Barriers Preventing Chinese Male Consumers from Purchasing Green Beauty Products

by

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Abstract

Title: Barriers Preventing Chinese Male Consumers from Purchasing Green Beauty Products

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Keywords: Beauty industry, China, Male market, Eco-friendly products, Green beauty products, Usage barrier, Value barrier, Risk barrier, Traditional barrier, Image barrier, Ethical concerns, Purchase intention, Innovation resistance theory

Thesis purpose: The purpose of this research is to investigate the barriers to purchasing green beauty products in the Chinese male beauty market, and analyze how ethical concerns moderate the influence of these barriers on purchase intention.

Methodology: This study utilized a cross-sectional research design and a quantitative methodology to investigate the association between barriers and Chinese males' purchase intention of eco-friendly beauty products. Data was collected through an online survey of 321 Chinese male consumers aged 18-54 and analyzed using SPSS software.

Theoretical perspective: This research expands the innovation resistance theory by incorporating ethical concerns as a moderating variable. It considers the moral and ethical aspects of consumers' decision-making processes, broadening the scope of the theory. Additionally, the study contributes to the literature on ethical consumption.

Findings: The results indicate that all identified barriers (usage barrier, value barrier, risk barrier, traditional barrier, and image barrier) have a negative effect on the purchase intention of green beauty products. However, a lower level of ethical concern among consumers can further exacerbate the negative effects of these barriers. This finding highlights the moderating role of ethical concern and suggests that promoting ethical awareness could effectively drive the adoption of green beauty products.

Practical Implications: The findings of this study provide valuable insights for businesses and policymakers in addressing the barriers to purchasing green beauty products in the Chinese male beauty market. By promoting ethical awareness and addressing the identified barriers, businesses can stimulate green purchasing behaviors and contribute to sustainable development within the Chinese beauty industry.

Acknowledgements

Bingxin Li

Bingxin Li

Zikang Chen

Zikang Chen

Table of contents

1. Introduction

Today, the Chinese beauty market is expanding rapidly. As of now, China holds the position as the second-largest market for beauty and personal care products globally, trailing behind the United States since 2020 (Dal Zotto, 2021). In 2021, the beauty market in China reached a valuation of 455.3 billion CNY (70.7 billion USD), marking a significant increase from 395.8 billion CNY (61.5 billion USD) in the previous year. The market experienced a decline in 2020 due to the impact of the COVID-19 pandemic, marking the first downturn in almost a decade. However, the cosmetics market has since recovered and is projected to reach 516.9 billion CNY (80.2 billion USD) by 2023 (Statista, 2022). Factors such as urbanization, rising disposable income, and the influence of social media have contributed to the increased demand for high-end prestige beauty products (Dal Zotto, 2021).

Data have demonstrated the potential for growth in China's green beauty market (Statista, 2020), and the men's market share in the beauty industry is experiencing rapid growth in the present day (Chaileedo, 2022). With the increase in Chinese male customers, there is evidence suggesting that Chinese consumers are becoming more conscious of environmental and health issues (Daniel et al., 2023). From the customer's perspective, the primary factors in purchasing grooming products are "quality" and "safety" (Cosmetics China Agency, 2022). This underlines the need for skincare products that are organic and contain fewer chemicals. It also presents a significant opportunity for green beauty products to gain a foothold in the male market, as Chinese consumers become increasingly aware of environmental and health issues.

The rising awareness of environmental issues and the increasing prevalence of green consumption trends underscore the necessity for further research in the green beauty market. As environmental concerns grow and consumers demand healthier and more sustainable products, the green beauty market offers businesses a unique opportunity to promote their brands and create positive impacts on both society and the environment. Therefore, conducting research in this field can yield valuable insights into consumer preferences, behaviors, and perceptions related to eco-friendly beauty products.

1.1 Background

1.1.1 The transformation of Beauty Industry in China

The beauty industry in China boasts a rich and complex history that spans thousands of years, deeply rooted in various ancient cultures. The pursuit of beauty can be traced back to the

earliest dynasties, where cosmetics and skincare practices held significant cultural and traditional importance (Han et al., 2021). In ancient China, natural ingredients such as plant extracts and minerals were commonly used for cosmetic and skincare purposes (Dal Zotto, 2021). With the advancement of knowledge in herbal medicine, botanical ingredients gained prominence in beauty products, highlighting the long-standing use of natural and eco-friendly elements in Chinese beauty culture (Han et al., 2021).

However, fast-forwarding to the modern era, the Chinese beauty market has undergone significant transformations due to the globalization of markets, leading to the introduction of synthetic and chemical ingredients that negatively impact the environment (Han et al., 2021). As the Chinese market expanded and competition intensified, beauty brands adopted more aggressive marketing strategies to attract consumers and establish brand loyalty. Advertising campaigns often propagated unrealistic beauty standards and encouraged excessive consumption of beauty products, thereby contributing to the industry's environmental footprint (Hu et al., 2022). The advent of social media platforms, including Weibo and Xiaohongshu, further amplified the role of marketing in the Chinese beauty industry. Influencers and Key Opinion Leaders (KOLs) have emerged as influential voices in promoting beauty products (Wang et al., 2023). Consequently, the demand for new and innovative beauty products has skyrocketed, leading to increased reliance on synthetic ingredients, single-use packaging, and extensive transportation networks, all of which have adverse environmental consequences (Liu and Wong, 2013; Lin et al., 2023).

Although the green beauty market in China is still in its nascent stage, it is expected to grow as consumer awareness and preferences shift toward more sustainable options. The value of China's natural and organic beauty market exceeded two billion U.S. dollars in 2020, and it is projected to generate revenue of more than 3.2 billion U.S. dollars by 2023 (Statista, 2020). This growing interest in natural and organic beauty products in China is driven by concerns about pollution, product safety, and a desire for healthier, more environmentally friendly alternatives (Euromonitor International, 2019). Chinese consumers are becoming more discerning in their choices, seeking products that align with their personal values and beliefs regarding environmental sustainability and health (Daniel et al., 2023).

1.1.2 The Rise of Male Beauty Market

Traditionally in Chinese culture, men do not use cosmetics or skincare products. However, modern Chinese men are starting to believe that their appearance affects their success, and many are interested in using cosmetics to improve their looks. Research conducted by Khan et al. (2017) shows that Chinese men have a positive attitude towards grooming products, placing more importance on their personal appearance compared to men in other countries. According to Xiaohongshu, a Chinese sharing platform, the number of creators sharing

content related to men's skincare on their platform increased by 82% in 2022 compared to the previous year (Nan, 2022).

Additionally, having a skincare routine has become a new standard among young Chinese men, while cosmetics use is less common. Men who do use cosmetics generally prefer a natural and 'no-makeup' makeup look and do not usually experiment with colors (Daxue Consulting, 2020). In 2021, over 50% of Chinese men reported performing daily or frequent skincare routines (Cosmetics China Agency, 2022). This increasing interest in men's skincare among Chinese consumers has resulted in the rapid growth of the men's beauty industry (Chaileedo, 2022). The Chinese men's beauty market has been expanding swiftly. In 2022, the sales of beauty products aimed at men reached a value of 50 billion USD, and it is anticipated that within the next two years, the sales will increase by 16%.

1.2 Research Aims and Objectives

Several researchers have identified factors and motives affecting purchase intention in the female green beauty market, including customers' awareness and knowledge of the benefits of natural cosmetics. Although a previous study has shown that women appear more receptive to purchasing cosmetics than men, including natural beauty products, extensive research has been conducted on the general beauty market, focusing primarily on the female market (Amberg and Fogarassy, 2019). A notable gap exists in understanding the factors and motives that influence consumer behavior within the male beauty market. Despite the considerable potential for increased demand for beauty products in the Chinese male market, as highlighted by the Cosmetics China Agency (2022), the specific barriers that shape male consumption of green beauty products remain understudied.

Another limitation of previous studies is that many of them conducted research in other countries such as South Korea, which is notable for its beauty standards. In other words, there is not sufficient research conducted in China, as the male beauty industry has grown rapidly only in recent years. Previous studies have found that Chinese men differ from men in other countries in terms of their beauty preferences and routines (Cosmetics China Agency, 2022). In other words, male consumers in China may possess distinct concerns and preferences. Therefore, it is imperative to delve into the unique considerations they face in relation to green beauty products. Understanding these barriers is crucial for industry practitioners and marketers aiming to effectively cater to the needs and desires of the male beauty market. While the motivations and behaviors of female consumers in the beauty market have been extensively examined, assuming that male consumers share the same preferences and attitudes would be misguided. Hence, it becomes imperative to explore the specific barriers that hinder male consumption of green beauty products.

This research aims to enrich the existing literature on resistance theory by investigating the barriers that influence male consumers' decision-making processes regarding eco-friendly beauty products in the Chinese male beauty market. By identifying and analyzing the barriers to purchase intention, this research offers a more comprehensive understanding of the factors that may impede the adoption of green beauty products among male consumers aged 18 to 54.

The research questions that this research aims to address are:

1. *"What barriers prevent Chinese men aged 18 to 54 from purchasing green beauty products?"*
2. *"How do these barriers affect male customers' purchase intention?"*

1.3 Intended Contribution

Data has demonstrated the potential for growth in China's green beauty market (Statista, 2020), and men's market share in the beauty market is growing rapidly at present (Chaileedo, 2022). Furthermore, Chinese consumers are becoming more conscious about environmental and health issues (Daniel et al., 2023). Therefore, this research aims to fill the gap in the literature by examining the potential barriers (i.e., usage barriers, value barriers, risk barriers, traditional barriers, image barriers) to purchasing green beauty products in the Chinese men's market and how these barriers affect purchase intention.

Moreover, this research could contribute to innovation resistance theory by incorporating ethical concerns as a moderating variable. Innovation resistance theory generally focuses on the barriers that prevent consumers from adopting new products or innovations. However, it does not typically consider the ethical implications of these decisions. By introducing ethical concern as a moderator, this research could broaden the scope of innovation resistance theory to include moral and ethical considerations in consumers' decision-making processes. Thus, this research may provide new insights into the ways in which ethical considerations shape consumer behavior. It could also highlight the role of ethical concerns in driving the adoption of environmentally-friendly products, thereby enriching our understanding of ethical consumption practices.

Last but not least, the findings of this research not only enhance our knowledge of the male beauty market in China but also offer valuable insights into the challenges faced by male consumers when considering eco-friendly beauty products. By understanding these dynamics, businesses can develop effective strategies to address the unique concerns and preferences of

male consumers, fostering the growth of the green beauty market and contributing to sustainable development within the Chinese beauty industry. Moreover, this research encourages collaboration among scholars, industry practitioners, and policymakers, allowing for a comprehensive examination of the complex interactions between environmental sustainability, consumer behavior, marketing strategies, and industry practices. Such collaboration can lead to the development of innovative solutions and policies that promote sustainability in the beauty industry while considering the economic and social aspects of the market.

1.4 Delimitation

The delimitations of this research relate to its geography and population. The scope of this research is limited to the Chinese beauty market, specifically focusing on Mandarin-speaking Chinese men aged 18-54 who use beauty products. This specific target population inherently limits the breadth of the research results, making it challenging to generalize the findings to other consumer groups. Also, it's worth noting that this research may not resonate with the experiences and perceptions of non-Mandarin speaking Chinese men who, despite sharing a common nationality, may have different attitudes towards green beauty products due to language or cultural differences. Similarly, Chinese women were excluded from this research. Although the female market is an integral part of the beauty industry, this research is specifically interested in understanding the unique barriers faced by men. Furthermore, the theory we chose, the innovation resistance theory, and the results of testing this theory are only relevant for Chinese men regarding green beauty products. For other product categories, the application of this theory may produce completely different results.

1.5 Outline of the Thesis

The thesis begins with an introduction section, which underlines the identified research problem tackled throughout the research. This is followed by a comprehensive literature review, serving to acquaint the reader with pertinent academic research findings. For instance, the literature review presents detailed findings on green beauty products and the green consumer behavior of Chinese males. Additionally, to operationalize our research question, we introduce an applicable theory - the innovation resistance theory.

Subsequently, we present our methodology based on the presented literature and theory, which outlines the way in which the research has been conducted. In this section, we also explain our research approach and design, and justify the reliability and validity of the research. After this, the empirical findings are outlined and scrutinized.

Following this, a discussion leveraging our theoretical and literature review aims to address our research questions. Meanwhile, we share our reflections on the findings of the paper, as well as its practical implications. Lastly, we suggest potential areas for future research, offering insights into how this research could be extended and evolved in the future.

2. Literature Review

2.1 Green products

Green or eco-friendly products are recognized as those that safeguard the environment and can be utilized without causing damage to natural resources. Characteristically non-toxic and renewable, these products embody sustainable use (Lin et al., 2018). Since the packages and materials of green products are often recyclable (Zappelli et al., 2016), the benefits of using them are manifold, including reduced consumption of water, materials, and energy during manufacturing. However, past studies have discussed the factors that prevent consumers from purchasing green products. For instance, studies have sometimes regarded green products as being of inferior quality and performance in comparison to conventional products (Lin & Chang, 2012; Luchs & Kumar, 2017; Sadiq et al., 2021). According to Luchs & Kumar (2017), choosing utilitarian features over hedonic ones can alleviate guilt, as the former choice is seen as morally superior. At the same time, numerous scholars have highlighted that consumers are reluctant to embrace eco-friendly products due to uncertainties and concerns about their purchase and use, with the higher cost of such options potentially discouraging consumers (Claudy et al., 2013; Hustvedt et al., 2013). Devinney et al. (2010) likewise suggested that the prospect of spending more on green products might deter consumers from prioritizing sustainability.

In an attempt to understand and foster environmentally conscious or sustainable purchasing behavior, several noteworthy studies have focused on describing the underlying values, attitudes, and behavioral intentions toward green products. White and Hardisty (2019) argued that sustainable consumer behavior entails actions that minimize negative environmental impacts and decrease natural resource use across a product, behavior, or service's lifespan. Unlike conventional consumer decision-making, which typically focuses on maximizing immediate personal benefits, sustainable choices prioritize longer-term benefits for both the environment and others. Lashari and Jang (2021) found in a study on purchase intention

toward electric vehicles that environmental and economic perceptions significantly influence purchase decisions. The researchers highlighted the need for governments and manufacturers to accentuate environmental benefits. Consequently, given the importance of environmental protection, environmental factors significantly influence consumers' green consumption behavior (Ahmad and Zhang, 2020). Zhang et al. (2022) emphasized the pivotal role of environmental benefits in promoting green recovery. Health concerns also play a part in the selection of green products (Lu and Miller, 2019). As such, the green product market is seen as a promising sector with considerable growth potential, offering economic benefits like job creation and aiding the shift towards a sustainable economy (Kamalanon and Le, 2022).

Additionally, Schleenbecker and Hamm's (2013) analysis of organic products suggested that the product's quality, packaging, design (including labeling), and brand identity all contribute to its overall perception. These factors are considered intrinsic attributes of the product itself. Research conducted by Thøgersen and Olesen (2010) maintains that ecolabeling initiatives equip customers with information about a product's ecological integrity, enabling them to make informed decisions about environmentally acceptable products. Ecolabeling has long been recognized as a key mechanism for promoting sustainable consumption practices (Sitarz, 1994), indicating a consumer demand for trustworthy product labeling information (Schleenbecker and Hamm, 2013). When it comes to organic food consumption, consumers associate these items with trust and health benefits, resulting in their purchase being correlated with health and environmental benefits, despite the additional cost (Sultan et al., 2021). This supports the growth of organic food production and encourages more sustainable consumption practices.

2.2 Green beauty products

The current research defines a green beauty product as a personal care item that primarily utilizes extracts and concentrates derived from plants and fruits (Amberg and Fogarassy, 2019). These products are characterized by their lack of chemical agents, artificial coloring, or other synthetic substances (Chin et al., 2018). Furthermore, they are designed with the intention of causing minimal harm to the environment throughout their entire lifespan. In this regard, green beauty products are often recyclable or reusable, possess biodegradable properties, and come in eco-friendly packaging. They also actively promote the preservation of the natural ecosystem for extended periods (OECD, 2009).

Green beauty products are considered innovative due to their non-toxic formulations. In contrast to many conventional beauty products that contain synthetic chemicals, preservatives, and potentially harmful substances, green beauty products emphasize the use of natural and organic ingredients. They avoid toxic chemicals such as parabens, phthalates,

and sulfates, which have been associated with various health risks (Chin et al., 2018). By providing safer alternatives, green beauty products protect consumers from the potential health risks associated with harmful ingredients while simultaneously addressing the growing concern for environmental sustainability.

As consumer awareness of environmental issues and personal health continues to increase, the demand for eco-friendly personal care products has also risen (Amberg and Fogarassy, 2019). Moreover, green beauty products align with the principles of sustainable development, which emphasizes the need for balancing economic growth, social equity, and environmental protection (United Nations, 2015). As such, they represent a shift in the beauty industry towards a more responsible and ethical approach to product development, manufacturing, and marketing. This shift challenges traditional industry practices and encourages a transformation towards more sustainable and environmentally conscious business models (Chin et al., 2018).

Green cosmetics typically exhibit higher prices, which could potentially result in fewer individuals being able to afford them (Amberg and Fogarassy, 2019). The utilization of natural ingredients is the primary factor contributing to the elevated price tag. Marine creatures and algae provide valuable ingredients for cosmetics due to their skincare benefits, such as hydration, circulation improvement, and anti-inflammatory effects (McIntosh et al., 2018). Bio-active ingredients derived from natural sources, such as gallotannins and caffeic acid, possess potential antioxidant, anti-inflammatory, and anti-wrinkle properties (Li et al., 2019). Additionally, clay minerals are advantageous due to their low toxicity and high bio-compatibility (Bastianini et al., 2018).

Although the price of green beauty products is relatively higher than conventional beauty products, choosing green beauty products can help mitigate the negative environmental impact associated with unsustainable cosmetic consumption. This concept, known as "green buying choice," serves as an effective solution to environmental problems caused by beauty product usage (Chekima et al., 2016). Furthermore, existing environmental issues act as a catalyst for consumers to opt for green products (Amberg and Fogarassy, 2019). Despite employing natural ingredients, many companies continue to utilize wasteful packaging, particularly plastic, owing to its flexibility and lightweight properties. However, a significant portion of plastic waste cannot be recycled and takes hundreds of years to break down through photodegradation. This plastic waste, including microbeads found in some cosmetics such as body scrubs, has devastating effects on marine life (Jones, 2023). Consequently, it cannot be assumed that beauty products containing natural ingredients are inherently more environmentally sustainable than their chemical-based counterparts. The environmental impact of natural ingredient production must be considered, as unsustainable practices may negate any potential benefits. There is a current marketing trend in cosmetics that emphasizes

the use of natural solutions and links them to a healthy lifestyle, connecting the use of cosmetic products to healthy eating habits (Tewary et al., 2021).

Moreover, since the price captures the value, the higher price of green cosmetic products would also increase its value and trigger customers to purchase. According to Rybowska (2014), there is a perception among some consumers that eco-cosmetic products are luxury items due to their limited availability and higher costs. Amberg and Fogarassy (2019) contend that consumers are willing to pay higher prices for natural cosmetics due to their perceived health and environmental benefits. Consequently, the rise in awareness of health and environmental concerns has led to a surging demand for eco-friendly products. However, consumer behavior is a complex phenomenon, influenced by internal factors such as psychological and emotional states, as well as external factors such as familial preferences, social norms, and cultural status (Tewary et al., 2021).

2.3 Male beauty market

Despite physiological and hormonal distinctions, men's skin, akin to that of women, necessitates fundamental care to maintain its optimal health (Jezierska and Sykuła, 2023). However, the consumption of skincare products by men often goes unnoticed and is relegated to the periphery of consumer behavior studies. A previous study indicates that men are generally not forthcoming about their usage of products like moisturizers and other facial skincare items, further highlighting the inconspicuous nature of men's consumption in this sector (Byrne and Milestone, 2023). This behavior is reminiscent of Erving Goffman's (1959) theory, wherein social behavior is likened to a theatrical performance, and individuals adopt front-stage and back-stage personas. It appears that men have internalized the 'necessity' to utilize skincare products, yet they prefer to relegate this to a 'back-stage' activity, away from public scrutiny. This tendency to conceal personal care habits aligns with the concept of 'inconspicuous consumption' (Eckhardt et al., 2015; Wu et al., 2017). This consumption pattern is particularly notable in the realm of personal hygiene products. Men tend to favor shower gels that double as shampoo and shaving gel, offering an illustration of the predilection for simplicity and efficiency in male grooming routines. These multifunctional, or "all-in-one" products, cater well to athletes and individuals leading active lifestyles who wish to maintain their personal care without dedicating excessive time or effort to it (Jezierska and Sykuła, 2023).

Furthermore, men are progressively being motivated to partake in activities that contribute to a broader economic process, benefiting the beauty industry. This phenomenon is often euphemistically termed as 'looking after oneself' (Byrne and Milestone, 2023). As society continues to evolve, contemporary men aim to strike a balance between robust mental and

physical health, facilitating the achievement of their aspirations. In this current era, physical appearance is gaining significant importance, and the maintenance of an appealing appearance is often supported by the use of cosmetic products (Jezierska and Sykuła, 2023). Additionally, the role of packaging in influencing consumer decisions cannot be overstated. Alhamdi (2020) determined that various aspects, including design, color, shape, and size, significantly influence consumer attention. These elements work together to create visual appeal that captivates consumers and persuades them to choose one product over another. Similarly, Singh (2018) disclosed that the quality of a product's packaging material can foster a positive perception of the product among consumers. High-quality packaging material creates an impression of a high-quality product, further driving consumer interest and purchase intention.

2.4 Chinese green consumer behavior

Organizations are increasingly shifting their focus to the green product market, leading to consistent growth and maturation of the sector (Patel et al., 2020). However, green consumption in China is relatively low compared to Western countries (Ahmad and Zhang, 2020). Green consumption is often associated with socially conscious and responsible consumption that promotes ecological responsibility (Wang et al., 2019). Various factors influencing Chinese consumers' green consumption behavior have been identified in several studies, including personal values, perceived benefits, environmental knowledge, social norms, and government policies (Shen and Wang, 2022; Shao, 2019; Yuan and Xiao, 2021; Qin and Song, 2022).

In responding to the effect of environmental knowledge, a study conducted by Shen and Wang (2022) investigated the relationship between pro-environmental awareness components and green consumption behavior. They highlighted the impact of contextual factors such as perceived cost, policy incentives, and cultural norms on this relationship. The study noted that perceived cost might hinder green consumption behavior, while policy incentives and cultural norms could either foster or impede pro-environmental behavior. Interestingly, Shao's (2019) study found that the younger generation showed a higher interest in adopting sustainable consumption practices and demonstrated a willingness to pay a premium for environmentally friendly products. Moreover, the study underscored the critical role of e-commerce platforms in promoting sustainable consumption behavior among Chinese consumers. While functional value (price and quality) is necessary, it alone cannot predict green buying behavior (Gonçalves et al., 2016). In a study by Sun and Xing (2023), the authors explored the influence of gamification motivation on green consumption behavior, which involves using game design elements to engage and motivate users in non-game contexts. They stressed the potential of gamification in promoting green behavior and the

significance of intrinsic motivation (such as enjoyment and satisfaction) in shaping the effectiveness of gamification interventions.

In the Chinese organic food market, a previous study found that the cognitive level positively affects residents' value perception and purchase intention of organic food. Value perception acts as a mediator between the cognitive level and purchase intention, while food safety and environmental awareness moderate this relationship (Yuan and Xiao, 2021). Value perception is primarily based on how much consumers understand and trust the "organic" attribute. This attribute represents a set of characteristics associated with environmentally friendly and healthy food products. Consumers who perceive the "organic" attribute positively are more likely to see organic food as having higher value and are more likely to engage in organic food consumption (Xia, 2019). Furthermore, McCarthy (2015) found that Chinese consumers view organic foods positively because they believe that such consumption benefits animal welfare. This factor is also related to environmental considerations and food safety, as animals consumed for food are typically not grown using chemicals to speed up their growth. Gan et al. (2014) also suggest that the value of organic foods is linked to a heightened concern for animal rights. Animal welfare has become a topic of public discussion and concern for consumers, producers, and regulatory institutions in many developing countries with intensive animal production systems. A significant majority of consumers in six South American countries believe that animal welfare is an important issue. Similar trends are also observed in China, where animal welfare is receiving increasing attention from society at large (Carnovale et al., 2021; Estévez-Moreno et al., 2021).

2.5 Synthesis

Green products, including green beauty products, have gained recognition for their environmentally friendly and sustainable attributes. These products are non-toxic, renewable, and often come in recyclable packaging, offering benefits such as reduced water, material, and energy consumption during manufacturing. However, consumer reluctance to purchase green products has been attributed to concerns about their quality, performance, higher cost, and uncertainties surrounding their use. Studies have emphasized the importance of environmental and economic perceptions, as well as health concerns, in shaping consumers' intentions to purchase green products. Ecolabeling initiatives and trustworthy product labeling information play a significant role in promoting sustainable consumption practices. While green beauty products often have higher prices due to the use of natural ingredients, consumers are willing to pay more for perceived health and environmental benefits. However, it is important to consider the overall environmental impact of green beauty products, including the sustainability of natural ingredient production and packaging choices. The male beauty market is an emerging sector that has received less attention in consumer

behavior studies. Men's consumption of skincare products is often inconspicuous, but they are increasingly motivated to prioritize personal care and appearance. Packaging design and quality significantly influence consumer attention and perception of products. In China, green consumption behavior is influenced by factors such as personal values, perceived benefits, environmental knowledge, social norms, and government policies. Contextual factors like perceived cost, policy incentives, and cultural norms play a role in shaping pro-environmental behavior. The younger generation in China shows a higher interest in sustainable consumption practices and willingness to pay a premium for environmentally friendly products. In the organic food market, cognitive levels, value perception, food safety, and environmental awareness affect consumers' purchase intention of organic food. The positive perception of organic attributes, including environmental considerations and animal welfare, contributes to the value consumers place on organic foods. Animal welfare is receiving increasing attention in China and other countries, influencing consumers' choices. Overall, green consumption behavior and the demand for green products are influenced by a complex interplay of factors related to sustainability, health, value perception, and cultural norms.

3. Theoretical framework and hypotheses

3.1 Innovation Resistance Theory

Ram (1987) originally proposed the innovation resistance theory, which was later modified by Ram and Sheth (1989). This theory aims to explain why consumers are hesitant to adopt new innovations. The underlying assumption is that innovations are generally superior to existing substitutes for products or services (Ram, 1987). Nevertheless, since innovations require consumers to adapt to change, it is a common response for consumers to resist change before they can begin to adopt the innovation (Ram, 1987). This resistance to innovation is a natural consumer response that must be addressed to encourage adoption. Therefore, Ram and Sheth (1989) contribute to the concept of innovation resistance by proposing functional and psychological barriers to the adoption of innovation. Functional barriers are further categorized into usage, value, and risk barriers, while psychological barriers consist of tradition and image barriers. Their work provides an expanded understanding of the various barriers that can impede the adoption of innovation. The innovation resistance theory has been widely applied across various industries, for instance, the mobile phone industry (Hosseini et al., 2019), fashion industry (Ionela-Andreea, 2019), construction industry (Lawluvy and Wang, 2022), and automation technology industry (Do Cho and Chang, 2008).

The present study utilizes the innovation resistance theory to examine the underlying factors contributing to the limited recognition of eco-friendly cosmetics for men in China.

3.2 Hypotheses formulation

Barriers play a crucial role in regulating consumers' purchasing behavior. According to Ajzen (2005), behavior is more likely to occur when individuals have power and control over internal factors such as income, available time, and competency, as well as external factors like the availability of resources required to perform the behavior. However, if individuals are unable to control the factors that either support or inhibit the behavior, it can result in other unforeseeable factors that hinder the likelihood of the behavior occurring. The Innovation Resistance Theory has been employed to investigate the barriers that impede consumers' willingness to purchase green beauty products. It has identified usage barriers, value barriers, risk barriers, tradition barriers, and image barriers as key factors that inhibit consumers from purchasing green beauty products (Sadiq and Paul, 2021). In this regard, the researchers provide a more detailed explanation of these barriers in the following sections.

3.2.1 The usage barrier

The usage barrier arises when a new product is incompatible with the established usage habits, trends, or workflow of consumers and can serve as a primary factor hindering the adoption of the product (Ram & Sheth, 1989). Consumers typically resist changes that may disrupt their equilibrium (Ram, 1989). It is one of the primary barriers that impedes consumers' adoption of a new innovation, as it emerges from consumers' perception that adopting a new innovation may disturb their existing status quo (Ram and Sheth, 1989). In the context of green purchasing, the limited availability and accessibility of environmentally sustainable products have been identified as significant barriers (Lea and Worsley, 2008; Padel and Foster, 2005). Despite some consumers preferring products that have limited availability (Rybowska, 2014), studies have proven that green beauty products have less variety and availability (Singhal and Malik, 2018; Nandi et al., 2017). Consumers typically exhibit a preference for products that are readily available and do not require extensive searching, particularly when it comes to green products (Tanner and Kast, 2003; Young et al., 2010).

Therefore, we propose the hypothesis:

H1: There is a strong correlation between the usage barriers and the negative impact of Chinese male consumers toward the purchase intention of green beauty products.

3.2.2 The value barrier

The value barrier pertains to the monetary value of an innovation and reflects the idea that consumers may not be willing to change their established behaviors unless the innovation provides strong performance-to-price relative to its substitutes (Ram and Sheth, 1989). The value barrier represents the perceived value of a new product when compared to its alternatives and plays a significant role in determining consumers' willingness to adopt new innovations (Kushwah et al., 2019a). The value barrier is closely related to the performance and monetary value of a product in comparison to its substitutes (Ram and Sheth, 1987). When it comes to green beauty products, consumers tend to prioritize natural ingredients that are beneficial to their health (Brausch & Rand, 2011; Arshad & Abbasi, 2020; Kilic & Soylak, 2021).

Therefore, we propose the hypothesis:

H2: There is a strong correlation between the value barriers and the negative impact of Chinese male consumers toward the purchase intention of green beauty products.

3.2.3 The risk barrier

The risk barrier refers to the level of risk associated with an innovation. Innovations inherently involve some degree of uncertainty, which contributes to the perception of risk among consumers (Ram and Sheth, 1989). The risk barrier is contingent upon the consumer's perception of the level of risk associated with a new product, which is influenced by the degree to which the element of uncertainty is deemed necessary in creating the new product (Ram and Sheth, 1989). Green products are frequently associated with higher costs, and consumers may exhibit reluctance to pay a premium solely for the environmentally friendly attributes of a product (Amberg and Fogarassy, 2019). Moreover, according to Scalvedi and Saba (2018), a lack of trust among stakeholders, such as certification bodies, increases the level of risk associated with green products for customers. The prevalence of unethical businesses in the market has led to an association between risk and eco-friendly products, with the use of greenwashing by manufacturers, marketers, and retailers being cited as a significant contributing factor (Lin et al., 2017; Zhang et al., 2018). Thus, consumers may delay the adoption of a new product or innovation until the level of perceived risk or uncertainty associated with it is reduced.

Therefore, we propose the hypothesis:

H3: There is a strong correlation between the risk barriers and the negative impact of Chinese male consumers toward the purchase intention of green beauty products.

3.2.4 The Tradition barrier

The tradition barrier refers to consumers' perception that adopting a new innovation may necessitate changes to their existing habits and lifestyle, as compared to the use of alternative products already in use. Tradition barriers arise when there are shifts in the prevailing customs, standards, and social and familial values that currently define the consumer's approach to innovation (Ram and Sheth, 1989). Consumers typically have established habits, routines, and social norms and values that can lead to resistance towards new products if these changes are required (Laukkanen, 2016). Insufficient knowledge and perceived cost are key factors that deter consumers from purchasing green cosmetic products (Demeritt, 2002; Shao, 2019).

Therefore, we propose the hypothesis:

H4: There is a strong correlation between the traditional barriers and the negative impact of Chinese male consumers toward the purchase intention of green beauty products.

3.2.5 The image barrier

The image barrier arises when negative associations are identified between the brand, new product, and current product line (Ram and Sheth, 1989). Laukkanen et al. (2009) proposed that an innovation or new product development may have its origins in various factors, such as the product category, brand name, or country of origin. The image barrier can significantly influence the intention and behavior of consumers towards a new product, as it can involve perceived skepticism, such as mistrust of the product available in the market (Hsu and Chen, 2014; Misra and Singh, 2016).

Therefore, we propose the hypothesis:

H5: There is a strong correlation between the image barriers and the negative impact of Chinese male consumers toward the purchase intention of green beauty products.

3.2.6 Ethical concern as moderator

Consumer ethics have been identified as a critical factor in driving green purchasing behavior (Lu et al., 2015). Ethical consumption refers to the conscious consumption of products that are produced or processed without causing harm to the environment, society, or animals (Chatterjee et al., 2021; Ryoo et al., 2020). Ethically concerned consumers feel a sense of

responsibility towards the environment and society and prioritize buying products that prioritize environmental impact, fair labor practices, fair trade, and animal welfare (Ghvanidze et al., 2016). Environmental and social impacts resulting from the production of cosmetics and personal care products have raised concerns among consumers, and greener product alternatives have been shown to influence their purchase decisions (Ghazali et al., 2017). The importance of caring for the environment reflects an awareness of environmental issues that actively encourage consumers to participate in resolving them (Moshood et al., 2022). Consumers are also demonstrating an increased interest in promoting animal safety and welfare by choosing cruelty-free or non-animal testing products (Chatterjee et al., 2021; Gan et al., 2014; Carnovale et al., 2021; Estévez-Moreno et al., 2021). The growing concern over unsustainable environmental issues is driving the adoption of eco-friendly products (Sadiq et al., 2021). Thus, it is hypothesized that ethical concerns can reduce the negative impact of barriers, including usage, value, risk, tradition, and image, on the intention to purchase eco-friendly cosmetics by encouraging consumers to challenge their existing beliefs and the status quo.

Therefore, we propose the hypothesis:

H6: Ethical concern serves as a moderating variable in the relationship between the intention to purchase green beauty products and associated barriers like usage, value, risk, and tradition. When the ethical concern is relatively low, these barriers significantly deter the purchase intention of green beauty products.

3.3 Conceptual model

The model suggests that each barrier - usage, value, risk, tradition, and image - individually contributes to impeding the purchase intention of green beauty products among Chinese male consumers. Each barrier exerts a unique influence, and they collectively form a more significant obstacle to purchase intention.

Ethical concern, in this model, is depicted as a moderating factor. It is postulated to influence the relationship between the barriers and purchase intention. In other words, it acts as a variable that could potentially weaken or strengthen the negative impact of these barriers on purchase intention.

The model illustrates the complexity of consumer decision-making processes, emphasizing that purchase intention in the context of green beauty products is influenced not just by standalone factors, but by the interplay of various barriers and ethical concerns.
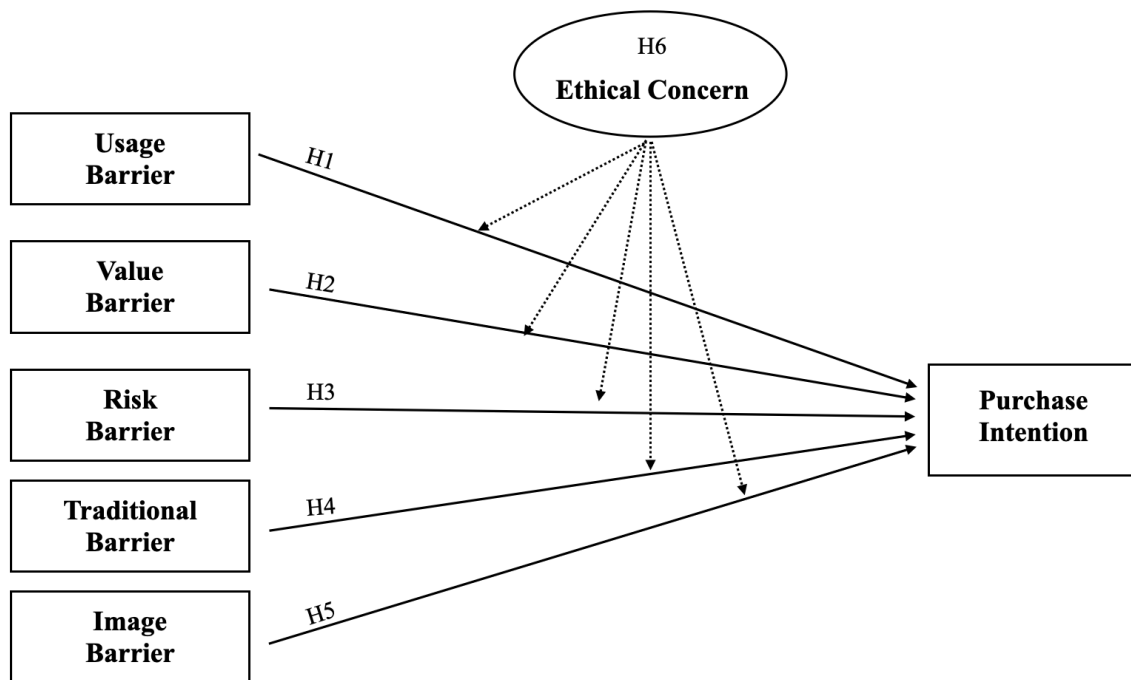
Figure 1. Conceptual model

4. Methodology

4.1 Research Approach

When it comes to research methodology and data collection, there are two prominent approaches: quantitative and qualitative research. The quantitative method is typically employed when conducting studies that aim to test hypotheses with measurable results, as it is rooted in an objective perspective of reality, allowing for greater generalizability of results. On the other hand, the qualitative method emphasizes the social constructs of society and is often used to gain a deeper understanding of a relatively new and specific topic. The qualitative approach is subjective, acknowledging the idea that reality is not an objective concept but is unique to each individual's perception (Bryman & Bell, 2017). Given that this study aimed to produce measurable results and statistically test several hypotheses grounded in existing theory, we deliberately chose to gather empirical data using a quantitative approach (Bryman & Bell, 2017).

4.2 Research Design

The research design provides a blueprint for implementing our selected methodology and interpreting the empirically gathered data. The chosen research design prioritizes specific dimensions in the investigative process and can impact the reliability, validity, and replicability of the research (Bell, Bryman & Hartley, 2019). Since this research employs a quantitative methodology, it enables the empirical examination of the theoretical framework and hypotheses, allowing us to address the research inquiries. Additionally, this research utilizes a deductive method, known as a top-down strategy, to scrutinize an established theory using a substantial sample size. Given that the objective is to examine the association between the specified barriers and Chinese males' purchase intention towards eco-friendly beauty products, we propose that a cross-sectional research design represents the most suitable approach. A cross-sectional study design, also referred to as a social survey design, allows for assessing variations within the target demographic, such as those related to gender and age (Bell, Bryman & Hartley, 2019). This methodology, as illustrated by Wang and Cheng (2020), captures a "snapshot" of a specific group of individuals, with study participants drawn from a population relevant to the research question. In the execution of cross-sectional research, quantitative questionnaires serve as suitable instruments for data gathering, as they enable the simultaneous acquisition of multifaceted information (Bell, Bryman & Hartley, 2019). Furthermore, the research utilizes SPSS for data analysis. Employing sophisticated software like SPSS minimizes the likelihood of errors, such as transcription errors, which could occur without such technological aids during data processing. Additionally, this software facilitates nearly immediate data interpretation (Easterby-Smith et al., 2018).

4.3 Reliability and Validity

In order to ensure that this study accurately assessed its intended objectives and maintained consistency throughout the measurement process, careful consideration was given to both the validity and reliability of the research (Bryman & Cramer, 2011; Sekaran & Bougie, 2016). The following paragraphs provide a more comprehensive explanation of the measures employed to enhance the validity and reliability of the study.

Reliability pertains to the consistency and stability of participants' responses across a range of items. A measure is considered reliable if the results remain consistent even when the study is replicated over time (Trochim, Donnelly & Arora, 2016). Reliability is crucial in this research, as inconsistent item scales would undermine the value of the study, yielding varied results each time they are measured. As this research gathers data through an online questionnaire, reliability was assessed by examining the internal consistency of the scale

items used in the questionnaire's construction. Specifically, the Cronbach's alpha of all scales was measured and scrutinized to determine if the measures exhibit consistency. A Cronbach's alpha of at least 0.7 is typically considered acceptable for a scale to be considered reliable (VanVoorhis & Morgan, 2007). The scale analysis of all items revealed a Cronbach's alpha greater than 0.7, indicating that the variables in this study are internally consistent.

On the other hand, validity refers to the accuracy of the results obtained from the analysis of sampled data and their applicability in the real world (Trochim, Donnelly & Arora, 2016). Validity is another essential element in research because if a study fails to measure its intended objectives, its results cannot be easily generalized (et al., 2016). In the current research, internal validity was assessed by incorporating control variables, namely age, income level, and education level, to identify and eliminate alternative explanations for potential outcomes. Additionally, it is recommended to collect a minimum of 10 samples per independent variable to ensure a sufficiently large data sample (Burns & Burns, 2008). For this research, the goal was to collect a minimum of 300 responses, considering the number of variables in the study. This goal was achieved by gathering precisely 321 responses. It is important to acknowledge that the use of a non-probability sampling method may impact the external validity of this research, making the results less generalizable. However, the utilization of snowball sampling help in collecting adequate data to meet the statistical standards for a quantitative study, particularly given the limited time available (approximately one week) for data collection.

4.4 Sample

The chosen sample population for this thesis comprises Chinese males who use beauty products, such as skincare or cosmetics. This population was selected due to the lack of research on the behavior and attitudes of Chinese male consumers towards green beauty products. The sample size for this research is determined based on the required number of participants to achieve statistical power and significance levels. The research aims to have a sample size that exceeds the widely accepted guideline of having at least ten participants per independent variable to ensure robust and reliable results (Burns & Burns, 2008).

Furthermore, to minimize the potential influence of cultural and language barriers, the research focuses on Chinese male participants who are fluent in Mandarin Chinese. The questionnaire is designed in Mandarin Chinese to ensure accurate comprehension and interpretation of the questions. Conducting the questionnaire online offers increased accessibility and convenience for participants, potentially improving the response rate and representation of the target population. However, it is important to note that the sample

population of Chinese males may not be fully representative of the broader population, and caution should be exercised when generalizing the findings to other populations.

4.5 Sampling method

Although probability sampling has its merits, we chose to use non-probability sampling instead of probability sampling due to time and cost constraints. Specifically, we utilized convenience sampling and snowball sampling as they are relatively straightforward, rapid, and cost-effective methods (Burns & Burns, 2008). Convenience sampling is a data collection method where participants are selected based on their convenience to the researcher (Burns & Burns, 2008). For this research, we included family members, classmates, and social media groups as participants. On the other hand, snowball sampling is a data collection method where already recruited participants assist in recruiting additional study participants (Burns & Burns, 2008). In this research, we requested that the questionnaire be shared with potential participants through word-of-mouth referrals.

4.6 Data collection

We opted to design and disseminate the questionnaire online, thereby collecting data through digital tools. Prior to this, pre-testing was employed to guarantee the clarity and comprehensibility of the questionnaire statements. The subsequent subsection provides more detail on the data collection methods.

Data Collection Instrument
We utilized an online questionnaire via WeChat, as it is a cost-free platform that is user-friendly and expeditious to complete. Ranging from desktop browsers to smartphones, WeChat questionnaires have the capacity to yield higher response rates for our study. Furthermore, the platform adheres to data privacy standards, ensuring that respondents remain anonymous.

Pretesting of Questionnaire
Pretesting questionnaires is advantageous for detecting confusing statements or other potential issues (Burns & Burns, 2008). In this research, we carried out a small-scale online pre-test study ahead to evaluate and refine our questionnaire design. We enlisted 10 respondents to pre-test our questionnaire through WeChat, selecting participants from varying age groups from 18 to 54 years old and with professional backgrounds. This approach ensured that the statements were understandable to more than just a specific group of individuals (e.g., marketing students or professionals). Upon completion of the pre-test, the

questionnaire was revised based on the feedback received. Once the modifications were implemented, the questionnaire was distributed to the general public.

4.7 Questionnaire Design

4.7.1 Filtering question

To ensure that only male consumers were included in this study, a control question "What is your gender?" was added at the beginning of the survey. The control question asked respondents to indicate their gender, with the response options limited to male. This was done to avoid the inclusion of female respondents who may have different perspectives and experiences regarding the purchase of green beauty products.

4.7.2 Variables and measures

To address the research question of the barriers influencing consumers' intention to purchase green beauty products, a questionnaire was developed. The questionnaire consisted of five independent variables, namely usage barrier, value barrier, risk barrier, traditional barrier, and image barrier. The moderating variable, ethical concern, was also assessed, as it is hypothesized that ethical concerns can mitigate the negative impact of barriers. To operationalize the conceptual framework, all measures used in the questionnaire were based on existing literature. A 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used for all items to assess the perceptions of respondents towards green beauty products.

Usage barrier
Usage barrier is the independent variable in the research, the measure consists of a three-item scale adapted from the study done by Nandi et al. (2017). An example item is "There is a little ability for choice eco-friendly cosmetic products for consumption".

Value barrier
Value barrier is the independent variable in this research, the measure consists of a three-item scale adapted from Kushwaha et al. (2019)'s study. An example item is "In my opinion, eco-friendly cosmetics are healthier than the conventional cosmetic".

Risk barrier
Risk barrier is the independent variable in the research. The two-item scale measure used for assessing the risk barrier is based on a study conducted also by Kushwaha et al. (2019). An

example item is "I fear that all eco-friendly cosmetics claiming to be environmentally friendly is not actually an eco-friendly cosmetic".

Traditional barrier
Traditional barrier is the independent variable in the research. The two-item scale measure used for assessing the traditional barrier is based on a study conducted by Torres-Ruiz et al. (2018). An example item is "Conventional cosmetic product is enough for me".

Image barriers
Image barrier is the independent variable in the research. The two-item scale measure used for assessing the image barrier is based on a study conducted by Kushwaha et al. (2019). An example item is "I have doubts towards the eco-friendly cosmetic labeling".

Ethical concern
Ethical barrier is the moderator in the research. The three-item scale measure used for assessing ethical concern is based on a study conducted by Suphasomboon & Vassanadumrongdee (2022). An example item is "Animal protection is necessary and animal welfare will improve if I do not buy animal-tested products".

Purchase intention
Purchase intention is the dependent variable in the research. The three-item scale measure used for assessing the purchase intention is based on studies from Lavuri, & Susandy, 2020; Park, 2015; Lavuri R, 2021. An example item is "It is possible that I will purchase green beauty products in the future".

Variable Name	Items code	Items
Usage Barrier (Nandi et al., 2017)	UB1	There is a little ability for choice eco-friendly cosmetic products for consumption
	UB2	The variety or range of eco-friendly cosmetic products is poor
	UB3	The reason I'm not purchasing eco-friendly cosmetic products because it's unavailable in the shop
Value Barrier (Kushwah et al., 2019)	VB1	In my opinion, eco-friendly cosmetics are healthier than the conventional cosmetic
	VB2	In my view, eco-friendly cosmetics are free from pesticides and other chemicals
	VB3	Eco-friendly cosmetic contains natural ingredients
Risk Barrier (Kushwah et al., 2019)	RB1	I fear that all eco-friendly cosmetic claiming to be environmentally friendly is not actually an eco-friendly cosmetic
	RB2	I fear that I am paying more money for eco-friendly cosmetic
Traditional Barrier (Torres-Ruiz et al., 2018)	TB1	Conventional cosmetic product is enough for me
	TB2	Difficult to tell it apart from other high quality eco-friendly cosmetic products
Image Barrier (Kushwah et al., 2019)	IB1	I have doubts towards the eco-friendly cosmetic labelling
	IB2	I believe that eco-friendly cosmetic currently sold in market are not really eco-friendly
Ethical Concern (Suphasomboon, & Vassanadumrongdee, 2022)	EC1	Animal protection is necessary and animal welfare will improve if I do not buy animal-tested products.
	EC2	I am interested in buying green cosmetics and personal care products because of organic and natural formulation, ethical sourcing, green manufacturing processes, green packaging which are not toxic to the
	EC3	I am interested in buying green cosmetics and personal care products because I appreciate the eco-friendliness of the product.
Purchase Intention (Lavuri, & Susandy, 2020; Park, 2015; Lavuri R, 2021)	PI1	I intend to purchase green beauty products
	PI2	It is possible that I will purchase green beauty products in future.
	PI3	I am willing to pay an extra price for green beauty products

Figure 2. Variables and measures

4.8 Data analysis methods

This quantitative research aims to uncover the factors influencing Chinese male customers' purchasing intentions for green beauty products by exploring the connections between different barriers and their purchasing intentions. Based on the proposed hypotheses, the data analysis techniques selected for this study include descriptive statistics, exploratory factor analysis, Cronbach's Alpha, Pearson correlation coefficient, and simple linear regression analysis. These methods are crucial for comprehending the variables' relationships and testing the hypotheses to yield meaningful findings (Bell, Bryman, & Hartley, 2019; Burns & Burns, 2008).

4.8.1 Descriptive Statistics

Descriptive statistics summarise the dataset by displaying mean, median, mode, standard deviation, and range metrics. This method helps understand the data's central tendencies and dispersion, which is necessary for grasping the sample's characteristics (Bell et al., 2019). Next, descriptive statistics outline the respondents' demographic information and provide an initial understanding of the variables. Finally, descriptive statistics are computed using SPSS to summarize the demographic data and the variables' features. This step gives an overview of the dataset and helps comprehend the sample's general characteristics.

4.8.2 Exploratory Factor Analysis (EFA)

EFA is a statistical technique that assists in identifying the underlying structure of a dataset by condensing a large number of variables into a smaller set of factors (Burns & Burns, 2008). This study applied EFA to categorize the questionnaire items related to the barriers (usage, value, risk, traditional, and image) and ethical concerns, facilitating a more straightforward interpretation and further analysis. EFA also aid in validating the factor structure and ensuring that the items measure the intended constructs.

In this research, the EFA is performed using SPSS to determine the underlying factor structure of the questionnaire items related to the barriers and ethical concerns. The factor loadings are scrutinized to ensure that the items measure the intended constructs. Items with low factor loadings (below 0.4) be eliminated from the analysis to enhance the overall factor structure (Bell et al., 2019).

4.8.3 Cronbach's Alpha

Cronbach's Alpha is a metric that measures a scale's internal consistency or reliability (Bell et al., 2019). It establishes the degree to which items in a scale consistently measure the same underlying construct. In this study, Cronbach's Alpha utilize to evaluate the reliability of the questionnaire items for each factor identified through EFA. A high Cronbach's Alpha value (above 0.7) indicates that the items are reliable and consistently measure the same construct (Burns & Burns, 2008). Next, Cronbach's Alpha is computed for each factor identified through EFA using SPSS. This step evaluates the internal consistency of the questionnaire items and ensures that the items reliably measure the same construct. If needed, items with low item-total correlations are removed to improve the overall reliability of the scales (Burns & Burns, 2008).

4.8.4 Pearson Correlation Coefficient

Pearson correlation coefficient measures the linear relationship between two variables (Bell et al., 2019). This study employs the Pearson correlation coefficient to examine the relationships between the identified factors (usage, value, risk, traditional and image barriers, and ethical concern) and the dependent variable, the purchasing intention of green beauty products. Pearson correlation aid in understanding the strength and direction of these relationships and provide preliminary support for the hypotheses. Pearson correlation coefficients are calculated using SPSS to examine the relationships between the identified factors and the purchasing intention of green beauty products. The correlation matrix provides insights into the strength and direction of these relationships and offers preliminary support for the hypotheses.

4.8.5 Simple Linear Regression Analysis

Simple linear regression analysis is a statistical method that allows for the prediction of a dependent variable based on the value of an independent variable (Burns & Burns, 2008). In this study, simple linear regression analysis tests the hypotheses by examining the influence of each barrier (usage, value, risk, traditional, and image) on the purchasing intention of green beauty products. Simple linear regression analysis is conducted using SPSS to test the hypotheses by examining the influence of each barrier (usage, value, risk, traditional, and image) on the purchasing intention of green beauty products. The regression coefficients, t-values, and p-values are assessed to determine the significance of the relationships.

4.8.6 Moderation Analysis

To test the ethical concern's moderating effect on the relationships between the barriers and purchasing intention. An interaction term is created by multiplying the ethical concern variable with each barrier variable. Then, the interaction terms are added to the regression models, and the significance of the interaction terms is assessed to determine the presence of a moderating effect (Bell et al., 2019).

4.9 Limitations

Foremost, the concentration of this research on Chinese males who are aged between 18 to 54 engaging with beauty products narrows the scope of the research, limiting the generalizability of the findings to other demographic groups. Moreover, the selection of Mandarin-speaking participants further delimits the research to a specific linguistic subset, which could be potentially unrepresentative of the wider Chinese male consumer populace. As a potential solution, future research could diversify the demographic and linguistic parameters to enhance the representativeness and generalizability of the findings.

Secondly, the employment of a cross-sectional research design within the research offers a singular temporal "snapshot", thereby precluding the exploration of temporal shifts or the substantiation of causal linkages between variables. An effective resolution to this limitation would be the adoption of a longitudinal research design in subsequent studies, thereby facilitating the observation of chronological trends and potential causal associations.

Thirdly, the reliance of the research on self-reported data, gathered via an online questionnaire, may be subject to influences such as recall bias, or potential misinterpretation of queries. To address this limitation, a qualitative study could be done in the future, such as interviews or focus groups, could provide a more nuanced and comprehensive understanding of the respondents' perceptions and intentions.

Despite these limitations, this research endeavor contributes valuable insights into the perceptions and intentions of Chinese males towards green beauty products. By addressing these limitations in subsequent research, a more comprehensive understanding of the topic can be achieved, encompassing a greater diversity of demographics, a broader temporal perspective, and a more robust methodological approach.

5. Result

The preceding segment familiarized the audience with the range of data and analytical methodologies deployed in this dissertation for data procurement and interpretation. This segment is aimed to delve into the empirical study's statistical outcomes. We are commencing with the exposition and evaluation of the descriptive statistics for the participants' demographics—age, gender, and education—and their subjective views on green beauty product usage. This is followed by the results derived from multiple statistical analyses, including Cronbach's alpha, Pearson's correlation, and simple linear regression, to bolster our pursuit of endorsing or rejecting our hypotheses, thereby addressing the primary research question.

5.1 Descriptive

Sample descriptive				
Items	Categories	N	Percent (%)	Cumulative Percent (%)
Age	(18-24	84	26.17	26.17
	25-34	111	34.58	60.75
	35-44	80	24.92	85.67
	45-54	46	14.33	100
Gender	Male	321	100	100
	Female	0	0	100
	Non-binary	0	0	100
Education	High school or equivalent	65	20.25	20.25
	Vocational or trade school	67	20.87	41.12
	Bachelor's degree	67	20.87	61.99
	Master's degree	65	20.25	82.24
	Doctorate degree	57	17.76	100
Income	Under35,000	52	16.2	16.2
	35,000-49,999	64	19.94	36.14
	50,000-74,999	45	14.02	50.16
	75,000-99,999	50	15.58	65.73
	100,000-149,999	54	16.82	82.55
	150,000 and above	56	17.45	100
Total		321	100	100

Table 1: Sample Descriptives

Our empirical investigation intended to gather responses from 300 to 400 Chinese male consumers between 18 and 54. After disseminating our survey across numerous platforms, we accumulated 400 responses. However, 79 were deemed unfit as they were either not male customers or had incomplete responses. We hence decided to remove responses from female and non-binary participants to maintain focus on our target demographic, which resulted in a final sample size of 321 participants.

The survey attracted participants from a broad age spectrum. The age bracket of 25-34 years represented the largest segment, making up 34.58% of the total, superseded by the 18-24 years (26.17%) and 35-44 years and older (24.92%) categories. The age group of 45-54 years was the least represented demographic, contributing only 14.33% of all participants. Cumulative percentages escalated sequentially across age brackets, commencing with 26.17% for individuals aged between 18 and 24 years and culminating at 100% for those aged 45-54. All 321 respondents in the survey were male, with zero representation from female or non-binary individuals.

The respondents displayed a broad spectrum of educational qualifications. The most common were vocational or trade school and Bachelor's degree holders, each comprising 20.87% of the total. Close behind were high school graduates or equivalent and Master's degree holders, each making up 20.25% of the respondents. Finally, the group with the minor representation were Doctorate holders, at 17.76%.

Income distribution among the participants was pretty even. The largest group (19.94%) reported an annual income of CNY35,000-49,999, followed by those earning CNY150,000 or more (17.45%) and CNY100,000-149,999 (16.82%). Participants with an annual income below CNY35,000 constituted 16.2% of the total. Cumulative percentages grew steadily across income tiers, reaching 100% for participants earning CNY150,000 and above.

5.2 Reliability and validity

In order to assess the reliability of the questionnaire, which refers to the repeatability of the survey results, a reliability analysis needs to be conducted upon the completion of data collection. This process helps confirm the questionnaire's reliability. In this analysis, Cronbach's Alpha is used to measure the internal consistency of the questionnaire, that is, the consistency between the survey items.

Cronbach Alpha			
	N of Items	*n*	Cronbach α
Usage barriers	3	321	0.832
Value barriers	3	321	0.849
Risk barriers	2	321	0.772
Traditional barriers	2	321	0.75
Image barriers	2	321	0.783
Ethical concern	3	321	0.928
Purchase intention	3	321	0.83

Table 2: Cronbach's Alpha

When the Cronbach's Alpha value for a scale is higher than 0.6, it implies acceptable internal consistency; if it is higher than 0.7, it suggests good internal consistency for the scale. As seen in the table, the Cronbach's Alpha values for all dimensions exceed 0.6. The Cronbach's Alpha values for the seven dimensions are 0.832, 0.849, 0.772, 0.750, 0.783, 0.928, and 0.830, all of which are greater than 0.7. This indicates that the internal consistency of the questionnaire's dimensions is good.

After ensuring the reliability of the questionnaire, we proceeded to analyze its validity. Validity represents the effectiveness of a questionnaire, i.e., the degree to which the questionnaire items accurately reflect the content being investigated. This study focused on the structural validity of the questionnaire, which refers to the degree of fit between the questionnaire structure and the expected theoretical framework. We used exploratory factor analysis to analyze the structural validity of the questionnaire, and the results are as follows:

KMO and Bartlett test		
KMO		0.725
Bartlett test	Approx. Chi-Square	2802.585
	df	153
	p value	0

Table 3: Result of KMO and Bartlett Test

To conduct factor analysis for information condensation research, we first analyzed whether the data fit factor analysis. From the table above, the KMO value is 0.725, more significant than 0.6, meeting the prerequisite for factor analysis and indicating that the data can be used for factor analysis research. Additionally, the data passed Bartlett's test of sphericity (p < 0.05), suggesting that the research data is suitable for factor analysis.

Based on the results, it can be concluded that the questionnaire has acceptable structural validity. The KMO value of 0.725 indicates that the sample is adequate for factor analysis. Additionally, the significant Bartlett's test of sphericity (p < 0.05) demonstrates that underlying patterns within the data can be extracted using factor analysis.

<div align="center">Factor loading (Rotated)</div>

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Communalities
UB1	-0.02	0.18	0.883	-0.036	0.078	0.069	0.096	0.835
UB2	0.075	0.22	0.819	-0.089	0.039	0.029	0.054	0.737
UB3	0.008	0.15	0.807	-0.052	0.157	0.066	0.086	0.713
VB1	0.062	0.894	0.161	-0.11	0.085	0.059	0.073	0.856
VB2	0.02	0.839	0.207	-0.036	0.056	0.011	-0.014	0.752
VB3	0.031	0.811	0.176	-0.03	0.078	0.07	0.142	0.721
RB1	-0.027	0.092	0.118	-0.014	0.087	0.886	0.075	0.822
RB2	-0.015	0.027	0.023	-0.095	0.154	0.889	0.043	0.826
TB1	0.008	0.058	0.056	-0.101	0.023	0.066	0.893	0.819
TB2	-0.075	0.111	0.149	-0.081	0.036	0.05	0.868	0.803
IB1	0.038	0.098	0.088	-0.025	0.904	0.12	0.004	0.85
IB2	-0.003	0.099	0.163	-0.153	0.863	0.132	0.06	0.826
EC1	0.938	0.023	0.062	0.018	-0.021	-0.004	-0.077	0.891
EC2	0.935	0.056	0.012	0.03	-0.013	-0.052	0	0.881
EC3	0.93	0.029	-0.013	0.011	0.072	0.01	0.005	0.87
PI1	-0.032	-0.063	-0.061	0.908	-0.072	-0.071	-0.044	0.845
PI2	0.037	-0.029	-0.03	0.81	-0.031	-0.095	-0.131	0.687
PI3	0.049	-0.07	-0.075	0.854	-0.073	0.046	-0.02	0.75

Table 4: Factor loading

This study used the varimax rotation method to determine the relationship between factors and research items. The table above shows the information extraction of factors for the research items and the correspondence between factors and research items. As can be seen

from the table, the commonalities of all research items are higher than 0.4, indicating a strong association between research items and factors, and factors can effectively extract information.

After ensuring that factors can extract most of the information from the research items, we analyzed the relationship between factors and research items. The correspondence between questions and factors is consistent with the theoretical expectations. EC1, EC2, and EC3 correspond to Factor 1; VB1, VB2, and VB3 correspond to Factor 2; UB1, UB2, and UB3 correspond to Factor 3; PI1, PI2, and PI3 correspond to Factor 4; IB1 and IB2 correspond to Factor 5; RB1 and RB2 correspond to Factor 6; and TB1 and TB2 correspond to Factor 7.

According to the results, Factor 1 represents the "Ethical concern" dimension in the questionnaire. Factor 2 represents the "Value barriers" dimension, Factor 3 represents the "Usage barriers" dimension, and Factor 4 represents the "Purchase intention" dimension. Factor 5 represents the "Image barriers" dimension, Factor 6 represents the "Risk barriers" dimension, and Factor 7 represents the "Traditional barriers" dimension. Therefore, the questionnaire demonstrates good structural validity since the correspondence between the items and factors is consistent with our theoretical expectations.

5.3 Correlation

Pearson Correlation

	Mean	Std. Deviation	UB	VB	RB	TB	IB	EC	PI
UB	2.954	1.080	1						
VB	3.013	1.108	0.425**	1					
RB	3.245	1.108	0.178**	0.155**	1				
TB	3.095	1.112	0.226**	0.197**	0.157**	1			
IB	3.164	1.136	0.267**	0.229**	0.285**	0.103	1		
EC	2.891	1.349	0.045	0.082	-0.036	-0.056	0.035	1	
PI	3.123	1.017	-0.155**	-0.156**	-0.126*	-0.189**	-0.179**	0.034	1

$* p<0.05 ** p<0.01$

	Pearson Correlation	Spearman`s rho	R²	Sig.(2-tailed)*
UB	-0.155	-0.155	0.024025	0.005
VB	-0.156	-0.159	0.024336	0.005
RB	-0.126	-0.122	0.015876	0.023
TB	-0.189	-0.198	0.035721	0.001
IB	-0.179	-0.183	0.032041	0.001

Table 5: Result of Correlation

As highlighted in section 4.8, correlation is crucial in scrutinizing the associations between the identified factors and the buying intention towards green beauty products. Furthermore, it illuminates the intensity and trajectory of these connections and supplies primary backing for the hypotheses. Below, we present the hypotheses that this section aims to test:

H1: There is a strong correlation between the usage barriers and the negative impact of Chinese male consumers toward the purchase intention of green beauty products.

H2: There is a strong correlation between the value barriers and the negative impact of Chinese male consumers toward the purchase intention of green beauty products.

H3: There is a strong correlation between the risk barriers and the negative impact of Chinese male consumers toward the purchase intention of green beauty products.

H4: There is a strong correlation between the traditional barriers and the negative impact of Chinese male consumers toward the purchase intention of green beauty products.

H5: There is a strong correlation between the image barriers and the negative impact of Chinese male consumers toward the purchase intention of green beauty products.

H6: Ethical concern serves as a moderating variable in the relationship between the intention to purchase green beauty products and associated barriers like usage, value, risk, and tradition. When the ethical concern is relatively low, these barriers significantly deter the purchase intention of green beauty products.

The result presented in Table 5 shows that the mean scores for UB (Usage Barrier), VB (Value Barrier), RB (Risk Barrier), TB (Traditional Barrier), IB (Image Barrier), and PI (Purchase Intention) are 2.954, 3.013, 3.245, 3.095, 3.164, and 3.123 respectively. This

implies that, on average, the consumers perceive risk barriers as most significant, while ethical concerns are perceived as least significant.

Meanwhile, Table 5 presents that the standard deviations for each variable are relatively close, suggesting similar variability in responses for each factor.

Additionally, looking at the Pearson Correlations, we see a positive correlation between all the barrier types (UB, VB, RB, TB, IB), meaning that an increase in one type of barrier is associated with an increase in other types of barriers. Most notably, a moderate positive correlation exists between UB and VB (0.425) and between IB and RB (0.285). This indicates that these pairs of barriers are particularly likely to rise and fall together.

However, regarding Purchase Intention (PI), we see negative correlations with all the barrier types. This suggests that the purchase intention decreases as the perception of barriers increases. The strongest negative correlation is with TB (-0.189) and IB (-0.179), indicating that these barriers significantly impact purchase intention.

As a moderator, ethical Concern (EC) does not correlate strongly with the other variables. Its correlations are close to zero, meaning that EC does not have a direct linear relationship with the barriers or the purchase intention. This could indicate that while EC might be an essential factor in purchase decisions, its impact might be non-linear or dependent on other conditions not captured in this analysis.

The R^2 values for UB, VB, RB, TB, and IB are 0.024025, 0.024336, 0.015876, 0.035721, and 0.032041, respectively. These values are relatively low, suggesting that each variable only explains a small percentage of the variance in Purchase Intention.

In terms of statistical significance (Sig. (2-tailed)*), the p-values for all the correlations with Purchase Intention (PI) are below 0.05, which means these correlations are statistically significant.

In conclusion, all the barriers negatively affect the purchase intention. However, the traditional and image barriers have the most substantial negative impact.

5.4 Hypothesis summary

Prior stated hypotheses H1, H2, H3, H4, and H5, which posit that usage, value, risk, traditional, and image barriers, respectively, exert a negative influence on the purchase intention for green beauty products, are supported. The mean scores and negative correlations between all barrier types and purchase intention affirm these hypotheses. Among them,

traditional and image barriers have the most pronounced negative impact, as evidenced by their stronger negative correlations with purchase intention. Regarding H6, the data suggest that the Ethical Concern (EC) does not substantially correlate with the other variables. The near-zero correlations imply that EC has no direct linear relationship with the barriers or the purchase intention.

5.5 Linear Regression analysis

Predictor	Constant B	Constant SE	Constant t	Constant p	Predictor B	Predictor SE	Beta	Predictor t	Predictor p	VIF	R^2	Adjusted R^2	F-statistic	p-value	Durbin-Watson
UB	3.555	0.164	21.710	0.000**	-0.146	0.052	-0.155	-2.810	0.005**	1.000	0.024	0.021	7.896 (1,319)	0.005	2.071
VB	3.555	0.163	21.826	0.000**	-0.144	0.051	-0.156	-2.828	0.005**	1.000	0.024	0.021	8.000 (1,319)	0.005	2.096
RB	3.499	0.175	20.028	0.000**	-0.116	0.051	-0.126	-2.277	0.023*	1.000	0.016	0.013	5.186 (1,319)	0.023	2.054
IB	3.629	0.166	21.899	0.000**	-0.160	0.049	-0.179	-3.245	0.001**	1.000	0.032	0.029	10.529 (1,319)	0.001	2.070
TB	3.656	0.165	22.115	0.000**	-0.172	0.050	-0.189	-3.429	0.001**	1.000	0.036	0.033	11.756 (1,319)	0.001	2.036

Table 6: Regression Summary

As indicated in section 4.8, regression analysis is instrumental in investigating how each barrier—usage, value, risk, traditional, and image—affects the purchasing intention for green beauty products. The evaluation of regression coefficients, t-values, and p-values aids in establishing the significance of these relationships. The outcome of the regression analysis suggests that all five barriers—Usage Barrier, Value Barrier, Risk Barrier, Image Barrier, and Traditional Barrier—significantly negatively impact Purchase Intention (PI). This suggests that as the perception of these barriers escalates, the propensity to purchase green cosmetics diminishes.

Usage Barrier (UB): The coefficient for UB is -0.146, suggesting that for each unit increase in UB, we can expect a decrease of 0.146 units in PI on average, all other factors being constant. This is statistically significant (p=0.005, < 0.01). The R^2 value of 0.024 suggests that UB can explain 2.4% of the variability in PI.

Value Barrier (VB): The coefficient for VB is -0.144, suggesting that for each unit increase in VB, we can expect a decrease of 0.144 units in PI on average, all other factors being constant. This is statistically significant (p=0.005, < 0.01). The R^2 value of 0.024 suggests that VB can explain 2.4% of the variability in PI.

Risk Barrier (RB): The coefficient for RB is -0.116, suggesting that for each unit increase in RB, we can expect a decrease of 0.116 units in PI on average, all other factors being constant. This is statistically significant (p=0.023, < 0.05). The R^2 value of 0.016 suggests that RB can explain 1.6% of the variability in PI.

Image Barrier (IB): The coefficient for IB is -0.160, suggesting that for each unit increase in IB, we can expect a decrease of 0.160 units in PI on average, all other factors being constant. This is statistically significant (p=0.001, < 0.01). The R^2 value of 0.032 suggests that IB can explain 3.2% of the variability in PI.

Traditional Barrier (TB): The coefficient for TB is -0.172, suggesting that for each unit increase in TB, we can expect a decrease of 0.172 units in PI on average, all other factors being constant. This is statistically significant (p=0.001, < 0.01). The R^2 value of 0.036 suggests that TB can explain 3.6% of the variability in PI.

In all models, the VIF (Variance Inflation Factor) is 1, indicating no multicollinearity, meaning these variables independently contribute to the prediction of PI. Also, the Durbin-Watson statistics are around 2 in all models, suggesting no autocorrelation in the residuals.

In summary, among all the barriers, Traditional Barrier (TB) has the most substantial adverse influence on Purchase Intention, followed by Image Barrier (IB), Usage Barrier (UB), Value Barrier (VB), and Risk Barrier (RB).

5.6 Moderation analysis

Barrier	Effect on PI (Model 1)	EC's Effect (Model 2)	Interaction Effect (Model 3)	Simple Slope Effect
UB	-0.158 (p=0.005**)	0.042 (p=0.46)	0.268 (p=0.000**)	Non-significant at high EC, Significant at low EC
VB	-0.159 (p=0.005**)	0.048 (p=0.398)	0.295 (p=0.000**)	Significant at both high and low EC
RB	-0.129 (p=0.023*)	0.03 (p=0.599)	0.138 (p=0.014*)	Non-significant at high EC, Significant at low EC
TB	-0.192 (p=0.001**)	0.024 (p=0.672)	0.117 (p=0.038*)	Non-significant at high EC, Significant at low EC
IB	-0.182 (p=0.001**)	0.041 (p=0.467)	0.135 (p=0.019*)	Non-significant at high EC, Significant at low EC

(* p<0.05 ** p<0.01)

Table 7: Moderation analysis

The tables provided above demonstrate the outcomes of five moderation analyses. Each of these analyses aims to examine the moderating effect of EC on the relationship between the dependent variable, PI, and various independent variables, namely UB, VB, RB, TB, and IB. The methodology applied to these analyses follows a three-part model.

Model 1 incorporates only the independent variable for each analysis. The primary objective here is to ascertain the impact of each independent variable on PI, with no consideration given to the moderating influence of EC. The results extracted from the table elucidate a significant relationship between each independent variable and PI. Each of these relationships is denoted by specific values (t = -2.810, -2.828, -2.277, -3.429, -3.245, respectively) and p-values ($p < 0.05$ for all), which signify that these independent variables hold substantial sway over PI.

In Model 2, the analyses are extended by including the moderating variable, EC, into the original structure of Model 1. This step aims to understand the moderating variable's direct effect on the dependent variable and its combined effect with the independent variable.

Model 3, the most comprehensive of the models, builds upon Model 2 by integrating the interaction term. This term is the product of the independent variable and the moderator. The significance of this term in Model 3 is analyzed to evaluate the influence of the moderator, EC. Across all analyses, the interaction term is significant ($p < 0.05$ for all), implying that the influence each independent variable has on PI varies in magnitude and depends on the level of EC.

Diving deeper into the implications of EC's moderating role, we can analyze the simple slope graphs provided（in Appendix). Each independent variable has a meaningful impact on PI when EC is low. This indicates that low levels of EC could amplify the influence of the barriers on PI, suggesting a critical role of EC in moderating these relationships.

5.7 Hypothesis test summary

Hypotheses	Support
H1: There is a strong correlation between the usage barriers and the negative impact of Chinese male consumers toward the purchase intention of green beauty products.	Yes
H2: There is a strong correlation between the value barriers and the negative impact of Chinese male consumers toward the purchase intention of green beauty products.	Yes
H3: There is a strong correlation between the risk barriers and the negative impact of Chinese male consumers toward the purchase intention of green beauty products.	Yes
H4: There is a strong correlation between the traditional barriers and the negative impact of Chinese male consumers toward the purchase intention of green beauty products.	Yes
H5: There is a strong correlation between the image barriers and the negative impact of Chinese male consumers toward the purchase intention of green beauty products.	Yes
H6: Ethical concern serves as a moderating variable in the relationship between the intention to purchase green beauty products and associated barriers like usage, value, risk, and tradition. When the ethical concern is relatively low, these barriers significantly deter the purchase intention of green beauty products.	Yes

6. Discussion

This section delves into the analysis results, providing a detailed examination of each hypothesis. It also connects these outcomes with prior scholarly work, offering a deeper understanding and richer insights.

6.1 Usage barriers

As supported by the negative regression coefficient, usage barriers play a substantial role in shaping the purchase intention of green beauty products among Chinese male consumers. This negative influence is consistent with previous studies (Lin & Chang, 2012; Luchs & Kumar, 2017; Sadiq et al., 2021), highlighting that consumers often perceive green products as inferior in quality and performance compared to their conventional counterparts.

This perception could stem from the misconceptions surrounding the efficacy of green beauty products, which might be viewed as less potent or less effective due to their natural composition. However, it's important to note here that such perceived performance deficits might not necessarily align with the actual performance of these products.

The usage barrier could also be linked to the unfamiliarity with green beauty products. Since the concept of green beauty products is relatively new in China, customers tend to purchase traditional beauty products with which they are more familiar. In contrast, green beauty products may be relatively new in the market, leading to uncertainty about their usage, which could be a barrier to their purchase.

Moreover, green beauty products might need more variety of options available in conventional beauty products, causing consumers to feel restricted in their choices. Currently, green beauty products are more pervasive for skin care and less for cosmetics. This limitation could also contribute to the usage barriers and deter potential buyers who demand various beauty products.

Furthermore, green beauty products may not provide immediate visible results, which could discourage potential users from looking for quick fixes to their beauty concerns. This is especially pertinent in the context of Chinese male consumers, who, as per the study by Byrne and Milestone (2023), could be more forthcoming about their use of beauty products and might thus prefer products that offer instant results.

6.2 Value barriers

The negative regression coefficient indicates that the value barriers are a significant factor in preventing Chinese male consumers from purchasing green beauty products. The regression coefficient of -0.144 (t=-2.828, p=0.005<0.01) indicates that the likelihood of purchase intention decreases as the perceived value barriers increase.

This finding aligns with prior research that has identified the high cost of eco-friendly products as a primary deterrent to their purchase. For example, Claudy et al. (2013) and Hustvedt et al. (2013) have pointed out that consumers may be discouraged from buying green products due to their higher prices than conventional options. This could be particularly true in the case of green beauty products, which, as Amberg and Fogarassy (2019) noted, often come with a higher price tag due to the use of natural ingredients.

In the Chinese market, this barrier might be exacerbated by the perception that organic or eco-friendly products are of higher value, thus commanding a higher price (Yuan and Xiao, 2021; Xia, 2019). Consumers who perceive organic attributes positively are more likely to see organic food as having a higher value and are, therefore, more likely to accept higher prices. Translated into the context of beauty products, consumers might be more willing to overcome value barriers if they understand and appreciate the benefits of green beauty products.

However, the current perception among Chinese male consumers may need to be more vital to outweigh the increased cost. This could be due to a need for more understanding or awareness about the benefits of green beauty products, a market gap that could be addressed through education and marketing. On the other hand, it could also reflect a more profound cultural perception of value and cost, in which case strategies to overcome this barrier are more nuanced.

6.3 Risk barrier

The significant negative regression coefficient for Risk Barriers (RB) suggests that perceived risks serve as a substantial hindrance to purchasing green beauty products among Chinese male consumers. This finding is consistent with prior research, notably the study conducted by Devinney et al. (2010).

Devinney et al. (2010) posited that the potential for higher costs associated with green products could deter consumers from purchasing these items, as they might view the additional expenditure as a financial risk. This could be particularly true for green beauty

products, which are often more expensive due to the costs associated with sourcing sustainable, natural ingredients and employing environmentally friendly production processes.

Moreover, as pointed out by Lin & Chang (2012), Luchs & Kumar (2017), and Sadiq et al. (2021), there is a prevalent perception among consumers that green products, including beauty products, might be of inferior quality compared to their conventional counterparts. This perception further exacerbates the risk barrier, as consumers may fear the risk of product ineffectiveness or failure to meet their expectations, leading to reluctance to purchase these products.

To overcome these risk barriers, it may be beneficial to emphasize the value, quality, and effectiveness of green beauty products. For example, credible certifications, transparent ingredient lists, and real-life reviews can be utilized to alleviate quality concerns. At the same time, the perceived risk of higher costs can be mitigated by highlighting the long-term financial, health, and environmental benefits of using green beauty products.

6.4 Traditional barriers

Traditional Barriers (TB) significantly impact the purchase intention of green beauty products among Chinese male consumers, as demonstrated by the negative regression coefficient. This finding is consistent with previous research, confirming the hypothesis that traditional barriers negatively influence the purchasing intention of green beauty products.

Traditional barriers, as highlighted in the studies by Lin & Chang (2012) and Luchs & Kumar (2017), often encompass ingrained perceptions and beliefs about the low effectiveness of green products compared to their conventional counterparts. This may include perceptions about green beauty products' quality, performance, and reliability, which might be considered less potent or effective. Such perceptions could stem from a need for more understanding or misinformation about the benefits and effectiveness of natural ingredients used in green beauty products.

Another facet of traditional barriers could be the entrenched habits and routines that consumers have developed with conventional beauty products. The switch to green products may require changes in these habits, which could be perceived as inconvenient or disruptive.

Additionally, traditional beauty products often have a strong brand reputation and widespread availability that green products may still need to achieve. This discrepancy further exacerbates the perception of green products as less desirable or trustworthy.

Zhang et al. (2022) emphasized the role of environmental benefits in promoting green recovery, while Lu and Miller (2019) stressed that health concerns play a part in selecting green products. However, if the perceived effectiveness of these products is low due to traditional barriers, more than their environmental and health benefits may be needed to sway consumers.

6.5 Image barriers

Image barriers refer to societal norms and stereotypes that might discourage specific consumers from purchasing particular products. In the context of green beauty products, these barriers may manifest in various ways for Chinese male consumers.

Based on the findings, the negative regression coefficient supports the hypothesis that image barriers negatively influence the purchase intention of green beauty products. In other words, the societal perception of men using beauty products, mainly green beauty products, might prevent Chinese male consumers from purchasing these products.

Byrne and Milestone's (2023) research provides an exciting perspective. Their study found that men need to be more forthcoming about their usage of beauty products, which could be due to the societal stigma associated with men using beauty products. This stigma might be even more pronounced regarding green beauty products, as they are often marketed towards a female audience and may not align with traditional male gender norms.

Moreover, the image of green beauty products themselves could be a factor. For example, if these products are perceived as feminine or not masculine enough, it might dissuade male consumers from purchasing them. Also, the notion that green beauty products are only for the "environmentally conscious" or "eco-friendly" individuals may prevent some men from identifying with these products.

6.6 Ethical concerns

Ethical Concerns (EC) play a crucial role in green beauty product purchase intention, particularly in moderating the negative impact of barriers such as usage, value, risk, traditional, and image barriers. This observation is consistent with the broader literature on green consumption, where ethical concerns often motivate environmentally conscious behaviour.

Wang et al.'s (2019) study elucidate that green consumption is often associated with socially responsible consumption, indicating that consumers who demonstrate higher ethical concern

are more likely to engage in green consumption despite the perceived barriers. This aligns with our results showing that ethical concern significantly interacts with each barrier, potentially mitigating their negative influence on purchase intention.

Further supporting this, Shen and Wang's (2022) study on pro-environmental awareness components and green consumption behaviour found that cultural norms could foster or impede pro-environmental behaviour. This suggests that cultural factors, which can be closely intertwined with ethical concerns, play a crucial role in shaping green purchase intentions. Ethical concerns can be viewed as a critical cultural factor that might moderate the adverse effects of the identified barriers.

Moreover, Shao's (2019) study found that the younger generation demonstrated a higher interest in adopting sustainable consumption practices and was an evening to pay a premium for environmentally friendly products. This ingress to pay more for green products can be interpreted as a manifestation of heightened ethical concern among younger consumers. It supports the hypothesis that ethical concern can moderate the influence of barriers (such as perceived value and cost) on green beauty product purchase intention.

7. Conclusion

This research set out to investigate the barriers faced by Chinese male consumers in purchasing green beauty products. By highlighting and examining these barriers, the study aimed to provide a more comprehensive understanding of the unique dynamics in the Chinese male beauty market. The five primary barriers identified were usage barriers (UB), value barriers (VB), risk barriers (RB), traditional barriers (TB), and image barriers (IB). In addition, this study also proposed and confirmed ethical concern (EC) as a moderating factor of these barriers on purchase intention (PI), lower environment contern(EC) can aggravate the adverse effects from barriers to purchase intention.

It was discovered that usage barriers, primarily related to perceptions of efficacy and diversity of green beauty products, significantly deterred male consumers. To overcome these barriers, education campaigns to debunk misconceptions, and expand the range of available green products, could stimulate a higher adoption rate.

Value barriers were also considered considerable obstacles, indicating that green beauty products' cost and perceived value negatively impact PI. However, this issue could be mitigated by developing more accessible pricing models and through consumer education about the long-term benefits of using eco-friendly products.

Risk barriers, linked to the perceived risks associated with using green beauty products, were another significant hurdle to adopting these products. Companies, in collaboration with policymakers, should work towards dispelling these misconceptions and making green beauty products more accessible and reliable.

Traditional and image barriers were closely linked, referring to societal norms and perceptions about male beauty product usage. The negative societal perception of men using beauty products, particularly green ones, significantly hinders purchase intention. These barriers could be mitigated through broad societal changes, normalizing the usage of beauty products among men.

Ethical concern emerged as a decisive moderating factor, indicating that an increase in ethical awareness and promotion of the environmental benefits of green beauty products can significantly influence the negative impact of the identified barriers on purchase intention. Thus, ethical awareness should be incorporated into strategies to boost the consumption of green beauty products.

7.1 Practical Implications

The increased environmental concerns due to the depletion of natural resources forced human civilization to focus on environmentally responsible consumption. As a result, increasing numbers of businesses are producing environmentally friendly products. However, prior studies have shown that customers need to transition their favourable attitudes into actual purchasing behaviours. Thus, this study provides valuable insights into the purchase intention of Chinese male consumers regarding green beauty products. Furthermore, it advances our understanding of the barriers preventing this demographic from embracing green beauty products, identifying usage, value, risk, traditional, image, and ethical concerns as critical factors.

For practitioners in the beauty industry, particularly those involved in marketing green beauty products, understanding these barriers is crucial to developing effective strategies to overcome them and appeal to Chinese male customers to purchase them without damaging the environment. It contributes towards a more sustainable ecosystem.

Companies could focus on debunking misconceptions about green beauty products to address usage barriers, which could be done by enhancing product marketing campaigns to demonstrate detailed information about the product's benefits, ingredients, and the science behind them, potentially using consumer testimonials or scientific studies as evidence. By doing so, customers are informed of the benefits of using the products and increase their interest in purchasing.

In the perspective of overcoming value barriers, brands may need to work on making their products more accessible by decreasing prices or offering better value for money. Currently, it is hard to lower the price as the cost of production for green beauty products is much more expensive than ordinal beauty products, which are massively produced. Thus, the suggested method to overcome the value barriers is to emphasize the long-term benefits of using green beauty products, such as health and environmental advantages, in the advertisement. By doing so, customers can be more informed about the value of green products.

To Mitigate risk barriers, green beauty products brands could provide transparent and easily understandable product information, which could be facilitated through credible certifications and detailed ingredient lists.

To overcome traditional barriers, brands must challenge and change deeply ingrained perceptions about green beauty products. This could involve highlighting the effectiveness of natural ingredients and emphasizing the health and environmental benefits of using green beauty products.

For image barriers, companies should consider their branding and marketing strategies. For example, they could make an effort to challenge gender norms, possibly by including more men in their marketing campaigns or creating product lines specifically targeted at men.

Finally, ethical concerns play a crucial role in buffering the negative impact of these barriers. Therefore, companies should emphasize ethical and sustainable practices in their marketing strategy. For instance, companies could integrate corporate social responsibilities in the campaigns to illustrate the brands' progress in balancing environmental imperatives. By doing so, brands can reach potential customers who want to make a positive difference with their purchase and feel socially responsible for helping the environment by purchasing green beauty products.

7.2 Future Research

This study opens several avenues for future research. For instance, research could be conducted to evaluate the effectiveness of different strategies to overcome the identified barriers. Moreover, longitudinal studies could be carried out to monitor shifts in consumer perceptions and behaviours over time, thereby shedding light on how effective these strategies have been and how consumer attitudes have evolved. Furthermore, future research could delve deeper into ethical concerns' role in moderating these barriers' adverse effects. For example, how do ethical concerns vary across different demographic segments, and how might these variations influence purchase intentions? In addition, the role of cultural norms in shaping ethical concerns could be explored further. Finally, studies could be conducted to explore other potential barriers not identified in this study. This could involve exploring barriers related to other demographic segments or examining barriers within cultural or national contexts.

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Appendix A. Questionnaire questions

Section 1: Personal Details
What is your age?
() Under 18
() 18-24
() 25-34
() 35-44
() 45-54
() 55-64
() 65 and above
Please indicate your gender:
() Male
() Female
() Non-binary
What is your highest education level?
() High school or equivalent
() Vocational or trade school
() Bachelor's degree
() Master's degree
() Doctorate degree

What is your annual income range in CNY?
() Less than 35,000
() 35,000-49,999
() 50,000-74,999
() 75,000-99,999
() 100,000-149.999
() 150,000 and above

Section 2: Attitudes and Opinions
Please respond to each statement according to your own beliefs and experiences.

Usage Barrier:

My options are limited when it comes to eco-friendly cosmetic products. (UB1)
() Strongly Disagree
() Disagree
() Neutral

() Agree

() Strongly Agree

The selection of eco-friendly cosmetic products is inadequate. (UB2)

() Strongly Disagree

() Disagree

() Neutral

() Agree

() Strongly Agree

The unavailability of eco-friendly cosmetic products in stores prevents me from purchasing them. (UB3)

() Strongly Disagree

() Disagree

() Neutral

() Agree

() Strongly Agree

Value Barrier:

I believe eco-friendly cosmetics are healthier than traditional ones. (VB1)

() Strongly Disagree

() Disagree

() Neutral

() Agree

() Strongly Agree

I perceive eco-friendly cosmetics as free from pesticides and harmful chemicals. (VB2)

() Strongly Disagree

() Disagree

() Neutral

() Agree

() Strongly Agree

Eco-friendly cosmetics are composed of natural ingredients, in my opinion. (VB3)

() Strongly Disagree

() Disagree

() Neutral

() Agree

() Strongly Agree

Risk Barrier:

I fear that some cosmetics claiming to be eco-friendly may not be as advertised. (RB1)

() Strongly Disagree

() Disagree

() Neutral

() Agree

() Strongly Agree

I am concerned about the higher cost of eco-friendly cosmetics. (RB2)

() Strongly Disagree

() Disagree

() Neutral

() Agree

() Strongly Agree

Traditional Barrier:

I find conventional cosmetics sufficient for my needs. (TB1)

() Strongly Disagree

() Disagree

() Neutral

() Agree

() Strongly Agree

I struggle to differentiate high-quality eco-friendly cosmetics from conventional products. (TB2)

() Strongly Disagree

() Disagree

() Neutral

() Agree

() Strongly Agree

Image Barrier:

I question the accuracy of eco-friendly cosmetic labeling. (IB1)

() Strongly Disagree

() Disagree

() Neutral

() Agree

() Strongly Agree

I suspect some eco-friendly cosmetics in the market are not genuinely eco-friendly. (IB2)

() Strongly Disagree

() Disagree

() Neutral

() Agree

() Strongly Agree

Ethical Concerns:

It is important to protect animals and their welfare will improve if I refrain from buying animal-tested products. (EC1)

() Strongly Disagree

() Disagree

() Neutral

() Agree

() Strongly Agree

I am keen on purchasing green cosmetics and personal care products due to their organic composition, ethical sourcing, eco-friendly manufacturing processes, and sustainable packaging. (EC2)

() Strongly Disagree

() Disagree

() Neutral

() Agree

() Strongly Agree

The eco-friendliness of a product motivates my interest in buying green cosmetics and personal care products. (EC3)

() Strongly Disagree

() Disagree

() Neutral

() Agree

() Strongly Agree

Purchase Intention:

I plan to buy green beauty products. (PI1)

() Strongly Disagree

() Disagree

() Neutral

() Agree

() Strongly Agree

I may consider purchasing green beauty products in the future. (PI2)

() Strongly Disagree

() Disagree

() Neutral

() Agree

() Strongly Agree

I am open to spending more for green beauty products. (PI3)

() Strongly Disagree

() Disagree

() Neutral

() Agree

() Strongly Agree

Appendix B. Regression analysis.

Parameter Estimates (*n*=321)

	Unstandardized Coefficients		Standardized Coefficients	*t*	*p*	VIF
	B	Std. Error	*Beta*			
Constant	3.555	0.164	-	21.710	0.000**	-
UB	-0.146	0.052	-0.155	-2.810	0.005**	1.000
R 2			0.024			
Adj *R* 2			0.021			
F			*F* (1,319)=7.896,*p*=0.005			
D-W 值			2.071			

Dependent Variable: PI

* *p*<0.05 ** *p*<0.01

Parameter Estimates (*n*=321)

	Unstandardized Coefficients		Standardized Coefficients	*t*	*p*	VIF
	B	Std. Error	*Beta*			
Constant	3.555	0.163	-	21.826	0.000**	-
VB	-0.144	0.051	-0.156	-2.828	0.005**	1.000
R^2			0.024			
Adj R^2			0.021			
F			*F*(1,319)=8.000,*p*=0.005			
D-W 值			2.096			

Dependent Variable: PI

* *p*<0.05 ** *p*<0.01

Parameter Estimates (*n*=321)

	Unstandardized Coefficients		Standardized Coefficients	*t*	*p*	VIF
	B	Std. Error	*Beta*			
Constant	3.499	0.175	-	20.028	0.000**	-
RB	-0.116	0.051	-0.126	-2.277	0.023*	1.000
R^2			0.016			
Adj R^2			0.013			
F			*F*(1,319)=5.186,*p*=0.023			
D-W 值			2.054			

Dependent Variable: PI

* *p*<0.05 ** *p*<0.01

Parameter Estimates (*n*=321)

	Unstandardized Coefficients		Standardized Coefficients	*t*	*p*	VIF
	B	Std. Error	*Beta*			
Constant	3.629	0.166	-	21.899	0.000**	-
IB	-0.160	0.049	-0.179	-3.245	0.001**	1.000
R^2			0.032			
Adj R^2			0.029			
F			$F(1,319)=10.529, p=0.001$			
D-W			2.070			

Dependent Variable: PI

* *p*<0.05 ** *p*<0.01

Parameter Estimates (*n*=321)

	Unstandardized Coefficients		Standardized Coefficients	*t*	*p*	VIF
	B	Std. Error	*Beta*			
Constant	3.656	0.165	-	22.115	0.000**	-
TB	-0.172	0.050	-0.189	-3.429	0.001**	1.000
R^2			0.036			
Adj R^2			0.033			
F			$F(1,319)=11.756, p=0.001$			
D-W			2.036			

Dependent Variable: PI

* *p*<0.05 ** *p*<0.01

Appendix C. Moderation testing, Sample slope.

Simple Slope

Level	Coef.	S.E.	t	p	95% CI	
Mean	-0.167	0.054	-3.072	0.002	-0.274	-0.061
High Level (+1SD)	0.101	0.076	1.324	0.186	-0.049	0.251
Low Level (-1SD)	-0.436	0.078	-5.553	0	-0.589	-0.282

Simple Slope

Level	Coef.	S.E.	t	p	95% CI	
Mean	-0.13	0.054	-2.395	0.017	-0.237	-0.024
High Level (+1SD)	0.165	0.081	2.045	0.042	0.007	0.323
Low Level (-1SD)	-0.425	0.072	-5.89	0	-0.567	-0.284

Simple Slope

Level	Coef.	S.E.	*t*	*p*	95% CI	
Mean	-0.129	0.056	-2.305	0.022	-0.239	-0.019
High Level（+1SD）	0.009	0.079	0.113	0.91	-0.145	0.163
Low Level（-1SD）	-0.268	0.08	-3.36	0.001	-0.424	-0.112

Simple Slope

Level	Coef.	S.E.	*t*	*p*	95% CI	
Mean	-0.177	0.056	-3.161	0.002	-0.287	-0.067
High Level（+1SD）	-0.06	0.084	-0.717	0.474	-0.225	0.104
Low Level（-1SD）	-0.295	0.075	-3.928	0	-0.442	-0.148

Simple Slope

Level	Coef.	S.E.	*t*	*p*	95% CI	
Mean	-0.171	0.056	-3.055	0.002	-0.281	-0.061
High Level（+1SD）	-0.036	0.084	-0.429	0.668	-0.2	0.128
Low Level（-1SD）	-0.306	0.076	-4.017	0	-0.455	-0.157