Exploring the effect of Starbucks' green marketing on consumers' purchase decisions from consumers' perspective

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ABSTRACT

This study contributes to current literature by constructing a model to evaluate how using green marketing to promote brand image affects consumers' purchase intentions. First, the decision-making trial and evaluation laboratory (DEMATEL) method was used to explore the mutual influence on evaluation indicators, and an influential network relation map (INRM) of indicators and sub-indicators was constructed based on the results. The DEMATEL method was then combined with the analytic network process to create a DANP method to calculate weights for each indicator and sub-indicator. A modified *Vlse Kriterijumska Optimizacija Kompromisno Resenje* (VIKOR) method was then employed to explore the comprehensive performance of each indicator and sub-indicator using empirical data. Finally, conclusions were summarised and suggestions were proposed. This study's findings can serve as a reference for firms seeking to improve the tangible effects of their green marketing strategies by stimulating consumers' purchase intentions.

1. Introduction

Consumers International, formerly known as the International Organisation of Consumers Unions, adopted a resolution on 'green' consumerism during the 1991 World Congress that called on consumers worldwide to recognise the value of biodiversity in nature and multi-directionality in culture, and to integrate the concepts of ecological awareness and green consumption into their evaluation of goods and services and their purchase decisions. Accordingly, bonded by their commitment to social responsibility and sustainable operations, enterprises worldwide began to pursue green production, design and promotion to gain a competitive advantage in the global green market (Chang et al., 2019; Papadas et al., 2018). Enterprises began emphasising that their products were recyclable, low-polluting, and resource-saving, promoting environmentally friendly consumption behaviour, and exploring green market opportunities to create a green corporate culture. Green marketing processes to ensure the sustainability of marketing operations quickly became mainstream (Chang et al., 2019). Understanding the factors influencing consumers' purchase intentions and decisions is necessary to improve the fit between green products and consumer needs and enhance market competitiveness (Jaiswal and Kant, 2018; Wei et al., 2018).

Due to the increasing severity of global warming in recent years, governments have vigorously implemented environmental or green policies aimed at protecting the environment. Consequently, these policies have indirectly compelled enterprises to undertake more social responsibility and introduce ethical marketing principles in their operations. The promotion of green consumption with the support of corresponding green policies has attracted increasing attention and support from the public, leading to the popularisation of 'green marketing'. The American Marketing Association (AMA) defines 'green marketing' as 'the development and marketing of products that are presumed to be environmentally safe'. The green marketing concept is broad and includes market responses in the design of products, production processes, packaging improvements, and advertising methods (Dangelico and Vocalelli, 2017; Hasan and Ali, 2015).

Green marketing stimulates green consumption behaviour by encouraging consumers to purchase green products, thereby reducing the generation of pollution. Encouraging consumers to contribute to the future of the planet by purchasing green products with less impact on the global environment has become an important research topic. Thus, many enterprises have prioritised the use of green marketing and promoting green products to improve consumers' brand recognition and trust, which then stimulates green product purchase intentions (Lai and

Cheng, 2016; Lin et al., 2017; Suki et al., 2016).

Starbucks has extensively promoted green marketing and environmental protection, and claims to focus on the following three aspects of its operations to reduce its impact on the environment: (1) sources of coffee, tea, and paper; (2) methods of transportation for products and personnel; and (3) outlet design and operational methods, such as power and water consumption and waste recycling and treatment. Starbucks reports that it invests more effort in environmental protection than other large coffee companies. In addition, Starbucks promotes its green efforts in its services and products through interior design elements and information pamphlets at its outlets. As a result, most Starbucks customers have a reasonable awareness of the company's green actions. This study uses Starbucks' green marketing as a context to investigate how green marketing affects consumers' purchase decisions. The study examines the issue from the consumer's perspective and analyses key influencing factors.

Previous studies on promoting green marketing to enhance brand image and stimulate consumers' purchase intentions for green products have tended to use statistical analysis methods (Chekima et al., 2016; Jaiswal and Kant, 2018; Sreen et al., 2018); few studies have used the multi-attribute decision-making (MADM) method. This differs from traditional statistical methods, in which 200 minimum samples are needed to verify the causal relationship between variables (Hoe, 2008), as the MADM method only requires a minimum of 15 samples (Jeng and Huang, 2015) to yield suitable research results (Tsai and Lin, 2016). The average questionnaire included 10 to 15 relevant experts using the MADM method (Liu and Chou, 2016; Tsai and Lin, 2016). Nevertheless, the use of green marketing to enhance brand image and stimulate consumers' purchase intentions for green products involves multi-attribute decision-making.

Scholars have increasingly employed the MADM method (Khaira and Dwivedi, 2018; Mardani et al., 2015; Si et al., 2018) to resolve marketing-related issues (Chen et al., 2014; Chen and Yang, 2019; Liu and Chou, 2016; Wang and Tzeng, 2012). This method has become popular because models constructed using MADM tend to better reflect real-world problems. Therefore, this study uses the MADM method. First, this study proposes a comprehensive research framework based on a literature review and interviews with Starbucks outlet employees. Next, the study deploys consumer surveys and constructs a model that evaluates how green marketing helps promote consumers' purchase intentions based on the collected data. Finally, the constructed model's applicability is tested using the green marketing campaigns and products of the Starbucks outlets.

This study seeks to review the factors influencing how Starbucks' green marketing affects consumers' purchase decisions, uncover any conflicts in perceptions between their green marketing strategies and consumers' views, and identify the gaps between indicators and goals to improve Starbucks' marketing strategies and competitive advantage in green marketing. Specifically, this study addresses the following questions from the consumer's perspective: (1) What are the factors that influence the effects of Starbucks' green marketing campaigns on consumers' purchase decisions? (2) Could an evaluation model be constructed that defines the networks of influence for these factors? (3) How would the indicator weights be developed for such a model? (4) How should improvement strategies be designed according to the findings?

This study is conducted as follows to resolve these issues: First, the factors that could influence the effect of Starbucks' green marketing on consumers' purchase decisions are identified based on a comprehensive literature review, and a research framework is proposed accordingly. Second, the decision-making trial and evaluation laboratory (DEMATEL) method is employed to explore the influential network relations among the indicators and draw an influential network relation map (INRM) to determine which of the indicators is the most significant (Chen and Lin, 2018; Cui et al., 2019; Jeng and Huang, 2015; Tsai and Lin, 2016). Third, a combination of the DEMATEL and analytical network process (ANP), also known as the DANP method, is used to

calculate each indicator's weight of influence (Chen and Lin, 2018; Zhao et al., 2019). The modified *Vlse Kriterijumska Optimizacija Kompromisno Resenje* (a multi-criteria optimisation and compromise solution, or 'VIKOR') method is then adopted for a gap analysis (Tsai and Lin, 2018; Zeng et al., 2019; Zhao et al., 2019). Finally, the study suggests ways to improve green marketing strategies based on the analysis' findings.

The rest of the study is organised as follows: Section 2 briefly introduces literature on the links among green marketing, green products, green management, green brand image, green brand relationships, green brand equity, and consumers' purchase intentions. Section 3 empirically examines the factors influencing how Starbucks' green marketing affects consumers' purchase decisions and describes the proposed model. Section 4 discusses the results and practical implications relative to creating a green marketing strategy for Starbucks. The final section presents our conclusions, limitations and recommendations for future research.

2. Literature review

This section reviews studies related to the research topic and uses the findings as a reference for the study's research framework. It is divided into seven sub-sections covering green marketing, green products, green management, green brand awareness and image, green brand relationships, green brand equity, and consumers' purchase intentions.

2.1. Green marketing

Awareness of environmental protections has increased rapidly in recent years, as enterprises have gradually begun to implement environmental protection concepts in their research and development (R&D), production and marketing processes. Consumers are also increasingly focusing on whether products are green and whether companies are implementing green marketing campaigns (Chen and Yang, 2019; Dangelico and Vocalelli, 2017). This study defines 'green marketing' by reviewing previous studies. Charter (1992) emphasises that the key to green marketing lies in minimising business activities' environmental impacts during raw material acquisition, production, sales, consumption, and disposal processes. Thus, green marketing aims to minimise the environmental impact of each stage of the life cycle, comprised of raw material acquisition, manufacturing, distribution, consumption, and disposal (Dangelico and Vocalelli, 2017). Further, Schoell and Guiltinan (1993) define green marketing as the development and implementation of marketing programs designed to enhance the environmental image of enterprises. Peattie (1993) points out that green marketing is a new marketing method developed by enterprises in response to human concerns about the global environment and planetary lifeforms.

Fraj and Martinez (2007) conduct an empirical study on consumer behaviour using the theory of reasoned action model proposed by Ajzen and Fishbein (1980) to predict the relationship between behaviour and attitude. The results reveal that consumers with environmental feelings tend to have a more positive attitude towards environmental protections, and that these feelings positively impact environmental protection behaviours (Chang et al., 2019; Chou et al., 2020). Moreover, Chan (2001) finds that environmental feelings significantly and positively impact green consumption attitudes, and that their effect is greater than the impact of ecological knowledge on green consumption behaviour; consequently, green marketing should connect consumers' feelings to environmental issues to achieve optimal marketing results (Chou et al., 2020; Dangelico and Vocalelli, 2017).

As the global trend of environmental protection grows, consumers' willingness to purchase premium green products is also increasing. Laroche et al. (2001) discover that consumers are willing to pay more for green products, and female consumers are more likely to include environmental protections in their product decision-making process than male consumers. Therefore, the authors argue that consumers with

higher environmental awareness are more willing to purchase green products, even if they are more expensive (Sreen et al., 2018). Although many enterprises have launched green products and corresponding marketing campaigns, they struggle to maintain their business interests while inducing consumers to purchase green products. Green marketing is considered a solution to this dilemma, as it incorporates environmental protection requirements into the design, production, and packaging of products, thus facilitating consumers' recognition of enterprises' environmental protection efforts and encouraging them to support such efforts through product purchase (Dangelico and Vocalelli, 2017).

2.2. Green products

Green products can be defined as products that are safe to use and are environmentally friendly (Fraccascia et al., 2018; Muhammad et al., 2017). Further, Shamdasani et al. (1993) further claim that green products do not pollute the earth or damage natural resources, can be recycled or conserved, and use more environmentally friendly components or ingredients and packaging to reduce their impact on the environment (Nuttavuthisit and Thøgersen, 2015; Sreen et al., 2018).

The Executive Yuan of Taiwan's Environmental Protection Administration (EPAT—1995) defines green products (or environmentally friendly products) as those that 'respect the principles of being recyclable, resource-saving, and low polluting during the raw material acquisition, manufacturing, distribution, consumption, and disposal processes'. This definition suggests that green products should ensure the effective utilisation of resources and reduction of environmental damage throughout the entire product life cycle. The Environmental Protection and Green Production Promotion Association of the Republic of China categorises green products into those that are granted the Taiwan Green Mark and other green goods. Products that are awarded the Taiwan Green Mark have passed the EPAT's inspection, while other green goods are products that effectively utilise resources and reduce environmental damage throughout the entire life cycle, or adopt environmental protection measures but have not yet obtained the Taiwan Green Mark.

Paying attention to and participating in public affairs and fulfilling corporate social responsibilities are found to have a significantly positive effect on improving enterprises' image among consumers and differentiating them from competitors (Amores-Salvadó et al., 2014; Zameer et al., 2020), thereby improving their operational performance and profits (Xie et al., 2019; Zhang et al., 2019). Corporations may also launch green products designed to promote environmental protection to fulfil their social responsibility initiatives (Amores-Salvadó et al., 2014; Sreen et al., 2018; Zhang et al., 2019).

Starbucks claims to reduce environmental pollution and mitigate operational behaviours that may worsen global warming (Jeong et al., 2014). The company has also expressed an intention to encourage participation among its partners and consumers. Specifically, Starbucks encourages consumers to bring their own containers when purchasing coffee and other drinks in their outlets by awarding them with an NT $10 coupon for doing so. Furthermore, the company uses soy inks for printing and has used environmentally friendly paper in all outlets in Taiwan since 2009. They have also reduced the number of packaging layers in their products and reportedly reject the use of any material considered harmful to the environment (Li et al., 2019b). The company prioritises products that are low-polluting, energy- and resource-saving, and recyclable. It was also granted the Green Procurement Benchmark Unit by the Taipei City Government at the end of 2008. Starbucks' 'creative use of coffee grounds' campaign has received widespread support from consumers; in addition to being used as natural fertiliser, other creative uses for spent coffee grounds have been proposed (Jeong et al., 2014; Li et al., 2019b).

2.3. Green management

Green management refers to the design and planning of products and services that minimise environmental pollution and contribute to environmental protection (Leonidou et al., 2013; Shu et al., 2016). In addition to the traditional five standard management functions (marketing, finance, human resource, production and operation, and information management), corporations should include environmental management in their daily operations (Steger, 1993). Further, Winn and Roome (1993) define environmental management as overseeing the impact an enterprise and its products and production processes make on environmental, ecological and cultural systems. Wolff (1996) suggests that enterprises should integrate environmental management into their overall operating system by implementing internal initiatives, such as proposing or issuing energy-saving policies. Enterprises are increasingly expected to shift their corporate attitudes and cultures towards the environment to cultivate an environmental protection spirit by effectively promoting and implementing green management measures.

The 'cleaner production' notion is a key concept in green management; this refers to the comprehensive implementation of green design and green production technology. Since 1989, the United Nations Environment Programme has promoted legislation governing the environment and the recycling and reuse of resources, which demonstrates the significance governments are attaching to cleaner production. As cleaner production emphasises the prevention of pollution during the product development, production and service-provision processes, it helps improve the utilisation efficiency of raw materials and resources and reduce the environmental impact of the entire product life cycle. Therefore, in addition to enhancing corporate image, cleaner production could improve firms' competitiveness (Yang et al., 2015).

Green administrative management refers to the implementation of internal management procedures that incorporate the concepts of environmental protection into R&D, product design, manufacturing, marketing, management, organisational structures, and human resource and financial management to transform the company into a green organisation that shares green values and has a matching corporate culture (Yang et al., 2015; Yu and Huo, 2019). The goal is to ensure that all departments within the organisation follow and implement policies and measures that meet the requirements of environmental protection and induce their employees to behave accordingly (Yang et al., 2015).

In addition to planning a green administrative management system and designing energy-saving and environmentally friendly equipment and facilities, enterprises can promote green management within the market by implementing 'green marketing', or a complex, dynamic process that includes environmentally friendly marketing strategies. Previous studies suggest that green marketing involves collecting green information, developing green technologies, creating green products, selecting green channels, establishing a green brand or product image, and providing green services (Delafrooz and Goli, 2015).

2.4. Green brand awareness and image

Keller (1993) claims that green brand knowledge refers to consumers' identification of a green brand, defining it as networked memory composed of brand awareness and brand image. Therefore, to convey corporate values and gain the trust of consumers, green brands should have a reduced impact on the environment and remind society of the importance of environmental protection (Chen, 2010; Delafrooz and Goli, 2015; Zameer et al., 2020). Further, Keller (1998) later adopts a customer-based perspective to explore brands, and proposes that brand marketing's effects depend on consumers' brand knowledge. In later research (Keller, 2003), he further observes that consumers' brand knowledge can be defined as the meaning of a given brand stored in memory, which contains all the descriptive and evaluative messages related to the brand. Therefore, based on the definition proposed by Keller (1993), this study divides brand knowledge into brand awareness

and brand image.

Aaker (1991) posits that brand awareness reveals the intensity of consumers' memory of the brand. When consumers make purchase decisions, they are likely to choose a brand that they are familiar with under the assumption that it is the most reliable; familiarity relieves uncertainty during the brand-selection process. Therefore, brand awareness can be regarded as a simplified form of product information used by consumers when making purchase decisions. Grewal et al. (1998) find that products with high brand awareness tend to have a larger market share and obtain more positive brand evaluations from consumers. Thus, consumers' brand awareness level may influence their purchase decisions.

In a later study, Aaker (1996) further clarifies that product image focuses on the combination of consumer values created by product attributes, whereas corporate image is based on corporations' ability to provide consumers with a sense of reliability and trust. Brand image is a comprehensive sensory impression created by enterprises and accepted and recognised by consumers, which affects the brand association in consumers' memory (Insch, 2011; Zameer et al., 2020). Moreover, Rio et al. (2001) divide brand associations into product functions and brand functions. Product functions refer to the associations generated by the tangible attributes of a product when it does not have a brand name or the brand is not well-known. Brand functions refer to the associations generated by the intangible attributes and the image created by the brand name of a given product; thus, the benefits of a brand image can be obtained only through a branded product.

Brand associations are conducive to the production of word-of-mouth and help differentiate an enterprise from its competitors (Bhat and Reddy, 1998). Further, Lanza (2001) points out that a brand provides value to a company through value generation for customers, while customers' brand associations are key to forming and managing brand equity.

2.5. Green brand relationships

Aaker (1996) posits that a brand's meaning includes the relationship between the brand and its customers, as a familiar brand should establish a positive relationship with them. Brand image and awareness alone cannot ensure an enterprise's survival. Esch et al. (2006) suggest that the key to long-term brand success lies in brand relationships, which include brand satisfaction, brand trust, and brand attachment. They also note that such a relationship can affect consumers' current and future purchases; specifically, brand relationships and purchase behaviours have a positive correlation.

Consumers with a high overall evaluation of a brand are more willing to buy the brand's products. This finding indicates that consumers' trust in the brand affects their willingness to purchase its products. Chaudhuri and Holbrook (2001) define brand trust as consumers' willingness to actively trust the products of a given brand. Thus, establishing consumers' trust in a green brand and making them perceive that the brand and its products are reliable, safe and trustworthy are conducive to promoting the brand image and stimulating consumers' willingness to purchase green products. Park et al. (2010) also point out that brand attachment is a better indicator of consumers' actual purchase behaviour than brand attitude strength (Chou et al., 2020). Further, Kahle and Kim (2006) claim that a powerful positive brand image leads to the formation of a strong brand attachment. Thus, brand image affects consumers' post-purchase behaviour through the emotional attachment to a brand, forming a relationship chain defined as 'image → attachment → post-purchase behaviour' (Chang et al., 2019; Chou et al., 2020; Dangelico and Vocalelli, 2017).

This literature review demonstrates that brand image and brand awareness generate brand trust and brand attachment, as well as brand satisfaction (Dangelico and Vocalelli, 2017). Moreover, Choi (2005) argues that when customers' needs are satisfied, their positive responses to a brand stimulate repurchase intentions and recommendations, which

foster market expansion, increase market share, and improve profitability for the company. He also observes that customer satisfaction is driven by the marketing orientation, and is the most valuable outcome of marketing activities. Therefore, customer satisfaction substantially influences business operations.

2.6. Green brand equity

Some studies suggest that brand equity can be analysed from the perspective in which commodities have both use value and exchange value (Liu and Jiang, 2020; Zhou et al., 2020). Brand equity was found to be associated with both the quantity and quality of producers' special (high-quality and creative) labour inputs, and customers' brand recognition.

The AMA considers brand equity to be the sum of the associations and behaviours of consumers and other members towards a given brand, which promotes a financial return greater than what would be achieved if the product lacked the brand name, thus providing a competitive advantage to the product. The brand equity concept is based on the theory of consumer behaviour; it is the potential value that exists in consumers' minds and is an overall reflection of brand image and quality. Brand equity is built when consumers express their recognition of and trust in specific brands over alternatives in the market, which is unlikely to change in the short-term (Chi et al., 2020; Liu and Jiang, 2020; Zhou et al., 2020).

Chen (2010) defines green brand equity as brand equity that consists of assets, liabilities and commitments related to ecological and environmental issues (Delafrooz and Goli, 2015). Brand names and symbols can increase or decrease the value of a product or service, while green brand equity is obtained by brands that consumers perceive to be environmentally friendly. The value of the green principle can be regarded as brand equity. Given that green brands tend to present the image of caring about the environment, the implementation of green marketing is likely to increase a brand's intangible equity. Motivations for implementing green marketing include complying with global trends towards environmental protection, improving competitive advantages in the market, consolidating corporate images, seeking green opportunities and options, and enhancing product value (Chen, 2010). Green brand equity is the sum of a firm's environmental commitments and brand-related environmental issues and the brand name and symbol, minus the value provided by the product or service (Azadi et al., 2015; Khandelwal et al., 2019). Green brand equity is measured by the (1) identification with and trust in the environmental commitment of the brand, which is sustained even if a new company with the same environmental commitments emerges; (2) commitment to purchase and patronise the brand, even if a new brand with the same environmental performance emerges; and (3) development of trust due to the importance the brand has attached to environmental protection, leading to a purchase that is sustained even if a new company with a similar level of attention to environmental protection emerges.

2.7. Consumers' purchase intention

Boyd and Mason (1999) define purchase intention as consumers' tendency to purchase a given product. Thus, consumers with greater purchase intention are more likely to purchase a product (McClure and Seock, 2020; Zhu et al., 2019). Further, Kotler (1999) finds that consumers tend to consider time, location, and payment method when making purchase decisions, form a preference between a feasible combination of the above previous factors and the available options, then generate purchase intentions based on the preferred choice. Wheeler et al. (2013) find that insufficient information sources negatively affect consumers' intentions to purchase green products, while advertisements that stress the importance of the cause stimulate their willingness to buy a product.

Wang and Chen (2019) contribute the effects of consumers'

perceived justice of fair trade organisations on consumers' intent to purchase fair trade products. They discover that consumers' perceived distributive, procedural and interactional justice of fair trade organisations positively affected their trust in these organisations; perceived distributive and procedural justice also positively affected the perceived effectiveness of fair trade products; and consumers' trust in fair trade organisations and their perceived effectiveness of fair trade products positively affected their intent to purchase fair trade products. Lee et al. (2020) explore how the interactions between representative environmental cues impact purchase intentions, such as sustainable labels and traceability, and the interaction between sustainable labelling and consumers' knowledge of the product's certification. The empirical results indicate that purchase intentions can increase by providing more transparent, diverse environmental cues based on information technology, and by increasing consumers' knowledge of product certifications.

Table 1 lists four dimensions of criteria based on the literature review and expert discussions: green management, green brand image, green brand relationships, and green brand equity.

3. Creating an evaluation model for improving Starbucks' green marketing from the consumer perspective

Green marketing has prospered in recent years. Many enterprises have begun to adopt green marketing as a market expansion strategy due to consumers' increasing awareness of environmental protection and intensifying market competition. Thus, enterprises have used green marketing as a vital component for surviving in highly competitive markets, inducing consumers to purchase green products, developing brand loyalty, increasing revenue and market share, and maintaining sustainable operations. Starbucks' strategy to use green marketing as a way to stimulate consumers' purchase intentions is of great significance. In addition to increasing green product consumers, such a strategy can give Starbucks a competitive advantage and ensure the sustainable development of the company, as well as benefit society.

This study constructs a comprehensive and objective evaluation model to analyse the factors influencing how Starbucks' green marketing campaigns affect consumers' purchase decisions from the consumer perspective. The constructed model is applied to evaluate Starbucks' green marketing campaigns, and suggestions for improving campaign strategies are developed. First, the factors that could influence the effect of Starbucks' green marketing on consumers' purchase decisions are identified based on key theories and the study's literature review, and a research framework is constructed. Next, the DEMATEL method is adopted to verify the causal relationships between indicators and sub-indicators (the first survey: DEMATEL Questionnaire), and an INRM of the indicators and sub-indicators is composed. The DANP method is then used to calculate the weights of the indicators. Finally, a modified VIKOR is employed for the gap analysis (the second survey: Performance Questionnaire). The analysis results reveal which indicators consumers consider more important when making purchase decisions. Fig. 1 presents the steps used to construct the decision-making model.

3.1. Causality analysis through the DEMATEL method

The DEMATEL method was developed by the Battelle Memorial Institute of Geneva from 1972 to 1976 for the Science and Human Affairs Program. The purpose was to study complex and difficult real-world problems—such as environmental protections and ethnicity- and energy-related issues—and identify feasible solutions through a hierarchical structure (Fontela and Gabus, 1976; Gabus and Fontela, 1973). The DEMATEL method can effectively combine expert knowledge and clarify the causal relationships between variables. In addition to converting the causal relationships between indicators into a clear structural model, the DEMATEL method can reveal the interdependencies between indicators and their intensities (Li et al., 2019; Tsai and Lin, 2016).

Table 1
Evaluation criteria of green marketing and definitions.

Dimensions	Criteria	Definition
Green Management (B)	Establishment of green corporate culture (B_1)	The corporation advocates for the awareness of environmental protection and sustainable development, caters to the global trend of environmental protection, and strives to establish core green competitiveness.
	Promotion of cleaner production (B_2)	Cleaner production is a comprehensive implementation process of green design and green technology and a focus of green management.
	Design and development of green products (B_3)	The products are produced, used, and disposed of in accordance with the requirements of environmental protection; are harmless or impose minimal harm to the environment; and are conducive to resource regeneration and recycling.
	Implementation of green marketing activities (B_4)	In order to promote green products, the enterprise actively implements green marketing activities to attract consumers, communicate green concepts, and improve corporate image so that consumers are more willing to accept the efficacy of the initiatives and purchase green products.
Green Brand Image (I)	Types of green brand associations (I_1)	The overall value or attitude of a particular green brand in consumers' memory
	Favourability of green brand associations (I_2)	The various levels of favourability of a particular green brand in consumers' memories
	Strength of green brand associations (I_3)	The attractiveness and recall of a particular green brand when repurchasing the products
	Uniqueness of green brand associations (I_4)	The unique style and competitive advantage of a particular green brand in consumers' memories.
Green Brand Relationships (R)	Green brand satisfaction (R_1)	Satisfaction with the function and use of the green brand.
	Green brand trust (R_2)	The degree to which customers trust the green brand.
	Green brand attachment (R_3)	Important links generated between individuals and products of the green brand.
Green Brand Equity (V)	Recognition and belief in the environmental commitment of the brand (V_1)	The consumers maintain trust in the brand even when new companies propose the same level of commitment.
	Willingness to continue to purchase and use the green brand (V_2)	The consumers still use the products of the brand even when new brands emerge in the market.
	Trust in the attention paid by the brand to environmental protection (V_3)	The consumers still purchase the products of the brand even when new companies attach the same importance to the environment.

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┌─────────────────────────────────────┐
│ Establishing an evaluation model of  │
│ factors that influence the effect of │        ┌──────────────────────────────┐
│ Starbucks' green marketing on        │◀───────│ Reviewing studies and         │
│ consumers' purchase intentions       │        │ conducting interviews with    │
│ from consumers' perspective          │        │ experts in the field          │
└─────────────────────────────────────┘        └──────────────────────────────┘
                  │
                  ▼
┌─────────────────────────────────────┐
│ Determining the evaluation           │        ┌──────────────────────────────┐
│ indicators for the factors that      │        │ Establishing research         │
│ influence the effect of Starbucks'   │◀───────│ framework based on the        │
│ green marketing on consumers'        │        │ evaluation indicators and     │
│ purchase intentions from consumer'   │        │ sub-indicators obtained       │
│ perspective                          │        │ through the previous stage    │
└─────────────────────────────────────┘        └──────────────────────────────┘
                  │
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┌─────────────────────────────────────┐        ┌──────────────────────────────┐
│ Establishing the research framework  │        │ Questionnaire design and      │
│ to analyse the factors that          │        │ distribution (first survey)   │
│ influence the effect of Starbucks'   │        └──────────────────────────────┘
│ green marketing on consumers'        │◀───────┌──────────────────────────────┐
│ purchase intentions from consumers'  │        │ Conducting the first survey   │
│ perspective                          │        │ and using DEMATEL analysis to │
└─────────────────────────────────────┘        │ calculate and establish INRM  │
                  │                             └──────────────────────────────┘
                  ▼
┌─────────────────────────────────────┐        ┌──────────────────────────────┐
│ Establishing INRM of factors that    │        │ Using the DANP method to      │
│ influence the performance of         │◀───────│ calculate the influence       │
│ Starbucks' green marketing from      │        │ weights of the evaluation     │
│ consumers' perspective               │        └──────────────────────────────┘
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│ Calculating the weights of each      │        │ Design and distribution of    │
│ indicator based on the results of    │        │ the gap analysis              │
│ DEMATEL analysis                     │        │ questionnaire (second survey) │
└─────────────────────────────────────┘        └──────────────────────────────┘
                  │                      ◀──────┌──────────────────────────────┐
                  ▼                             │ Determine the targets of      │
┌─────────────────────────────────────┐        │ distribution                  │
│ Conducting gap analysis of the       │        └──────────────────────────────┘
│ effect of Starbucks' green marketing │◀───────┌──────────────────────────────┐
│ on consumers' purchase intentions    │        │ Conducting the second survey  │
│ from consumers' Perspective          │        │ and applying the modified     │
└─────────────────────────────────────┘        │ VIKOR for gap analysis        │
                  │                             └──────────────────────────────┘
                  ▼
┌─────────────────────────────────────┐
│ Developing improvement strategies    │
│ based on INRM, influence weights of  │
│ indicators, and gap analysis         │
│ results.                             │
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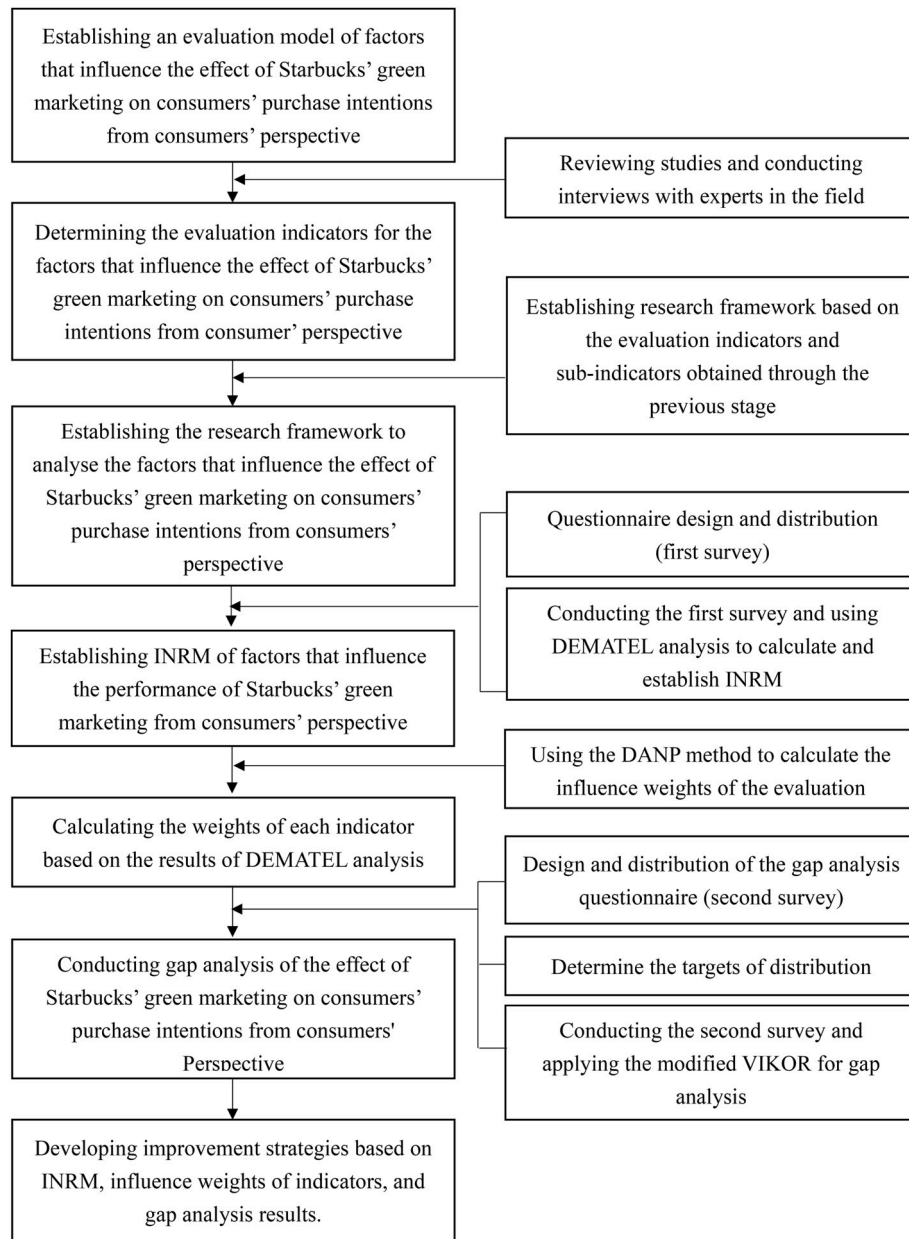
Fig. 1. Construction of decision-making model.

The most distinctive feature of the DEMATEL method is its ability to illustrate the relationships between clusters and obtain the core criteria of the representative elements. Further, DEMATEL has been successfully used in various applications, such as strategic project portfolio selection, national museums, green business failure, and banking service innovations (Jeng and Huang, 2015; Li et al., 2019; Tsai and Lin, 2016; Zhao et al., 2019).

The DEMATEL method includes six major steps: (1) creating an individual direct-relation matrix; (2) calculating the average direct-influence relation matrix; (3) examining the consistency; (4) calculating the normalised average direct-influence relation matrix; (5) calculating the total-influence relation matrix; and (6) constructing the INRM. These steps are described as follows.

Step 1. *Creating an individual direct-relation matrix*

Suppose there are H experts and n factors to be examined, and a pairwise comparison of the factors is conducted; e_{ij} indicates that factor i influences factor j. A five-point scale is used to represent the level of influence (0 = negligible; 1 = minor; 2 = moderate; 3 = major; and 4 = severe). The score given by each expert is a non-negative $n \times n$ matrix and $E^h = [e^h_{ij}]$, $1 \le e \le H$. Further, $\mathbf{E}^1, \mathbf{E}^2, \cdots \mathbf{E}^H$ symbolises the H experts' response matrix, and each factor of $\mathbf{E}^k$ is expressed as e^h_{ij}. Therefore, the individual direct-relation matrix of all experts' $n \times n$ ($\mathbf{E}$) can be established as follows:

$$\mathbf{E} = \begin{bmatrix} e_{11} & \cdots & e_{1j} & \cdots & e_{1n} \\ \vdots & & \vdots & & \vdots \\ e_{i1} & \cdots & e_{ij} & \cdots & e_{in} \\ \vdots & & \vdots & & \vdots \\ e_{n1} & \cdots & e_{nj} & \cdots & e_{nn} \end{bmatrix} \quad (1)$$

Step 2. *Calculating the average direct-influence relation matrix*

The H experts' average score is expressed as $a_{ij} = \frac{1}{H} \sum_{h=1}^{H} e^k_{ij}$. The average matrix $\mathbf{A} = [a_{ij}]$ is defined as the initial direct-influence relation matrix, which shows that one factor affects all other factors and is

affected by all other factors, as in the below Equation (2):

$$\mathbf{A} = \begin{bmatrix} a_{11} & \cdots & a_{1j} & \cdots & a_{1n} \\ \vdots & & \vdots & & \vdots \\ a_{i1} & \cdots & a_{ij} & \cdots & a_{in} \\ \vdots & & \vdots & & \vdots \\ a_{n1} & \cdots & a_{nj} & \cdots & a_{nn} \end{bmatrix} \qquad (2)$$

Step 3. *Examining the consistency*

This step examines whether a consensus exists between the H experts' responses. Equation (3) is used to perform this consistency check. When the consistency ratio is less than the significance level—the threshold is generally set to $\alpha = 5\%$—it can be determined that the H experts' responses have reached a satisfactory consistency and consensus; otherwise, the experts are asked to provide their responses again. The average gap ratio in consensus (%) is

$$\frac{1}{n(n-1)} \sum_{i=1}^{n} \sum_{j=1}^{n} \left(\left| a_{ij}^{H} - a_{ij}^{H-1} \right| \Big/ a_{ij}^{H} \right) \times 100\%, \qquad (3)$$

where n represents the number of criteria, and H represents the number of experts.

Step 4. *Calculating the normalised average direct-influence relation matrix*

In this step, the average matrix **A** as obtained in Step 2 is normalised to obtain a normalised direct-relation matrix **D**:

$$\mathbf{D} = s \cdot \mathbf{A} \quad s > 0 \qquad (4)$$

$$s = \min_{i,j} \left[\frac{1}{\max\limits_{1 \le i \le n} \sum\limits_{j=1}^{n} x_{ij}}, \frac{1}{\max\limits_{1 \le j \le n} \sum\limits_{i=1}^{n} x_{ij}} \right], \quad i, j = 1, 2, \cdots, n . \qquad (5)$$

Step 5. *Calculating the total-influence relation matrix*

As the number of multiplications of matrix **D** increases, the indirect effect decreases. Moreover, $\lim\limits_{m \to \infty} \mathbf{D}^m = [0]_{n \times n}$ and $\lim\limits_{m \to \infty} (\mathbf{I} + \mathbf{D} + \mathbf{D}^2 + \cdots + \mathbf{D}^m) = (\mathbf{I} - \mathbf{X})^{-1}$, where **I** is the identity matrix of $n \times n$. The total-influence relation matrix (**T**) is the matrix of $n \times n$, $\mathbf{T} = [t_{ij}]_{n \times n}, i, j = 1, 2, \cdots, n$, where

when $m \to \infty$, $\mathbf{T} = \mathbf{D}(\mathbf{I} - \mathbf{D})^{-1}$. $\qquad (6)$

Step 6. *Constructing the INRM*

In this step, the values in the columns and rows of the total-influence relation matrix (**T**) are summed as follows:

$$D_i = \sum_{j=1}^{n} t_{ij}, \quad i = 1, 2, \cdots, n, \qquad (7)$$

$$S_j = \sum_{i=1}^{n} t_{ij}, \quad j = 1, 2, \cdots, n. \qquad (8)$$

where D_i is the sum of the columns of **T**, which represent a criterion's direct or indirect degree of influence on other criteria; and S_j is the sum of the rows of **T**, which signify the degree to which a criterion is affected by other criteria. Therefore, when $i = j$, $(D_i + S_j)$ represents the strength of the relationship between criteria, or the degree of centrality of i. Further, $(D_i - S_j)$ symbolises the causality between criteria: if $(D_i - S_j)$ is positive, i affects other criteria; if $(D_i - S_j)$ is negative, i is affected by other criteria.

3.2. Finding the influential weights of indicators through a DANP analysis

The ANP is an extension of the analytic hierarchy process (AHP). Although the ANP's basic hypotheses are similar to those of the AHP, the two methods differ greatly, in that the ANP considers the existence of the feedback relationships and internal dependencies among the criteria of alternative options, while the AHP considers the criteria as independent (Saaty, 1996).

Ou Yang et al. (2008) find that the current method of normalising supermatrices assumes that each group of clusters has the same degree of influence. Although such a method is simple to apply, it ignores the fact that different clusters may have differing degrees of influence. Therefore, they solve this problem by proposing the DANP (DEMA-TEL-based ANP): a new method that combines the DEMATEL and ANP methods. The empirical results demonstrate that the proposed method is more suitable for application to practical problems.

The traditional approach involves using both the DEMATEL and ANP questionnaires. The DEMATEL questionnaire is first used to determine the mutual influences between evaluation attributes and construct a hierarchically structured network; subsequently, the ANP questionnaire is applied to obtain the weights of the attributes and evaluation results. However, the DANP method requires only the DEMATEL questionnaire. Therefore, this study uses the DANP method to simplify the survey processes by considering the different levels of influence among the criteria.

The total-influence relation matrix obtained in Step 5 is used to calculate the influence weights of the criteria and sub-criteria. The DANP method's steps are detailed as follows.

Step 1. *Establishing a transposed and normalised total-influence relation matrix*

The normalised total-influence relation matrix ($\mathbf{T}^\alpha$) can be obtained through Equation (9). Transposing the normalised matrix yields a transposed total-influence relation matrix, or an unweighted supermatrix ($\mathbf{W}^\alpha$), as shown in Equation (10):

$$\mathbf{T}^\alpha = [t_{ij}]_{n \times n} / D, \qquad (9)$$

$$\mathbf{W}^\alpha = (\mathbf{T}^\alpha)^{-1}. \qquad (10)$$

Step 2. *Calculating the original weights of dimensions and criteria*

As noted in the following Equation (11), $\mathbf{W}^\alpha$ is multiplied several times until it converges to the long-term equilibrium value; thus, the DANP weights for each dimension and criterion can be obtained.

$$\lim_{\phi \to \infty} (\mathbf{W}^\alpha)^\phi. \qquad (11)$$

Step 3. *Calculating the overall weight of all criteria*

Multiplying the original weight of each criterion with the original weight of the corresponding dimensions yields the overall weight of all the criteria ($\mathbf{W}_{criteria}^{global}$) in Equation (2):

$$W_{criteria}^{global} = W_{D\_c}^{local} \times W_{D}^{local}. \qquad (12)$$

3.3. Improving consumers' purchase intentions through a modified VIKOR analysis

The VIKOR method was proposed by Opricovic in 1998 as a new method of calculating the criteria score when the technique for the order of preference by similarity to an ideal solution (TOPSIS) was not available. The VIKOR and TOPSIS methods are both ranking methods used in multiple-attribute decision-making (MADM). Both methods utilise the concept of compromise to handle the advantages and disadvantages of

the evaluation criteria, and both rank the alternatives based on the closeness of a limited number of evaluated criteria to the ideal solution. Two types of ideal solutions exist: the positive ideal solution (PIS) and negative ideal solution (NIS). A PIS is a solution in which all indicators reach their most optimal values, and an NIS is a solution in which all indicators reach their least optimal values.

The TOPSIS method ranks all solutions by their closeness to the PIS and distance from the NIS. However, when evaluating two criteria in cases when the scenarios fall diagonally on the plane, the TOPSIS method cannot truly reflect each scenario's closeness to the ideal solution, and the most optimal solution cannot be identified. To avoid this defect in the TOPSIS method, the modified VIKOR method uses the 'aspired level' and 'worst value' to compare the alternatives' evaluation scores and identify an ideal solution. A modified VIKOR has been successfully used in many applications, such as banking service innovation, business strategies, and domestic airline service quality (Liou et al., 2011; Tsai and Lin, 2018; Zhao et al., 2019).

The detailed steps of the modified VIKOR are as follows.

Step 1. *Determining the aspired and worst values*

The most and least optimal solutions are identified among all the criteria using Equations (13) and (14), respectively:

$$\text{Propose the aspired level, } f^{aspired} = \left(f_1^{aspired}, f_2^{aspired}, \cdots, f_n^{aspired}\right), \tag{13}$$

$$\text{Propose the worst value, } f^{worst} = \left(f_1^{worst}, f_2^{worst}, \cdots, f_n^{worst}\right), \tag{14}$$

where $j = 1, 2, \cdots n$, $f_j^{aspired}$ is the PIS (aspired level for all criteria), and f_j^{worst} is the NIS (the worst value for all criteria). This study uses an 11-point scale to measure the criteria (0–10; extremely unimportant ← $0, 1, 2, \cdots, 9, 10 \rightarrow$ extremely important; PIS = 10 and NIS = 0). Unlike in the traditional approach, this study defines $f_j^{aspired} = 10$ as the PIS and $f_j^{worst} = 0$ as the NIS to avoid selecting the most optimal solution from among the least optimal options.

Step 2. *Calculating values of S_k and Q_k*

Equations (15) and (16) are used to calculate the mean of the utility of the majority (S_k) and the maximum value of the individual regret of the opponent (Q_k):

$$S_k = \sum_{j=1}^{n} w_{cj}^g r_{kj} = \sum_{j=1}^{n} w_{cj}^g \left|f_j^{aspired} - f_{kj}\right| \Big/ \left|f_j^{aspired} - f_j^{worst}\right|, \tag{15}$$

$$Q_k = \max_j \left\{r_{kj} | j = 1, 2, \cdots, n\right\}, \tag{16}$$

where w_{cj}^g are the criteria's influence weights, which are calculated using the DANP method.

Step 3. *Calculating the value of R_k*

The value of the comprehensive index (R_k) can be calculated using Equation (17):

$$R_k = v(S_k - S^*) / (S^- - S^*) + (1 - v)(Q_k - Q^*) / (Q^- - Q^*), \tag{17}$$

where $S^* = \min_k S_k$ symbolises the maximum utility of the majority and $S^- = \max_k S_k$; $Q^* = \min_k Q_k$ symbolises the minimum individual regret of the opponent $Q^- = \max_k Q_k$; and v is the strategy weight representing the criteria of the majority, generally set as 0.5.

4. Empirical case analysis for Starbucks' green marketing from the consumer perspective

Based on the methodology proposed in Section 3, this section constructs an evaluation model for use in assessing the performance of green marketing strategies. A DEMATEL questionnaire was composed

according to the established dimensions and criteria. A survey using the composed questionnaire was conducted among actual and target customers, and other consumers affected by the green marketing campaigns of Starbucks Taiwan. The DANP method was then used to analyse the collected data and weigh the criteria. Subsequently, a modified VIKOR questionnaire was designed and a second survey was conducted. Reliability and validity analyses were performed before the gap analysis. The survey data were compiled, and the following sub-section presents a detailed analysis of the results.

4.1. Using the DEMATEL technique to create the INRM map

A data analysis was performed according to the reference materials collected from literature and based on the study's research methods. The research implementation steps are described as follows.

Step 1. *Questionnaire design*

A DEMATEL questionnaire was designed based on the literature review and expert interviews and discussions. The key green marketing factors that affect consumers' purchase decisions were categorised into 14 criteria across four dimensions. A five-point scale was used to measure each item (0 = negligible, 1 = minor, 2 = moderate, 3 = major, and 4 = severe).

Step 2. *Questionnaire distribution*

Given that this study focuses on customers' views of Starbucks' green marketing, the questionnaire was distributed among consumers that have purchased products at Starbucks outlets and are aware of their green marketing campaigns. The participants were asked to rate the listed factors' impacts on their purchase decisions.

Step 3. *Consistency check*

Of the 60 DEMATEL questionnaires distributed, 60 responses were collected, yielding a response rate of 100%. All collected responses were used in the consistency analysis. The consistency threshold was set to 0.05, as values less than 0.05 indicate response consistency. The results reveal an overall value of 0.006; the values of green management, green brand image, green brand relationships and green brand equity are 0.006, 0.005, 0.004 and 0.006, respectively. As all values are less than the threshold, this indicates consistent responses (Table 2).

Step 4. *Compiling DEMATEL data and constructing INRM*

The equations listed in Section 3 were used to calculate the collected data to obtain the total-influence relation matrix at the criterion and dimensional levels.

4.1.1. Total-influence relation matrix at the dimensional level

In Table 3, B, I, R and V in the first row are the influenced factors, while B, I, R, and V in the first column are the influential factors; Column D_i illustrates the sum of the values of the influential factors, and row S_i displays the sum of the values of the influenced factors. The mean of the total-influence relation matrix was calculated to obtain the threshold value, which was used to determine the influence and its direction among the criteria in the INRM. The calculated threshold value is 18.424, and figures that are greater than the threshold value are highlighted in bold.

The degree of correlation is expressed as $D_i + S_i$, while $D_i - S_i$ indicates the degree of causality. A positive $D_i - S_i$ value indicates that the factor is the cause; a negative $D_i - S_i$ value indicates that the factor is the effect. The $D_i - S_i$ values were used to construct the INRM, and the results reveal that three criteria are effects and one criterion is a cause (Table 4). Fig. 2 presents the INRM of the criteria, and demonstrates that the factor most influential in consumers' purchase decisions is B. When consumers are sufficiently aware of environmental protections, Starbucks' commitment to protect the environment and promote green products—such as by promoting reusable cups, reducing the consumption of paper and plastic cups, and reusing coffee grounds—and implement green

Table 2
The average direct-influence relation matrix **A** of dimensions and criteria.

Dimensions	B	I	R	V
B	0.000	3.267	3.017	3.117
I	2.983	0.000	3.133	3.267
R	2.750	2.983	0.000	3.067
V	3.100	3.183	3.167	0.000
Green management (B)	B_1	B_2	B_3	B_4
B_1	0.000	2.983	3.283	3.367
B_2	2.900	0.000	2.950	2.883
B_3	3.100	3.017	0.000	3.367
B_4	3.000	2.767	3.150	0.000
Green brand image (I)	I_1	I_2	I_3	I_4
I_1	0.000	3.100	3.167	3.083
I_2	3.167	0.000	3.000	2.833
I_3	3.283	3.083	0.000	3.217
I_4	2.967	2.950	3.350	0.000
Green brand relationship (R)	R_1	R_2	R_3	
R_1	0.000	3.367	3.133	
R_2	3.133	0.000	3.133	
R_3	2.933	3.117	0.000	
Green brand equity (V)	V_1	V_2	V_3	
V_1	0.000	3.483	3.250	
V_2	3.300	0.000	3.150	
V_3	3.100	3.067	0.000	

Note: The consistency threshold was set to 0.05; values smaller than 0.05 indicate response consistency. The results showed that the overall value was 0.006; the values of green management (B), green brand image (I), green brand relationships (R), and green brand equity (V) were 0.006, 0.005, 0.004, and 0.006, respectively. All values were smaller than the threshold, indicating that the responses were consistent.

Table 3
The total influence matrix of criteria **T**.

Dimensions	B	I	R	V
B	17.815	**18.970**	**18.794**	**18.996**
I	18.025	**18.679**	**18.769**	**18.972**
R	17.169	**18.036**	17.642	**18.074**
V	18.125	19.030	18.868	18.812
Green management (B)	B_1	B_2	B_3	B_4
B_1	5.138	**5.268**	**5.557**	**5.664**
B_2	4.998	4.668	5.154	**5.245**
B_3	**5.318**	5.207	**5.237**	**5.597**
B_4	5.086	4.971	**5.250**	5.100
Green brand image (I)	I_1	I_2	I_3	I_4
I_1	8.215	8.271	**8.526**	8.272
I_2	8.229	7.797	8.280	8.028
I_3	**8.625**	**8.421**	**8.434**	**8.431**
I_4	**8.401**	8.212	**8.486**	7.980
Green brand relationship (R)	R_1	R_2	R_3	
R_1	8.915	**9.660**	**9.436**	
R_2	9.021	9.090	**9.213**	
R_3	8.800	**9.197**	8.676	
Green brand equity (V)	V_1	V_2	V_3	
V_1	7.562	**8.021**	**7.886**	
V_2	**7.677**	7.462	**7.665**	
V_3	7.439	7.547	7.122	

Note: Any value greater than threshold value is presented in bold (Dimensions (18.424), Green management (5.216), Green brand image (8.288), Green brand relationships (9.122), and Green brand equity (7.598)).

management practices are conducive to promoting green brand equity and brand image. Consequently, this will increase consumers' preferences for the brand and enhance the relationship between the enterprise

Table 4
Sum of influences given and received on dimensions and criteria.

Dimensions/criteria	D_i	S_j	$D_i + S_j$	$D_i - S_j$
Green management (B)	74.576	71.135	145.710	3.441
Establishment of green corporate culture (B_1)	21.626	20.540	42.166	1.086
Promotion of cleaner production (B_2)	20.066	20.114	40.180	−0.049
Design and development of green products (B_3)	21.359	21.199	42.558	0.160
Implementation of green marketing activities (B_4)	20.407	21.605	42.013	−1.198
Green brand image (I)	**74.445**	**74.715**	**149.160**	**−0.270**
Types of green brand associations (I_1)	33.284	33.470	66.755	−0.186
Favourability of green brand associations (I_2)	32.334	32.701	65.036	−0.367
Strength of green brand associations (I_3)	33.911	33.726	67.637	0.185
Uniqueness of green brand associations (I_4)	33.079	32.711	65.791	0.368
Green brand relationships (R)	**70.921**	**74.073**	**144.993**	**−3.152**
Green brand satisfaction (R_1)	28.010	26.736	54.746	1.274
Green brand trust (R_2)	27.324	27.947	55.271	−0.623
Green brand attachment (R_3)	26.673	27.324	53.997	−0.651
Green brand equity (V)	**74.835**	**74.854**	**149.689**	**−0.019**
Recognition and belief in the environmental commitment of the brand (V_1)	23.469	22.677	46.146	0.792
Willingness to continue to purchase and use the green brand (V_2)	22.804	23.031	45.835	−0.228
Trust in the attention paid by the brand to environmental protection (V_3)	22.108	22.672	44.779	0.564

and consumers, increasing these consumers' willingness to purchase green products in the brand's outlets. Therefore, improving B improves V, I and R.

4.1.2. Total-influence relation matrix (green management)

In Table 3, B_1, B_2, B_3 and B_4 in the first row are the influenced factors, while B_1, B_2, B_3 and B_4 in the first column are the influential factors. Column D_i displays the sum of the values of the influential factors, and row S_i shows the sum of the values of the influenced factors. The mean of the total-influence relation matrix was calculated to obtain the threshold value, which was then used to d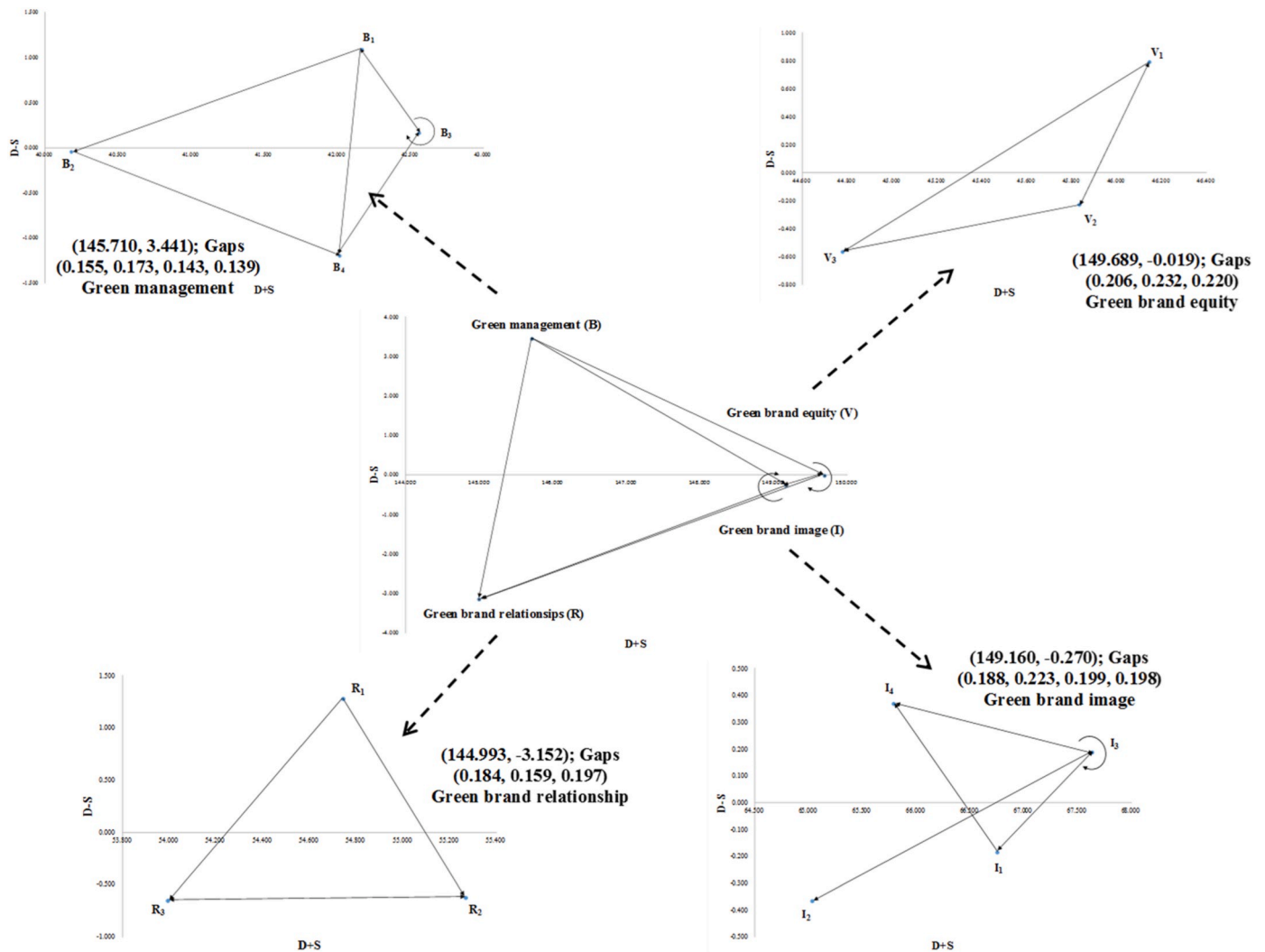etermine the influence and direction of the influence among the criteria in the INRM. The calculated threshold value is 5.216, and figures greater than the threshold value are highlighted in bold.

The degree of correlation is expressed as $D_i + S_i$, and $D_i - S_i$ is the degree of causality. A positive $D_i - S_i$ value indicates that the factor is the cause, while a negative $D_i - S_i$ value indicates that the factor is the effect. The $D_i - S_i$ values were used to construct the INRM. The results demonstrate that two criteria are effects, and two criteria are causes (Table 4). The INRM indicates that the most influential factor in green management is B_1 (Fig. 2). When consumers have environmental protection awareness, Starbucks' efforts to create a green corporate culture—such as by turning outlets into green facilities and using renewable energy—promote cleaner products and green design and development, which facilitate the implementation of green marketing activities. Thus, consumers are more willing to purchase green products at their outlets.

4.1.3. Total-influence relation matrix (green brand image)

In Table 3, I_1, I_2, I_3 and I_4 in the first row are the influenced factors, while I_1, I_2, I_3 and I_4 in the first column are the influential factors. Column D_i shows the sum of the values of the influential factors, and row S_i displays the sum of the values of the influenced factors. The mean of the total-influence relation matrix was calculated to obtain the threshold value, which was then used to determine the influence and direction of

Fig. 2. The influential network relationship map of each dimension and criteria for Starbucks' green marketing.

the influence among the criteria in the INRM. The calculated threshold value is 8.288, and figures greater than the threshold are highlighted in bold.

The degree of correlation is expressed as $D_i + S_i$, and $D_i - S_i$ is the degree of causality. A positive $D_i - S_i$ value indicates that the factor is the cause, while a negative $D_i - S_i$ value indicates that the factor is the effect. The $D_i - S_i$ values were used to construct the INRM. The results reveal that two criteria are effects and two criteria are causes (Table 4). Fig. 2 shows that I_3 has the greatest influence among the four factors. Starbucks' green products can stimulate consumers' association with Starbucks when purchasing green coffee products, and could encourage the purchase of corresponding Starbucks products; thus, its green brand associations are strong. The reinforcement of such associations leads to an increase in the perceived uniqueness of the brand and a differentiation among association types, increasing favourability. As a result, the tested consumers are more likely to purchase Starbucks' green products.

4.1.4. Total-influence relation matrix (green brand relationships)

In Table 3, R_1, R_2 and R_3 in the first row are the influenced factors, while R_1, R_2 and R_3 in the first column are the influential factors. Column D_i shows the sum of the values of the influential factors, and row S_i shows the sum of the values of the influenced factors. The mean of the total-influence relation matrix was calculated to obtain the threshold value, which was used to determine the influence and direction of the influence among the criteria in the INRM. The calculated threshold

value is 9.122, and figures greater than the threshold are highlighted in bold. The degree of correlation is expressed as $D_i + S_i$, and $D_i - S_i$ shows the degree of causality. A positive $D_i - S_i$ value indicates that the factor is the cause, while a negative $D_i - S_i$ value indicates that the factor is the effect. The $D_i - S_i$ values were used to construct the INRM. The results show that two criteria are effects and one criterion is a cause (Table 4).

Fig. 2 shows that R_1 has the greatest influence among the three factors related to green brand relationships. This finding suggests that consumers pay more attention to satisfaction resulting from product function and use. Products of a well-known brand with limited functionality and a generally unsatisfactory user experience tend to deter consumers from a repurchase, while products that present a satisfactory user experience and sufficient functionality lead to general satisfaction among consumers. Such satisfaction encourages consumers to develop trust in Starbucks' green products and generates a sense of attachment to the brand; as a result, consumers are more willing to purchase its green products.

4.1.5. Total-influence relation matrix (green brand equity)

In Table 3, V_1, V_2 and V_3 in the first row are the influenced factors, while V_1, V_2 and V_3 in the first column are the influential factors. Column D_i shows the sum of the values of the influential factors, and row S_i shows the sum of the values of the influenced factors. As per the procedure, the mean of the total-influence relation matrix was calculated to obtain the threshold value, which was then used to determine the

influence and direction of the influence among the criteria in the INRM. The calculated threshold value is 7.598, and figures greater than the threshold are highlighted in bold.

The degree of correlation is expressed as $D_i + S_i$, and $D_i - S_i$ shows the degree of causality. A positive $D_i - S_i$ value indicates that the factor is the cause, while a negative $D_i - S_i$ value indicates that the factor is the effect. The $D_i - S_i$ values were used to construct the INRM. The results demonstrate that two criteria are effects, and one criterion is a cause (Table 4). Fig. 2 reveals that V_1 has the greatest influence among the three factors of green brand equity. Starbucks' green products facilitate consumers' trust in the brand, even if other companies launch similar products. Thus, consumers maintain their view that Starbucks' green products are more representative of their beliefs and more trustworthy. As consumers recognise Starbucks' green products, they are more likely to purchase and repurchase them.

4.2. Using the DANP technique to find the indicators' influential weights

A DANP analysis was conducted to identify the value of the weights to determine each criterion's importance in consumers' purchase decisions. The DANP formulas described in Section 3 and the survey data were used to determine the weight of each criterion and analyse its importance (Table 5).

Green brand equity (V) was found to be the most important criterion, followed by green brand image (I), indicating that consumers attach more significance to those two factors. Implementing green marketing activities was found to be the most important factor in green management; consumers are more willing to buy green products at Starbucks outlets when supported by green marketing activities. However, the least important factor is the promotion of cleaner production. One likely explanation for this result is that cleaner production is an internal process; thus, it is less likely to influence consumers' purchase decisions because they are unlikely to encounter it directly. The strength of brand associations was found to be the most important factor in green brand image, while the favourability of brand associations is the least important. Green brand trust was found to be the most important factor in green brand relationships, while green satisfaction was the least important. Finally, continuing to purchase and use the brand was the most important factor in green brand equity, while trust in the brand's attention to environmental protection had the least significance.

4.3. Using the modified VIKOR to evaluate gaps in Starbucks' green marketing

A modified VIKOR questionnaire was designed according to the findings in the previously described analysis. The questionnaire was then distributed to Starbucks' customers, target customers, and consumers affected by its green marketing. Of the 128 questionnaires distributed, 128 responses were collected, for a 100% response rate. The collected data were analysed using SPSS software.

4.3.1. Reliability and validity analyses

Cronbach's α was used to measure each variable's internal consistency. In general, a value greater than 0.7 indicates satisfactory reliability. Therefore, based on the findings, the questionnaire exhibits good reliability (Cronbach's α = 0.961 > 0.7). The questionnaire's Kaiser-Meyer-Olkin value is 0.933; this is greater than 0.8, indicating that the sample size is adequate for a factor analysis.

4.3.2. Gap analysis with modified VIKOR

Following the gap analysis, the criterion with the largest gap value should be prioritised when designing improvement strategies. In Table 6, the gap value of green brand relationships (R) is the highest, indicating that the company should pay more attention to improving green brand relationships. These could be improved by increasing consumers' satisfaction with, trust in and attachment to Starbucks' green

Table 6
Gap analysis of dimensions and criteria.

Dimensions/criteria	Performance Score	Gaps value
Green management (B)	8.398	0.160
Establishment of green corporate culture (B_1)	8.445	0.155
Promotion of cleaner production (B_2)	8.273	0.173
Design and development of green products (B_3)	8.570	0.143
Implementation of green marketing activities (B_4)	8.609	0.139
Green brand image (I)	**8.313**	**0.169**
Types of green brand associations (I_1)	8.125	0.188
Favourability of green brand associations (I_2)	7.773	0.223
Strength of green brand associations (I_3)	8.008	0.199
Uniqueness of green brand associations (I_4)	8.016	0.198
Green brand relationships (R)	**8.047**	**0.195**
Green brand satisfaction (R_1)	8.156	0.184
Green brand trust (R_2)	8.406	0.159
Green brand attachment (R_3)	8.031	0.197
Green brand equity (V)	**8.227**	**0.177**
Recognition and belief in the environmental commitment of the brand (V_1)	7.938	0.206
Willingness to continue to purchase and use the green brand (V_2)	7.680	0.232
Trust in the attention paid by the brand to environmental protection (V_3)	7.805	0.220
Total performance	8.131	
Total gaps		0.189

Table 5
DANP weights analysis.

Dimensions	Original Weight	Ranking	Criteria		Original Weight	Ranking	Overall Weight	Ranking
Green Management (B)	0.241	4	B_1	Establishment of green corporate culture	0.246	3	0.059	13
			B_2	Promotion of cleaner production	0.241	4	0.058	14
			B_3	Design and development of green products	0.254	2	0.061	12
			B_4	Implementation of green marketing activities	0.259	1	0.062	9–11
Green Brand Image (I)	0.253	2	I_1	Types of green brand associations	0.252	2	0.064	8
			I_2	Favourability of green brand associations	0.246	4	0.062	9–11
			I_3	Strength of green brand associations	0.254	1	0.064	7
			I_4	Uniqueness of green brand associations	0.247	3	0.062	9–11
Green Brand Relationships (R)	0.251	3	R_1	Green brand satisfaction	0.326	3	0.082	6
			R_2	Green brand trust	0.341	1	0.086	2
			R_3	Green brand attachment	0.333	2	0.084	3–5
Green Brand Equity (V)	0.254	1	V_1	Recognition and belief in the environmental commitment of the brand	0.332	2	0.084	3–5
			V_2	Willingness to continue to purchase and use the green brand	0.337	1	0.086	1
			V_3	Trust in the attention paid by the brand to environmental protection	0.331	3	0.084	3–5

products, thereby stimulating purchase intent. Green brand equity (V) should then be the second priority, followed by green brand image (I) and green management (B).

In terms of the criteria, V_2, I_2, V_3 and V_1 were found to have the greatest gap values (Table 6). Three of the factors are criteria for green brand equity. Promoting consumers' recognition of and trust in Starbucks' green brands could increase their perceived brand equity and thereby stimulate repurchase behaviour and favourable brand associations. This could facilitate purchase intentions.

4.4. Discussions and practical implications

The study analysed the effect of Starbucks' green marketing on consumers' purchase intentions using a hybrid MADM evaluation model based on the consumers' perspective or, specifically, green management (B), green brand image (I), green brand relationships (R) and green brand equity (V). We used the DEMATEL causality technique in conjunction with the DANP method to create an INRM and discover the influential weights of various indicators. This study also used the modified VIKOR method to ascertain not only the gaps in Starbucks' green marketing, but how to improve them.

The empirical results are discussed as follows. First, according to the DEMATEL causality model, we can recognise the interrelationships between each dimension and criterion in the INRM (Fig. 2). Green management (B) as noted in Fig. 2 affects the other dimensions, namely, green brand image (I), green brand relationships (R) and green brand equity (V). Clearly, green management (B) is important, as it has the highest-intensity influence in its relationships with the other dimensions. Hence, Starbucks' decision-makers should improve this dimension first, followed by green brand equity (V), green brand image (I) and green brand relationships (R), in assessing and improving Starbucks' green marketing from the consumers' perspective.

Second, after discussing the dimensions, we described each considered criterion. Fig. 2 illustrates an INRM of the criteria according to the analysis results. Hence, regarding the influential relationships between these criteria, the establishment of a green corporate culture (B_1) was the most influential criteria in the green management (B) factor and should be improved first. This should be followed by the design and development of green products (B_3), promotion of cleaner production (B_2) and implementation of green marketing activities (B_4). Moreover, Fig. 2 provides further detail on the causality relationship from Starbucks' green marketing model based on the consumer's perspective. Each evaluation dimension and criterion creates the behaviours necessary to induce green marketing in Starbucks. Therefore, Starbucks should evaluate all dimensions and criteria for enhancing consumers' purchase intentions in accordance with Fig. 2. The subsequent evaluation model can then be used for Starbucks.

Third, the study used the DANP to confirm the 14 criteria's influential weights. As Table 5 indicates, the highest influential weights are the willingness to continue to purchase and use the green brand (V_2; $\mathbf{IW}_{DANP} = 0.086$), green brand trust ($E_2$; $\mathbf{IW}_{DANP} = 0.086$), the brand's environmental commitment (V_1; $\mathbf{IW}_{DANP} = 0.084$), green brand attachment (R_3; $\mathbf{IW}_{DANP} = 0.084$), trust in the brand's attention to environmental protections (V_3; $\mathbf{IW}_{DANP} = 0.084$) and green brand satisfaction (R_1; $\mathbf{IW}_{DANP} = 0.082$). This indicates that good green marketing can assist Starbucks by actively pursuing consumers' purchase intentions from the consumer's perspective to help the company expand their loyalty and increase revenues. The lowest-priority weights involve the establishment of a green corporate culture (B_1; $\mathbf{IW}_{DANP} = 0.059$) and the promotion of cleaner production (B_2; $\mathbf{IW}_{DANP} = 0.058$); consequently, these actions are the least influential. Fig. 2 and Table 6 both illustrate the priority in improving criteria from top to bottom, as improving the most influential criteria provides the most substantial effects. In prioritising the dimensions and criteria for improvement, the INRM should be considered to reduce any gaps and meet Starbucks' needs. Improving different criteria could also influence the results,

either directly or indirectly.

Finally, Table 6 displays an overall gap value of 0.189 for Starbucks in improving Starbucks' green marketing on consumers' purchase intentions from the consumers' perspective, indicating gaps for improvement. A green marketing model based on the consumers' perspective denotes, green brand relationships (R)—with the highest gap of 0.195—as an utmost priority for improvement if Starbucks' decision-makers aim to achieve desired levels. Regarding long-term improvement, decision-makers in the company should improve its green marketing strategy to enhance consumers' purchase intentions from their perspective. Given these critical empirical findings, Table 7 illustrates Starbucks' improvement strategy, which emphasises the goal of satisfying consumers' needs. Consequently, these decision-makers should use this method to determine Starbucks' needs to not only define gaps, but also close them to achieve their target aspirations and enhance consumers' purchase intentions.

However, the application of the green marketing evaluation model is also noteworthy. The empirical results drawn from this study are based on the experiences or preferences of actual consumers and their awareness of sustainability, and this study's results are a mere snapshot of this evaluating framework. A different outcome might be derived based on other types of consumers.

In summary, the green marketing evaluation model differs from that used in previous studies and provides a valuable contribution to the research of such companies as Starbucks. The evaluation model can help Starbucks' decision-makers improve their efficiency in developing and creating a consumer-focused marketing strategy that aims to increase consumers' purchase intentions.

5. Conclusions and remarks

Based on a literature review, this study identified four dimensions (including 14 criteria) that influence how Starbucks' green marketing strategies affect consumers' purchase decisions. The DEMATEL method was used to construct an INRM to visualise the mutual influences between the criteria and sub-criteria. The DANP method was then used to calculate the influence weights of each criterion to identify the importance of the factors in consumers' purchase decisions. Finally, a modified VIKOR method was used to calculate the gap values of these criteria. This study suggests that Starbucks should focus on the factors with higher gap values to improve its green marketing strategy and stimulate consumers' purchase intentions. Table 7 presents the proposed improvement measures.

The following suggestions are offered based on this study's findings. First, the DEMATEL method illustrated the influence network among the investigated factors, and green management was found to have the greatest impact on other factors. Therefore, Starbucks should improve its green management, for example, by using green materials for the construction of outlets; minimising the consumption of consumable items and energy throughout its operations; and promoting

Table 7
Strategy for improving green marketing strategy and stimulating purchase intention.

Formula	Strategies (sequence of improvement priorities)
F1: influential network of dimensions	(B), (V), (I), (R)
F2: influential network of criteria	**(B):** (B_1), (B_3), (B_2), (B_4)
	(I): (I_3), (I_4), (I_1), (I_2)
	(R): (R_1), (R_2), (R_3)
	(V): (V_1), (V_2), (V_3)
F3: sequence of dimensions to rise to aspired/ desired level (by gap value, from high to low)	(R), (V), (I), (B)
F4: sequence of criteria to rise to aspired/desired level within individual criteria (by gap value, from high to low)	**(B):** (B_2), (B_1), (B_3), (B_4)
	(I): (I_2), (I_3), (I_4), (I_1)
	(R): (R_3), (R_1), (R_2)
	(V): (V_2), (V_3), (V_1)

environmentally friendly products, such as reusable cups, which reduce the consumption of paper and plastic cups and increase the sales of environmentally friendly products. Thus, consumers are likely to have greater confidence in the brand, recognise 'green action' as a consumer initiative, and be more willing to purchase the brand's green products.

Consumers should support the company's efforts to improve green management to ensure that their recommendations and suggestions can be implemented. Such information as that generated through the gap analysis is essential to company efforts to reduce gaps in operational and consumer expectations and ensure that consumers are more willing to purchase the brand's green products. Therefore, although this study adopted the consumer's perspective to analyse the factors influencing how Starbucks' green marketing affects consumers' purchase intentions, the company perspective should not be ignored, as consumers and enterprises are inter-dependent. Consumer suggestions assist companies in designing improvement strategies, and these can assist in the promotion of green products.

This study used the DEMATEL method to analyse the network relationships among the criteria and a modified VIKOR method to conduct a gap analysis. Future studies could apply other research methods to verify or improve the accuracy of this study's findings. Future studies could also explore the factors affecting green purchase decisions among consumers with environmental protection awareness, and the findings could serve as a reference for enterprises seeking to refine their green marketing strategies.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jretconser.2020.102162.

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