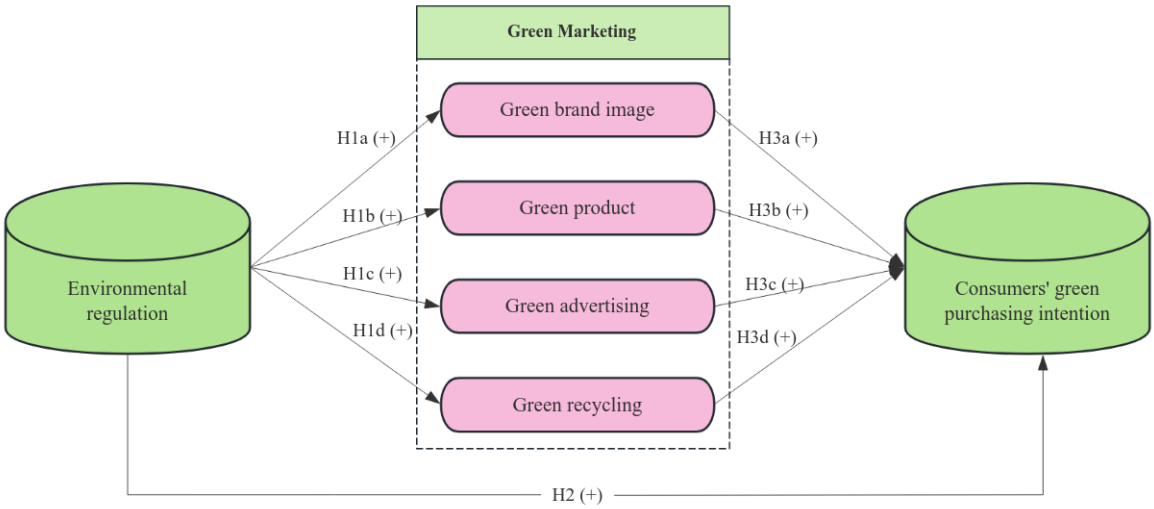


Figure 1. Theoretical model of this paper.

4. Research Design

4.1. Variables

(1) The explained variable is customers' green purchasing intention (GPI). For the measurement of green purchasing intention, we draw upon the studies of Kumar (2023) [67] and Witek (2024) [68]. A questionnaire is crafted to measure green purchasing intention, with specific items listed in Table 1. Additionally, we employ the Likert 5-point scale methodology to collect data.

Table 1. Question items for measuring consumers' green product purchase intention.

Number	Questions
Y1	You are concerned about the quality of green products.
Y2	You frequently purchase green commodities.
Y3	You are willing to pay extra for green goods.
Y4	Your acquaintance with green product brands is notably heightened.
Y5	You possess comprehensive understanding of green certification symbols.
Y6	You exhibit a profound level of trust in green certification symbols.
Y7	You have a thorough grasp of the advantages of green products.
Y8	Your capacity to seek information on green products is formidable.
Y9	You have influenced the green product purchasing behaviors of family members or friends.
Y10	You acknowledge the efficacy of green marketing strategies.

(2) The explanatory variable is environmental regulation (ER). Historically, many scholars employ various methods to measure environmental regulations [69]. Given the variables under consideration in this study, we gauge environmental regulation using the pollution abatement costs. This paper assesses the Environmental Regulation Evaluation Index to calculate the environmental regulatory levels in China over the years. This index could reflect the actual scale of China's efforts in industrial environmental governance. Moreover, it mitigates assessment errors in environmental regulatory levels caused by variations in industrial structures in different regions. The measurement formula is as follows:

$$C_n = \frac{I_n}{A_n} \quad (1)$$

In Formula (1), C_n represents the cost of pollution control per unit of industrial output value in China for the nth year. In represents the amount invested in industrial pollution control completed in the nth year. A represents the industrial value added for the nth year. In this context, a higher value of C implies a more intensity of environmental regulation. However, a lower value indicates a weaker intensity of environmental regulation. All data for those indicators are sourced from the China Statistical Yearbook. We have selected data from the years 2001 to 2020 for this study.

(3) The mediating variable is green marketing (GM). In measuring green marketing, this paper primarily draws upon the research of Correia (2023) [70] and Soomro (2024) [71]. Green marketing is segmented into four secondary indicators. These indicators include green brand image (GB), green products (GP), green advertising (GA), and green recycling (GR). Furthermore, we utilize the Likert 5-point scale method to obtain the relevant data. The questionnaire items for measuring green marketing are shown in Table 2.

(4) Controlling variables

Apart from environmental regulations and green marketing, we have identified various factors influencing the consumers' green product purchasing intention. On the consumer front, aspects such as the income, age, and level of education play pivotal roles in shaping consumers' inclination towards green buying decisions. Furthermore, the price of green products also impacts consumers' green product purchasing intention. Hence, to mitigate endogeneity concerns to the fullest extent possible, we control for other variables that are likely to exert significant influences. These controlling variables are as follows. (a) Consumer income (CI): Consumers with different income levels exhibit variations in their willingness to purchase green products. Higher-income consumers may lean towards consuming green products [72]. (b) Consumer age (CA): Generally, older consumers tend to have a higher inclination towards green consumption [73]. (c) Consumer education level (CE): Consumers with higher levels of education possess greater awareness of green products. Consequently, consumers' willingness to engage in the green consumption tends to be relatively higher [74]. (d) Product price (CP): Excessively high prices of green products

could impede the consumers' intention to engage in green consumption [75]. The data for these indicators are sourced from survey questionnaires.

Table 2. Questionnaire items for measuring green marketing.

Index	Number	Questions
Green brand image	C1	The green brand embodies a green image.
	C2	The impression of a green brand conveys qualities of sustainability and environmental consciousness.
	C3	The image of a green brand could actively embody the principles of sustainable development.
Green product	C4	Green products are of superior quality.
	C5	The after-sales service of green products is excellent.
	C6	The functional characteristics of green products meet your expectations.
Green advertising	C7	The credibility of green advertisements for green products is substantial.
	C8	Green advertisements have the potential to enhance your affinity towards the brand.
	C9	Green advertisements facilitate your comprehension of the characteristics of green products.
Green recycling	C10	You are familiar with the recycling initiatives associated with green products.
	C11	You consider the green recycling processes for green products to be clear and convenient.
	C12	Your satisfaction with the green recycling services for green products is high.

4.2. Sample and Reliability Testing

4.2.1. Sample and Sampling Procedure

The explanatory variable regarding environmental regulation in this paper is from the China Statistical Yearbook. In addition, many data are from the survey questionnaire. Hence, we utilize a questionnaire survey approach, combining it with Likert 5-point scale method to acquire a majority of the variable data.

From 2021 to 2023, we sent out 622 research questionnaires. In terms of questionnaire region selection, we chose provinces from various regions of China. These provinces are representative in the development of green industries. Firstly, in the well-developed eastern regions in terms of green industry, we conducted questionnaire surveys in Shanghai, Guangzhou, Beijing, and Shenzhen. In the western regions where green industry development is lagging, we conducted questionnaire surveys in areas such as Xinjiang, Qinghai, and Ningxia province. For the central regions where green industry development is moderate, we selected Heilongjiang, Liaoning, Hunan, and Hebei for questionnaire surveys.

In the selection of respondents, we targeted individuals closely associated with environmental regulations, green marketing, and consumers. Regarding environmental regulations, the surveyed participants include government regulatory bodies closely involved in formulating environmental policies. In the realm of green marketing, respondents encompass marketing personnel for green products, marketing managers, and consumers purchasing green products.

We initially employed a small-scale pilot survey by distributing 30 research questionnaires. By analyzing the results of these 30 questionnaires, we eliminated irrelevant items and finalized all items in the research questionnaire.

In the formal survey phase, 622 research questionnaires were distributed in total. Simultaneously, 541 valid responses were collected. Consequently, the effective response

rate for the questionnaire retrieval stood at 86.98%. At the same time, in each region, we received a relatively positive response from the respondents. These survey questionnaires also show significant representative.

Combining the findings from the research questionnaires and the panel data, we conducted a statistical analysis on the variables. The analysis results are shown in Table 3. The table showcases multiple facets of the data for all the variables examined.

Table 3. Descriptive statistical results of variables.

Variables		Min.	Max.	Mean	Standard Deviation
Explained variable	GPI	1	5	2.1388	0.7932
Explanatory variable	ER	0.8821	4.7922	2.7902	0.7861
Mediating variable	GB	1	5	2.5917	0.8025
	GP	1	5	2.6209	0.8362
	GA	1	5	2.5481	0.8174
	GR	1	5	2.7809	0.7993
Control variables	CI	1	5	2.6731	0.7630
	CA	1	5	2.0483	0.8025
	CE	1	5	3.1792	0.9144
	CP	1	5	2.8403	0.8653

4.2.2. Reliability and Validity Testing

(1) Reliability testing

Reliability testing was conducted to assess the internal consistency of variables within a model [76]. The questionnaire utilized in this paper employs a Likert 5-point scale. Therefore, Cronbach's α value could be employed as a reference for reliability testing to conduct a reliability analysis. The questionnaire scale in this paper comprises five latent variables and 22 observed variables.

Initially, the evaluation of questionnaire observed variables was based on examining the rationality of items with the use of the corrected item–total correlation coefficient. A threshold of 0.4 is deemed acceptable for purifying measurement items [77]. Subsequently, we analyzed the reliability coefficients of the 22 observed variables within the five latent variables individually. At the same time, computations were performed using SPSS 22.0 software. The results are shown in Table 4. The Cronbach's α coefficients for the 5 latent variables ranged from 0.806 to 0.859, all exceeding 0.8. Moreover, the composite reliability (CR) values of the variables fall between 0.72 and 0.86, all surpassing 0.7. These inspection outcomes indicate the favorable reliability of the questionnaire scale adopted in this paper.

Table 4. Cronbach's α coefficients for each scale.

latent Variables	Number of Observed Variables	CR	Cronbach's α Coefficient
GPI	10	0.72	0.842
GB	3	0.84	0.806
GP	3	0.86	0.817
GA	3	0.76	0.859
GR	3	0.79	0.833

(2) Validity testing

The validity test results indicate that the factor loadings of all latent variables' observed variables are consistently above 0.62, signifying their significance. It is proved that latent

variables have good convergent validity. Additionally, the inter-construct correlations are all less than the square root of their average variance extracted (AVE). This implies distinctiveness among the latent variables. Hence, the reliability and validity tests have been satisfactorily passed by all latent variables' scales. We could proceed with the next step to test the model hypotheses.

4.3. Empirical Model

4.3.1. Establishment of the Baseline Regression Model

We hoped to investigate the relationships among regulatory environment, green marketing, and consumers' green product purchasing intention. Thus, we built upon the research findings of relevant scholars [78] to formulate the following regression model:

$$LnGPI_{it} = \alpha_0 + \alpha_1 LnER_{it} + \alpha_2 LnGM_{it} + \varepsilon_{it} \quad (2)$$

where LnGPI represents consumers' green product purchasing intention. LnER denotes environment regulation. LnGM signifies green marketing. ε_{it} denotes the error term. To mitigate potential biases stemming from omitted variables during the estimation process, we derived a new regression model (3) based on model (2). In model (3), relevant control variables that may influence consumers' green product purchasing intention have been incorporated. The form of model (3) is as follows:

$$LnGPI_{it} = \alpha_0 + \alpha_1 LnER_{it} + \alpha_2 LnGM_{it} + \beta_i LnN_{it} + \varepsilon_{it} \quad (3)$$

where N_{it} represents the control variables impacting consumers' green product purchasing intention. We wanted to further delve into the impact process of the interaction between regulatory environment and green marketing on consumers' green product purchasing intention. Thus, we constructed another regression model (4). Model (4) can elucidate the effects of the interaction term between regulatory environment and green marketing on consumers' green product purchasing intention. The form of model (4) is as follows:

$$LnGPI_{it} = \alpha_0 + \alpha_1 LnGM_{it} + \alpha_2 (LnGM_{it} \times LnER_{it}) + \beta_i LnN_{it} + \varepsilon_{it} \quad (4)$$

4.3.2. Threshold Regression Model Construction

With the changing regulatory landscape, the influence of green marketing on consumers' green product purchasing intention may exhibit nonlinear variations [79]. Therefore, we went a step further and developed a panel threshold regression model (5). By employing this model, we could unveil the environmental regulatory threshold effect of green marketing on consumers' green product purchasing intention. The form of model (5) is as follows:

$$LnGPI_{it} = \alpha_0 + \alpha_1 Lngi_{it} \times I(Lndf_{it} \leq c) + \alpha_2 Lngi_{it} \times I(Lndf_{it} > c) + \beta_i LnN_{it} + \varepsilon_{it} \quad (5)$$

where I(·) represents the indicator function. c denotes the threshold value. Moreover, the central threshold value is the environmental regulation.

5. Results

5.1. Baseline Regression Analysis

The results regarding the influence of the environmental regulations on consumers' green product purchasing intention are presented in Table 4. Model (1) shows that the coefficient for environmental regulation is quite positive. It is statistically significant at the 5% level. This implies that environmental regulations could significantly stimulate consumers' green product purchasing intention. Several potential reasons account for this occurrence. On one hand, governmental environmental regulatory policies could enhance consumers' green product purchasing intention. On the other hand, societal environmental regulations exhibit a more pronounced effect on consumers' green product purchasing

intention. Moreover, Model (2) incorporates four control variables on top of Model (1). These control variables are consumer income, consumer age, consumer education level, and product price. The analysis of Model (2) reveals that environmental regulation remains positive. It is also significant at the 5% level. Thus, hypothesis H2 is validated. It passes the test.

Moreover, the coefficient for LnCI is positive and obviously significant. This also indicates that an increase in consumer income would elevate consumers' green product purchasing intention. In addition, the coefficient for LnCA is positive and obvious significant. This shows that older consumers display a stronger inclination towards green consumption compared to younger consumers. The coefficient for LnCE is positive and significant. This implies that consumers with a higher level of education demonstrate a stronger willingness to purchase green products. However, the coefficient for LnCP is negative and significant. This indicates that an increase in product prices would, to some extent, inhibit consumers' green product purchasing intention. To sum up, the performance of these four control variables aligns with the general theoretical consensus.

5.2. Mediation Analysis

We checked the influence of environmental regulations on consumers' green products purchasing intention. Next, we would continue to explore the mediating role of green marketing. Initially, green marketing would be delineated into four dimensions, namely, green brand image, green products, green advertising, and green recycling. Simultaneously, the results are presented in Table 5. Model (3) shows that the coefficients indicating the impact of environmental regulations on green brand image, green products, and green recycling are significant at the 5% level. They are positive values. Furthermore, the coefficient representing the influence of environmental regulations on green advertising is positive and significant at the 10% level. This suggests that hypotheses H1a, H1b, H1c, and H1d have all passed the test. Additionally, the coefficients reflecting the impact of green brand image, green products, green advertising, and green recycling on consumers' purchase intention are all positive and significant. This indicates that hypotheses H3a, H3b, H3c, and H3d have all passed the test.

Table 5. Regression results of the impact of environmental regulations on consumers' green product purchasing intention.

Variables		lnGPI	lnGPI	lnGM				lnGPI
		(1)	(2)	(3)				(4)
				LnGB	LnGP	LnGA	LnGR	
LnER		4.552 ** (0.061)	5.832 ** (0.076)	7.832 ** (0.055)	8.817 ** (0.072)	8.661 * (0.042)	14.017 ** (0.083)	2.317 *** (0.056)
LnGM	LnGB							0.171 ** (0.273)
	LnGP							0.254 *** (0.509)
	LnGA							0.178 ** (0.832)
	LnGR							0.173 *** (0.041)
LnCI			0.278 ** (0.033)	0.380 ** (0.042)	0.117 * (0.029)	0.542 ** (0.037)	0.719 *** (0.043)	0.558 ** (0.064)
LnCA			0.3572 ** (0.049)	0.4729 * (0.051)	0.5226 ** (0.046)	0.3924 ** (0.072)	0.4192 * (0.083)	0.9204 *** (0.036)

Table 5. *Cont.*

Variables	lnGPI	lnGPI	lnGM				lnGPI
	(1)	(2)	(3)				(4)
			LnGB	LnGP	LnGA	LnGR	
LnCE		0.845 * (0.026)	0.193 ** (0.004)	0.482 ** (0.029)	0.588 *** (0.042)	0.739 ** (0.061)	0.947 *** (0.048)
LnCP		−0.052 ** (0.029)	−2.36 *** (1.893)	−3.174 * (1.003)	−2.994 ** (1.172)	−3.438 ** (1.226)	−3.71 *** (1.3492)
C	4.2205 * (0.014)	7.7321 ** (0.086)	13.592 *** (0.259)	12.591 * (0.372)	11.732 ** (1.482)	15.331 * (0.892)	30.718 * (12.743)
Time	Control	Control	Control	Control	Control	Control	Control
Individual	Control	Control	Control	Control	Control	Control	Control
N	14086	14086	14086	14086	14086	14086	14086
R^2	0.5209	0.4178	0.6322	0.6179	0.7324	0.5183	0.6703

Note: ***, **, and * denote statistical significance at the 1%, 5%, and 10% confidence levels, respectively.

Moreover, Table 5 shows the coefficient representing the influence of the environmental regulations on the consumers' green goods purchasing intention. The coefficient in Model (4) is smaller than it is in Model (2). It means the presence of a significant mediating effect of the green marketing activities during the influence of the environmental regulations on the consumers' green goods purchasing intention. Thus, the regression result confirms hypothesis H1 again.

5.3. Analysis of Nonlinear Threshold Effects

We wanted to ensure the accuracy of the research findings. Thus, we integrated an analysis of the nonlinear threshold effects of environmental regulations on consumers' green product purchasing intention [80]. This study investigates the interplay between the environmental regulations and the green marketing activities by the panel regression model. It also explores whether the nonlinear relationship between the environmental regulations and the consumers' green goods purchasing intention varies with changes in the above two variables. First of all, we carried out a threshold test on the panel model. Table 6 shows the results. The conclusions reveal significant single thresholds for environmental regulations and green marketing concerning consumers' green product purchasing intention. However, dual thresholds and triple threshold effects are nonexistent. Thus, we could establish a single-threshold regression model.

Table 6. The analysis results concerning the existence of thresholds.

Threshold Variables	Number of Thresholds	F	*p*	BS Frequency	Threshold Value	1%	5%	10%
LnER	Single threshold	15.306	0.0001	400	1.5936	18.0932	10.0335	7.1844
LnGM	Single threshold	27.826	0.0001	400	7.2208	22.1746	24.9832	27.0239

Table 7 shows the single-threshold regression results. When the environmental regulations and green marketing activities are below the threshold values, the regression coefficient is significant. It is obviously positive at the 5% level. It also shows the presence of a notable spillover effect from the environmental protection regulations. Furthermore, when the environmental regulations and green marketing activities surpass the threshold values, the coefficient continues to show a significantly positive relationship at the

10% level. This also surpasses the previous coefficient and implies a significant driving force. Additionally, green marketing activities play a positive mediating role and exhibit a non-linear characteristic of increasing the marginal effects.

Table 7. Single-threshold regression analysis results.

Variable	Coefficients	Variable	Coefficients
Threshold value	1.5936	Threshold value	7.2208
LnER × I (q ≤ 1.5936)	1.2234 **	LnGM × I (q ≤ 7.2208)	1.9741 **
LnER × I (q > 1.5936)	1.0032 *	LnGM × I (q > 7.2208)	1.8862 *
Control variables	Control	Control variables	Control
N	2809	N	2809
R^2	0.6732	R^2	0.7588

Note: ** and * indicate significance at the 5% and 10% confidence levels in the regression results.

5.4. Spatial Spillover Effect Analysis

The prior regression analysis does not fully capture the process by which explanatory variables influence the dependent variable [81]. To address this, we decomposed the regression coefficients via partial differentiation, thereby isolating the direct and indirect effects of each explanatory variable. This approach allows for a more precise examination of the interrelationships among variables. The detailed results are presented in the last two columns of Table 8. The direct effect coefficient for the key variable, environmental regulation, is significantly positive at the 5% level in the model. Additionally, the indirect effect coefficient for environmental regulation is also significant and positive at the 5% level. This suggests that environmental regulation boosts local consumers' propensity to purchase green products. Furthermore, it is detrimental to the increase in green purchasing intentions of consumers in neighboring areas. This situation may arise because local businesses in the region have innovated and improved under environmental regulations. Their green products may have comparative advantages in terms of price or quality, putting neighboring businesses at a disadvantage in competition. This could reduce the diversity and competitiveness of green products in neighboring areas, thereby influencing consumer choices and purchase intentions. Additionally, the coefficient indicating the direct impact of green marketing is notably positive at the 5% significance level, whereas the coefficient for the indirect impact lacks significance. This suggests that corporate green marketing can bolster the growth of the local green economy. However, it does not have a significant influence on the green economic development of adjacent regions. Consequently, corporate green marketing demonstrates a spatial spillover effect concerning consumers' intentions to purchase green products.

Table 8. Results of spatial model regression and spatial effect decomposition.

Variables	Main	Wx	Spatial	Variance	Direct	Indirect
LnER	0.284 ** (0.013)	−0.872 * (0.049)			0.392 ** (0.021)	−5.082 ** (0.019)
LnGM	0.057 *** (0.036)	−0.163 ** (0.051)			0.072 ** (0.015)	0.096 (0.028)
ρ			0.558 ** (0.042)			
σ^2				0.294 * (0.025)		
Control variable			Control			
Obs	4230	4230	4230	4230	4230	4230
N	338	338	338	338	338	338
R^2	0.552	0.703	0.471	0.492	0.284	0.227

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

5.5. Regional Heterogeneity Analysis

We have found that environmental regulations, corporate green marketing, and consumers' green purchasing intentions exhibit strong spatial correlations. Given China's vast territorial expanse, substantial variations exist in the environmental protection regulations and consumers' green product purchasing intentions across different regions. To study the relationship between both variables in various regions, we undertook the regional heterogeneity.

Based on the research of former scholars on China's regional division, we segmented the regions into Eastern, Central, and Western regions [82]. The heterogeneity relationships among environmental regulations, corporate green marketing, and consumers' green product purchasing intentions in different regions were investigated. The results of regional heterogeneity estimation are presented in Table 9. The table reveals that there are certain disparities in the relationships between environmental regulations, corporate green marketing, and consumers' green product purchasing intentions in China's different regions. In examining the three regions, it is evident that environmental regulations positively impact consumers' intentions to purchase green products. The strength of this influence is most pronounced in the Eastern region, followed by the Central region, and is least pronounced in the Western region. This pattern is largely due to the more stringent environmental policies in the Eastern region, where even small regulatory changes can significantly sway consumer behavior toward green products. Conversely, the role of green marketing activities in shaping consumers' green purchasing decisions is both positive and significant across all regions. The Western region experiences the strongest influence, with the Central and Eastern regions following. This is mainly because the Western region has a comparatively weaker capacity for corporate green marketing. However, even slight improvements in green marketing strategies in the Western region could significantly boost local consumers' inclination to purchase green products.

Table 9. Analysis of regional heterogeneity estimation.

Variable	Eastern Region	Central Region	Western Region
LnER	4.299 * (0.571)	2.894 *** (0.392)	1.733 ** (0.185)
LnGM	0.541 ** (0.072)	2.386 * (0.034)	3.941 ** (0.052)
LnCI	0.832 ** (0.175)	0.465 * (0.256)	0.336 *** (0.149)
LnCA	0.264 ** (0.018)	0.146 ** (0.024)	0.392 * (0.071)
LnCE	0.172 *** (0.038)	0.219 * (0.146)	0.385 ** (0.172)
LnCP	0.046 ** (0.193)	0.059 *** (0.137)	2.873 * (0.092)
C	3.885 * (0.982)	4.307 ** (1.925)	3.044 ** (1.738)
N	583	583	583
R^2	0.572	0.509	0.632

Note: ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

5.6. Robustness Testing

To improve the precision and dependability of this study, a robustness test was performed [83]. Rigorous data processing was performed. Missing values were imputed using the average growth rate of the data. Outliers were treated with deletion. Additionally, to mitigate the impact of outliers, data truncation was applied in this paper.

Table 10 displays the outcomes from the robustness analysis conducted on the refined dataset. In Models (1), (2), and (3), the environmental regulation coefficients are both positive and statistically significant. Likewise, the green marketing coefficients in these models also exhibit positive significance. Additionally, the control variables like consumer income, age, and education level have positive and significant coefficients. Conversely, the coefficient for product price is negative and significant. The key variables mentioned above demonstrate consistency, in direction and significance, with previous research. These findings indicate that the model specifications and regression results of this paper are both reliable and robust. Therefore, we can proceed to the next step.

Table 10. Results of robustness testing.

Variable		(1)	(2)	(3)
LnER		4.015 * (0.294)	3.729 * (0.253)	2.736 ** (0.188)
LnGM	LnGB	0.472 * (0.073)	0.199 *** (0.036)	0.057 ** (0.072)
	LnGP	0.392 *** (0.057)	0.284 ** (0.033)	0.182 * (0.016)
	LnGA	0.193 * (0.037)	0.028 * (0.054)	0.076 *** (0.039)
	LnGR	0.084 * (0.052)	0.139 ** (0.029)	0.226 * (0.073)
LnCI		0.336 * (0.018)	0.302 ** (0.024)	0.677 * (0.059)
LnCA		0.042 ** (0.061)	0.284 * (0.047)	0.371 *** (0.059)
LnCE		1.702 *** (0.055)	2.346 * (0.015)	1.083 ** (0.039)
LnCP		−1.043 * (0.281)	−1.397 *** (0.346)	−1.926 ** (0.174)
C		7.314 * (1.002)	5.873 ** (0.094)	5.712 ** (1.045)
N		722	722	722
R^2		0.562	0.633	0.581

Note: ***, **, and * represent significant results at the 1%, 5%, and 10% levels, respectively.

5.7. Endogeneity Testing

To mitigate potential endogeneity concerns in our analysis, this study implements an endogeneity test. We primarily utilized instrumental variable analysis to tackle these concerns [84]. The outcomes of our test are detailed in Table 11. Our findings reveal that, even after accounting for endogenous variables, environmental regulations continue to exert a positive and statistically significant influence on consumers' intentions to purchase green products at the 10% significance level. In the initial stage of regression, the F-statistic surpasses 40, indicating no issues with weak instruments. Additionally, the Sargan test yields a *p*-value exceeding 0.22, confirming that our instrumental variables satisfy the exogeneity condition. This experiment confirms that the model used in this study effectively addresses endogeneity issues, thus supporting the reliability of our research conclusions.

Table 11. Results of 2-stage least square method for instrumental variables.

Variables	First	Second
	ER	GPI
ER		982.334 * (36.58)
Con_	Yes	Yes
z_1	0.003 * (0.0001)	
z_2	0.003 * (0.0003)	
z_3	0.0005 *** (0.0006)	
F statistic	48.925	
Sargan test		0.23
R^2	0.472	0.589

Note: *** and * represents the significance results at the 1% and 10% levels, respectively.

6. Conclusions, Implications, Contributions and Research Limitations

6.1. Conclusions

First of all, environmental regulations can stimulate an increase in consumers' green product purchasing intention. This impact process is not the sole result of a single factor [85]. The findings are reliable according to the robustness tests. Thus, when enhancing consumers' green product purchasing intention in a region, the environmental regulatory framework must be taken into full consideration. The region should further investigate the combined effects of various other factors.

Furthermore, environmental regulations can enhance consumers' green product purchasing intention by the mediating variable of green marketing. When the environmental regulations influence consumers' green product purchasing intention, the role of green marketing activities is quite crucial. Particularly, against the backdrop of improving green marketing capabilities, the increase in consumers' green product purchasing intention will occur at the same time.

Thirdly, there is an obvious correlation between environmental regulation and consumers' green product purchasing intention in China's different areas [86]. In this way, regional development should take into account the consumers' green product purchasing intention and the environmental regulatory requirements within the region itself. At the same time, they should also consider the circumstances of surrounding areas. Therefore, efforts by relevant authorities to enhance local consumers' green product purchasing intention should evolve in accordance with the changes in neighboring regions.

Fourthly, the relationships between environmental regulations, green marketing, and consumers' green product purchasing intention in China's different area exhibit differences. Furthermore, the impact of environmental regulation on the consumers' green product purchasing intention is most pronounced in Eastern regions. Conversely, the changes in green marketing show the greatest impact on the consumers' green product purchasing intention in Western regions. Thus, the focal points of the management should aim to enhance the consumers' green product purchasing intention in different areas.

6.2. Implications

Firstly, businesses should leverage environmental regulations to enhance consumers' green product purchasing intention. Companies should strengthen their green brand image and promotion. By actively responding to and exceeding environmental regulatory requirement, businesses could establish themselves as environmental pioneers. For instance, companies could incorporate environmental labels on product packaging or promote their environmental efforts and achievements through various media channels. Through transparent environmental reporting and proactive environmental promotion, companies could

clearly demonstrate their actual environmental actions to consumers. This would enhance consumers' green product purchasing intention. Furthermore, companies should promote the quality of the green products. Companies should actively research the green products that comply with environmental regulations. Through innovation and technological investment, companies could produce more environmentally friendly and energy-efficient products to meet consumer demand for green products. By offering high-quality green products, companies could not only meet consumers' environmental needs but also gain a competitive advantage in the market. Thus, this would boost consumer purchasing intentions. Moreover, companies could also establish green supply chains and partnerships. Companies should ensure the entire production process complies with environmental regulations by establishing green supply chains and partnerships. In this way, companies could ensure that every aspect of the production process meets environmental requirements. By establishing green supply chains, companies could improve production efficiency, reduce environmental risks, and enhance consumer trust in the company.

Secondly, businesses should enhance consumers' green product purchasing intention through green marketing. Companies should design environmentally friendly products and packaging. By utilizing eco-friendly materials and sustainable production processes, companies could clearly indicate the environmentally friendly characteristics of their products. This could also influence consumers to prefer these green products during purchase, as they could perceive themselves to be contributing to environmental conservation. Furthermore, companies should utilize transparent and credible green certifications. To increase consumer trust, companies should obtain and display green certifications issued by reputable institutions. These certifications may include organic certifications and forest certifications. Through these certifications, consumers could better understand the environmental friendliness of the products. Moreover, companies should actively engage in environmental education and community initiatives. By organizing various environmental education and community engagement activities, companies enhance consumers' environmental awareness. These activities could include, for instance, hosting environmental lectures, organizing tree planting events, participating in environmental public welfare projects, and more. These activities can improve a company's social image. They could also directly impact consumers' environmental consciousness. Through these interactions, consumers are more likely to embrace a company's green products. They are also willing to pay higher prices, viewing it as supporting a socially responsible enterprise.

Thirdly, businesses should develop management strategies tailored to enhance consumer willingness for green consumption based on the distinct characteristics of different regions. In the Eastern region, companies should actively leverage environmental regulations to boost consumer willingness for green purchases. By showcasing transparency and compliance, companies could increase consumer trust. By publicly demonstrating their adherence to environmental laws and regulations, companies could convey a positive environmental image to consumers. Additionally, obtaining authoritative environmental certifications is an effective strategy to prove the green products, thereby enhancing consumer recognition of the company. Education and promotion play vital roles as well. Companies could emphasize the importance of environmental regulations to consumers through promotional activities, sparking their willingness for green purchases. Additionally, in the Western region, many firms should reinforce the green marketing activities, highlighting the green attributes of products. By emphasizing the environmental advantages and benefits of products, companies could attract consumers with stronger environmental awareness towards choosing green products. Moreover, companies could underscore their social responsibility and environmental commitment. Companies showcase their achievements in environmental conservation through promotional activities. They should enhance consumer trust and recognition of green products. Collaborating with environmental organizations is also an effective strategy. Through partnerships to promote environmental concepts and green products, companies could collectively encourage the popularization and development of green consumption.

6.3. Contributions

There are three marginal contributions in this study. First of all, this study may enrich the research content on the consumers' green product purchasing intention. This paper intertwines consumers' green product purchasing intention with environmental regulations and green marketing for examination. It further enriches the existing research content related to consumers' green product purchasing intention. Secondly, we may extend the application scope of multiple regression analysis. Previously, few scholars utilized multiple regression analysis to study the relationship between environmental regulations and consumers' green product purchasing intention. Therefore, this study further expands the application scope of multiple regression analysis. At last, the conclusions could offer crucial insights for relevant enterprises and governments to make decisions. Furthermore, the findings of this paper could serve as a significant reference for enhancing consumers' green product purchasing intention for relevant businesses. Simultaneously, the conclusions also could provide valuable guidance for relevant governments to optimize the efficacy of environmental regulations.

6.4. Research Limitations and Future Research Directions

Due to the constraints of the authors' energy and resources, there are three research limitations in this paper. Firstly, the distribution of research samples still needs to be further expanded. The data collected are all from China. However, the impact of environmental regulations on the green economy is a normal phenomenon in the world. Thus, the sample remains relatively limited. Furthermore, the study topic needs extension. This paper only explores the influence of environmental regulations on consumers' green product purchasing intention. It does not investigate the impact of other factors on consumer green purchasing intention. In addition, we systematically investigate the impact of environmental regulations on various components of green marketing. However, we do not study the impact of various components of green marketing on environmental regulations. Therefore, we would enhance research in this area in the future. At last, we have not examined the impact on consumers' green products purchasing intention in regions with or without environmental regulations, or with different regulations. This would be a focus of our future research.

Future research directions: In light of the limitations identified in this study, we argue some future research directions. First of all, we would expand the scale of survey samples. In future research, we could incorporate data from emerging economies or other countries. The study conclusions based on data from different areas are likely to exhibit significant differences. Therefore, scholars may uncover divergent findings in other regions in the future. Secondly, we would enhance the research theme. In future studies, we could delve further into the impact of product branding, product information transparency, and social factors on consumers' green product purchasing intention. This approach can further improve the relevant study themes. Furthermore, we would study the impact of various components of green marketing on environmental regulations. At last, we would further investigate the variations in consumers' green products purchasing intention in regions with and without environmental regulations. Additionally, we would also explore the differences in consumers' green products purchasing intention between developed and developing countries.

Author Contributions: Conceptualization, X.L.; methodology, C.W.; software, D.L.; validation and formal analysis, D.Y.; investigation, F.M.; resources, Y.H.; data curation, X.L. and C.W.; writing—original draft preparation, C.W. and D.L.; writing—review and editing, all authors; visualization, D.Y. and F.M.; supervision, D.L. and Y.H. All authors have read and agreed to the published version of the manuscript.

Funding: This research was supported by the Philosophy and Social Science Research Planning Project of Heilongjiang Province (No. 22GJB127), the Postdoctoral Funding Program in Heilongjiang

Province (No. LBH-Z23128). The funders had no role in paper design, data collection and analysis, decision to publish, or preparation of the manuscript.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The original contributions presented in the study are included in the article, further inquiries can be directed to the corresponding author.

Acknowledgments: We would like to express our sincere gratitude to Heilongjiang University and Harbin University for their invaluable support and guidance throughout the course of this research.

Conflicts of Interest: The authors declare no conflicts of interest. Supporting entities had no role in the design of the study, in the collection, analysis, or interpretation of data, in the writing of the manuscript, or in the decision to publish the results.

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