A systematic literature review on greenwashing and its relationship to stakeholders: state of art and future research agenda

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Abstract

The interest in greenwashing has grown in recent decades. However, comprehensive, and systematic research concentrating on the evolution of this phenomenon, specifically regarding its impacts on stakeholders, is still needed. The main purpose of this study is to provide an overview and synthesis of the existing body of knowledge on greenwashing, through a bibliometric study of articles published up to 2021, identifying the most relevant research in this field. Special attention is given to the latest articles that link greenwashing to stakeholders, identifying gaps and future research opportunities. A bibliometric analysis and literature review was performed on 310 documents obtained from the Web of Science database, using the VOSviewer software program. This article identifies the most influential aspects of greenwashing literature (authors, articles, journals, institutions, and keyword networks). The most recent articles on the effect of greenwashing on stakeholders were also analyzed, which made it possible to identify trends, gaps, and opportunities for future research. These topics include greenwashing impacts on branding, consumer attitudes and intentions, mainly on purchase behavior, B2B relationships and the definition of taxonomy for greenwashing, considering the different practices. This study offers a thorough analysis on the state-of-the-art, as well as a closer look at the impacts of greenwashing on various stakeholders, providing a list of suggestions for future research.

Keywords Greenwashing, Stakeholder · Systematic literature review · VOSviewer

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1 Introduction

Society is growing more sensitive and concerned about the environmental practices adopted by firms (Musgrove et al., 2018). As environmental practices are appreciated by society (Torelli et al. 2020), firms face significant pressure to conform to stakeholder demands (Kim et al. 2017). So, as firms realize that their image, legitimacy and reputation are at stake, they may be tempted to exaggerate, mislead or embellish their external communications regarding their environmental actions (Kim et al. 2017) in order to create a favorable image (Chen et al. 2014). In this way, firms exhibit positive green communication or pretend to be environmentally friendly (De Jong et al. 2018; Delmas and Burbano 2011; Nguyen et al. 2019), but what the firm communicates may be different from its actual behavior (Gatti et al. 2021). Hence, when firms mislead or deceive society regarding their environmental practices or the environmental benefits of their product or service (Delmas and Burbano 2011), they engage in greenwashing. At the same time, consumers are increasingly aware and, consequently, more skeptical about the authenticity of corporate environmental claims (Lyon and Montgomery 2015).

The term "greenwash" has been the subject of interest among academics, mostly in the marketing field (Lee et al. 2018), with a focus on consumers or decision-making by the general public (Contreras-Pacheco et al. 2019; Nyilasy et al. 2014; Szabo and Webster 2021). Additionally, greenwashing literature studies have recognized the negative consequences of these practices, mostly on consumers (Chen and Chang 2013; Nyilasy et al. 2014). Thus, greenwashing has become a hot topic in the literature with an impressive growth in the last two decades, due to public interest regarding greenwashing activities (Gatti et al. 2021).

Recently, scholars have begun to summarize the research on greenwashing (de Freitas Netto et al., 2020; Gatti et al., 2019; Montero-Navarro et al., 2021; Saleem et al., 2021; Yang et al., 2020). These studies have focused on mapping and analyzing the academic production regarding greenwashing phenomenon (Andreoli et al. 2017), providing an evaluation and progress of the field's trends, and synthesis of the results provided by previous studies (Gatti et al. 2019). Some authors even focus on articles directly associated with agriculture, food industry and food retail (Montero-Navarro et al. 2021). Others, investigate greenwashing main concepts and typologies (de Freitas Netto et al., 2020), while others focus on its causes, taxonomy and consequences (Yang et al. 2020). Despite presenting valuable insights on this topic, a thorough examination involving its effects on the stakeholders is still lacking (Gatti et al. 2021; Pizzetti et al. 2021). This research therefore attempts to provide a comprehensive overview of trends and the current position of the academic studies on greenwashing, focusing on its effects on stakeholders. To that purpose we consider stakeholders, shareholders, investors, consumers, customers, clients, employees, workers, partners, suppliers and competitors as the focus of the investigation, and how they might be affected by greenwashing actions, identifying research gaps and providing potential future research directions. For this purpose, the authors carried out a bibliometric analysis supported by VOSviewer, followed by a literature review of the articles obtained from Web of Science (WoS).

The results of this investigation are especially relevant considering the importance of greenwashing. This article is structured as follows: it describes the adopted methodology, followed by Sects. 3 and 4, where the results of the bibliometric analysis and literature review are presented. Section 5 exhibit identified gaps and provides future research directions. The last section offers the final considerations.

2 Methodology

2.1 Research methodology

To pursue an in-depth understanding of the state of the art of greenwashing literature, focusing on its effects on stakeholders, this study used a two-step methodology: first, the authors conducted a bibliometric analysis, which indicates the evolution of the research in the greenwashing field. Bibliometric analyses are quite useful for decoding or interpreting a wide set of data in a precise way, which allows making advances in a certain field in several ways (Donthu et al. 2021). Additionally, bibliometric mapping makes it possible to conduct a statistical evaluation of several connections across publications, providing a clear insight on the topic by visualization of the maps (van Eck and Waltman 2010). The second step consists of an overview of the current state of literature, by means of a literature review.

A systematic literature review is defined as the "means of identifying, evaluating and interpreting all the available research relevant to a particular research question, topic area, or phenomenon of interest" (Grant and Booth 2009). This type of approach allows a transparent and reproducible process of selection, analysis and reporting of previous research on a specific topic (Denyer and Tranfield 2009). The authors adopted the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) approach. PRISMA is used to help authors improve their systematic reviews reporting (Page et al. 2021). PRISMA incorporates four sequential steps: identification, screening, eligibility, and study inclusion. This framework assures transparency in the selection and analysis of included studies and allows for other investigators to replicate this process (Booth et al. 2020).

2.2 Method

From the several databases available for query, the authors used WoS, because it is considered the most reliable, powerful and most trusted database in the world (Saleem et al. 2021), frequently used for bibliometric studies in management and organization fields. Nevertheless, the authors acknowledge that other studies might be indexed in other databases, and it is possible that some might have been left out of this analysis. The records, which were later used in the review, were identified on December 28, 2021, in WoS core collection, with a time frame including all years to date, with no limitations on document type, language, or citations databases.

Similar to other authors' approaches (de Freitas Netto et al., 2020; Gatti et al., 2019), and in order to assess the true dimension of literature citing the term greenwashing, we used the term "greenwash*" in a Topic search, returning 508 articles. In

other words, we used Boolean Proximity search, to help us find specific words that are near greenwashing (i.e., greenwashing, greenwash, greenwashed, greenwashes). As the asterisk represents any number of characters, the search will encompass all these words. To narrow our research and focus on our objectives, we subsequently limited the number of documents based on the selection of document type, citation databases, data rage, language, and categories. Exclusion criteria and selection process are described in the PRISMA 2020 flow diagram (see Fig. 1). We excluded 198 documents during the screening process, leaving 310 articles to track trends in the usage of greenwashing in the academic literature.

The authors used information obtained from WoS to deliver productivity measures about the research field, considering the historical evolution of the publications, the most influential articles, the main journals where they were published and the most prolific authors. This investigation also includes a bibliometric mapping approach using the VOSviewer software to analyze what the patterns and hot topics are in the field of greenwashing. VOSviewer makes it possible to create and visualize maps, taking into account the co-citations of author or journal; bibliometric networks based on citation, co-citation, co-authorship, bibliographic coupling, amongst others (Moya-Clemente et al. 2021). It is quite useful for displaying large bibliometric maps in an easy-to-interpret way (van Eck and Waltman 2010).

To establish a connection between greenwashing and its impact on different stakeholders, and to maintain the accuracy of our study, we executed supplementary filtering processes (Dangelico and Vocalelli 2017; Pizzi et al. 2020). Initially, we utilized keyword combinations to exclude articles that might address topics unrelated to the effects of greenwashing on stakeholders (Drejerska et al. 2023). We only considered articles that contained the combination of both the term "greenwash*" and stakeholder, shareholder, investor, consumer, customer, client, employee, worker, partner, supplier or competitor. In this process we excluded 112 documents. Second, although the selected terms (e.g., greenwash* and stakeholder*) were mentioned in the title and/or keyword, and/or abstract of the article, there is always the risk that this is not the central focus of the paper. Thus, using a double-check process, we manually reviewed all keywords, titles, and abstracts of the articles, and, when needed, the entire content of each paper included in the data base, excluding 159 documents that were not relevant to our subject of investigation. 39 articles fully met the review protocol, as presented in Fig. 1, and were used in the literature review.

To gain insight into potential avenues for future research, it is imperative to understand the latest research trends Thus, we employed a methodology recommended by Oliveira et al. (2019) to analyze recent articles and papers published by the most cited authors. This involved scrutinizing the most recurring topics and determining the frequency with which they were directly or indirectly addressed in the literature. By conducting such an analysis, we can reveal gaps and trends that have yet to be explored (de Oliveira et al. 2019; Tallon et al. 2019).

To investigate these trends and gaps, we adopted a similar approach to Juliani and Oliveira (2016) who utilized literature from the previous three years. Accordingly, we limited our analysis to the most recent publications (i.e., the period from 2019 to 2021) to uncover research gaps and potential avenues for further investigation (Kraus et al. 2020). This examination of highly cited and recent literature will provide robust
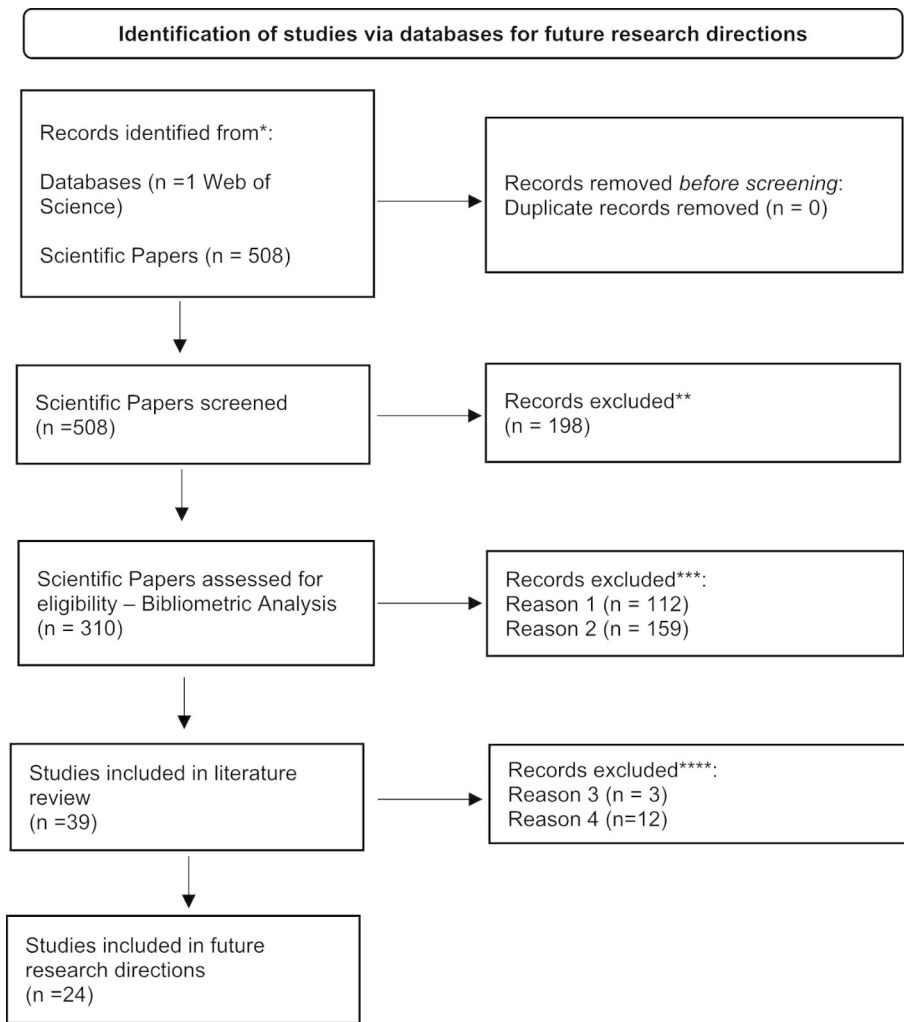
Identification of studies via databases for future research directions

Records identified from*:

Databases (n =1 Web of Science)

Scientific Papers (n = 508)

→ Records removed *before screening*: Duplicate records removed (n = 0)

↓

Scientific Papers screened (n =508)

→ Records excluded** (n = 198)

↓

Scientific Papers assessed for eligibility – Bibliometric Analysis (n = 310)

→ Records excluded***: Reason 1 (n = 112) Reason 2 (n = 159)

↓

Studies included in literature review (n =39)

→ Records excluded****: Reason 3 (n = 3) Reason 4 (n=12)

↓

Studies included in future research directions (n =24)

Fig. 1 PRISMA 2020 flow diagram for systematic review on Greenwashing effects on stakeholders

insights into fruitful directions for future research. The number of citations was also considered, as only the ones that were cited at least one time were included. Therefore, limiting our analysis of referenced documents to the most prominent articles (Frerichs and Teichert 2023). This final step resulted in 24 articles.

In summary, the first and most extensive dataset consisted of 310 articles, and it underwent bibliometric analysis to identify the most relevant research in the field of greenwashing. The second dataset, comprising 39 articles, was utilized in the literature review to explore the influence of greenwashing on stakeholders, as per the objectives of this investigation. Finally, the third dataset, encompassing 24 articles, was used to identify research gaps and future investigation opportunities. The outcomes obtained during each stage of the systematic review process are illustrated in Fig. 1.

* The research began with the usage of the term "greenwash*" (i.e., greenwashing, greenwash, greenwashed, greenwashes) in a Topic (title, abstract, author keywords, and Keywords Plus) search.

** Exclusion based on the selection of document type, citation databases, data rage, language, and categories:

- Document type: Article.
- Citation databases: SCI-EXPANDED, SSCI, ESCI.
- Data range: all years to 2021.
- Language: English.
- Categories: (count > 10): Business (101), Environmental Studies (98), Management (68), Environmental Sciences (65), Green Sustainable Science Technology (60), Ethics (26), Communication (25), Economics (25), Business Finance (23) Engineering Environmental (22), Hospitality Leisure Sport Tourism (18) and Political Science (11).

*** Exclusion based on:

Reason 1 – Additional filtering keywords: Articles that did not included both keywords: Greenwashing and several stakeholders: TS=(greenwash*) AND (((((((((((TS=(stakeholder*)) OR TS=(shareholder*)) OR TS=(investor*))) OR TS=(consumer*)) OR TS=(customer*)) OR TS=(client*)) OR TS=(employee*)) OR TS=(worker*)) OR TS=(partner*)) OR TS=(supplier*)) OR TS=(competitor*)

Reason 2 – Relevance to the study based on the reading of keywords, titles, abstracts, and entire document, if necessary.

**** Exclusion based on:

Reason 3 – Features less than 1 (one) citation.
Reason 4 – Exclusion based on year of publication (before 2019).

Adapted from: Page et al. (2020)

3 Results and discussion

The following analysis comprises the 310 articles related to greenwashing that were published up to 2021. These records can be found in 171 different journals, written by 739 different authors, affiliated with 442 institutions, based in 56 different countries and the articles had 8,308 citations (7,332 without self-citation).

3.1 Analysis of the overall growth trend

Figure 2 illustrates the evolution of greenwashing publications and annual citations. The first article was reported in 2000, in Environmental & Resource Economics Jour-
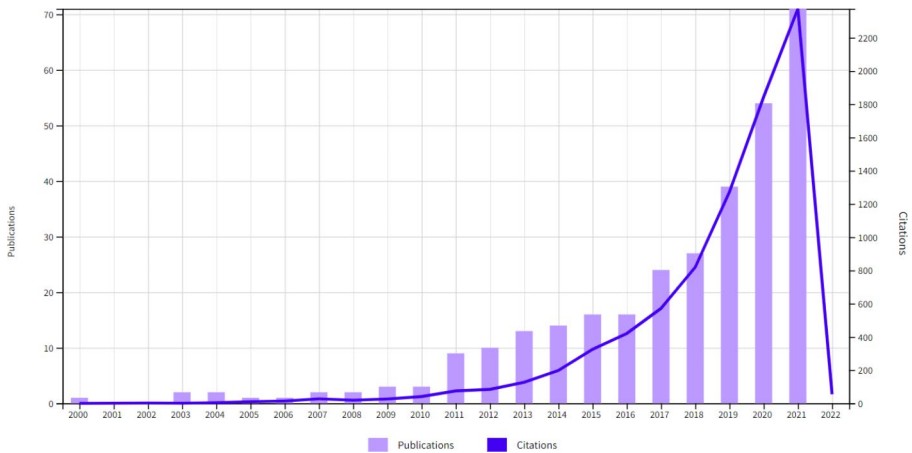
Fig. 2 Times Cited and Publications Over TimeSource: Web of Science.

nal, with the title "Green business and blue angels – A model of voluntary overcompliance with asymmetric information", written by Kirchhoff (2000). The number of studies was limited, however, since 2011 and largely since 2017, there is a significant increase in studies. It is possible to identify three stages in greenwashing literature (2000–2010; 2011–2016 and 2017–2021). In fact, 69% of the total publications occurred in the last 5 years (i.e., 2017–2021), which reflects the increasing interest in greenwashing studies. This interest may be related to the growing awareness of environmental issues and social practices embraced by corporations (Musgrove et al., 2018).

3.2 Publications by country

Among the top 10 countries, the USA is clearly the most productive country, with 87 articles and 3870 citations. England and the People's Rep. of China follow with 37 and 28 articles, respectively. Most of the studies are conducted in developed economies, with the exception of the People's Rep. China (see Table 1). Thus, it seems that investigations in developing countries are scarce (Jog and Singhal 2020).

Some of the documents were published in co-authorship with other countries. The clusters of these co-authorship can be seen in Fig. 3.

In Fig. 3, the higher the circle is, the greater the number of articles published in that country. The node representing USA has a significant position in the network, corroborating the fact that it is the most productive country. Additionally, the collaborations between scholars in two countries are measured by the distance between circles. Thus, there are 5 main clusters of co-authorship between countries. The first cluster (red) includes Denmark, France, Norway, Sweden, and Switzerland. The second (Green) Brazil, Canada, England, New Zealand, and Poland; the third (Blue) – Belgium, Italy Netherlands, and Spain; the fourth (yellow) – Australia, the People's Republic of China and USA, and the fifth (purple) – Austria, Germany and Turkey.

Table 1 Top 10 of countries with the largest number of articles featuring Greenwashing

Country	Documents	Citations	Total link strength
USA	87	3870	24
England	36	889	14
People's Rep. China	28	457	14
Canada	22	802	18
Germany	18	371	4
Netherlands	18	330	8
France	17	645	12
Italy	17	462	7
Spain	14	190	9
Australia	13	327	5
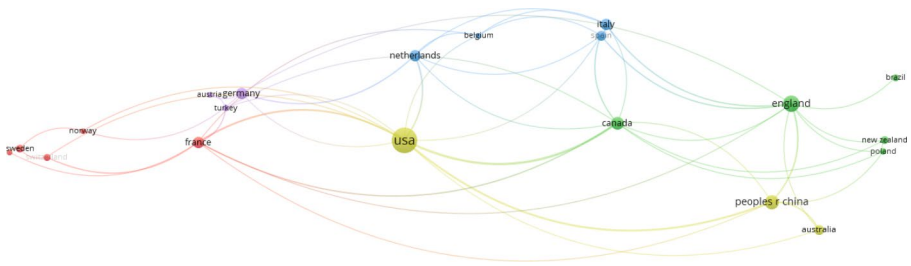
Fig. 3 Co-authorship from countries Source: VOSviewer

Table 2 Most prolific organizations

Organization	Documents	Citations	Total link strength
University of Michigan	6	860	7
St Anna School of Advanced Studies	5	176	4
University of Salerno	4	154	3
Cardiff University	4	78	2
Swinburne University of Technology	4	70	6
University of Florida	4	28	7
Natl Taipei University	3	519	2
Indiana University	3	478	1
Queens University	3	312	2
Leeds Metropolitan University	3	305	1

3.3 Publications by institutions

As depicted in Table 2, University of Michigan and St. Anna School of Advanced Studies are the most productive organizations, with 6 and 5 publications, respectively.

Table 3 Most prolific authors

Author	Documents	Citations	Total Link Strength
Lyon, Thomas P.	5	854	4
Font, Xavier	5	360	2
Testa, Francesco	4	176	6
Siano, Alfonso	4	154	10
Vollero, Agostino	4	154	10
Iraldo, Fabio	3	144	5
Du, Xingqiang	3	117	4
Gatti, Lucia	3	90	5
Seele, Peter	3	90	5
Karaman, Abdullah S.	3	47	5
Uyar, Ali	3	47	5
…	…	…	…
Laufer, WS	1	503	159

3.4 Publications by author

Out of the 739 authors, 48 of them were cited more than 100 times and 17 authors had been cited more than 200 times. The most prolific authors in greenwashing literature are highlighted in Table 3, which considers the contribution as an author or co-author. Thomas P. Lyon achieved 854 citations with 5 published articles, while Xavier Font, with the same number of published articles, achieved 360. It is important to note that WS Laufer, with only one article, regarding Greenwashing, received a total of 503 citations.

3.5 Publications by journal

Out of the 171 sources, 33 journals had more than 50 citations and only 16 journals had more than 100 citations. The top ten, with more articles in the greenwashing literature, are highlighted in Table 4.

While the 310 articles were published in over 171 sources, most appear in a few key journals. 34% of all identified articles were published in the top 10 journals. About 77% of these cited articles were published in the top 4 journals. Therefore, they are of special importance in greenwashing research.

Sustainability is the most influential research journal, with 25 publications on Greenwashing. However, *Journal of Business Ethics*, with only 22 publications, received a total of 2104 citations. It is interesting to note that Organizations & Environment, with four articles, achieved 222 citations.

3.6 Mostcited articles

A view of the 10 mostoften referenced publications provides a first glimpse of important topics in greenwashing research. Table 5 summarizes the scientific publications cited most often.

These articles include overviews on reporting (Font et al. 2012; Hahn and Lülfs 2014; Laufer 2003; Mahoney et al. 2013), financial performance (Wu and Shen 2013), audit (Lyon and Maxwell 2011), Corporate Social Responsibility in the bank-

Table 4 Most prolific journals

Source	Documents	Citations	Total Link Strength
Sustainability	25	128	97
Journal of Business Ethics	22	2104	219
Business Strategy and The Environment	17	246	81
Journal Of Cleaner Production	16	454	91
Corporate Social Responsibility and Environmental Management	7	169	42
Environmental Communication - A Journal of Nature and Culture	5	87	15
Organization & Environment	4	222	53
Journal of Sustainable Tourism	3	185	12
Journal of Advertising	3	91	24
International Journal of Hospitality Management	3	87	14

Table 5 Mostcited scientific articles on greenwashing

Title	Authors	Source Title	Citations
Social accountability and corporate greenwashing	(Laufer 2003)	*Journal of Business Ethics*	503
The Drivers of Greenwashing	(Delmas and Burbano 2011)	*California Management Review*	488
Greenwash: Corporate Environmental Disclosure Under Threat of Audit	(Lyon and Maxwell 2011)	*Journal of Economics & Management Strategy*	368
How Sustainability Rating Might Deter "Greenwashing": A closer look at Ethical Corporate Communication	(Parguel et al. 2011)	*Journal of Business Ethics*	267
Greenwash and Green Trust: The Mediation Effects of Green Consumer Confusion and Green Perceived Risk	(Chen and Chang 2013)	*Journal of Business Ethics*	262
Corporate Social Responsibility in the banking industry: Motives and financial performance	(Wu and Shen 2013)	*Journal of Banking and Finance*	240
A research note on standalone corporate social responsibility reports: Signaling or greenwashing?	(Mahoney et al. 2013)	*Critical Perspectives on Accounting*	201
The Means and End of Greenwash	(Lyon and Montgomery 2015)	*Organization & Environment*	183
Legitimizing Negative Aspect in GRI-Oriented Sustainability Reporting: A Qualitative Analysis of Corporate Disclosure Strategies	(Hahn and Lülfs 2014)	*Journal of Business Ethics*	176
Corporate Social responsibility: The disclosure-performance gap	(Font et al. 2012)	*Tourism Management*	176

Fig. 4 Network visualization-Source: VOSviewer
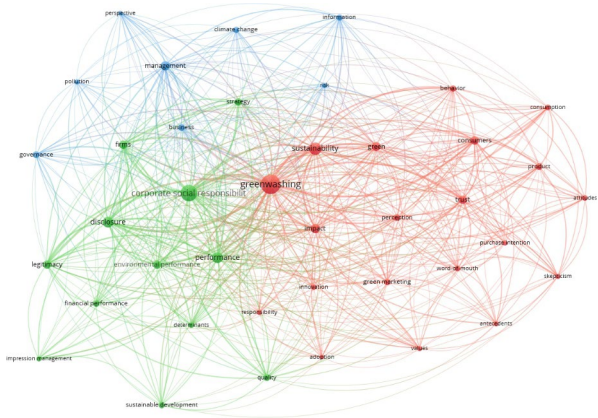
ing industry: Motives and financial performance, and on communication (Lyon and Montgomery 2015; Parguel et al. 2011). Other articles focus on greenwashing drivers (Delmas and Burbano 2011) and greenwashing effects on customers.

3.7 Keywords analysis

Our research indicates that of the 1670 different keywords, 99 had a minimum number of 5 occurrences. Considering that some authors use different words to express an analogous concept, we screened all keywords that identify similarities and replace them with a single keyword (Dabić et al. 2020).

The analysis of keywords exposes hotspots and trends in the research topics that are crucial for understanding advances in the field. The aim of this analysis is to recognize the most popular research topics and find what the trends are in keywords over time through the overlay visualization provided by VOSviewer. The authors used the "full counting" method, keeping only the keywords that appeared, at least, ten times (40 keywords). The 3 most relevant terms were found: greenwashing, corporate social responsibility, and management, resulting in the same number of clusters. Based on these three categories, the connection between the keywords can be examined.

Figure 4 displays 3 clusters, whose definition is based on the items that complement them, as shown in Table 6 .

Cluster 1 (red) is related to greenwashing outcomes. It includes terms like sustainability, impact, perception, attitudes, consumer, consumption, purchase intention, trust, and word of mouth. The relevance of stakeholder perceptions, and consequent attitudes towards corporate greenwashing practices, may have been one of the main concerns that led scholars to focus on this topic. The second cluster (green) encompasses the firms' progress and success by adopting Corporate Socially Responsible practices. This cluster is composed of keywords related to performance, legitimacy, disclosure, and sustainable development. The existence of this cluster reflects the possibility that true, ethic and real socially responsible corporate behaviors can improve firms' performance and development. The third cluster (blue) is related to

Table 6 Clusters

Cluster 1 - Red	Cluster 2 - Green	Cluster 3 - Blue
Adoption	Corporate social responsibility	Business
Antecedents	Determinants	Climate change
Attitudes	Disclosure	Governance
Behavior	Environmental performance	Information
Consumers	Financial performance	Management
Consumption	Firms	Perspective
Green	Impression management	Pollution
Green marketing	Legitimacy	Risk
Greenwashing	Performance	
Impact	Quality	
Innovation	Strategy	
Perception	Sustainable development	
Product		
Purchase intention		
Responsibility		
Skepticism		
Sustainability		
Trust		
Values		
Word-of-mouth		

pervasions in the firms. It comprises terms such as management, governance, risk, climate change and pollution.

Below, the overlay visualization (Fig. 5) demonstrates the trends in keyword changes over time. In Fig. 5, the blue part corresponds to older investigations while the yellow part corresponds to more recent investigations. The figure uncovers some hotspots that were created in the field recently, including "perception" (18 times in 2019), purchase intention (11 times in 2020), skepticism (12 times in 2019), word-of-mouth (13 times in 2020), antecedents (11 times in 2020) and trust (27 times in 2019) in the red cluster, and governance (19 times in 2019) in the blue one. Therefore, it appears that there is a transition from studies related to the firms' legitimacy, innovation, and development, to the effects of corporate greenwashing, namely in the perceptions of this practice, skepticism, purchase intention, trust, and word of mouth.

4 Greenwashing and its effects on stakeholders

A detailed examination involving greenwashing and its effects on stakeholders is needed (Gatti et al. 2021; Pizzetti et al. 2021). Therefore, the authors considered 39 articles that related both terms and performed a literature review.

Greenwashing is multifaceted in nature (de Freitas Netto et al., 2020), as it can occur at the corporate level (i.e., be misleading or deceptive in regard to the environmental practices of an organization) or at the product/service level (i.e., be misleading or deceptive in regard to the environmental benefits of a product or service) (Delmas and Burbano 2011). These practices can be categorized as claim greenwash-

Fig. 5 Overlay VisualizationSource: VOSviewer

ing and executional greenwashing (de Freitas Netto et al., 2020). The former encompasses textual arguments that list ecological benefits of a product/service to create a deceptive environmental claim. The second refers to natureevoking elements, such as images using colors, sounds, or natural landscapes that might create false perceptions of the firm's greenness (Parguel et al. 2015).

Despite previous studies that substantiate its negative outcomes, greenwashing consequences have not been conveniently addressed, and need to be further explored (Yang et al. 2020).

4.1 Theoretical approaches

Several theoretical approaches have been used, but scholars have traditionally linked greenwashing with its effect on stakeholders, based on five theories: the attribution theory (Chen et al. 2019; Farooq and Wicaksono 2021; Kahraman and Kazançoğlu 2019; Pizzetti et al. 2021; Szabo and Webster 2021), the attitude-behaviour-context (ABC) theory (Wang et al. 2020; Zhang et al. 2018), theory of reasoned action (Bulut et al. 2021; Nguyen et al. 2021), the cognition-affect-behavior (C-A-B) paradigm (Nguyen et al. 2019; Rahman et al. 2015), and the affect–reason–involvement (ARI) model (Schmuck et al. 2018; Urbański and Ul Haque 2020). The attribution theory is the most widely used theoretical approach, with scholars arguing that immoral and irresponsible behaviors by firms, such as pursuing greenwashing, have several detrimental effects. For example, a lower intention to invest (Szabo and Webster 2021); a negative effect on consumer green trust (Chen et al. 2019), perceived risk, skepticism, and purchasing intention (Kahraman and Kazançoğlu 2019). Moreover, perceived greenwashing can have damaging results for organizations, in regard to

consumers' product and environmental perceptions, and happiness and website inter-actions as well (Szabo and Webster 2021).

4.2 Instruments

While examining previous studies, it was clear that they are essentially quantitatively based on surveys (Ahmad and Zhang 2020; Akturan 2018; Bulut et al. 2021; Chen et al. 2019, 2020; Chen and Chang 2013; De Jong et al. 2018; Guerreiro and Pacheco 2021; Hameed et al. 2021; Jog and Singhal 2020; Junior et al. 2019; Majláth 2017; Nguyen et al. 2019, 2021; Schmuck et al. 2018; Tahir et al. 2020; Testa et al. 2020; Urbański and Ul Haque 2020). This methodology may be justified by the high cost of conducting field experiments (Ferrón-Vílchez et al. 2021). There are, however, a few studies that used experiments (De Jong et al. 2018; Ferrón-Vílchez et al. 2021; Gatti et al. 2021; Guyader et al. 2017; Lee et al. 2018; Parguel et al. 2015; Pizzetti et al. 2021; Schmuck et al. 2018; Torelli et al. 2020; Wang et al. 2020) and mix-method approaches (Szabo and Webster 2021).

4.3 Stakeholders

Several authors used samples of students in their research (Bulut et al. 2021; Ferrón-Vílchez et al. 2021; Guyader et al. 2017; Majláth 2017; Torelli et al. 2020; Wang et al. 2020). This choice might perhaps occur due to the lack of cooperation (by managers, for instance), and to the fact that students are also consumers or potential investors and are an "easy access" stakeholder for scholars. Employees of green organizations and consulting firms (Szabo and Webster 2021) and employees (low and mid-level management) (Tahir et al. 2020) were also investigated, as well as investors (Gatti et al. 2021; Pizzetti et al. 2021). Most of the analyzed studies, however, considered con-sumers (Ahmad and Zhang 2020; Chen et al. 2019, 2020; Chen and Chang 2013; De Jong et al. 2020; Guerreiro and Pacheco 2021; Hameed et al. 2021; Jog and Singhal 2020; Junior et al. 2019; Nguyen et al. 2019, 2021; Parguel et al. 2015; Rahman et al. 2015; Testa et al. 2020; Urbański and Ul Haque 2020). This means other relevant stakeholders have been neglected in the literature (Gatti et al. 2021; Szabo and Web-ster 2021).

4.4 Effects of greenwashing

Latest research on the effects of greenwashing on stakeholders suggests that these practices have detrimental effects on consumers, brands, and organizations. How-ever, different forms/levels of greenwashing may have different effects on the stake-holders' perceptions, and on their reactions towards environmental scandals (Torelli et al. 2020).

Studies have consistently showed that perceived greenwashing practices nega-tively affect consumers, whether directly or indirectly. For instance, greenwashing seems to influence consumer purchase intentions and behavior (Ahmad and Zhang 2020; Akturan 2018; Bulut et al. 2021; Chen et al. 2020; Guerreiro and Pacheco 2021; Guyader et al. 2017; Hameed et al. 2021; Jog and Singhal 2020; Junior et al.

2019; Kahraman and Kazançoğlu 2019; Nguyen et al. 2019; Urbański and Ul Haque 2020; Wang et al. 2020; Zhang et al. 2018). In contrast, Urbański and Ul Haque found statistical evidence in their study that suggests that purchase intention is not affected by greenwashing (2020). Additionally, greenwashing inhibits consumers from making informed purchase decisions (Wu et al. 2020), as it increases consumers' confusion (Chen and Chang 2013) and diminishes their willingness to pay for greenwashed products (Lee et al. 2018). These actions also influence negatively consumers' evaluation of ads (Majláth 2017) and affect brand's ecological image and brand attitude (Parguel et al. 2015). Consumer perceptions of risk (Chen and Chang 2013), skepticism (Kahraman and Kazançoğlu 2019; Nguyen et al. 2019), green trust (Chen and Chang 2013; Guerreiro and Pacheco 2021), green WOM (Guerreiro and Pacheco 2021; Nguyen et al. 2021; Zhang et al. 2018), are also impacted by greenwashing.

Studies have also highlighted the negative influence of greenwashing on brands. Green brand associations, brand credibility, green brand equity (Akturan 2018), green brand image, green brand loyalty (Chen et al. 2020; Hameed et al. 2021), green brand love (Hameed et al. 2021), customer brand engagement (Guerreiro and Pacheco 2021) are also affected by greenwashing. Increased greenwashing deteriorates the company's green brand as well (Pimonenko et al. 2020).

Greenwashing also presents undesired outcomes for firms. Higher levels of greenwashing lead to a decrease in intention to invest, and a higher level of blame attribution (Pizzetti et al. 2021). Furthermore, Gatti et al. (2021) demonstrated that investors are less prone to invest in companies that practice greenwashing, than in firms that exhibit corporate misbehavior unrelated to misleading communication. Additionally, studies suggest that when greenwashing activities grow, managers are less willing to collaborate with the greenwasher (Ferrón-Vílchez et al. 2021).

Research also showed that greenwashing has a spillover effect, meaning that greenwashing practices of one brand negatively affect consumers' intention to purchase other brands in the same industry (H. Wang et al. 2020). Consumers make an overall judgement on other firms, even if they produce genuine natural products (Kahraman and Kazançoğlu 2019).

Considering all the negative outcomes derived from greenwashing practices, some authors set out to investigate what the consequences of restraining greenwashing might be. These authors defend that even if greenwashing were regulated, the cost associated with CSR practices or the environmental subject is not very important to firms, so it may not lead them to act green. In contrast, if greenwashing practices were allowed, it might incentivize firms to behave in a genuinely green manner. Even so, perceived corporate greenwashing can have harmful consequences for organizations, in relation to their consumers' product and environmental perceptions (Szabo and Webster 2021). Greenwashing poses a major threat and does not offer a true competitive advantage (De Jong et al. 2018), as corporate greenwashing can have negative effects on corporate financial performance (Testa et al. 2018) and their green brand (Pimonenko et al. 2020). Hence, only genuine green conduct will have the desired positive effects (De Jong et al. 2020) on the various stakeholders.

5 Future research directions

Understanding which the latest trends of research are, on greenwashing and its effect on stakeholders, sheds light on future research directions. For that purpose, we have considered 24 articles that had been published in the last three years (2019–2021) (see Table 7), uncovering gaps and suggestions for future research.

From the articles reviewed, four thematic lines were identified that present research opportunities. The first investigation opportunity comprises greenwashing impacts on brands and how they are perceived. Thus, future research could discuss the differences of greenwashing and its effect on green brand image (Chen et al. 2020), namely, on the trust in an ecolabel as well as its perceived self-efficacy (Testa et al. 2020). Briefly, the connection between greenwashing and green brand should be better understood (Pimonenko et al. 2020).

The second opportunity is related to consumer attitudes towards corporate greenwashing, mainly on their purchase intention. Scholars suggest the inclusion of three aspects in future studies: consumers' individual characteristics, product, and business-related aspects. Individual aspects such as consumer trust (Hameed et al. 2021), cognitive ability (Wang et al. 2020), environmental consciousness level (Chen et al. 2019), environmental knowledge, price sensitivity, income and online experiences (Ahmad and Zhang 2020) deserve to be included in the studies of greenwashing effect on consumer green purchase intention. However, consumers' different perceptions of greenwashing might have a different importance/effect on green purchasing behavior (Wang et al. 2020). Product-associated variables are often referred to as a relevant aspect to delve into the greenwashing literature and its effects on consumer attitudes and intentions. Within the scope of the greenwashing effect on consumer purchase intention, a comparison between regular products and green ones is often recommended (Chen et al. 2020; Hameed et al. 2021). These differences could include product attributes such as price, quality, accessibility (Guerreiro and Pacheco 2021), labels or packaging (Testa et al. 2020). Additionally, consumer green purchase intention studies might be applied in a broader range of product categories (Akturan 2018; Nguyen et al. 2019, 2021), such as high-involvement products (Schmuck et al. 2018); electronics, fast food (Topal et al. 2020) or beverages (Jog and Singhal 2020). Bulut et al. suggested an investigation of post-millennials' green purchasing tendencies, exploring why and what the preferences of product categories of these specific stakeholders are (Bulut et al. 2021). Finally, business aspects such the company (De Jong et al. 2018) or even company's sectors (Kahraman and Kazançoğlu 2019), the trademark (Nguyen et al. 2021), company brands, ownership type (Nguyen et al. 2019), could also be related to consumer reactions to the greenwashing phenomenon. Thus, future investigations can take these aspects into account.

The third opportunity refers to B2B relationships, which have seldom been investigated. Several studies have assessed the perception of consumers relating to corporate greenwashing practices, neglecting the points of view of other stakeholders. Thus, using other categories of stakeholders besides consumers (Torelli et al. 2020), such as employees, organizational customers, suppliers or B2B relationships could be investigated (Gatti et al. 2021; Pizzetti et al. 2021). In this way, future studies may seek to understand the perception of other stakeholders involved, directly or

Table 7 Gaps and suggestions for future research

Source	Gaps/Research Question	Future research directions
(Guerreiro and Pacheco 2021)	- Green trust and its antecedents have been under researched. - The role of greenwashing perception on green trust.	- Compare green features to other product attributes, in consumers' green buying decisions.
(Gatti et al. 2021)	- The different forms of greenwashing. - The greenwashing incidents.	- Use secondary data; conduct field studies and survey professional investors. - Greenwashing practices and the core business of the company. - Study other stakeholders besides consumers.
(Hameed et al. 2021)	- The mediators on the relationship between greenwashing and consumers' green purchase behavior.	- Study consumers' behavior toward regular products instead of green ones and use consumer trust as a moderating variable. - Conduct longitudinal research in developed countries and compare the results.
(Nguyen et al. 2021)	- Greenwashing and consumers' environment and health. - The mediation on the relationship between greenwashing and green purchase intention.	- Evaluate the potential influences on business aspects such as trademark, product type, and other topics.
(Ferrón-Vílchez et al. 2021)	- Lack of studies on the perceived effects of greenwashing and how they affect the decision-making skills of managers. - The role of environmental management as moderating variable.	- Comparing differences between managers and future managers' perceptions. - Using managerial green skepticism or belonging to a "green" team, as moderators.
(Bulut et al. 2021)	- Does post-millennials' concern about the environment lead to a purchase of green product and recommendation of it.	- Analise specific age groups' tendencies and their environmental concern. - Explore other nations/cultures.
(Jog and Singhal 2020)	- Most literature concentrates on developed countries.	- Replicate the model in other product or use experimental approaches by exploring product-specific or post-purchase experiences.
(Ahmad and Zhang 2020)	- Most studies neglect firms' attributes. - The moderation role of greenwashing	- Analyze other countries, including knowledge and price sensitivity or other control variables.
(Testa et al. 2020)	- Lack of research on greenwashing and green packaging buying behavior.	- Study the combined effect of trust and self-efficacy on an individual's intention to buy eco-labels.
(Wu et al. 2020)	- The conditions to engage in greenwashing; how greenwashing affects the social welfare and whether greater transparency about firms' CSR activities might lead to higher social welfare.	- Analyze how different cost formulations affect welfare and CSR spending. - Examine a direct price competition between different types of firms.
(Urbański and Ul Haque 2020)	- Lacks investigations on the effects of misleading advertising on consumer trust, awareness, and effectiveness and the role of consciousness.	- Study green consumers that do not use shopping malls.
(Szabo and Webster 2021)	- Greenwashing has received little attention, namely on the interactions with website, and emotional expressions.	- Investigate a wider set of stakeholders, exploring the relative influence of green content and interactivity.
(Pimonenko et al. 2020)	- The impact of greenwashing on the green brand remains unexplored.	- Investigate the connection between greenwashing and green brand at the country's level.

Table 7 (continued)

Source	Gaps/Research Question	Future research directions
(Chen et al. 2020)	- Lack of investigations on purchase behavior from the perspectives of greenwashing, brand image, and brand loyalty.	- Investigate purchase experience of regular products in other countries for further comparison, using longitudinal data.
(Tahir et al. 2020)	- Unclear findings for the effects of greenwashing on green employee behavior.	- Collect longitudinal data, from top management for triangulation and assess other psychological factors; Compare cultures and countries.
(Pizzetti et al. 2021)	- Greenwashing effects on stakeholders are understudied, especially in the supply-chain context. - No study attempted to examine whether a supplier's involvement in a greenwashing scandal affects stakeholders' reactions.	- Include alternative investment solutions (short and long term). - Investigate different types of greenwashing and the different effects on investors' decisions. - Investigate regulatory system and CSR related standards.
	- The distrust of the whole industry has not been explained clearly. - The influence of greenwashing on consumers' purchase intention towards the green products of other brands in the industry.	- Longitudinal research methods and use firm or industry data - Investigate other industries, products, and countries.
(De Jong et al. 2020)	- Lack of investigation on the severity of greenwashing is not yet available.	- More complex experimental research should be performed
(Kahraman and Kazançoğlu 2019)	- Shortage in the research on consumers' perceptions of greenwashing.	- Explore different demographic profiles (age, income, education, gender). - Compare different product groups and/or sectors.
(Topal et al. 2020)	- Lack of studies comparing country customers' reactions towards the Volkswagen diesel emission crisis.	- Replicate investigations on fast food products - Include other social media instruments within the scope of the research.
(Torelli et al. 2020)	- Defining a taxonomy of the greenwashing phenomenon. - Stakeholders' reactions towards greenwashing and corporate reputation.	- Refinement of the different levels of greenwashing - The possible role of NGOs in identifying types of greenwashing.
(Nguyen et al. 2019)	- Greenwashing behavior in the food industry, especially in developing countries, considering greenwashing and green information.	- Using other demographics and variables such as company brands, ownership type, culture context, product category.
(Junior et al. 2019)	- Lack of an overall perspective of greenwashing.	
(Chen et al. 2019)	- Hospitality and tourism literature reveals a shortage of investigation on greenwashing.	- Include environmental consciousness level, guest type, and the satisfaction derived from hotel experiences.

indirectly, in greenwashing practices, providing a broader approach to environmental irresponsible/immoral practices.

The last opportunity for future research consists of defining a taxonomy in greenwashing to set the different practices. The different levels of greenwashing practices require the development and validation of new scales, as their impacts might differ depending on the perceived severity of the action (Torelli et al. 2020). Future research could discuss the differences of greenwashing activities (Chen et al. 2020)

and develop an adequate measurement of these practices (Zhang et al. 2018), by adding other levels of misleading environmental communication, factors, types or concepts of greenwashing proposed by previous authors (Pizzetti et al. 2021; Torelli et al. 2020). This aspect presents a fertile field in sustainability and marketing research, as the refinement of the actual classification levels of greenwashing will enrich and more comprehensively express the multidimensional character of greenwashing.

Most of the authors also suggest other methodologies/instruments (Chen et al. 2020; Topal et al. 2020), with other respondents (Gatti et al. 2021; Tahir et al. 2020), different scales (Urbański and Ul Haque 2020) and the collection of longitudinal data (Chen et al. 2020; Hameed et al. 2021; Tahir et al. 2020). The replication of the author's proposed model in other countries is also frequent (Bulut et al. 2021; Chen et al. 2020; Hameed et al. 2021). The researched literature allowed us to identify themes that are in evidence, with accentuated growth, representing research contexts and potential fields to be developed.

6 Final considerations

There are past studies, bibliometric analyses, and systematic reviews regarding greenwashing. However, they did not provide a detailed analysis of the impact of these practices on stakeholders. This study originally provides a closer look of these aspects, expanding the scientific knowledge of the subject.

This investigation provides information on the state of the art, recognizing trends, gaps, and future research opportunities, thus, contributing to the existing body of knowledge. Through the bibliometric analysis of the relevant articles focusing on greenwashing, published up to 2021, and a narrower literature on the articles that investigate the effects of greenwashing on stakeholders, published in the last three years, it presents 3 major contributions: First, it is possible to see the evolution of greenwashing literature. The increase of published articles over the years indicates how relevant and novel this research topic is for the academia and for managers, which also demonstrates the potential to deepen the subject in other fields. Besides, the trends, most prolific authors, articles, and journals were identified. As a result, it is possible to acknowledge the leading journals that are specialized in greenwashing studies, the countries, the authors, and articles that contribute most to greenwashing literature and knowledge dissemination. It is also possible to realize that there is a recent investigation trend on greenwashing outcomes, that is in the perceptions of this practice, skepticism, purchase intention, trust, and word of mouth. In addition, the use of VOSviewer software enabled the presentation of a network of co-occurrences of keywords through maps, which made it possible to identify hotspots and trends in the research topics that are crucial for understanding advances in the field, and, thus, providing topics that can be further explored. In turn, the literature review, covering articles that relate greenwashing to stakeholders, allowed to identify that attribution theory is the most used theoretical approach, and that previous investigations are largely based on surveys. Even if stakeholders, in general, are the focus of this investigation, we always end up on customers: as most articles investigate greenwashing from the consumers' point of view. Students are also often used as a proxy for these external stakeholders. All the same, employees and investors are also scrutinized. Nevertheless, relevant stakeholders have

been neglected in the literature (Gatti et al. 2021; Szabo and Webster 2021), which can be the reason why there are several calls on this aspect (Gatti et al. 2021; Pizzetti et al. 2021; Torelli et al. 2020). Moreover, past literature on the effects of greenwashing on stakeholders indicates that these practices have several damaging effects on consumers, brands, and organizations. Finally, by analyzing the latest research, this investigation was able to identity gaps that can be used in future investigations. Thus, several branches of investigation emerge. Future research might deepen the studies regarding greenwashing impacts on branding, on consumer purchase intentions and attitudes, on other stakeholders and B2B relationships and finally on delineating a taxonomy in greenwashing to set the difference on the different practices. Hence, the most relevant contribution of this study is the identification and analysis of the past, present and future areas to research. Above all, the results of this study make it clear that misleading claims regarding environmental practices inflict harm on stakeholders. Thus, it raises awareness of the damaging effects, which might help to reduce the frequency of these acts.

6.1 Limitations

This study, as all other bibliometric analysis and literature reviews, is subject to several limitations. First, the articles were downloaded on a specific date from a single database. Despite WoS being the most reliable data source (Saleem et al. 2021), the authors acknowledge that additional relevant papers might be indexed in other databases, thus, there is the possibility that some might have been missing in this analysis. Therefore, other databases (i.e., Scopus) could be consulted to help avoid eventual data bias and to better understand greenwashing research. Additionally, despite the concern to include all possible key terms to search the articles for the study, it is possible that some terms related to stakeholders might be missing. Second, the authors decided to analyze only articles and disregard other works such as book chapters, proceedings papers, early access, editorial materials, etc. However, the chosen articles, published in journals, represent qualified knowledge as they are peer-reviewed. Third, the literature review was based on the number of citations and the last three years, regardless of the actual quality of the document. However, the number of citations is more significant than the number of articles, because it is a better approach to the author's impact and influence (Podsakoff et al. 2008). Finally, other analysis techniques can be used to obtain more comprehensive results.

Declarations

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