

# Green marketing mix and repurchase intention: the role of green knowledge

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Green  
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## Abstract

**Purpose** – This study investigated the effect of green marketing mix on consumer repurchase intention in Ghana. The study focusses on the interaction effect of green knowledge on green marketing mix and consumer repurchase in Ghana.

**Design/methodology/approach** – A quantitative approach to research was employed. In all, 371 participants were chosen using the purposive sampling technique. Data analysis was conducted using the SPSS software.

**Findings** – The findings showed that green price, green place and green promotion had a positive significant effect on repurchase intention. However, green product insignificantly influenced repurchase intention. The findings further showed that green knowledge moderated the relationship between green price and green place, on repurchase intention. Green knowledge was not found to moderate the relationship between green product, green promotion and repurchase intention.

**Originality/value** – The study advances our knowledge on green marketing mix, green knowledge and repurchase intention within the beverage sector. It reveals the positive implication of green marketing mix on a firm's customers using the marketing mix theory.

**Keywords** Green marketing, Green marketing mix, Repurchase intention, Green knowledge

**Paper type** Research paper

## Introduction

Excessive resource consumption has led to pollution and environmental degradation (Wang *et al.*, 2018), fostering consumer environmentalism (Sandhu *et al.*, 2010). Ghana is of no exception as the country has witness environmental issues over the past decades (Amoako *et al.*, 2020). In their quest to achieve success, firms are engaging in green marketing practices. According to Alwis and Manel (2021), green marketing encompasses eco-friendly pricing, promotion, and distribution, aligning green products, prices, places, and promotions to mitigate environmental impact (Khan *et al.*, 2020). Thus, marrying green product, green price, green place and green promotion decouples consumption from environmental degradation (Khan *et al.*, 2020). Kowalska (2020) explained that the traditional marketing mix (4Ps) overlook environmental concerns (Kowalska, 2020). Kotler (2011) therefore advocates that marketing should be revised to attain sustainability. The response to this call is the reconsideration of the traditional marketing mix to be called green marketing mix (Alwis and Manel, 2021).

Consumers increasingly prioritise environmental concerns, favouring green brands (Kumar *et al.*, 2021). The market for green products grows rapidly (Chen *et al.*, 2018), intensifying competition and prompting firms to scrutinise consumer buying patterns (Ahmad and Zhang, 2020). Consumer behaviour is elucidated through purchase and repurchase intentions (Chen *et al.*, 2018). Environmentally-conscious consumers exhibit repurchase tendencies (Situmorang *et al.*, 2021), underscoring the necessity to comprehend consumer responses to green marketing mix initiatives.



Green marketing mix plays a pivotal role in environmental preservation. Yet, consumers heed this call, leading to a disparity between professed green beliefs and actual consumer actions (Bramah and Tweneboah-Koduah, 2011; Davari and Strutton, 2014). Literature also highlights the resource-intensive nature of green products, demanding recycling and substantial investments (Cheema *et al.*, 2015). Consequently, firms often charge higher prices consumers are not willing to pay for (Widyastuti *et al.* (2019).

Numerous studies on the green marketing mix have concentrated on consumer-based brand equity and purchase intentions (Nguyen-Viet, 2023; Ahmed *et al.*, 2023) in Vietnam and the USA. Despite this, the integration of the green marketing mix and repurchase intentions in an emerging economy like Ghana remains underexplored. In Africa, Alabo and Anyasor (2020) explored green marketing mix and sustainability in Nigeria's breweries sector, yet they minimally addressed consumer green knowledge as a moderator between green marketing mix and repurchase intentions. Notably, green knowledge predicts green marketing determinants and consumer behaviour (de Sio *et al.*, 2022). Their study concluded that higher environmental awareness corresponds to increased willingness to purchase green food, warranting further examination by future research. To address this gap, our study responds to this call, moderating green knowledge's influence between the green marketing mix and repurchase intentions, particularly in Sub-Saharan Africa, like Ghana. Green knowledge stands as a factor that can potentially strengthen or weaken relationships.

The marketing mix theory has undergone adaptations such as the service marketing mix (Hati *et al.*, 2021), entrepreneurial marketing mix (Martin, 2009), and social marketing mix (Peattie and Peattie, 2011). Interestingly, the theory's application within the context of green marketing remains relatively unexplored. Justifying its relevance, the marketing mix theory provides valuable insights into elucidating the dimensions of the green marketing mix.

This study's contribution enriches knowledge in several dimensions. Firstly, it addresses the underutilisation of the marketing mix theory within green marketing literature, especially in emerging economies like Ghana. Secondly, it extends prior research on the green marketing mix within such economies, delving into the connection between the green marketing mix and repurchase intentions. Lastly, it underscores the role of management in fostering consumer repurchases through heightened focus on the product's green attributes (Situmorang *et al.*, 2021).

The study pursues two objectives: firstly, to assess the impact of the green marketing mix on consumer repurchase intentions; and secondly, to examine the moderating role of green knowledge between the green marketing mix and repurchase intentions. This research is conducted within Ghana, specifically focussing on the bottled water sector. This sector is aptly chosen due to its significant contributions to both the Ghanaian economy and environmental degradation (Stoler *et al.*, 2012). The subsequent sections are organised as follows: The subsequent section delves into the literature on green marketing, the marketing mix theory, green marketing mix, and repurchase intentions. This is succeeded by the methodology, data analysis, and a discussion of the results.

## Literature review

### *The marketing mix theory*

The marketing mix concept was introduced by Borden (1964), proposing that companies, upon market analysis, should adopt strategies aligning with consumer needs and competitive edge (Borden, 1964). This encompasses product, price, place, and promotion (Borden, 1964), each exerting distinct influence on firm success (Thwala and Slabbert, 2018).

Despite its popularity, the theory has faced criticism regarding its suitability for marketing industrial products. For instance, [Marjanovic and Murthy \(2016\)](#) contends that the theory is product-centric rather than customer-centric. This critique has prompted a transformation from product to customer solution, price to fee, promotion to communication, and place to convenience ([Wu and Li, 2018](#), p. 74). These critiques prompted marketing scholars ([Kotler, 2011](#); [Kowalska, 2022](#)) to augment the 4Ps, introduce fresh concepts, and redefine the conventional marketing mix as the green marketing mix. This study aims to address these criticisms by redefining the conventional marketing mix as the green marketing mix and investigating its connection with repurchase intentions.

### *Green marketing mix*

The green marketing mix entails firms' commitment to crafting biodegradable, safe products through recyclable, eco-friendly packaging, energy-efficient materials, and environmentally conscious manufacturing ([Kotler, 2011](#)). In this study, the green marketing mix is characterised as strategies enabling firms to effectively target and fulfil consumer needs in an environmentally sustainable manner. Comprising four components – green product, green price, green place, and green promotion – it forms the framework.

### *Green product*

Green products are those that are both safe for use and environmentally friendly ([Tsai et al., 2020](#)). [Davari and Strutton \(2014\)](#) emphasised that green products often emerge from eco-friendly processes. In this study, green products are defined as items crafted from recyclable materials and designed to minimise waste generation. [Karunarithna et al. \(2020\)](#) advocated the adoption of the five principles—reuse, reconditioning, repair, remanufacture, and recycling (5 Rs)—for green product development ([Peattie and Crane, 2005](#)). Positioned at the core of the green marketing mix, green products are pivotal to the overall green marketing strategy ([Mahmoud, 2018](#)).

### *Green price*

Green prices are the additional costs consumers typically pay for green products ([Nguyen-Viet, 2023](#)). In this study, green prices are defined as reflective of the environmental impact, equating the cost to the environment. While traditionally viewed as a cost in conventional marketing, it is now acknowledged as a communication channel for consumers about product value ([Sharaf and Perumal, 2018](#)). Generally, green prices tend to surpass conventional prices ([Novela and Hansopaheluwakan, 2018](#)). Firms often incur added costs due to factors like production processes and packaging materials ([Agustini et al., 2021](#)).

### *Green promotion*

Green promotion entails offering authentic product information in a manner that safeguards both moral and material interests of consumers ([Hashem and Al-Rifai, 2011](#)). Green promotion comprises messages tailored to engage environmentally conscious customers' interests and aspirations ([Mahmoud, 2018](#)). In this study, green promotion is characterised as activities boosting consumer awareness of environmental issues. It encompasses the use of diverse communication tools to advocate for green products and services ([Hossain and Rahman, 2018](#)).

### *Green place*

Green place is an essential marketing mix component aiding firms in selecting appropriate markets for their offerings ([Ahmed et al., 2023](#)). It involves channel selection that minimises

environmental impact (Mukonza and Swarts, 2020, p. 840). This study conceptualised green place as the strategic distribution of recycled plastic materials that minimises environmental harm. Green promotion effectively serves as a means to remind, communicate, and inform stakeholders about their environmental contributions (Mukonza and Swarts, 2020). It's a vital tool for enhancing customer awareness to facilitate informed environmental decisions (Taufique *et al.*, 2019).

#### *Repurchase intention*

The term “repurchase intention” stems from “behavioural intention” (Prasetya and Sianturi, 2019) and holds significance as a key customer behavioural intention (Meilatinova, 2021). It signifies the customer's readiness and willingness to repeatedly buy a product or service, reflecting loyalty (Chuah *et al.*, 2022). Building on these definitions, this study defines repurchase intention as customers' inclination to consistently purchase plastic products from the same business entity. This recurring purchase often hinges on past transaction benefits, including cost and performance (Hsu *et al.*, 2014). Given the substantial expense linked to acquiring new customers, repurchase becomes imperative. “Acquiring new customers and initiating transactions costs five times more than retaining existing customers” (Majeed *et al.*, 2022, p. 7).

#### *Green knowledge*

Green knowledge, also referred to as environmental knowledge (Mohiuddin *et al.*, 2018), encompasses an understanding and awareness of environmental challenges and potential solutions (Taufique *et al.*, 2016). It represents a comprehensive grasp of facts, concepts, and the interplay between the environment and the ecosystem (Safari *et al.*, 2018). In this study, green knowledge is defined as individuals' awareness of environmental issues, spanning comprehension of the natural environment. This awareness motivates those responsible to safeguard and conserve the environment (Hariyanto and Alamsyah, 2019). Schahn and Holzer (1990) identified two dimensions of green knowledge: concrete knowledge (factual knowledge) and abstract knowledge (understanding environmental issues and their solutions). In the context of green marketing, Wang *et al.* (2019) asserted that consumers with greater knowledge of green products and services are more likely to grasp the significance of environmental protection.

### **Research hypotheses**

#### *Green product and repurchase intention*

An increasing number of consumers are voicing environmental concerns (Chen *et al.*, 2018), prompting firms to view this as an opportunity to capture consumer attention (Chin *et al.*, 2018). Consequently, green products are employed to engage and educate consumers about the environmental impact of their purchasing decisions (Tan *et al.*, 2019). Research underscores green products as a pivotal factor influencing consumers' purchase choices (Siddique and Hossain, 2018). Al Majali and Tarabieh (2020) revealed that environmentally conscious consumers exhibit strong motivation to buy green products. Dhir *et al.* (2021) further indicated that consumers with a positive environmental attitude are inclined to opt for green products. Alabo and Anyasor (2020) identified a significant positive correlation between green products and the sustainability of breweries in Nigeria. Despite this scholarly recognition, a scarcity of research exists concerning the intersection of green products and repurchase intentions within an emerging economy, particularly Ghana. This gap led to the formulation of the first hypothesis:

*H1.* Green product has a significant positive effect on consumer repurchase intention.

### *Green price*

Shabbir and Wisdom (2020) assert that green prices offer consumers significant opportunities to invest in addressing environmental challenges, driven by the perceived benefits and added value of green products (Alabo and Anyasor, 2020). Consequently, certain consumers are willing to pay between 7% and 20% more for such environmentally friendly products (Munamba and Nuangjammong, 2021). Al-Majali and Tarabieh (2020) identified a robust connection between green pricing and consumer behaviour. Anjani and Perdhana (2021) uncovered a positive impact of green pricing on consumer purchase decisions. Gelderman *et al.* (2021) found that green pricing leads to heightened customer satisfaction. Conversely, Nekomahmud and Fekete-Farkas (2020) discovered that price-conscious consumers are unwilling to pay premium prices for green products. Consequently, this study posited the following hypothesis:

H2. Green price has a significant positive effect on consumer repurchase intention.

### *Green place*

Assuring the environmental character of products is crucial for customers (Yazdanifard and Mercy, 2011), attainable by directing goods to environmentally conscious consumers (Agustini *et al.*, 2021). Green place significantly shapes consumer behaviours, as evidenced by Pushpanathan and Dhananjani Silva (2020) who established a positive link between green place and purchase intentions. Sohail (2017) confirmed a substantial relationship between green place and customer loyalty. Additionally, Nguyen-Viet (2023) revealed firms employ green distribution to cultivate consumer trust. However, Karunarathna *et al.* (2020) found an insignificant correlation between green place and consumer purchase intentions. Despite this, the connection between green place and consumer repurchase intentions in an emerging economy remains unexplored in literature. Thus, this study formulated the following hypothesis:

H3. Green place has a significant positive effect on consumer repurchase intention.

### *Green promotion*

Sohail (2017) documented that firms employ green promotion to convey information about environmental benefits, addressing consumer-relevant environmental concerns (Kim *et al.*, 2019). Consequently, green promotion serves consumers' eco-centric needs, sustainability expectations, and environmental preferences (Chen, 2013). Existing literature establishes that green promotional initiatives influence consumers' purchase decisions (Siddique and Hossain, 2018), engender customer loyalty (Budidharmanto, 2021), and foster customer satisfaction (Novela and Hansopaheluwakan, 2018). However, Schmuck *et al.* (2018, p. 127–128) highlighted "the disingenuous attempts by certain firms to promote their products' environmental qualities, undermining consumer trust in green advertising." Despite these findings, research on the relationship between green promotion and repurchase intentions within Ghana's bottled water industry is limited. Thus, this study formulated the following hypothesis:

H4. Green promotion has a significant positive effect on consumer repurchase intention.

### *The moderating role of green knowledge between green marketing mix and repurchase intention*

A comprehensive understanding of green knowledge empowers consumers to make informed environmentally friendly choices (Law *et al.*, 2017). This viewpoint is supported by Jaiswal and Kant (2018), who contend that green knowledge serves as an explanatory factor

for consumers' environmental behaviours. The correlation between green knowledge and pro-environmental behaviours is evident (Tan *et al.*, 2022). Zhang *et al.* (2018) noted that consumers' perception of green products can be augmented through environmental awareness. In Ghana, Amoako *et al.* (2020) established a positive association between green knowledge and purchase decisions. Notably, Ahmed *et al.* (2020) highlight that consumers lacking prior green knowledge are less inclined to prefer green products due to the insufficient persuasive impact of the attached green messaging. This underscores that green knowledge can bolster consumers' choices to purchase and repurchase green products (Situmorang *et al.*, 2021).

Moreover, the level of price sensitivity and insensitivity towards green products significantly influences environmental behaviour, making price a fundamental yardstick for consumers' purchase assessments (Kumar and Mohan, 2021). Consumers' readiness to pay premium prices for green products stems from their belief that their green knowledge influences their eco-conscious buying behaviour (Gelderman *et al.*, 2021).

Similarly, green promotion serves as a means for consumers to enhance their understanding of eco-friendly behaviours (Ankit and Mayur, 2013). This behaviour is intertwined with consumers' levels of green knowledge (Tan *et al.*, 2022). Kusuma and Handayani (2018) evidenced a positive relationship between green knowledge, green promotion, and consumers' purchase decisions. Conversely, Aman *et al.* (2012) disputed the favourable impact of green knowledge on consumers' attitudes towards green products. Consequently, green knowledge can either fortify or weaken the association between green price and repurchase intentions.

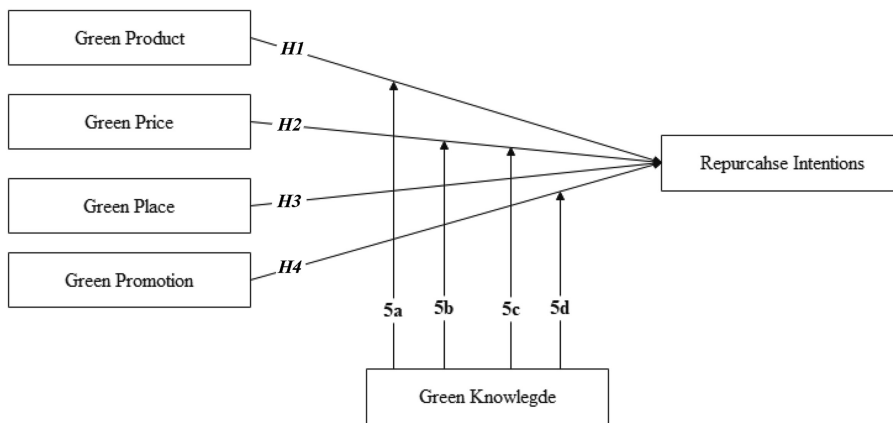
Green place is a strategy capable of influencing consumers' environmentally conscious purchasing behaviour by providing influential information (Tan *et al.*, 2022). Consequently, many firms leverage it to establish a positive stance in consumers' perceptions (Rahbar and Wahid, 2011). Al-Majali and Tarabieh (2020, p. 420) underscored that "customers desire easy access to green products without encountering challenges such as long travel distances, additional transportation costs, and significant efforts." Hence, exposure to green products through green places becomes imperative (Sohail, 2017). Mahmoud *et al.* (2017) hypothesised that consumers' awareness of green places reinforces their purchase decisions. Despite these arguments, a research gap exists in.

- H5a.* Green knowledge moderates the relationship between green products and repurchase intention.
- H5b.* Green knowledge moderates the relationship between green price and repurchase intention.
- H5c.* Green knowledge moderates the relationship between promotion and repurchase intention.
- H5d.* Green knowledge moderates the relationship between green place and repurchase intention.

See Figure 1 below for the conceptual framework.

## Methodology

The study focused on shoppers at both the Accra Mall and the Atlantic Mall in Accra, the capital of Ghana. Accra was chosen due to its high population density, numerous public and private organisations, and presence of prominent figures like politicians and entrepreneurs. Additionally, it hosts several of the country's largest shopping malls, leading to substantial bottled water consumption and environmental degradation.



Green marketing mix and repurchase intention

**Figure 1.** Conceptual framework

**Source(s):** Authors own creation

Using purposive sampling, only shoppers purchasing BelAqua Natural Mineral Water were included. Those not purchasing this brand were excluded. Shoppers were conveniently selected at the malls based on their willingness to complete self-administered questionnaires. This approach allowed participants to independently respond (Creswell, 2014), and convenience sampling was chosen for its accessibility (Etikan *et al.*, 2016). Participant anonymity and confidentiality were ensured to encourage open questionnaire responses (Wiles *et al.*, 2007).

The study determined its sample size using Yamane's (1967) formula, resulting in the selection of 371 participants. Survey data collected from the field was analysed using Statistical Package for Social Scientist (SPSS) version 21. This statistical tool is widely used for quantitative analysis (Bryman and Bell, 2015), allowing researchers to provide descriptive and inferential statistics, and draw statistical inferences from responses. Hierarchical regressions were adopted as the analysis method for this survey. The data collection instrument employed a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). This approach aligns with prior studies in green marketing (Amoako *et al.*, 2020; Narimanfar and Nezhad, 2022). The constructs, including green product, green price, green place, green promotion, green knowledge, and repurchase intention, were adapted from existing studies in green marketing (Anjani and Perdhana, 2021; Chayomchai, 2019).

## Results

The research findings indicated that a majority of the respondents (62.3%) were female. Additionally, a significant proportion (56.3%) fell within the age range of 31–40 years, with 209 participants falling in this category. In terms of education, the majority (62.3%) of the sampled respondents held a bachelor's degree, amounting to 231 individuals. Furthermore, the majority of respondents (24.8%) reported earning between GH¢500 to GH¢1499. These details are summarised in Table 1.

To assess the potential for common method bias (CMB), the Herman single factor technique was utilised (Huang *et al.*, 2019). The analysis yielded a single factor variance of 37.68%, falling below the critical threshold of 50% (Podsakoff and Organ, 1986). This result indicates the absence of significant CMB in the data. Regarding internal consistency, Cronbach's Alpha values for the constructs surpassed the recommended threshold of 0.70

Demographics	Frequency	Percent
<i>Gender</i>		
Female	231	62.3
Male	140	37.7
<i>Age</i>		
18–20	23	6.2
21–30	139	37.5
31–40	209	56.3
<i>Education</i>		
Bachelor's degree	231	62.3
HND/diploma	46	12.4
Post-graduate	71	19.1
S.H.S	23	6.2
<i>Income level</i>		
GH ¢ 0.00 - GH ¢ 499	69	18.6
GH ¢ 500 - GH ¢ 1499	92	24.8
GH ¢ 1500-GH ¢ 2499	47	12.7
GH ¢ 2500-GH ¢ 3499	69	18.6
GH ¢ 3500-GH ¢ 4499	23	6.2
GH ¢ 4500 and Above	71	19.1
<i>Total</i>	371	100.0

**Table 1.**  
Demographic characteristics of the study respondents

**Source(s):** Authors' own creation

(Nunnally and Bernstein, 1994). Furthermore, the estimated composite reliability ranged from 0.89 to 0.98, exceeding the required threshold of 0.70 (Hair *et al.*, 2010). These values affirm the strong internal consistency and reliability of the variables and survey instruments. These details are summarised in Table 2.

The study employed confirmatory factor analysis (CFA) to validate the adapted constructs. The initial measurement model, encompassing green product, green price, green place, green promotion, and green knowledge, exhibited acceptable fit indices, demonstrating a significant goodness-of-fit. As all indices indicated a good fit, no modifications were made to the model, as depicted in Table 2. Table 2 further indicates that all constructs achieved average variance extracted (AVE) scores equal to or greater than 0.50, and composite reliability (CR) values surpassing the 0.80 threshold. These results affirm convergent validity, a fact also supported in Table 2.

The results of the current study revealed that green products had a negative and insignificant relationship to repurchase intention. Green price exhibited a positive and significant impact on repurchase intention. With respect to green place, our study revealed a positive and significant relationship with repurchase intention. Our research further uncovered a significant and positive relationship between green promotion and repurchase intentions (see Table 3 below). On the other hand, green knowledge weakened the relationship between green products (H5a), green promotion (H5c), and repurchase intention. However, green knowledge moderated the relationship amongst green price (H5b), green place (H5d), and repurchase intention (See Table 3).

Table 4 below provides the summary of the hypothesised results of the study.

## Discussion

The primary objective of this study was to examine the influence of green marketing mix and repurchase intention, while also exploring the moderating role of green knowledge in this

Constructs	Loadings	AVE	CR	Green marketing mix and repurchase intention
<i>Green product</i>		0.53	0.9	
GPD1	0.82			
GPD2	0.79			
GPD3	0.67			
GPD4	0.66			
GPD5	0.69			
<i>Green price</i>		0.58	0.98	
GPRIC1	0.83			
GPRIC2	0.71			
GPRIC3	0.75			
<i>Green place</i>		0.5	0.89	
GPLAC1	0.63			
GPLAC2	0.7			
GPLAC3	0.71			
GPLAC4	0.71			
GPLAC5	0.77			
<i>Green promotion</i>		0.6	0.93	
GPRM1	0.8			
GPRM2	0.81			
GPRM3	0.79			
GPRM4	0.79			
GPRM5	0.68			
<i>Repurchase intention</i>		0.59	0.98	
RI2	0.83			
RI3	0.82			
RI5	0.64			
<i>Green knowledge</i>		0.53	0.9	
GK1	0.72			
GK2	0.71			
GK3	0.61			
GK4	0.8			
GK5	0.78			

**Source(s):** Authors' own creation

**Table 2.**  
Loadings, average variance extracted and composite reliability

Path	BetV	TV	PV	Decision
GPD → RI	0.019	0.390	0.697	Not supported
GPRIC → RI	0.290	3.970	0.000	Supported
GPLAC → RI	0.246	3.600	0.000	Supported
GPRM → RI	0.108	2.820	0.005	Supported
<i>Moderator</i>				
GPD*GK	0.005	-0.080	0.933	Not supported
GPRIC*GK	0.111	2.290	0.023	Supported
GPLAC* GK	2.210	3.172	0.000	Supported
GPRM* GK	0.009	0.250	0.800	Not supported

**Source(s):** Authors' own creation

**Table 3.**  
Regression analysis

relationship. The findings shed light on several key aspects. The research established that within an emerging economy context, green products are not sufficient to explain repurchase intention. This novel insight contributes to the existing literature on green marketing mix,

aiding in understanding consumer repurchase intentions more comprehensively. This empirical outcome aligns well with the assumptions surrounding consumer repurchase intentions. Furthermore, the study empirically validated the impact of green marketing activities on consumer behaviour. This finding may be attributed to contextual factors, such as the lower attention paid by some Ghanaians to environmental concerns. Interestingly, this finding contradicts the results of Nguyen-Viet's study (2023), which observed a positive relationship between green products and customer loyalty.

Another significant discovery was that green price exhibited a positive and significant impact on repurchase intention. This outcome could be attributed to consumers' price consciousness when it comes to Bel Aqua Natural Mineral Water, especially in relation to its environmental attributes. This implies that the product offers reasonable and justified prices, proportionate to its quality and performance. This result aligns with Sohail's assertion (2017) that a positive relationship exists between green price and consumer behaviour.

Regarding green place, our study revealed a positive and significant relationship with repurchase intention. This outcome underscores the influence of distribution channels on consumers' decisions to repurchase Bel Aqua Natural Mineral Water. It implies that the firm's distribution practices are environmentally conscious, involving fuel-efficient processes, optimal space utilisation, and careful consideration of logistics' environmental impact (e.g. carbon footprint). This might be attributed to the growing adoption of green fleet management practices amongst Ghanaian firms. This finding aligns with Mukonza and Swarts' assertion (2020) that "green place involves the selection of channels that ensures that there is minimal environmental damage." Moreover, it reflects efforts to minimise consumers' exertion in obtaining, using, and disposing of products, as supported by Anjani and Perdhana (2021).

Our research further uncovered a significant and positive relationship between green promotion and repurchase intentions. This suggests that green promotion is a pivotal factor in consumer behaviour (Taufique *et al.*, 2019). The result highlights consumers' trust in green promotional activities, which resonates with the growing utilisation of green promotion strategies by Ghanaian firms, including Bel Aqua Natural Mineral Water. These firms employ tactics that emphasise their products' environmental benefits, promote green lifestyles, raise awareness about environmental concerns, provide sustainability-related information, and address environmental issues. This finding emphasises the significant role of green promotion in shaping consumers' overall purchase behaviour. It echoes the assertions of Al Majali and Tarabieh (2020) and Davari and Strutton (2014) that green promotion is a pivotal component of consumer behaviour.

Concerning the moderation effect of green knowledge on the relationship between green marketing mix elements and repurchase intention, the data validated two of the hypotheses. Green knowledge emerged as a significant factor that reinforces the connections between

Hypothesis	Factor	$\beta$ values	$t$ values	Decision
H1	Green product $\rightarrow$ Repurchase Intention	0.03	0.92	Not supported
H2	Green Price $\rightarrow$ Repurchase Intention	0.56	11.21	Supported
H3	Green Place $\rightarrow$ Repurchase Intention	0.45	2.31	Supported
H4	Green Promotion $\rightarrow$ Repurchase Intention	0.48	4.11	Supported
H5a	GK*Green Product $\rightarrow$ Repurchase Intention	0.01	0.12	Not supported
H5b	GK*Green Price $\rightarrow$ Repurchase Intention	0.24	3.01	Supported
H5c	GK* Green Place $\rightarrow$ Repurchase Intention	0.24	0.01	Supported
H5d	GK* Green Promotion $\rightarrow$ Repurchase Intention	-0.09	-1.15	Not supported

Source(s): Authors' own creation

**Table 4.**  
Summary of  
hypotheses

green price (H5b), green place (H5c), and repurchase intention. This signifies that the presence of strong green knowledge amplifies the impact of green price and green promotion on repurchase intention. Consequently, respondents with heightened green knowledge exhibit a heightened inclination to repurchase Bel Aqua Natural Mineral Water. This phenomenon is possibly due to consumers possessing extensive information about environmental concerns, being well-informed about eco-friendly product options, and actively seeking knowledge about environmental issues. This outcome aligns with findings from [Mahmoud \*et al.\* \(2017\)](#) and reflects the positive influence of green knowledge.

On the other hand, green knowledge weakened the relationship between green products, green promotion, and repurchase intention. This suggests that green knowledge diminished the impact of green products and green promotion on repurchase intention. This could be attributed to certain consumers having limited awareness of environmental matters. Despite Bel Aqua Natural Mineral Water's use of recyclable materials, safety for consumption, and minimal environmental impact, these consumers do not view these attributes as compelling enough to influence their intention to repurchase. This finding resonates with [Kumar \*et al.\*'s \(2017\)](#) observation that green knowledge does not always translate into purchasing green products. Moreover, it reflects [Schmuck \*et al.\*'s \(2018\)](#) caution that consumers' confidence in green advertising can be undermined by deceptive corporate attempts to promote environmental qualities. Consequently, individuals well-versed in green knowledge might be hesitant to repurchase based on concerns about the authenticity of green claims.

#### *Theoretical implications*

The study effectively employed the marketing mix theory to enhance comprehension of the impacts of green marketing mix on repurchase intention ([Anjani and Perdhana, 2021](#); [Mahmoud, 2018](#)). While the marketing mix theory has been applied, the specific insights from Ghanaian consumers concerning this theory have remained limited in the existing literature. Consequently, the application of the marketing mix theory to the context of green marketing mix in an emerging economy emerges as a significant theoretical contribution of this study. Additionally, the marketing mix theory proved relevant in elucidating the effects of green marketing mix on consumer repurchase intention amongst Ghanaian consumers. This was demonstrated through the influential role of various green marketing mix elements on the repurchase intention of Ghanaian consumers. It is noteworthy that many prior studies ([Nguyen-Viet, 2023](#); [Sohail, 2017](#)) on green marketing mix have been conducted outside the Ghanaian context. This underscores the significance of further exploration of green marketing mix within the unique perspective of an emerging economy.

#### *Managerial implications*

The study has established a significant and positive correlation amongst three elements of the green marketing mix (green price, green place, and green promotion). These findings hold several implications for managerial decision-making. First, the study reveals that the green product component does not currently influence consumers repurchase intentions. This highlights the need for Bel Aqua Natural Mineral Water's management to reconsider the product's design and presentation to emphasise its environmental attributes more effectively. Second, the study underscores that green price, green place, and green promotion play pivotal roles in positively shaping consumers repurchase intentions. This signals the importance of the management's ongoing efforts to uphold these aspects. Therefore, organisations striving for successful green marketing should scrutinise their green marketing initiatives comprehensively.

The study's findings emphasise the crucial role of green marketing in steering consumer repurchase intentions in Ghana's bottled water industry, a sector that has faced criticism for

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its environmental impact. In light of this, regulatory bodies like the Ghana Standards Authority (GSA) and the Foods and Drugs Authority (FDA) are recommended to maintain their oversight of industry practices. Moreover, the Ghanaian government should encourage private sector involvement in plastic bottle recycling, creating employment opportunities for youth while curbing environmental pollution.

#### *Implications for research and society*

The study holds significant societal implications. In an era where consumers are increasingly concerned about environmental matters, understanding how the green marketing mix influences consumer behaviour, especially considering their level of environmental knowledge, can contribute to the promotion of sustainable consumption practices. This study serves to empower businesses by leveraging green knowledge to equip consumers with accurate and reliable information. Given the heightened environmental consciousness in society, the cultivation of green knowledge can drive the adoption of green marketing mix strategies, fostering more ethical and environmentally conscious consumption behaviours. Ultimately, these efforts contribute to a more ecologically sustainable future.

#### *Limitations and future research directions*

The current study acknowledges certain limitations. While the questionnaire's measurement instruments were adapted from existing research, the structured format limited respondents from expressing their nuanced perspectives on the variables of interest. Additionally, the study's sample was confined to customers of Bel Aqua Natural Mineral Water, thereby impeding the generalisability of findings. This study suggests that future research employ alternative data collection methods, such as focus group discussions or in-depth interviews, to capture richer insights into the influence of green marketing mix on consumer repurchase intention.

Furthermore, this study focused solely on the bottled water sector, which might not fully encapsulate the broader service industry. Future investigations could encompass the service sector, thereby extending the examination of the marketing mix to include elements like green people, green physical evidence, and green process. Lastly, it's recommended that forthcoming studies explore the potential of green knowledge as a mediator in the relationship between green marketing mix elements and consumer behaviours.

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### Further reading

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