

A Bibliometric Analysis on the Spillover Effect of Green Consumption Behavior

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ABSTRACT

The research employs a bibliometric analysis approach to assess the existing landscape of the spillover effects literature associated with green consumption behavior, utilizing a sample of 176 documents sourced from the Web of Science database. Through document co-citation analysis, the knowledge structure is systematically organized and clarified, leading to the development of a framework based on an antecedent-behavior-consequence logic. This framework highlights the dynamic nature of green consumption behavior, ultimately aiming to provide theoretical support and practical guidance for researchers and practitioners.

Keywords: Green consumption behavior, spillover effect, bibliometric analysis, knowledge framework.

INTRODUCTION

Green consumption behavior is characterized by a consumer's intentional efforts to mitigate resource wastage and environmental pollution across the lifecycle of products, from acquisition to disposal, with the overarching aim of reducing the detrimental environmental impacts (Peattie et al., 2010). This behavior is characterized by dynamism and coherence, rather than operating in isolation. The adoption of green consumption practices at one stage often catalyzes further actions in subsequent stages, a phenomenon recognized as the spillover effect of green consumption behavior (Nilsson et al., 2017; Truelove et al., 2014). While some studies have undertaken quantitative evaluations of the spillover effects associated with green consumption behavior (Maki et al., 2019), there is still an absence of a coherent systematization and research framework grounded in subject knowledge that addresses the intricate internal knowledge structure of these effects. Building upon the analysis presented, this study employs bibliometric methods to systematically synthesize findings on the spillover effects of green consumption behavior.

RESEARCH METHODOLOGY AND DESIGN

Data Source and Retrieval

The Web of Science is a globally authoritative database for scientific literature, including top journals on green consumption's spillover effects, and uses SCI-E, SSCI, and A&HCI indicators to ensure research quality (Du et al., 2021). To ensure comprehensive extraction of domain literature data, we develop a more refined search strategy grounded in these keywords and concepts. Green consumption-related keywords (Field term): ("green" OR "low*carbon" OR "sustainab*" OR "*environment*" OR "ecolog*" OR "eco\$friendly*") AND ("consum*" OR "purchas*" OR "buy*" OR "procure*" OR "shopping" OR "acquisition" OR use OR "appl*" OR "process*" OR "recycl*" OR "dispos*" OR "recovery") AND "behavio*"; spillover-related keywords (Related term): "spill\$over*". Accordingly, the subsequent search criteria were established as follows: Language (English), Publication Years (2013 – 2023), Document Types (Articles, Review Articles). After two rounds of review and elimination of irrelevant articles, a total of 176 articles were selected as the final data-set (Lee et al., 2022).

Bibliometric Analysis Method

Bibliometric analysis serves as a valuable method for mapping scholarly literature within a specific research domain. In this research, we employ bibliometric analysis to examine the spillover effects associated with green consumption behavior. Utilizing VOSviewer and Citespace, we generate visual maps that depict research trends, thereby facilitating a deeper comprehension of the central issues and advancements in the field (Du et al., 2021).

DESCRIPTIVE STATISTICS ANALYSIS

Core Journals Analysis

The spillover effect of green consumption behavior represents an interdisciplinary research domain, where the depth and breadth of inquiry are substantially enhanced by the integration and cross-disciplinary collaboration of knowledge. Dual-map overlay analysis can display the distribution and citation tracks of papers of various disciplines in the entire data set, and reveal the cross-relationship between the citing discipline groups and the cited discipline groups (Chen et al., 2014). Among them, the number of arcs in the graph represents the frequency of knowledge flow between disciplines. The more arcs it shows, the more

frequent the knowledge flow (Chen et al., 2014; Yang et al., 2023). In graph analysis, the overall distribution of journals on the left identifies journals that publish research in this field, while that on the right indicates which journals in the field are the main contributors to research in this field. The citation relationship between these two sides reveals the knowledge flow and spillover effect of green consumption behavior at a journal level (Lyu et al., 2024). As depicted in Figure 1, the three primary reference paths are distinguished by distinct colors, and their thickness directly corresponds to the Z-score of the reference frequency, thereby intuitively reflecting the significance of each path. Citation relationships are arranged in descending order based on Z-scores, rounded to the nearest thousandth for enhanced clarity. Psychology, education, and health journals are influenced by psychology, education, and sociology ($z=6.0914$), as well as economics and politics ($z=2.259$). Furthermore, the curves representing economics and politics serve as references within their respective disciplines ($z=2.497$). These findings suggest that green consumption behavior's spillover effect encompasses a complex multidisciplinary field incorporating theories and methodologies from psychology, education, sociology, economics, and political science. This interdisciplinary integration not only enriches research content and perspectives, but also establishes a disciplinary foundation for constructing a knowledge framework.

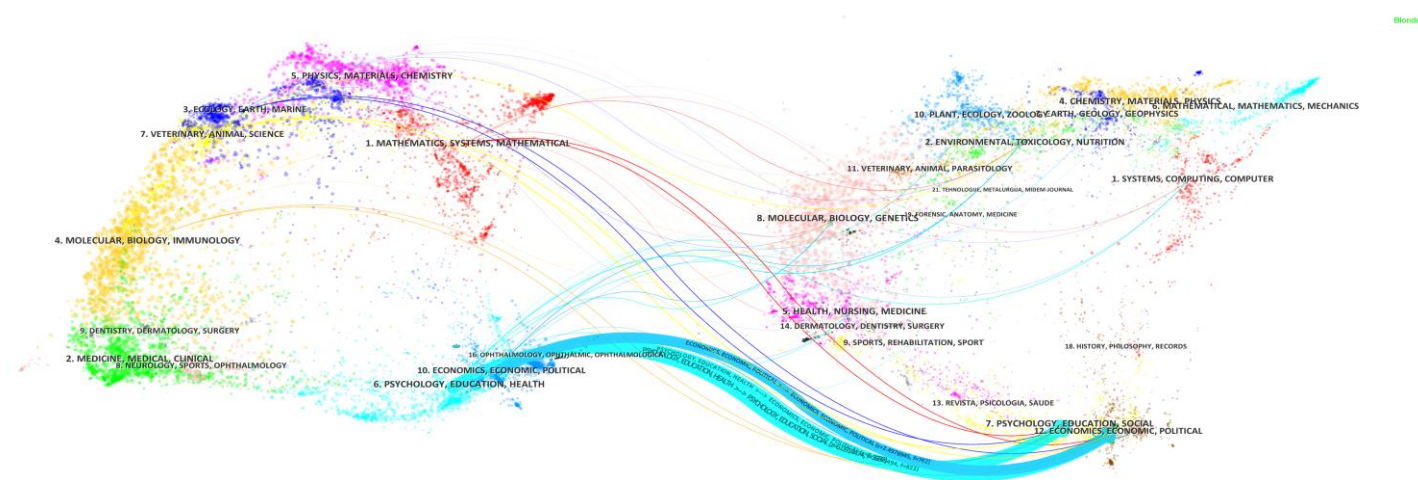


Fig. 1: A Dual-map Overlay of the Science Mapping Literature (Citespace)

Core Authors Analysis

The core author group denotes a set of scholars who have contributed a significant number of publications and have had a substantial impact in a particular academic domain. As depicted in Figure 2, there are 33 authors who have authored two or more papers, signifying their status as key contributors. The modest publication counted from these pivotal authors hints at the nascent stage of a cohesive research community in this area. The network connections in Figure 2 represent scholarly collaborations, with the thickness of the lines correlating to the strength of these cooperative relationships. However, the apparent limitations in the extent of these collaborations may have implications for the depth and breadth of research on the spillover effects of sustainable consumer practices. To catalyze further advancement in this field, it is imperative for researchers to amplify the exchange of scholarly insights and to facilitate the flow of information. Additionally, establishing more robust academic networks for collaboration is crucial to deepen collective understanding and exploration of spillover effects related to green consumption behavior.

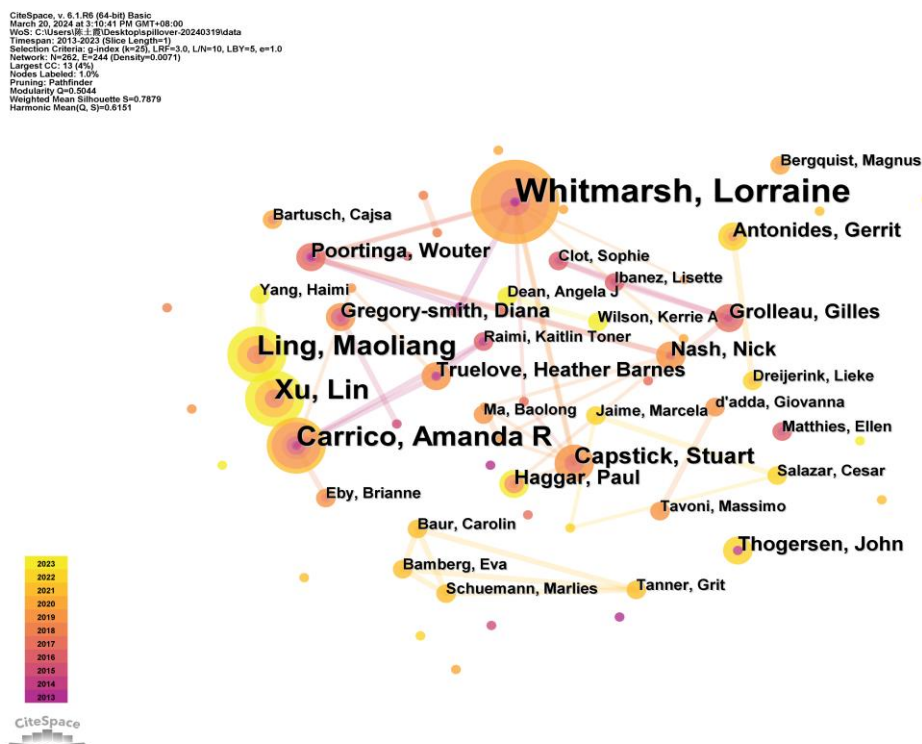


Fig. 2: Network of Cooperation between Different Authors (Citespace)

Core Institutions and Countries Analysis

By analyzing the high-performing scientific research institutions and countries, it is beneficial to comprehend and grasp the activity and influence of authoritative institutions and national research in the field. According to the findings presented in Table 1, Cardiff University emerges as a leading institution in the United Kingdom with 13 published papers, accounting for nearly half of the total number of publications in the country. This highlights its robust expertise in studying the spillover effect of green consumption behavior. Similarly, Zhejiang University has demonstrated a remarkable publication record in China, with 8 papers to its credit, representing a significant 16% share of the total national publications. This achievement highlights the university's concentrated research endeavors and its substantial influence in the field. Aarhus University's performance in Denmark is equally remarkable, accounting for 77.78% of the total number of publications in the country, highlighting its significant position within the field. In terms of contributions from American institutions, Univ Colorado has published a noteworthy total of 5 articles, which also accounts for a substantial proportion of all articles published across the nation.

Globally, China ranked first on the list with 50 articles, followed by the United States with 36. The research findings from these two countries exert a significant global influence due to several factors. Firstly, as the largest developing country in the world, China's investigation into the spillover effect of green consumption behavior holds immense significance for global sustainable development. Secondly, as a representative of developed nations, the United States often spearheads technological and theoretical innovations through its research outcomes. Therefore, in order to foster comprehensive and multidimensional advancements in understanding the spillover effect of green consumption behavior, researchers from diverse countries, institutions, and disciplines should enhance exchanges and collaborations. By sharing research findings, undertaking joint projects, and organizing international academic conferences, we can facilitate knowledge exchange and stimulate innovative thinking collectively to propel progress in this field, while making substantial contributions towards global environmental protection and sustainable development.

Table 1: Productivity and Collaboration Analysis of Countries and Institutions

Rank	Institution	PCI	Country	PCC	Proportion
1	Cardiff University	13	ENGLAND	26	50%
2	Zhejiang University	8	CHINA	50	16%
3	Aarhus University	7	DENMARK	9	77.78%
4	University Colorado	5	USA	36	13.89%
5	University Queensland	4	AUSTRALIA	14	28.57%
6	Zhejiang Gongshang University	4	CHINA	50	8%
7	Monash University	4	AUSTRALIA	14	28.57%

Abbreviations: PCI: publication counts Of Institutions; PCC: publication counts Of countries, Proportion: the proportion of institutional publications to national publications.

THE PROPOSAL OF THE KNOWLEDGE FRAMEWORK

In this research, the VOSviewer tool is deployed to perform a document co-citation analysis and to graphically represent the findings. The visualization presented in Figure 3 delineates three unique knowledge domains associated with the spillover effects of sustainable consumption practices. Following an exhaustive examination of titles, abstracts, keywords, and full texts for articles in each domain, appropriate designations have been assigned.

Antecedents

Cluster 1 (depicted in green) explores the antecedents of the spillover effects associated with green consumption behavior (Steinhorst et al., 2015; Lauren et al., 2016). The spillover effect stemming from green consumption behavior represents a multifaceted psychological and behavioral process, influenced by a range of internal and external factors. These elements collectively shape consumers' decision-making processes, which in turn affect their subsequent behaviors related to green consumption (Truelove et al., 2014; Lacasse, 2015; Thøgersen & Crompton, 2009). External factors, encompassing political and economic to cultural, social, and environmental dimensions, exert a significant influence on the spillover effect of consumption behavior (Kidwell et al. 2013; Thomas et al., 2016; Whitmarsh et al., 2021; Millet & Weijters, 2023). For example, external incentives like tax relief and subsidies, along with social pressures such as communal expectations for environmentally responsible actions, can stimulate engagement in green consumption practices. However, an excessive focus on these external stimuli may undermine consumers' intrinsic motivation, potentially leading to a decline in the sustainability of their subsequent behaviors. Moreover, research by Lanzini and Thøgersen (2014) indicates that financial rewards and verbal encouragement can effectively enhance consumers' green purchasing behaviors, leading to a cascade of additional eco-friendly consumption actions over time.

Internal factors delve into the psychological intricacies of individuals, encompassing their values, beliefs, emotions, self-perception, and other related aspects (Verplanken & Holland, 2002; Lacasse, 2019). These factors are playing a crucial role in either facilitating or obstructing the spillover effect of green consumption behavior. Notably, personal norms and environmental self-identity stand out as significant internal influences. Thøgersen (1999) demonstrated a significant positive effect of personal norms on the adoption of environmentally friendly behaviors, indicating that individuals who view green consumption as a moral obligation are more likely to engage in such practices. Additionally, Truelove et al. (2016) found that environmental self-identity can mediate the relationship between environmental concerns and green consumption behavior. In essence, individuals with heightened environmental concerns are more likely to strongly identify with ecological issues and thus adopt sustainable consumption practices (Carrico et al., 2016). This implies that environmental self-identification serves as a link between environmental worries and actions, thereby facilitating the occurrence of green consumption. Mullen and Monin (2016) illustrate that strong environmental attitude moderate moral licensing effects, those with robust pro-environmental beliefs are less susceptible to ethical licensing influences. Consequently, they tend not to lower their ecological standards in future actions despite prior environmentally conscious decisions.

Behaviors

Cluster 2 (in red) centers on the examination of green consumption behavior itself (Kollmuss and Agyeman, 2002; Abrahamse et al.; 2005, Barr et al.; 2010). This cluster addresses interventions aimed at altering green consumption behaviors, as well as specific consumer patterns observed during the stages of purchasing, utilizing, and disposing of products (Peattie et al., 2010; Zhao et al., 2014). Green purchase behavior is distinguished by consumer preferences that prioritize environmental protection and sustainability when evaluating goods and services (Shrum et al., 1995; Mainieri et al., 1997). Scholarly work in this domain predominantly concentrates on understanding the acquisition of eco-friendly products and the myriad factors that sway such consumer choices (Yadav and Pathak, 2017; Han, 2020). The concept of green usage behavior is critical and encompasses consumer actions during the utilization of products and services. This includes energy conservation, emission reduction, and recycling initiatives, all aimed at curtailing resource use and environmental pollution (Peattie et al., 2010; Van Nes and Cramer, 2006). The domain of green disposal behavior includes eco-conscious practices such as recycling and waste segregation. The majority of studies examine the various factors that affect these behaviors, including policies, psychosocial influences, the costs and benefits associated with recycling, as well as individuals' recycling practices (Xu et al., 2018; Pei, 2019; Nguyen et al., 2022).

Consequences

Cluster 3 (in blue) primarily investigates the outcomes of spillover effects related to green consumption behaviors (Thøgersen 2004; Tiefenbeck et al. 2013). Research within this domain mainly concentrates on evaluating the environmental consequences of green consumption behavior and analyzing various spillover effects. The positive spillover effect is characterized by a series of beneficial changes in green consumption behavior, which can be assessed through various psychological mechanisms. For instance, this effect can be understood as the identity effect (De Groot and Steg, 2007; Whitmarsh and O'Neill, 2010; Arias & Trujillo, 2020). When individuals identify themselves as environmentalists, this self-perception influences their future consumption choices (Van der Werff et al.; 2014). Lacasse (2016) found that engaging in pro-environmental behaviors strengthens environmental attitudes by reinforcing the "environmentalist" identity rather than simply alleviating feelings of guilt. As a result, individuals consciously strive to maintain consistent behaviors.

This research systematically examines the spillover effects of green consumption, identifying key thematic elements and formulating a theoretical framework through a quantitative bibliometric analysis. This analysis revealing various dimensions of the green consumption behavior spillover effect, encompassing core journals, core authors, publishing institutions, and countries/regions. By leveraging literature co-citation analysis, this study meticulously delineates the knowledge structure of the spillover effects from green consumption behavior, categorizing it into three distinct yet interrelated domains: antecedents, behaviors, and consequences. This study enhances understanding in relevant research domains while providing valuable guidance for scholars and management practitioners interested in exploring the spillover effect of green consumption behavior. In terms of sample selection, only the literature from international journals indexed in Web of Science is included in the analysis, while literature from other databases such as Scopus is excluded. However, it is possible to incorporate literature from other databases into future analyses.

ACKNOWLEDGMENT

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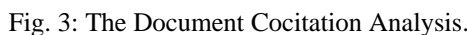


Fig. 3: The Document Cocitation Analysis.

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*In order to comply with the submission requirements, only a partial list of references have been included.