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Article

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MANAGEMENT | REVIEW ARTICLE

Knowledge foundation in green purchase behaviour: Multidimensional scaling method

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Abstract: For the past few decades, because of the environmental hazards, green purchase has been subject to wide ranges of studies. Subsequently, understanding the intellectual structure of the green purchase behaviour is increasingly becoming important. This study investigates the citation in green purchase academic literature and it analyses the knowledge structure in it. The following bibliometric analysis comprised 86 green purchase articles. By employing multidimensional scaling (MDS) to identify the ranges of the intellectual influences and shaped green purchase behaviour. The knowledge structure in green purchase is discovered by employing co-citation analysis to find the most important and effective studies in the green purchase study domain. A conceptual framework is developed and finally the future model was proposed.

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PUBLIC INTEREST STATEMENT

The current study analyses the existing green purchase behavior literature and propose a future framework that links customer attribute, media, green purchase intention, and green purchase. Given the importance of the green purchase, the major concern for green firms and brands is how to promote the green purchase behavior. By investigating the most influential works on the topic, the current study proposes an integrated understanding on how green purchase behavior can be promoted between customers. This research calls for more involvement and attention of practices in different cultures and societies.

Subjects: Applied Social Psychology; Cross Cultural Psychology; Consumer Psychology

Keywords: research method; green purchase; multidimensional scaling; bibliometric studies; theory of planned behaviour

1. Introduction

The burgeoning rise of human consumption globally has led to severe damages to the human environment and the earth. During the past decade, several environmental issues such as global warming, air pollution have made the customers to be more environmentally aware of their purchase and its impact on the environment. Subsequently, due to these changes in the customer purchase behavior pattern, green purchase behavior has turned into a new consumer research study (Zhao & Zhong, 2015). Regarding this behavioral phenomenon in customer behavior study, wide ranges of studies have been conducted (e.g., Yadav and Pathak, 2016; Zhao & Zhong, 2015). These researches mainly focused on the antecedent of green purchase behavior and what causes it. Marketing researches mainly were looking for the factors that encourage customers to purchase green products. Subsequently, this gives a marvelous opportunity to green products to increase their market share.

Over the past decade, the researcher has analyzed different relationships about green purchase behavior. For instance, green purchase intention (Mei et al., 2012; Ramayah et al., 2010), environmental concern (Stern et al., 1993; Suki, 2016), customer effectiveness (Amin et al., 2015; Sellitto, 2018) are the topics that have been mainly under investigation. Because of these attempts, a considerable body of knowledge has been enhanced. But, no quantitative attention has been given to the process of green purchase behavior development and its emergent throughout the last years. Also, there has not been a specific analysis to study the creed beneath the green purchase behavior. Subsequently, in order to advance the constant development of green purchase behavior, it is vital to inspect the intellectual structure of the green purchase domain.

The main objective of this research is to systematically investigate the past, present and future of green purchase behavior and evaluate the current progress and profound contribution of this burgeoning field. This research is motivated by the pressing need to understand how green purchase emerged and changed over the past decades. Additionally, this research tries to understand how consumer behavior research will be influenced by the green purchase advancement. This research tries to answer the question of how the conceptual structure of green purchase has emerged and changed. These layers of analysis help researchers to discover the historical basis and identify the changes in the knowledge structure of green purchase domain.

Evaluation of the most highly cited articles in green purchase behavior provides a possible future research agenda. Different scholars (e.g., Ramos-Rodríguez & Ruiz-Navarro, 2004; Schildt et al., 2006) have applied bibliometric analysis. The bibliometric analysis method aids the researchers to do an analysis of the most highly cited articles in the green purchase topic with a higher level of quantitative sophistication. Doing analysis aids researchers to gain a specific and more comprehensive understanding of the links between intellectual topics.

Like all other research domain, knowledge improvement happens over time. Consequently, the main purpose of this research is to provide a comprehensive analysis of green purchase. To do so, we conducted a co-citation analysis which concentrates on the structure of green purchase and helps us to propose a framework for future studies. Co-citation analysis can identify the relationship between the most-cited articles in green purchase behavior, which results in interrelationship clarification.

In the following first a brief literature review of green purchase and its theoretical roots is provided. Afterward, the applied method is presented. Then, the citation data from green purchase are analyzed and used for different co-citation analyses. This is followed by a discussion and future possible researches.

2. Theoretical review of green purchase

2.1. Planned behavior

Theory of Planned Behavior (TPB) has been conducted in different studies related to psychological and social-related studies (Ajzen, 1991; Taylor & Todd, 1997). Findings of a meta-analysis research by Thompson et al. (1994) suggested that perceived behavioral control explains approximately 40 to 50% of intentions and behavioral intentions associated to planned theory of planned behavior.

TPB has been the basis of analysis for different studies for green purchase behavior (Paul et al., 2016; Yadav & Pathak, 2017). Fishbein and Ajzen (1976) developed the theory of reasoned action (TRA) to explain why customers behave in a specific manner. Ajzen and Fishbein (1980) proposed that intentions are the most important predictor of customer behaviors. Their findings suggested that humans are rational in making rational decisions based on the available information (Ding & Ng, 2009).

TRA contributes profoundly to non-routine thinking decisions (Oppermann, 1995). TRA is considerable effective at explaining psychological/cognitive responses comprehend consumers “contextual decision-making (Han & Kim, 2010). TRA suggests that individuals are eager to participate in specific behavior. Subsequently, in this context, intention refers to the individuals’ eagerness for participating in a particular behavior (Han & Kim, 2010). According to this theory, green product intention suggests the extend which customers are interested in purchasing green products due to their impact on themselves and surroundings.

Concerning to predicting green purchasing, TRA has been applied for predicting green purchase behaviors as well (Chan, 2001). Although TRA has been successful in explaining customer green purchase behavior (Han & Kim, 2010), it fails to address the requirement of resources and opportunists. For example, not all the customers are able to buy green products as they don’t have the same level of access to resources and opportunities.

Intentions are predictors of behaviors (Ajzen, 2002). Wide ranges of studies (e.g., Glasford, 2008; Hsu & Lu, 2007; Netemeyer & Bearden, 1992) have found the TRA quite useful in predicting a particular behavior. Hence, being quite useful in predicting individual behavior, TRA has been quite used in predicting consumer behaviors (Lam & Hsu, 2004).

In particular, TPB enhances the green purchase intention model predictability considerably. As proposed by TPB, this model proposes three predictors of intention for doing a particular behavior: Subjective norms, attitude toward behavior, perceive behavioral control.

2.2. Attitude

Attitude is the individual readiness for doing a particular behavior (Allport, 1935; Breckler & Wiggins, 1989; Di Martino & Zan, 2015). Attitude toward a behavior suggests the degree which an individual finds a behavior favorable or unfavorable in the evaluation of the behavior in question (Ajzen, 1991). In addition, attitude comprises judgment which a judgment under consideration is bad or good and whether individual wants to do the behavior or not (Leonard et al., 2004). Results of Ramayah et al. (2010) and Kotchen and Reiling (2000) suggested that attitude is the main and most important predictor of behavioural intention. Attitude is a psychological emotion routed in the customer perception about doing a behaviour (M. F. Chen & Tung, 2014).

The phenomena of specific attitude toward green product and purchasing environmental products show that how one concerns about environment and their ecological consequences.

T. B. Chen and Chai (2010) suggested that the environmental attitude has an impact on the individual attitude and perception toward green products. For instance, if individuals pay attention to their health and concern more about the environment, s/he will have a positive attitude toward

green products. In green product purchase context, a positive relationship between attitude and behavioral intention has been made in different cultures (Mostafa, 2007). Results of Wang et al. (2020) showed that when individuals are more environmentally friendly, they prefer to purchase more environmentally friendly packages. In green hotel tourism industries, different studies (e.g., Becker-Olsen et al., 2006; Paul & Rana, 2012) confirmed that intentions positively influence on customer behaviors. What is more, results of Netemeyer et al. (2005) revealed that the more positive the attitude of customers towards the green product, the more likely costumers purchase green products.

2.3. Subjective norm

In the TPB model, the second determinant of behavioural intention is the subjective norm. The subjective norm is defined as the “perceived social pressure to perform or not perform a particular behaviour” (Ajzen, 1991). The social pressure can be from individuals’ friends, relatives, or families. Subjective norms can impact on the individuals’ feelings about doing a particular behaviour. Moreover, consumers who experience the positive subjective norm toward a behaviour have shown a more likely positive intention toward a behaviour.

In the green marketing literature, different studies have applied subjective norm as an important determinant of green purchase behaviour (e.g., Schepers & Wetzels, 2007; Yang & Jolly, 2009), green hotel revisit intention (Han & Kim, 2010; Lee et al., 2010). These researches found a positive link between subjective norm as intention. In other words, when customers realise that others, who are important to him/her, take part in green purchase behaviour, they also are more likely to take part in purchasing green products.

2.4. Perceived behavioural control

As mentioned earlier the TRA could not predict green purchase behaviour efficiently due to not considering the required resources for conducting a behaviour. The term perceived behavioural control refers to the “perceived ease or difficulty” of doing a specific behaviour (Ajzen, 1991). The perceived behavioural control reflects individuals past experiences and also envisage the future obstacles. Results of Zhou et al. (2014) revealed that behavioural control (e.g., having sufficient money for purchasing green products) has a profound influence on the behaviour. Subsequently, having access to non-motivational factors such as concept of resources, opportunities, and action controls plays an important role in predicting a particular behaviour.

Different studies have shown that PBC positively has an influence on intention in a wide range of research context including green hotels (Han & Kim, 2010, 2010), organic food (Arvola et al., 2008; Tarkiainen & Sundqvist, 2005; Zhou et al., 2014), and green product in general.

3. Environmental concerns

3.1. Green purchase behavior

Green purchase behavior is buying environmentally friendly products which are usually recycled and bring benefits to the environment (Mostafa, 2007). Additionally, green products avoid harming both society and environment. Customer green purchase behavior is usually evaluated in terms of consumer intentions and willingness to buy green products and then the intention usually is transformed to green purchase behavior which finally has an influence on customer behavior for buying such environmentally sustainable products (Joshi & Rahman, 2015). As discussed earlier, green purchase behavior first was unveiled by TRA (Fishbein & Ajzen, 1975). Subsequently, due to the theory limits, TPB was used for explaining customer green purchase behavior (Hsu et al., 2017). What is more, modified behavioral measures were also adopted in a wide range of environmentally friendly products including Asia and India (Hsu et al., 2017) in organic products (Zhou et al., 2014), and Skincare products (Hsu et al., 2017).

In particular, the term green products or sustainable products are the products which are benefited to society, environment and includes eco-friendly bags, recycled papers, energy-saving

lights, and ecofriendly products (Joshi & Rahman, 2015). Besides, these products have usually low waste generation and are recyclable (T. B. Chen & Chai, 2010).

Based on the above argument it seems that consumer behavior is not affected by only attitudinal factors and it also needs cognitive factors such as environmental concern, environmental knowledge, and antidote toward green purchase product (Kim, 2011; Kumar et al., 2017; Paul et al., 2016).

Concerning to environmental behavioral studies, environmental concern refers to the customer concern about the environmental-related issues (Hines et al., 1987). Environmental concern is found to be one of the key antecedents of the customer eco-friendly behavior in marketing and green marketing literature. In general, environmental concern is about the individual concern about environment and the level of readiness to overcome problems. Additionally, it reflects one sense of responsibility to protect and save the environment and their involvement in protecting the environment. Subsequently, the level of environmental concern seeks to solve environmental problems at different levels ranging from recycling (Schultz & Oskamp, 1996) to green purchase (Mostafa, 2007).

Different scholars (Akehurst et al., 2012; Chan, 2001; Hartmann & Apaolaza-Ibáñez, 2012; Rahbar & Abdul Wahid, 2011) suggested that environmental concerns have a profound impact on green purchase intention. The idea is that customers who have a higher level of environmental concern try to save the earth and environment by purchasing green products.

4. Psychological determinant of customer environmental concern

In order to understand why people behave ecofriendly, Maloney and Ward (1973) determined the importance of people's knowledge of environment and their feeling toward environment, environmental commitment, and actual commitment. Consistent with their results, Maloney et al. (1975) shown that customer ecological concern is highly dependent on customer knowledge, feeling, and intention toward the environment. This view is also consistent with the TPB in which cognition, affection, and conation are one of the most important components of determining an individual behavior.

Generally, literature shows a positive relation between behavior and knowledge (). However, in the environmental research the issue is far more clear. For example, results of Dispute (1977) found a positive relation between ecological knowledge and eco-friendly behavior. Also, results of Grunert (1993) identified a positive relationship between ecological knowledge and green purchase. Such mixed findings indicate a more complicated relationship between behavior and knowledge. As Davis (1993) shown that the more knowledge individual has toward the environment, the more positive ecological attitude they have.

More consistently, more empirical evidence has been found to support the relationship between the behavior and ecological feeling (Mayer & Frantz, 2004). In this regard, Redclift and Redclift (1994) has termed such ecological concern, which shows the individual degree of one attachment to ecological problems.

To conclude, empirical studies have shown the positive relationship between ecological behavior and intention. Additionally, the results of Hines et al. (1987) meta-analysis have shown that average correlation of 0.49 exists between ecological intention and behavior. These results support the TPB notion which intention is considered to be the most important relevant predictor of behavior.

5. Bibliometric analysis

Bibliometric research analysis refers to the set of quantitative analysis of written documents (Osareh, 1996). Bibliometric analysis is a widely accepted and tool for analysing written communication in social science (Weismayer and Pezenka, 2017). For instance, Hubbard et al. (2010) investigated the influence of awarded marketing articles using citation analysis. Samiee and Chabowski (2012) studied the knowledge structure of the international marketing by applying

hierarchical cluster analysis (HCA) and multidimensional scaling (MDS). Wiid et al. (2012) tried to illuminate the key contributions and values in the evolution of Marketing Intelligence and Planning by employing citation analysis. More recently, Martínez-López et al. (2020) employed the bibliometric analysis to find the patterns of knowledge in the journal of Industrial Marketing Management. Noteworthy, Sheoran et al. (2018) applied the co-citation and citation analysis to find the trends and future direction of marketing literature.

In general, bibliometric analysis plays an important role in answering the question of de facto of conceptual structure of the complicated field of studies which the intellectual base is ambiguous (Oliver and Ebers, 1998). Additionally, bibliometric analysis has been also used to compare and evaluate the research outcomes of different institutions, field of study, researchers, and geographical regions (Moed et al., 1995; Van Raan, 2005).

Bibliometric analysis method can be categorised into three distinctive categories including Basic descriptive analysis, citation analysis, conceptual modelling analysis. Basic descriptive analysis can show the structure of the research field under investigation (e.g., geographic pattern of publication), content (e.g., authorship) and the most active institutions in the field of the study. Citation analysis refers to considering the literature cited by the body of discourse (Ratnatunga & Romano, 1997; Üsdiken & Pasadeos, 1995). Finally, conceptual mapping analysis illuminates a methodological method in which the articles under investigation are read and their properties of interests coded manually by the researcher.

Citation analysis plays a vivid role in identifying the body of research intellectual foundation and identifying the underlying the knowledge structure. Additionally, a temporal citation can provide information about how the body of literature has evolved over time. According to Garfield (1965) there are several reasons that a researcher might cite a particular document which mainly includes paying attention to the pioneers, providing literature review, criticising, and correcting previous researchers, and attributing credit to the related work done in the field.

Co-coupling is one of the most common forms of citation analysis (Chabowski et al., 2013; Egghe & Rousseau,). According to Small (1973) co-citation is “the frequency with which two documents are cited together”, and is often normalised in relation to the total number of two cited articles. In this regard, Cawkell (1976) suggested that co-citation analysis can show how similar subjects are as they prove that two articles were used in the same context (e.g., the third article). Noteworthy, his findings suggest that the analogy between co-citations is based on the co-occurrence of the words in a context.

While basic descriptive citations refer to the most influential researches and studies, co-citations coupling can be referred to how the most influential researches and works are related to one another. Once such network is created, the depth of analysis method should be used to examine it, such as network centrality assess the strength and position of the nodes which are formed in the highly cited articles.

6. An overall view of green purchase

6.1. Method

To start the research, researcher should identify the concept of green purchase concept and its concept of study in the bibliometric search. This step is vital as green purchase has been used in wide ranges of topics.

We set out to find the terms which cover our study domain. In order to meet this research objective, we used the term “green purchase” to find the authors who are highly cited in this domain. Doing this provided a list of authors who are highly cited in this field.

This resulted in 106 articles and 1664 citations in the researcher analysis of the green purchase for a 49 years period ending in 2019. To author knowledge and based on the WOS database output, green purchase articles were not published prior to 2001 and this framework covers the entire framework related to the green purchase search term. In general, WOS searched each article records including (1) article-specific reference identifier (2) author keywords (3) publication title (4) and document title. As the aim of the researcher is mainly on published articles concerning green purchase, books, methodology paper, editorial notes, and any indirect research item was excluded from the analysis.

Afterward the data were gathered and coded for accuracy and consistency. In order to find the green purchase most highly cited articles, researcher used frequency counts. Afterward, by using bibExcel software, co-citation matrix was developed. Subsequently, in order to examine the potential for model instability, metric multidimensional scaling (MDS) was utilised (Burt, 1983). To find a good model fit, researcher increased the number of highly cited articles.

A common practice of bibliometric research is that stress value less than 0.10 shows a good model fit (Ramos-Rodríguez & Ruíz-Navarro, 2004). Hence, 27 articles were comprised for further analysis (Table 1). In order to find the research groups and research clique, standard distance of

Table 1. The most highly cited green purchase publications

Rank	Citations	Document
1	42	Ajzen, 1991, Organ Behav Hum Dec
2	40	Chan, 2001, Psychol Market
3	39	Kim & Choi, 2005, Adv Consum Res
4	37	Fornell & Larcker, 1981, J Marketing Res
5	35	Straughan & Roberts, 1999, J Consum Mark
6	32	Laroche et al., 2001, J Consum Mark
7	29	Roberts, 1996, J Bus Res
8	26	Ellen et al., 1991, J Public Policy Mark
9	22	Tanner & Kast, 2003, Psychol Market
10	21	Ajzen & Fishbein, 1980, Understanding Attitu
11	20	Kalafatis et al., 1999, J Consum Mark
12	20	Y. S. Chen & Chang, 2012, Manage Decis
13	19	Gleim et al., 2013, J Retailing
14	19	Lee, 2008, Mark Intell Plan
15	19	Chan & Lau, 2000, J Consum Mark
16	18	Pickett-Baker & Ozaki, 2008, J Consum Mark
17	17	Akehurst et al., 2012, Manage Decis
18	17	Diamantopoulos et al., 2003, J Bus Res
19	17	Stern, 2000, J Soc Issues
20	16	Paul et al., 2016, V29, P123, J Retail Consum Serv
21	16	Mostafa, 2007, Int J Consum Stud
22	15	Mostafa MM, 2007, Psychol Market
23	14	Bagozzi et al., 1999, J Acad Market Sci
24	14	Young et al., 2010, Sustain Dev
25	14	Mainieri et al., 1997, J Soc Psychol
26	14	Kinnear et al., 1974, J Marketing
27	14	Lee, 2009, J Consum Mark

0.25 was used (Hair et al., 1998). Research clique is a research group which has three or more articles in it. In the following, we present the results of the researcher bibliometric analysis.

7. Results

In this section, researcher first reviews the general nature of the 27 heavily cited articles in green purchase. Then, results of the bibliometric analysis are presented. Doing this provides a deep and comprehensive evaluation of the network of highly cited articles published in green purchase. Additionally, it allows the researcher to propose a future model in the following sections.

8. Citation overview

The first highly cited document is Ajzen (1991) article. His article is about the theory of planned behaviour. The theory of planned behaviour (TPB) is mainly an extension of the theory of reasoned actions (TRA) which comprises the perceived behavioural control and individual belief. This theory suggests that perceived behavioural control, subjective norms, and attitude toward behaviour together form individual behaviours and intentions.

Chan (2001) is in the second rank with 40 citations. This article analyses the impact of different psychological and cultural factors on the green purchase behaviour among Chinese customers. Additionally, this research tries to develop a model for green purchase behaviour antecedents. Antecedents include collectivism and ecological knowledge. It also comprises other factors; ecological affect, attitude toward green purchase, and green purchase intention.

The third rank belongs to Kim and Choi (2005). Their articles aim to identify the main key antecedents of green purchase behaviour by applying the conceptual framework of value-attitude-behaviour relationship. Their findings suggest that environmental concern and perceived consumer effectiveness are the key antecedents of green purchase behaviour. The fourth rank in the table belongs to Fornell and Larcker (1981) article, which is about evaluating the structural equation model. This article in the fourth rank suggests that researchers have mainly applied quantitative and structural equation models (SEM) for analysing their data. Finally, among the most heavily cited articles, Straughan and Roberts (1999) have the fifth rank in the table. Their study investigates the ecological consumer behaviour consciousness.

9. Co-citation analysis

The MDS results representing the green purchase used the co-citation data as indicators of proximity between the most cited researchers. Higher co-citation shows the greater shared knowledge and closer proximity. On the other hand, co-citation shows that the articles share less. Using a maximum standard distance of 0.25, four clear research groups in green purchase. These three groups provide a comprehensive understanding of green purchase knowledge structure.

Based on the composition of the research groups from the results, we can identify the green purchase research domains. These groups include green purchase promotion (Group 1), green purchase behaviour (Group 2), antecedents of green purchase behaviour (Group 3), sustainable consumption (Group 4), difference of green purchase behaviour during time (Group 5).

Firstly, green purchase promotion (Group 1) shows the importance of topics related to the promotion of green purchase. This group discusses the importance of green promotion and tries to suggest implications for marketers and companies which are engaged in green product commercialisation and promotion. Results of Laroche et al. (2001) indicates the attributes of green customers. In more detail, their results show that that female with at least one child who lives at home are more ecological conscious and are more likely to be influenced by environmentally friendly product promotions. Additionally, results of Tanner (2010) suggest that green behaviour is not significantly related to monetary barriers or the socioeconomics characteristics of the customers.

Secondly, green purchase and environmental concern (Group 2) highlights the necessity of the topic related to customer environmental concern and customer green purchase. This group suggests that customer environmental concern is one of the primary causes of green purchase and customers who purchase green products are the individuals who are environmentally conscious.

Thirdly, antecedents of green purchase behavior (Group 3) try to develop a model for green purchase behavior based on the theory of planned behavior. This group studies the antecedents of green purchase behavior (Group 3), namely, environmental concern and perceived consumer effectiveness (PCE).

Sustainable consumption (Group 4) investigates the dynamics of the ecologically conscious consumer behavior. Consistent with the previous group, this group suggests that perceived consumer effectiveness (PCE) can provide a comprehensive insight into ecologically conscious consumer behavior. Finally, demographic and attitudinal of ecologically conscious consumer behavior (Group 5) suggests that concern for ecologically conscious consumer behaviour (ECCB) is becoming a universal phenomenon. This group suggests that contrary to the past that emphasis on environmental problems was largely limited to political and environmental solutions, current trend is toward consumer purchase behaviour. Additionally, this group suggests that environmental concern is turning into a major concern worldwide.

In order to validate the integral nature of the research analysis, researcher also identifies and examines more recent heavily cited articles in the green purchase. The same procedure and keywords were used to find the heavily recent cited articles since 2016 that had received on average 2 citations in year in the WOS database. Doing this makes researchers to find an indication of an article possible longevity in a research domain. As shown in Table 2, 17 included. Taken together these results provide a discussion regarding future of green purchase intention opportunities.

10. Discussion

In this section, detail basis of the future research agenda has been proposed. In order to do so, the content of both highly cited articles (Table 1) and highly recent articles (Table 2) has been discussed. These researches were evaluated to propose the major topics of the possible future purchase intention research agenda: green purchase strategy, green purchase positioning.

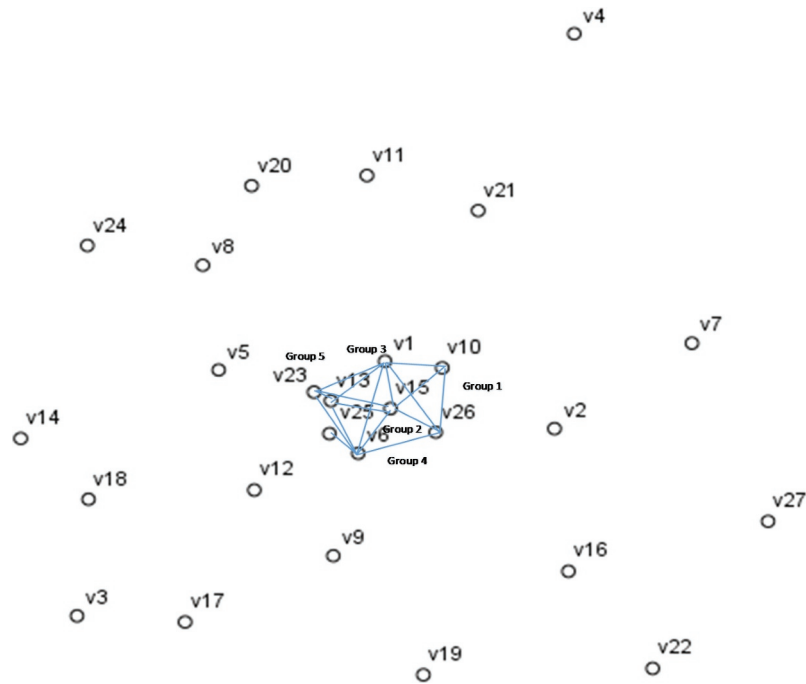
For instance, the topic of green purchase promotion (Group 1) was quite prevalent in the findings, as noted in green purchase motives (Group 1), this group shows that environmental concern, demographic attributes of green product customers, and their behavioural profile of green product customers are necessary for proposing a future green purchase research. More specifically, this group tries to identify the profile of customers who are more willing to pay more for green products. For instance, results of Anderson and Cunningham (1972) suggest that females, who have finished high school and are considered above average socioeconomic status, are more willing to pay for green product. More recently, results of Chekima et al. (2016) suggests that economic level of customers highly influences on the green purchase intention.

Secondly, the topic of antecedent of green purchase behaviour (Group 3) tries to investigate the influence of environmental, collectivism, and perceived consumer effectiveness (PCS) on green purchase behaviour. For example, results of Wei et al. (2017) reveals that customer environmental concern attitude necessary does not result in green product purchase. Their results suggest that environmental involvement, information utility, green advertising scepticism, and green trust have a positive impact on the customer attitude towards green products which results in green purchase intention. On the other hand, green purchase and environmental concern (Group 2) investigate the attitudinal and demographic attributes of green product customers. Thirdly, sustainable consumption (Group 4) studies the role of culture in the green purchase behaviour. Finally,

Table 2. Recent highly cited green purchase research

Document Title	Author	Year	Citation per year
Determinants of Consumers' Green Purchase Behavior in a Developing Nation: Applying and Extending the Theory of Planned Behavior	Yadav, Rambalak; Pathak, Govind S.	2017	10.67
Theory of planned behavior approach to understand the green purchasing behavior in the EU: A cross-cultural study	Liobikiene, Genovaitė; Mandravickaitė, Justina; Bernatoniene, Jurga	2016	9
Green marketing consumer-level theory review: A compendium of applied theories and further research directions	Groening, Christopher; Sarkis, Joseph; Zhu, Qingyun	2018	8.5
Examining green consumerism motivational drivers: does premium price and demographics matter to green purchasing?	Chekima, Brahim; Wafa, Syed Azizi Wafa Syed Khalid; Igau, Oswald Aisat; Chekima, Sohaib; Sondoh, Stephen Laison, Jr.	2016	7.5
Linking green skepticism to green purchase behavior	Goh, See Kwong; Balaji, M. S.	2016	5.25
Toward Sustainable Livelihoods: Investigating the Drivers of Purchase Behavior for Green Products	Wei, Chiou-Fong; Chiang, Chang-Tang; Kou, Tun-Chih; Lee, Bruce C. Y.	2017	3
Green public procurement implementation challenges in Australian public healthcare sector	Ahsan, Kamrul; Rahman, Shams	2017	3
Green purchasing behaviour: A conceptual framework and empirical investigation of Indian consumers	Jaiswal, Deepak; Kant, Rishi	2018	3
Sustainable consumption: the effects of knowledge, cultural values, environmental advertising, and demographics	Chekima, Brahim; Chekima, Sohaib; Wafa, Syed Azizi Wafa Syed Khalid; Igau, Oswald Aisat; Sondoh, Stephen Laison, Jr.	2016	2.75
Green purchase behavior of undergraduate students in Hong Kong	Lai, Carman K. M.; Cheng, Eddie W. L.	2016	2.5
Factors influencing green purchase behavior of millennials in India	Chaudhary, Richa; Bisai, Samrat	2018	2.5
The influence of cultural values on green purchase behaviour	The Ninh Nguyen; Lobo, Antonio; Greenland, Steven	2017	2.33
Predictors of young consumer's green purchase behaviour	Joshi, Yatish; Rahman, Zillur	2016	2.25
Green competence framework: evidence from China	Subramanian, Nachiappan; Abdulrahman, Muhammad D.; Wu, Lin; Nath, Prithwiraj	2016	2
Environmentally friendly behaviour and green purchase in Austria and Lithuania	Liobikiene, Genovaitė; Grincevicene, Svitrigaile; Bernatoniene, Jurga	2017	2
Causality analysis of media influence on environmental attitude, intention and behaviors leading to green purchasing	Wafa, Syed Azizi Wafa Syed Khalid; Igau, Oswald Aisat; Chekima, Sohaib; Sondoh, Stephen Laison, Jr.	2018	2

Figure 1. Green purchase knowledge structure.



demographic and attitudinal of ecologically conscious consumer behaviour (Group 5) studies the role of media in the customer green purchase behaviour. For instance, results of Trivedi et al. (2018) suggests that media positively influence on the green purchase intention among Indian green product consumers.

11. The components of a green purchase research agenda

A first fundamental component of green purchase identified from the findings of this research is related to green product purchase customer attributes. A considerable body of research is related to the research about what attributes green product customers have (e.g., Chen, 2001; Millar & Baloglu, 2011). However, results of Straughan and Roberts (1999) suggest that customer demographic attributes cannot envisage customer green purchase behaviour.

Subsequently, researchers paid more attention to the components such as environmental concerns. Recent researchers also try to investigate other factors that influence the customer green purchase intention. Environmental concern (Goh & Balaji, 2016), Environmental attitude (Lee & Jan, 2015; Liao, 2018), environmental knowledge (Groening et al., 2018), environmental involvement (Chekima et al., 2016), perceived customer effectiveness (Jaiswal & Kant, 2018) were studied to some degrees.

The third fundamental topic related to green purchase research highlights the importance of the customer country of origin. Relating to the green product configuration in the market, the role of different cultures of the globe has been highlighted. For instance, researchers have focused on the role of Chinese culture (Nguyen et al., 2017; Sreen et al., 2018), Europe (Liobikienė et al., 2016), India (Jaiswal & Kant, 2018; Yadav & Pathak, 2017), Malaysia (Goh & Balaji, 2016), Australian (Ahsan & Rahman, 2017) have investigated the role of culture in green purchase intention and behaviour.

The final component of green purchase identified in the bibliometric result is the role of the media. The role of media is the next identified component in the green purchase research domain. According to Agenda-setting theory (McCombs & Shaw, 1972) media plays a vital role in forming

and influencing on the individual perception. In this regard, Fernando and Lawrence (2014) used agenda-setting theory to suggest that online media increases the customer awareness about ecological concern around the globe. Consequently, media plays an important role in influencing on people awareness about the ecological concerns. Subsequently, having impact on the customer green purchase intention.

12. An integrated framework for future green purchase intention research

Based on the fundamental components identified in the bibliometric research approach, and by leveraging the theory of planned behaviour and agenda-setting theory researcher proposes an integrated framework for future studies regarding green purchase. The proposed model is shown in Figure 2. It implicates that customer attributes influence on the customer environmental concern which results in the customer green purchase behaviour. In the following the future proposed green purchase intention is proposed.

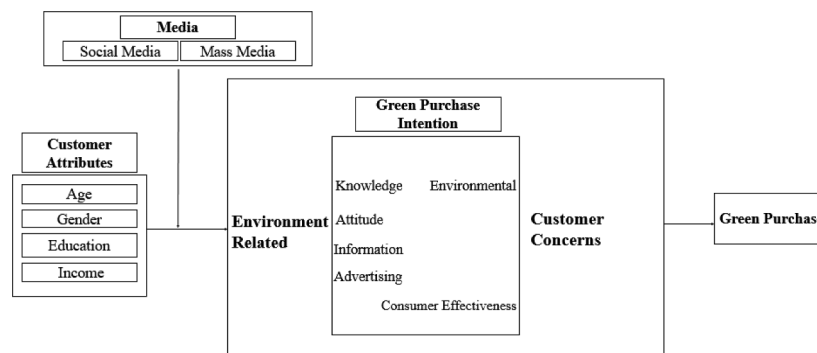
The influence of customer attributes on the green purchase intention

The theme of customer attributes has been related to the green purchase intention. In addition, women tend to be more environmentally aware. For instance, results of Han et al. (2011) revealed that women tend to spend more time and money for green purchases. In their study, it was shown that women tend to stay in green hotels and spend more money in these hotels. Additionally, results of Hur et al. (2013) suggested that female customers are more willing to purchase hybrid cars.

What is more, findings of Akehurst et al. (2012) show that educational level positively influences on the level of customer concerns. Customers with higher level of education tend to be more environmentally concerns and pay more attention to their roles on the environment. What is more, results of D'Souza et al. (2007) showed that customer attributes such as age and education and level of income positively influence on the customer concerns and especially customer effectiveness. Findings of Lee (2008) suggested that the level of income and social influence was the top predictor of green purchase among Hong Kong consumers. However, very little is known about the influence of age on the environmental-related. For instance, in the recent years, there has been social movements for protecting the earth from global warming, which were mainly led by teenagers. Future studies can investigate the relationship of customer attributes such as age on customer environmental concerns and customer effectiveness. Also, future researchers can investigate the role of young generation on the influence of young green product consumers and the old green product/service users.

The role of media on the green purchase intention has been investigated to some degrees (e.g., Aman et al., 2012; Lee, 2008; Rahbar & Abdul Wahid, 2011). However, the influence of media in the relationship between customer attributes and green purchase intention needs to be studied in

Figure 2. A proposed framework for future green purchase research.



more detail. For instance, does mass media and social media have the same level of increasing customer environmental concerns comparing to social media. Does social media influence the young generation more comparing to the older generation or not. Also, questions such as does social media influence male and female at the same level needs to be investigated in detail in the future as well.

13. The influence of green purchase intention of the green purchase

Several studies investigated the influence of the environmental attributes on the green purchase, which have been conducted (e.g., Chan & Lau, 2000; Mostafa, 2007; Schlegelmilch et al., 1996; Tanner & Kast, 2003). However, a more comprehensive and complete evaluation between green purchase intention and green purchase behaviour is needed. For instance, future researchers are encouraged to investigate questions such as which elements of customer green purchase intention and environmental-related influence on the green purchase. Does environmental knowledge have the same level of influence on the green purchase intention comparing to customer concerns. Which of the customer concerns positively influence on green purchase intention?

14. Theoretical contribution

The first contribution of the current study is the integration of disparate topics on green purchase studies to date to provide an integrated understanding of the domain for scholars. Although previous studies have all investigated the green purchase behavior topic from different perspectives, no scholars have provided an integrated overview of the domain. Furthermore, a common literature review over a domain is mainly subjected to lack rigor and does not offer an integrated understanding of the research domain (Foroudi et al., 2020), which consequently increases the value of current study for future scholars.

Furthermore, any further development over a research topic is based on established and current studies on a domain (Kuhn, 1996). So, with this in mind, the second contribution of the research relates to the future theory-driven framework. Although previous and recent studies both have tried to offer an integrated research direction and suggestion for future scholars, but their suggestions are based on their topic and do not offer an integrated suggestion for future scholars.

15. Managerial contribution

The most important managerial implication of the current study relates to the proposed future framework. More specifically, the configuration of green purchase intention and social media is critical to the implementation of a firm/brand strategy. Though the strategies can be different according to customer attribute, the customer concerns, according to our result, can be categories in two dimensions. As results of these two integrated common customer concerns, managers can implement their future marketing strategies to encourage purchase behaviour. Thus, the use of environmental and customer effectiveness criteria offers a holistic view upon marketing and brand managers.

16. Limitations

Like all the researches, there are limitations in this research. First of all, the term green purchase was used to find and identify the green purchase articles. Given the nature of the research, different key terms can reveal different articles which can have an impact on the results of the research. Additionally, although MDS results are widely used in the bibliometric research, other forms of MDS analysis can reveal other groups. Future studies can investigate the green purchase by using different bibliometric analyses. Using other methods such as EFA and network visualization can identify different groups. Consequently, the future study's findings can prove more comprehensive understanding and development to the results of the following study.

Finally, bibliometric analysis tends to be more focused on backward looking, with a heavy emphasis on the most-cited articles. Thus, the analysis of this field is mainly based on the specific of most co-cited articles Although the most heavily cited articles can be considerably influential,

they don't represent the entire field of the research. Therefore, more recent articles and contributions can also be equally important; serving new buildings of blocks for green purchase. The importance of such contributions can be revealed only over time.

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