



Review article

Understanding green loyalty: A literature review based on bibliometric-content analysis

Na Zhang^{a,*}, Mingxuan Guo^a, Xing Bu^b, Chunhua Jin^a

^a School of Economics and Management, Beijing Information Science and Technology University, China

^b School of Economics and Management, University of Science and Technology Beijing, China

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ABSTRACT

Green loyalty is a crucial factor that influences consumers' purchase intentions and is essential for the sustainable development of ecological environments. However, research on this topic is still scattered, and exploring the research hotspots and trends of green loyalty is vital for future studies. This systematic literature review clarified the conceptual content, structure, and measurement of green loyalty. Additionally, the study conducted a bibliometric analysis of 236 articles on green loyalty from 2002 to 2022 in the Web of Science database. The content analysis revealed the theoretical basis, antecedent and outcome variables, and mechanisms of green loyalty, providing important guidance for future research.

1. Introduction

As global environmental issues grow increasingly serious, public awareness of environmental protection and sustainability is gradually rising [1] and the concept of green consumption is slowly prevailing [2]. Conducting green transformation toward sustainable development has become a top priority for enterprises [3]. As a result, an increasing number of businesses have begun to adopt green marketing to provide eco-friendly products and services [4]. Satisfying green customers with green products is the core of green marketing [5]. Loyalty is a key factor in achieving ultimate financial success by retaining existing customers rather than simply attracting new ones [6]. Because of its importance, developing and retaining loyal green customers is undoubtedly one of the most effective ways to ensure that green marketing translates into long-term success for many businesses [7]. Chen took the lead in proposing the concept of green loyalty under the green background, defining it as "the level of repurchase intentions prompted by a strong environmental attitude and sustainable commitment toward an object, such as a product, a service, a company, a brand, a group, or so on" [8].

Previous scholars have discussed the concept of green loyalty as it pertains to green banks, green hotels, green travel, and various green products [9–12]. Most have examined two aspects of the influencing factors of green loyalty: product-related and consumer-related. In product-related research, Pahlevi and Suhartanto proposed that green perceived quality and green perceived value are the key influencing factors of green loyalty [10], and Assaker et al. indicated that green product image has an indirect positive impact on guest loyalty through perceived quality and trust [13]. From the consumer perspective, Suki proposed that consumer satisfaction with green products is a key influencing factor of green loyalty [14], and Han et al. asserted that cruise travelers' sense of green value has a positive effect on the establishment of green loyalty [15].

* Corresponding author.

E-mail address: b15033@buaa.edu.cn (N. Zhang).

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Previous work has focused only on empirical research and the conclusions remain fragmented, and efforts to assemble and integrate the pieces of literature on this topic were limited. Therefore, an in-depth review of green loyalty is essential to a better understanding of the construct. To do so, this article conducts a study using a bibliometric-content analysis to identify the publication productivity and the intellectual structure of the field. Specifically, this study seeks to answer the following questions:

- RQ1. What is the publication productivity of research on green loyalty?
- RQ2. What are the most prominent topics and themes of green loyalty?
- RQ3. What theoretical lenses have been employed by researchers to analyze green loyalty?
- RQ4. What are the variables in existing empirical research results and their relationships with green loyalty?
- RQ5. What are the future directions for green loyalty research?

In doing so, this review seeks to contribute to green loyalty research in two ways. The first and most important aim is to understand the research hotspots and trends of green loyalty, and visually display the research focus of green loyalty through the research method of bibliometrics. Second, we have summarized the specific relationship between the relevant theories and variables of green loyalty in detail and offer detailed future directions so that consumer researchers may better understand green loyalty. Specifically, this study summarizes and integrates the existing relevant research, and provides effective guidance for enterprises to formulate effective green marketing strategies by systematically sorting out the influencing factors of green loyalty, which provides a reference for relevant theoretical research and application of green loyalty, and provides direction for future research.

The paper is organized as follows. First, we examine how the concept of green loyalty defines and measures. Second, we use bibliometric analysis to objectively analyze the large corpus of articles on green loyalty, mapping the research hotspots and trends of green loyalty to show the overall research status of green loyalty. Third, we use content analysis to discuss the theories used in research on green loyalty literature. We also put forward the integrated theoretical model of green loyalty based on the findings from extant studies. Finally, we conclude the review by providing several directions for future research. Fig. 1 presents the research process for the current review.

2. Background

2.1. Conceptualization of green loyalty

The concept of green loyalty is put forward based on Oliver’s concept of consumer loyalty [16]. Green loyalty refers to the level of repurchase intention caused by strong environmental attitudes and sustainable commitment to a certain object (such as products, services, companies, brands, or groups) [17]. Furthermore, recent studies have shown that green loyalty is measured by a consumer’s repurchase intention, and it is based on the consideration of the firm’s attitude and commitment to a sustainable environment [18].

Previous studies have employed two approaches to study loyalty: behavioral loyalty and attitudinal loyalty. Behavioral loyalty is the systematic purchase of a product or service by a consumer over a period of time. Attitudinal loyalty can be interpreted as a customer’s loyalty intention [19], which can be commitment or trust, but does not translate into actual purchase behavior. Even if

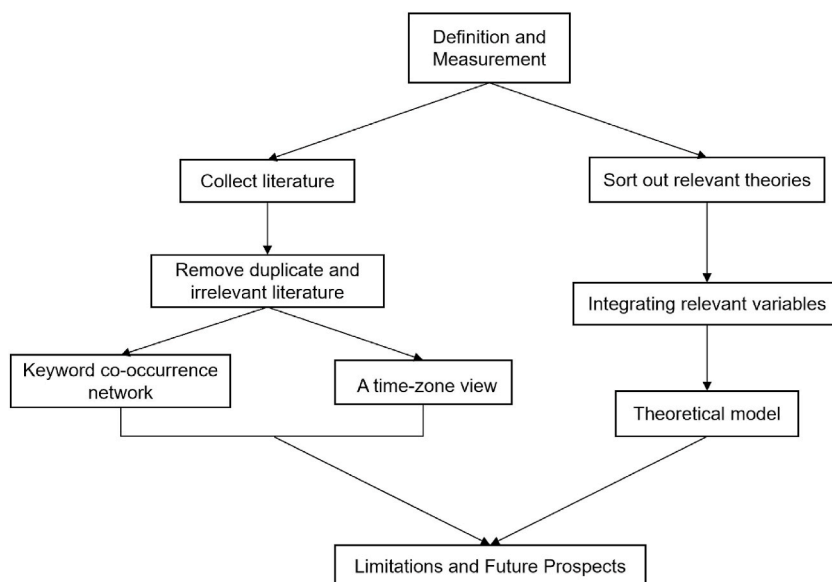


Fig. 1. Review process.

customers do not make a purchase, they will recommend products to other customers, which shows a loyal attitude. The attitudinal approach allows researchers to measure customer loyalty ranging from very disloyal to very loyal [20]. Based on these findings, we can find that even if consumers do not generally purchase behavior will also generate loyalty because of the trust consumers have in the product. Therefore, the conceptualization of loyalty based on an attitude approach may be an appropriate way to capture green loyalty [10].

The literature has often shown that the concepts of consumer loyalty and brand loyalty are mixed. Jacoby and Chestnut defined brand loyalty as “the biased, behavioral response, expressed over time, by some decision-making unit, with respect to one or more alternative brands out of a set of such brands, and is a function of psychological decision-making, evaluative processes” [21]. When consumers feel that the brand provides the right product features, image, or quality level at the right price, they will repeat their purchases and generate loyalty. Oliver defined customer loyalty as a deep commitment to repurchase or patronize a preferred product or service in the future [16].

On the one hand, compared with brand loyalty, consumer loyalty is a deeper commitment that focuses more on consumers' emotions. Brand loyalty is a concept produced by comparing different brands of similar products. Consumers choose the most appropriate products, such as price and quality, through a comparison process. Consumer loyalty means that customers have a certain dependence and preference on the products and services of a certain enterprise (or brand) in consumption and are not easily influenced and tempted by the information of other brands [22]. When consumer loyalty has been established, customers' tolerance for factors such as product cost performance will also increase. On the other hand, the process of establishing brand loyalty is different from that of consumer loyalty. Brand loyalty is established after consumers have used the brand for a period of time, but consumer loyalty is not necessarily based on experience. According to Oliver [16], the process of establishing consumer loyalty begins with cognitive loyalty. Consumers can find a brand preferable to its substitute through the obtained brand attribute information. The definition of green loyalty is associated with consumer loyalty against a green background. Different from consumer loyalty, however, green loyalty is attitudinal loyalty to pro-environment brands, goods, services, etc. Consumer commitment and loyalty are limited to green products or services due to environmental consciousness, making it an important factor in distinguishing green loyalty from brand loyalty.

2.2. Measurement of green loyalty

The measurement scale for green loyalty was developed from Oliver's loyalty measurement [16]. Chen et al.'s research proposed a green brand loyalty scale including four items [23]: (1) I am eager to repurchase the brand due to its environmental performance; (2) I prefer buying the brand to other brands due to its environmental functionality; (3) I rarely consider switching to other brands due to the brand's environmental features; and (4) I intend to continue purchasing the brand since it is environmentally friendly. At present, most studies have referred to this scale or adapted it according to article content. However, the measurement of attitudinal loyalty is still imperfect. Green products usually have higher production costs, and whether consumers are willing to pay a premium due to environmental protection is an important influencing factor. When consumers do not continue to buy green products because of insufficient purchasing power, it is also a kind of attitudinal loyalty to recommend green products to relatives and friends. For example, Suki divided green loyalty into three dimensions, purchase intention, word-of-mouth intention, and willingness to pay (premium), which increased the measurement of consumers' acceptance of price [24], while Pahlevi and Suhartanto [10] added the dimension of customer recommendation intention on the basis of Chen's scale [25]. However, these scales have not been verified by authoritative research, and the measurement scale for green loyalty still needs to be further discussed and improved.

3. Methodology

3.1. Data collection

Web of Science, a database widely used in bibliometric analysis [26], is adopted since it ensures the widest time span of literature and high-quality journals [27]. The first search was by topic, including “green loyalty”, “green customer loyalty” and “green brand loyalty”, in which “topic” covered the title, summary, and keywords of an article. A total of 451 paper records were obtained. Then, we eliminate the duplicate literature in the collected literature and the authors check each literature to eliminate the literature whose research topics are not related to this paper (e.g., green supply chain, green economy, or articles related only to consumer loyalty, etc.). Ultimately, a sample of 236 articles spanning from 2002 to 2022 was retained.

3.2. Analysis method

3.2.1. Bibliographic analysis

Bibliometric analysis has attracted academic interest over the past decade due to the availability of easily accessible online databases containing almost all published literature. Bibliometrics is an interdisciplinary discipline based on bibliography, informatics, mathematics, and statistics, and can be used to conduct quantitative statistical analysis of existing literature. Quantitative analysis of the literature using scientific statistical methods can provide researchers with a comprehensive reference of the background and trends of the development of the discipline. Compared to traditional literature reviews, bibliometric methods can provide a comprehensive member of a knowledge field based on the vast amount of literature available for reference. Donthu et al. proposed that the techniques for bibliometric analysis manifest across two categories: (1) performance analysis and (2) science mapping [28]. We would like to present the overall research hotspots and trends related to green loyalty. So, this paper adopts a scientific mapping technique for the

bibliometric review, which examines the relationships between research constituents.

The present study adopts the four-step procedure for bibliometric analysis recommended by Donthu et al. [28], which includes defining the aims and scope of the study, choosing the techniques for analysis, collecting the data for analysis, running the analysis, and reporting the findings.

In Step 1: Defining the aims and scope for the study, this study aims to shed light on the bibliometric and intellectual structure of the extant literature pertaining to green loyalty. The bibliometric structure encapsulates the publication productivity, whereas the intellectual structure pertains to the major topics and themes of research in the area under study. The scope of the study is relatively large, as consumer loyalty are rich area of research.

In Step 2: Choose the techniques for analysis, the present study employs a combination of bibliometric and content analysis techniques to map the development of the literature pertaining to green loyalty.

In Step 3: Collect the data for analysis, we described in detail in the Data collection section in the preceding part, to identify the articles and associated bibliometric and bibliographic data for analysis.

In Step 4: Run the analysis and report the findings, the last step involves conducting the bibliometric-content analysis and reporting the findings from the analysis. To do so, we use CiteSpace to perform bibliometric analysis and to visualize its output in a network [29]. CiteSpace is a visual literature research software based on co-citation analysis theory and routing network algorithms. By drawing different types of knowledge maps, it summarizes the evolution path, research development status, hot spots, and frontier fields of the selected research direction [30]. Through cooperative analysis, co-word analysis, and co-citation analysis, three main mapping structures [31] are formed, which can present complex network information in a dynamic form. The findings of the analysis are reported in the next sections.

3.2.2. Content analysis

Content analysis, a systematic coding and classification method for analyzing large amounts of text data [32], is also used in this study. This method combines qualitative methods that retain rich meaning and perform robust quantitative analysis [33],

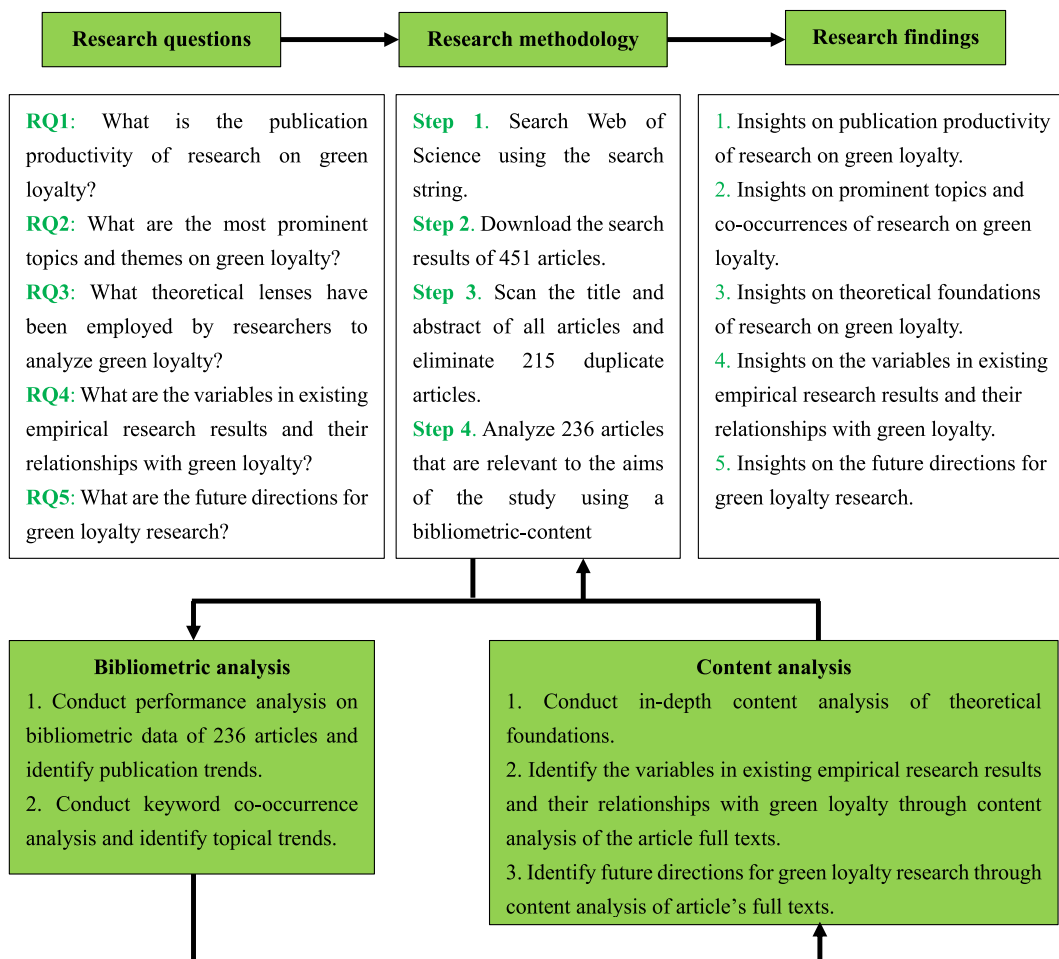


Fig. 2. Research design and scheme of analysis.

supplementing the bibliometric analysis. As the bibliometric analysis of green loyalty only exhibits the research hotspots and trends, however, the inner relationships and influencing mechanisms of related variables could not be obtained. We then used literature content analysis to provide a comprehensive review on the theories and variable relationships in green loyalty research.

In conclusion, to provide a taxonomy of the vastly in the topic of green loyalty, we employ bibliometric-content research methods [34,35], which provide a birds-eye view of the field and which allow us to bridge gaps between the variety of disciplines. We have complemented bibliometrics with content analysis. This technique is oriented to analyzing words and terms used by studies addressing a certain topic to identify patterns and tendencies [36]. In this study, it first identifies the current hot spots for green loyalty research and how they have evolved in recent years. To elaborate on this paper, then we use content analysis to summarize the common theories of green loyalty and the specific relationships between variables in more detail. The overview of the study's methodology is presented in Fig. 2.

4. Review results

Findings from the bibliometric-content analysis are presented based on the research questions that they address. In particular, findings pertaining to publication productivity, prominent themes, theoretical foundation, variables, and their relationships, and future research agendas are related to the first, second, third, fourth, and fifth research questions, respectively, and the sections are organized as follows.

4.1. Publication productivity

To answer RQ1—i.e., What is the publication productivity of research on green loyalty?—the study analyzes the total publications in the field by year. The number of papers published in a certain field can reflect the specific change in a research hotspot over time, and the fluctuation of the number of papers published over time can predict future development trends in this field, which has guiding significance for the direction of future research. Fig. 3 shows the annual publication volume on the green loyalty family from 2002 to 2022. Generally, the following change trends in the number of published papers were observed. Before 2010, the number of published papers was lower, after which it began to increase. Since 2015, there has been considerable growth, which has been continuously maintained at an average annual level of approximately 30 articles. By 2019, the number of published articles had peaked. The changing trend in citation volume was approximately the same as that of published papers. As shown by the above results, in recent years, as the environmental pollution directly related to the global industrial manufacturing industry has become increasingly serious, research on green loyalty has received increasing attention to enable corporations to better undertake social responsibility.

4.2. Most prominent themes

To answer RQ2—i.e., What are the most prominent topics and themes on green loyalty?—the study performs a keyword co-occurrence analysis. Based on the 236 journal articles collected, the keyword frequency function in CiteSpace software was used to generate a keyword map containing 286 key nodes and 680 connections, as shown in Fig. 4. Node size and font size represent the frequency of the keyword. The larger the node and font size is, the more research on the direction of the node in the green loyalty field. The connection lines between different nodes represent the co-occurrence relationship between keywords, and the color and thickness of the connection lines indicate the occurrence time and frequency, respectively.

Through screening and editing the high-frequency keywords related to green loyalty, invalid words such as “green (18) loyalty (101)” and “impact (55), intention (52), Model (41)” were deleted, and synonyms were merged. Information on the top 20 high-frequency keywords is shown in Table 1. High-frequency keywords represent the main hot spots in the research field. The cluster

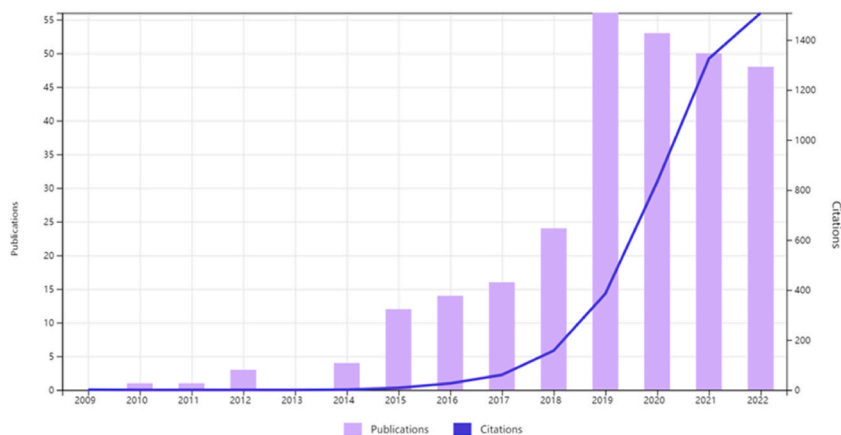


Fig. 3. Year-wise publication from Web of Sciences.



Fig. 4. Keyword co-occurrence network.

analysis of CiteSpace keywords revealed that the research topics covered customer satisfaction (frequency 91, centrality 0.24), perceived quality (frequency 42, centrality 0.24), perceived value (frequency 29, centrality 0.02), and corporate social responsibility (CSR) (frequency 21, centrality 0.18). The most used theory in the study of green loyalty was the theory of planned behavior (TPB) (frequency 18, centrality 0.04).

We concluded from the results that a key driving force of green loyalty is green satisfaction. From the keyword co-occurrence graph, we can find that the hot keywords related to green loyalty are mainly divided into two directions, which promote the objective discovery of knowledge clusters of green loyalty [37]. One cluster is the influencing factors of green loyalty, such as customer satisfaction, perceived value, CSR, etc.; another cluster is the industries related to green loyalty, such as liquor stores, banks, travel, etc. The influencing factors of green loyalty are studied from the perspective of customers, such as green awareness and customer satisfaction, and from the perspective of products, such as brand value, and service quality.

In the context of green products, green satisfaction is the degree of pleasure related to consumption that meets consumers' environmental willingness, sustainable expectations, and green needs [38]. Customer satisfaction itself is affected by the customer's own circumstances as well as other factors beyond the company's control. When consumers' expectations are realized as a brand strategy, consumers will believe that the company is keeping its promise [39]. Research on eco-friendly products has shown that satisfaction exerts a positive impact on cultivating green loyalty [40]. According to research on green hotels, satisfaction exerts a positive impact on customer loyalty [19].

Quality is the consumer's judgment of a product or service, while perceived value is the consumer's evaluation of the user experience. Satisfaction is affected by product quality and perceived value. Previous studies on green products have verified that

Table 1
Frequency of 20 keywords.

Key word	Frequency	Centrality	Particular year
customer satisfaction	91	0.24	2003
customer loyalty	79	0.13	2009
quality	42	0.24	2003
customer behavior	37	0.23	2010
intention	35	0.11	2010
trust	33	0.05	2010
perceived value	29	0.02	2015
corporate image	23	0.06	2013
corporate social responsibility	21	0.18	2013
attitude	21	0.09	2010
performance	21	0.18	2003
service quality	20	0	2010
behavioral intention	18	0.25	2013
planned behavior	18	0.04	2015
consumption	16	0.21	2013
sustainability	14	0.04	2018
commitment	13	0.2	2010
determinant	12	0.06	2010
experience	11	0.04	2013
innovation	11	0.04	2010

quality and perceived value have significant impacts on customer satisfaction and customer loyalty [41]. The literature on green products has noted that green perceived quality is one of the key factors affecting customers' green behavior and is the basis for maintaining customer relationships, that is, consumers' evaluation of green product quality based on their experience of consuming products. While some research has shown that perceived quality has direct effects on loyalty, studies related to green products have shown that perceived quality affects loyalty by enhancing perceived risk [42] and satisfaction [43]. Perceived quality exerts an indirect impact on loyalty, as perceived quality will affect customers' repurchase intention only when the product has low risk, meets customers' expectations, and delivers the promised performance.

Perceived value has positive impact on satisfaction [44]. The perceived value generated by consumers' evaluation of products will lead to word-of-mouth, which not only has a significant effect on consumers' repurchase intention but also on their recommendation intention [45]. Therefore, when consumers perceive that the value of products exceeds their expectations, it will increase their trust and loyalty to green products.

CSR activities are conducive to maintaining corporate relationships with consumers [46]. In particular, perceived eco-friendliness affects consumers' brand loyalty through a positive brand image [47]. Although environmental protection is a social problem, it is also a consumer choice. Customers with environmental awareness hope that enterprises will invest energy and time in green practices. Consumers' perception of CSR affects their purchase intention [48]. It has also been found that customers' perception of CSR affects their loyalty to green hotels [46]. In addition, customers' trust in the CSR of banks will enhance their loyalty to green banks [11].

As illustrated by the time-zone view, the research topic has changed over time. The keywords with the highest frequency were clustered into time zones, as shown in Fig. 5. In the first few years, from 2002 to 2008, research on green loyalty focused mainly on two aspects: customer satisfaction and quality. Scholars paid more attention to the enterprise and brand performance enabled by consumers' green loyalty. In the past 15 years, environmental problems have become increasingly serious, and the impact of CSR and corporate image on consumers' green loyalty has been progressively discussed. Scholars have also paid more attention to the sustainable development of enterprises. In addition, research on green loyalty initially focused mainly on service industries such as green banks and green hotels and has gradually developed to address tourism in recent years.

4.3. Theoretical foundations

To answer RQ3—i.e., What theoretical lenses have been employed by researchers to analyze green loyalty?—the study analyzes the theories used by consumer researchers in green loyalty research. We found that scholars have relied on a variety of theories to examine green loyalty, and the theories frequently used in the research were the TPB, the quality-loyalty model, and the loyalty chain stages theory, and the TPB was the most frequently employed theory.

4.3.1. Theory of planned behavior

Ajzen's TPB [49] is a framework for the understanding of complex human behaviors. He believed that the attitude, subjective norms, and perceived behavioral control are the influence factors of behavioral intentions. Furthermore, intentions are considered to be the direct antecedent variable of actual behavior [49]. The traditional TPB is widely employed for predicting customers' green purchase intention [50,51]. In a study on green hotels, Yarimoglu and Gunay used an extended TPB model to explain the factors and outcomes of customers' visit intentions, and they found out that attitude, subjective norms, environmentally friendly activities, and overall image positively affected customers' intention to visit green hotels, which in turn predicted customers' willingness to pay, satisfaction, and loyalty [12]. Chen used TPB to explore the influence of perceived green value on loyalty to a public bike system, and his results show that perceived pleasure of use and subjective norms have the greatest impact on users' and non-users' green loyalty to public bikes [52]. The results of Panda et al. showed that sustainability awareness has a positive impact on consumer altruism, thereby increasing consumer purchase intention and green brand loyalty [53].

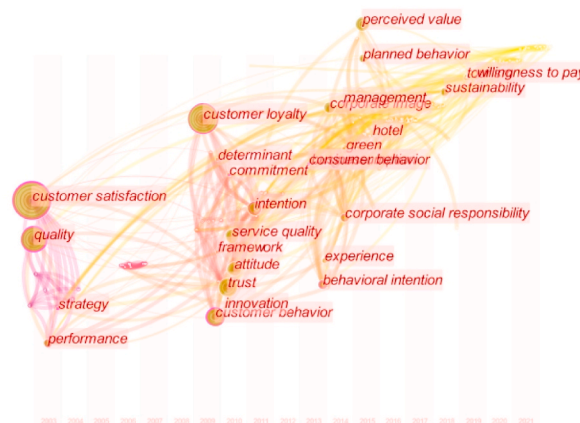


Fig. 5. A time-zone view of keywords with high frequencies from 2002 to 2022.

4.3.1.1. Quality-loyalty model. According to the loyalty literature, there are not many conceptual models describing loyalty, among which the quality-loyalty model is the most commonly used [19]. The quality-loyalty model is based on a cognitive-rational approach [54], which considers quality as the main influence factor of perceived value, satisfaction, and loyalty. Additionally, the model proposes that quality positively affects value, and satisfaction, which in turn affects loyalty. Studies in the context of green products have confirmed that product quality and perceived value exert a considerable impact on customer satisfaction and customer loyalty [20]. Such results indicate that the basic driving force of green loyalty is product quality; that is, consumers evaluate the superiority of green products based on their own consumer product experience to establish green loyalty [55]. In addition, although some studies have shown that perceived quality exerts a direct impact on loyalty, research on green products has shown that perceived quality affects loyalty by enhancing perceived risk [41] and satisfaction [42]. Perceived quality affects customer green loyalty only when product risk is low, meets customer expectations, and demonstrates committed performance [10]. Saeednia and Khodaei Valahzaghari showed that green product quality perception and green consume perception image are the major drivers of green consumer satisfaction, and successively affect green consumer loyalty [56]. Chang and Fong pointed out that both green product quality and green corporate image could generate green customer satisfaction and green customer loyalty in turn [57].

4.3.1.2. Loyalty chain stage theory. According to Oliver's loyalty chain stage theory [58], action loyalty emerges sequentially through three different stages: cognitive loyalty, cultivation of affective, and conative loyalty [6]. In other words, consumers become loyal to a product or service first cognitively, followed by an affective "like" or "dislike" of the object, then later conatively [59,60]. Lee et al. verified that customers' cognitive evaluations of green hotels significantly positively impact their affective evaluations and overall images, in turn, triggering their loyalty to the hotel (e.g., word-of-mouth, willingness to pay a premium, and revisitation intention) [61]. Han et al. indicated that customers' cognitive loyalty (perceived value and service quality) significantly affected their affective loyalty (satisfaction), sequentially exerted positive impacts on conative loyalty (commitment and revisit intention), and formed action loyalty. In another study of green hotels [59], Han et al. also verified that customers' perceived performances of green management in water saving and energy conservation increased their cognitive loyalty, which successively caused affective loyalty, followed by conative loyalty [62].

4.4. Empirical research on green loyalty

To answer RQ4—i.e., What are the variables in existing empirical research results and their relationships with green loyalty? —We provide a summary of the variables (independent, mediating, moderating, and outcome variables) and their relationships with green loyalty, and put forward an integration model of green loyalty.

4.4.1. Independent variables

According to the results of the keyword co-occurrence network, the research on the independent variables of green loyalty can be divided into two aspects: enterprise and brand.

Most studies have focused on green marketing, green enterprise practice, and CSR. Ham and Han showed that consumers are more likely to choose hotels with green practices, and consumer perception of hotels' green practices exerts a positive impact on green loyalty [63]. Similarly, Gelderman et al. pointed out that green marketing, as a green brand practice, exerts a promoting impact on consumers in establishing green loyalty [64]. Research on green banks [11] has indicated that CSR is a strategic issue that helps organizations increase customers' green loyalty, a relationship that is further strengthened by the Green Banking Initiative.

Regarding brands, most research has focused on green brand image and green brand innovation. Martinez proposed in a study of green hotels that the brand image of green hotels exerts a positive impact on the establishment of green loyalty [40]. In addition, some studies have pointed out that green brand innovation is directly related to green loyalty [65] and indirectly affects green loyalty through green perceived value. On the one hand, green brand innovation can improve consumer satisfaction and trust [17] through the ability of green brands to provide effective new solutions. On the other hand, green brand innovation reflects a brand's ability to fulfill its green commitment, thus strengthening consumers' willingness to purchase again [66].

4.4.2. Mediating variables

The research on the mediating variables of green loyalty can be divided into two types: consumer-related and product-related.

Plenty of research has focused on consumers' psychological factors, such as motivation, green trust, green satisfaction, green emotional attachment, and so on. Suhartanto et al. highlighted the partial mediation of tourist motivation on the impact of experience quality, perceived value, and tourist satisfaction on tourist loyalty [20]. Asgharian et al. proposed that green product quality will bring about green customer satisfaction, which increases customer green loyalty [67]. Additionally, some scholars have indicated that green support and green experiential satisfaction mediate the relationship between perceived experiential quality and green experiential loyalty [68]. Similar results were found that experiential trust and experiential satisfaction are the mediators in the relationship between experiential quality and experiential loyalty [69]. Jang et al. demonstrated that the impact of coffee shops' green practices on consumers' loyalty to green stores and green products was mediated by their store attachment [70].

From the product perspective, most studies have focused on green perceived value, green perceived risk, and green perceived quality. In a study of green travel, Chen identified that both perceived fun to use and green perceived usefulness partially mediated the relationship between green loyalty and green perceived value for either users or non-users of public bikes [25]. In addition, the green value perception of green cruise consumers exerted a significant impact on green loyalty through a mediation effect of their social

norms [15].

4.4.2.1. Moderating variables. Compared with most studies on mediating variables of green loyalty, little research examines the moderator variables. A minority of studies have investigated the moderating effect of consumers' individual differences, such as age, gender, green knowledge, and green awareness. According to some studies, young people are more motivated than older generations to reduce product consumption [71,72], which means that consumers' green loyalty varies between generations. A study on coffee shops consumers pointed out that green consciousness plays a moderating role in the relationship between emotional attachment and green store loyalty [70]. Compared with consumers with lower green consciousness, consumers with high green consciousness respond more positively to the green behavior of stores and show higher levels of green store loyalty and green product loyalty [70]. In addition, gender also exerts a certain impact on green loyalty. Shapoval et al. found empirical evidence that gender moderates the relationship between satisfaction and loyalty at green restaurants, and male exhibits higher loyalty when they are satisfied [73].

4.4.2.2. Outcome variables. At present, the research has primarily discussed the influence mechanism of establishing green loyalty, whereas few scholars have conducted in-depth research on its outcome variables. Kang and Hur proposed that green loyalty will bring lower marketing costs and higher premiums and market shares to green brands [74].

We constructed an integrated model based on the existing empirical research results, as shown in Fig. 6.

4.5. Future research agendas

According to Paul et al. systematic literature reviews should be able to deliver (1) state-of-the-art insights and (2) stimulating agendas to advance knowledge in the review domain [75]. Therefore, to answer RQ5—i.e., What are the future directions for green loyalty research? —we discuss these research gaps and provide several directions for future research.

For the past two decades, studies of green loyalty have been restricted to the antecedents, i.e., independent and mediating variables. The consequences of consumer green loyalty are an important but largely neglected area. In other words, previous researchers all focus on a range of explanations for what contributes to the formation of green loyalty. To the authors' knowledge, few studies have employed green loyalty as an antecedent variable to investigate the outcomes of such attitude, and further discussion is called on what impacts green loyalty can actually bring on organizational variables. Accordingly, future research would benefit from examining the relationship between customers' green loyalty and corporations' financial and non-financial performance [76]. Thus, we posit the following:

Proposition 1. *Green loyalty will have independent impacts on corporations' performance (e.g., financial and non-financial performance).*

In addition to this, most of the existing studies have explored positive factors (e.g., green marketing, green enterprise practice, CSR, green brand image and green brand innovation) in developing customer green loyalty, but few studies have explored negative, loyalty-repressing factors' impact on green loyalty. Therefore, investigating the impact of negative factors (e.g., greenwashing) on green

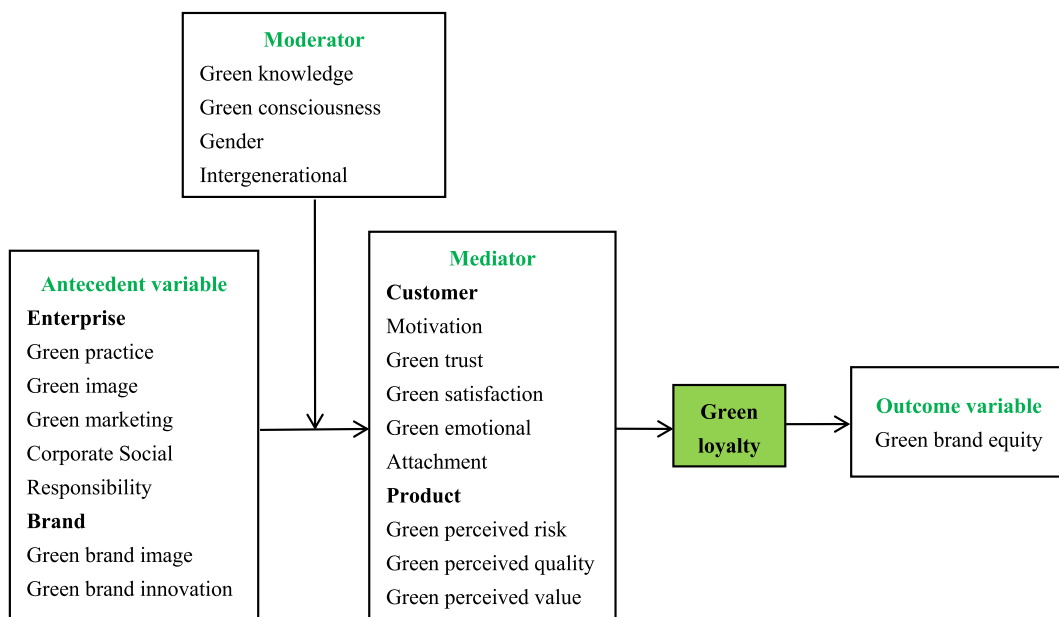


Fig. 6. Integration model of green loyalty. (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

loyalty is a future research direction [23]. Additionally, one avenue for future research is to explore the effect of consumers' characteristics such as negative brand personality [77], negative moods [78], or negative experiences [79]. Exploring the negative factors can avoid detours within the green transformation. Accordingly, research on the negative factors of green loyalty should be discussed as a future research direction. Thus, we posit the following:

Proposition 2. *Negative factors (e.g., greenwashing, negative brand personality negative moods, and negative experiences) have effects on consumer green loyalty.*

Similarly, by reviewing the research on green loyalty, we found that most studies in this area mainly focused on the individual's two aspects of emotion and cognition to examine the mediation effect of green loyalty, the motivation mechanism remains limited and requires further in-depth study. Follow-up research can increase the discussion of consumer's motivations in forming green consumer behavior [80], such as such as relatedness, competence, and autonomy in the creation of consumer loyalty. Consequently, we posit the following:

Proposition 3. *Kinds of motivation (e.g., relatedness, competence, and autonomy) have a mediating effect on the establishment of consumer green loyalty.*

Furthermore, our results suggest that few studies have examined moderator variables associated with individual characteristics (e.g., age, gender, green knowledge, and green awareness) to better predict consumer green loyalty. However, as far as we know, no one has yet studied other variables related to products or companies. As switching costs can negatively affect customer loyalty to new green alternatives [81], it would be instructive to examine how switching costs affect green loyalty [82]. Future studies may also benefit from investigating the effect of green CSR programmes on green loyalty [1]. Therefore, we propose:

Proposition 4. *Different kinds of products and firms (e.g., switching costs and green CSR programmes) will have a moderating effect on consumer green loyalty.*

Finally, most of the existing research on green loyalty are empirical studies, which are conducted in the context of specific green products or green services, and the research objects have diverse cultural backgrounds and consumption habits. As a result, the overall research conclusions in this field are relatively scattered, and it is difficult to rise to the theoretical level to get universal conclusions. Future research can deeply verify whether the current conclusions are still applicable in different marketing scenarios and cultural backgrounds. It would be interesting to explore how Muslims, Buddhists, Christians, Confucians, Hindus, and others vary in green loyalty [83]. Additionally, these results warrant further investigation of qualitative research and review research on green loyalty. Therefore, we propose:

Proposition 5. *Customer green loyalty scholars will benefit from cross-cultural research in different countries to examine the antecedents and outcomes.*

5. Discussion

5.1. Theoretical implications

Green loyalty not only aroused the great interest of researchers but also attracted the interest of many business managers. This review helps position green loyalty within the broader marketing area and makes an objective and comprehensive overview of the existing green loyalty works of literature. First, we summarized the concept and measurement methods of green loyalty and clarified the definition of green loyalty. Distinguished it from brand loyalty and consumer loyalty to avoid confusion. By identifying consumers' pro-environment commitment and the corresponding green product or service received, green loyalty could be effectively separated from consumer loyalty, which contributes to reducing conceptual confusion.

Second, we conducted a bibliometric analysis of 236 journal articles on green loyalty collected from the Web of Science database from 2002 to 2022. We drew knowledge graphs under different indicators and examined the related research hotspots of green loyalty through keyword co-occurrence in CiteSpace. The results showed that the research on green loyalty has focused mainly on several hot topics, such as consumer satisfaction, quality, perceived value, and CSR. We then clustered the keywords according to time and analyzed the research trends of green loyalty. Our findings indicated that the overall research in different fields of green loyalty factors is relatively similar and is currently concentrated mainly in green hotels, green banks, green tourism, and other industries.

Third, we performed content analysis to further mine the content of existing research. We discussed the theories used in previous studies and summarized four aspects of existing empirical research: antecedent, mediating, moderating, and outcome variables of green loyalty. The results showed that the TPB was the most commonly applied theory in the green loyalty literature. Among the influencing factors, the research on the antecedents and influencing mechanism of green loyalty were relatively rich, while less discussion existed on boundary conditions, such as moderators. Specifically, the effects of consumers' green perceived value, green perceived quality, and green satisfaction on green loyalty were current research hotspots.

5.2. Practical contribution

By combing through the literature related to green loyalty, several suggestions are made for green practices in enterprises. Firstly, companies should follow green sustainability principles, develop green products, focus on product quality in product design, and

improve the quality of consumers' green perceptions. At the same time, they should develop products that cater to the environmental needs of consumers with distinct characteristics, and devote more attention to resource efficiency, life cycle, reuse, and renewability, to enhance consumers' green satisfaction. When products are designed green, the appearance of the product should be treated differently according to its unique performance of it and the needs of the user environment, and at the same time, eye-catching green product logos should be designed to make consumers can easily identify.

Second, companies need to pay more attention to the reasonable use of a variety of multimedia means to green sales, and actively participate in promoting social welfare, to establish a good company image. Managers could apply various new media, combining online and offline, in participating in green-related activities. At the same time, the concept of green marketing should be promoted among the employees within the company, and consumers should be cultivated on green marketing. Integrate the green concepts into the corporate culture; promote the concept of green environmental protection among consumers, so that consumers have a certain understanding of this enterprise's green products/services, and their awareness of green environmental protection will be increased and deepened.

5.3. Limitations

There are still some shortcomings in this paper. First, due to the limited scope and quantity of research paper data in the Web of Science database, there are limitations in the bibliometric methods and the knowledge mapping analysis function of the software, and there are inevitably some biases in the data acquisition, statistical processing, and analysis of research samples. Based on this paper, subsequent research can obtain more extensive research data in the field of green loyalty and use a variety of qualitative and quantitative analysis methods and software to conduct a more in-depth and objective analysis and comparative study of its development. Second, this paper has a large amount of data, and although it can present a full picture of green loyalty-related research, the analysis of green loyalty-related variables is still not deep enough.

Author contribution statement

All authors listed have significantly contributed to the development and the writing of this article.

Data availability statement

No data was used for the research described in the article.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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