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Customer brand engagement as a driver of psychological benefits of post–purchase green consumption

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Abstract

Purpose – Self-transcendence and self-enhancement motives often coexist in green consumer behavior. Customers may engage with green brands to reconcile possible tensions arising from these two conflicting motives. Using dual concern theory, we investigate how customers' altruistic, biospheric and egoistic values drive desired self-identity and perceived life-meaning rewards, as mediated by their post-purchase green brand engagement (GBE). We also test whether perceived effort worthiness moderates these associations.

Design/methodology/approach – Data were collected via survey from 368 electric/hybrid vehicle owners and analyzed using structural equation modeling (SEM).

Findings – Results reveal that customers' altruistic and egoistic values impact desired self-identity and perceived life-meaning rewards through their engagement with green brands. While perceived effort worthiness had no bearing on desired self-identity, it was found to strengthen the indirect effects of altruistic and egoistic values on perceived life-meaning rewards through post-purchase customer engagement with green brands.

Originality/value – We identify customer brand engagement following purchase as an instrumental mechanism for managing potential inner tensions created by dueling motives in green post-purchase customer reactions. Additionally, we respond to calls for engagement-based boundary conditions by highlighting the moderating role of perceived effort worthiness between customer engagement and perceived life-meaning rewards.

Keywords Personal values, Customer brand engagement, Green brands, Perceived effort worthiness, Desired self-identity, Perceived life-meaning rewards

Paper type Research article

1. Introduction

Many brands position themselves as environmentally friendly by offering greener options to help gain a competitive advantage (Saif *et al.*, 2024). These brands' core strategy is to promote long-term relationships with their customer base (Hartmann *et al.*, 2005) by emphasizing their positive environmental impacts and strengthening value congruence with environmentally conscious customers. To solidify such relationships, these brands also rely on customer engagement following purchase. That is, beyond offering green products and building rapport

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through shared values, green brands undertake various engagement activities (e.g., post–purchase workshops, personalized communications) to build loyalty (Parihar *et al.*, 2019; Vivek *et al.*, 2012). For instance, many car brands, such as Toyota, offer environmentally friendly vehicles (EFVs) while providing multiple customer engagement options post–purchase, such as carbon saving tracking, vehicle care workshops and owner portals.

Given the deleterious role car brands play in generating greenhouse gas emissions, a more active approach is required to tackle this existential crisis (Spreafico, 2021). Consequently, many car brands have responded to government sector calls and customers' demand for greener options. Concurrently, academic research on EFVs in the past 2 decades has grown exponentially owing to pressing environmental concerns and technological advancement of EFVs (Vishwakarma, 2024). Despite multiple interdisciplinary studies on consumer behavior toward EFVs, key prominent research gaps remain.

First, past studies heavily employed the theory of planned behavior (TPB) as a theoretical approach (Dcosta *et al.*, 2024). The theory's general premise is that a positive attitude toward adopting EFVs, substantial social pressure and greater behavioral control lead to EFV purchase intentions (Degirmenci and Breitner, 2017). Although this premise holds, Herberz *et al.* (2020) contend that consumers' favorable attitudes towards EFVs rarely translate into genuine purchases, highlighting a critical need to better understand consumer sustainability motives.

We argue that consumer motives to adopt EFVs are complex. While self-transcendence motives (e.g., caring for the environment; White *et al.*, 2019) are the predominant predictors of EFV consumption, self-enhancement motives (e.g., status and hedonic motives; Herberz *et al.*, 2020) also substantially predict EFV purchase intentions. We argue these two motives may co-occur, yielding potential tensions (Tsiotsou, 2021). To reconcile these, we suggest customers engage with green brands (Pizzutti *et al.*, 2022) and, by doing so, experience higher-order psychological benefits, including desired self-identity and perceived life-meaning rewards (Chuah *et al.*, 2020). However, the dynamics characterizing the interplay of these motives, particularly around post–purchase engagement, remain tenuous, exposing a key literature gap.

Second, extant research on consumers' EFV behavior has concentrated on barriers to widespread adoption or advantages associated with EFVs (Dcosta *et al.*, 2024). Notable barriers include upfront purchase prices, limited charging infrastructure and battery range anxiety (Egbue and Suzanna, 2012). The primary advantages of EFVs comprise fuel cost savings, smart connectivity, low maintenance costs and symbolic benefits (Hidrue *et al.*, 2011; Kumar and Alok, 2020). Recently, research has called for further investigation of psychological determinants of EFV consumer behavior, including personal values and motives (e.g., Herberz *et al.*, 2020).

Lastly, prior research often examined the behavioral intention to adopt EFVs, usually through hypothetical scenarios (e.g., Habich-Sobiegalla *et al.*, 2018). Our study moves past this preference by focusing on customer engagement with focal brands *following* purchase. Customer post–purchase activity is complex as consumers take the time and effort to reflect on their purchases, often calling on steps such as information search or engagement to confirm or disconfirm their purchase decisions (Pizzutti *et al.*, 2022; Obilo *et al.*, 2021). Additionally, an investigation of higher-order psychological outcomes (desired self-identity and perceived life-meaning rewards) as the dependent variables offers alternative insights beyond purchase intentions heavily examined in prior literature.

This study aims to address these gaps. Explicitly, we investigate the extent to which customers' altruistic, biospheric and egoistic values influence desired self-identity and perceived life-meaning rewards, via the mediating role of post–purchase green brand engagement (GBE), and whether these relationships are moderated by perceived effort worthiness. To do this, we draw on dual concern theory, which postulates a coexistence of self-interested and other-interested motives as drivers of behavior to achieve expected benefits (Butts *et al.*, 2019).

To date, few studies (e.g., Leckie *et al.*, 2021) have explored how customer engagement with green brands serves to satisfy personal values; however, advancing insight into these dynamics matters, because if marketers can foster customer engagement with green brands

following purchase, this may enable consumers to reconcile the possible tension surrounding their conflicting motives, thus yielding benefits to customers, the environment and brands (Mason *et al.*, 2023).

Further, we argue that individuals draw perceived value from investing their resources to achieve anticipated psychological benefits (Hollebeek *et al.*, 2019). Here, we predict that customer-perceived *effort worthiness*, the effort a customer invests to achieve positive results (Lagomarsino *et al.*, 2020), moderates the effect of personal values on customer psychological benefit *through* engagement, because it helps consumers shape their identity and intrinsic rewards (Covington, 1984; Dunn *et al.*, 2019). Prior studies in the crowdfunding and donation contexts affirm that when consumers perceive their actions as worthwhile, their engagement in such behaviors increases (Cryder *et al.*, 2013; Kuppuswamy and Bayus, 2017).

Thus, this current study contributes to green consumer behavior and customer engagement literature in two ways. First, we employ dual concern theory (Pruitt and Rubin, 1985) to examine the effect of customers' engagement with green brands in pursuit of their egoistic (self-oriented), altruistic (other-oriented) and biospheric (environment-oriented) values. Typically, dual concern theory is used to explore purchase behavior of green products; however, we believe it plays a role in customer brand engagement following purchase, which has commonly been overlooked. Here, we assess engagement's mediating role in the effect of altruistic, biospheric and egoistic values on customer perceived psychological benefits associated with such engagement (i.e., desired self-identity and perceived life-meaning rewards) to clarify the potential motivational tension.

Second, we empirically demonstrate perceived effort worthiness as a moderator between customer engagement and desired self-identity and perceived life-meaning rewards, thus responding to Claffey and Brady's (2017) call for further studies on engagement-based boundary conditions. Extending the ethical/green consumption literature (e.g., Perera *et al.*, 2022), we find that perceived effort worthiness moderates the effect of altruistic and egoistic values on perceived life-meaning rewards through customer engagement with green brands after purchase. Specifically, when customers exert greater perceived effort, altruistic and egoistic values drive these customers to be more engaged with green brands, thus strengthening the relationship with perceived life-meaning rewards. However, personal values did not have the same impact in strengthening desired self-identity.

The article is organized as follows: First, we provide our theoretical background and hypotheses. Next, we present the methodology, then discuss the main results. We conclude with theoretical and practical implications from our analyses, followed by limitations and further research suggestions.

2. Theoretical background

2.1 Customer brand engagement

Customer engagement is heralded as an imperative firm metric (Brodie *et al.*, 2011; Kumar *et al.*, 2019), given its capacity to foster desirable consumer behavior (e.g., heightened purchase, lifetime value and loyalty). Despite its acclaimed benefits, the fragmented literature on customer engagement suggests insufficient consensus surrounds engagement's conceptualization. For example, while Vivek *et al.* (2012, p. 127) define customer engagement as "the intensity of an individual's participation in and connection with an organization's offerings or organization initiatives," Kumar *et al.* (2019) conceptualize it as a customer's operant/operand resource investment in their brand interactions.

Given the brand's role as the most prominent engagement object, we adopt the *customer brand engagement* concept, defined as a customer's "positively valenced brand-related cognitive, emotional and behavioral activity [or dynamics] during or related to focal consumer/brand interaction," in this article (Hollebeek *et al.*, 2014, p. 154). The authors' widely adopted scale comprises cognitive processing, affection and activation, which exhibit an elevated fit in the context of consumers' self-transcendence/self-enhancement motives.

Extending dual concern theory, we argue that when it comes to electric/hybrid vehicle consumption, customers' self- and other-interested motivations simultaneously manifest through egoistic, biospheric and altruistic values and specific actions (e.g., engaging with green brands), yielding customer-perceived benefits. Therefore, in addition to purchase behavior (i.e., revealing the investment of financial resources; Hollebeek *et al.*, 2019), individuals show a readiness to devote *other* (e.g., cognitive or temporal) resources in their brand interactions. However, not every customer engages with a brand, and the decision to engage may be driven by particular psychological factors, including personal values. These are explored in the next section.

2.2 Personal values

Personal values are "a desirable trans-situational goal varying in importance, which serves as a guiding principle in the life of a person or other social entity" (Schwartz, 1992, p. 21). In sustainable consumption literature, altruistic, biospheric and egoistic values have been identified as dominant in shaping customers' pro-environmental attitudes and behavior (Ferrell *et al.*, 2019; Perera *et al.*, 2022) and are critical in all purchase stages (Joshi and Rahman, 2015).

Altruistic and biospheric values represent other-oriented motives based on harmonious relationships (Kim and Koo, 2020). While caring for others, biospheric and altruistic values differ (Kim and Koo, 2020). Altruistic values underlie an individual's concern for others' well-being (Roos and Hahn, 2019), while biospheric values reflect one's concern for all living species—wildlife and flora/fauna (Saleem *et al.*, 2018).

Altruistic values manifest in selflessness or helping behavior (Saleem *et al.*, 2018). Customers whose altruistic values are activated believe degrading environmental conditions (e.g., poor air quality) threaten society (Stern, 2000). Consequently, they behave to protect others from harm (Saleem *et al.*, 2018). Consumers who are guided by higher levels of altruism might respond to green offerings centered on emotions or social norms, for example, which potentially influence their post–purchase activities (Sivapalan *et al.*, 2021). While not explicitly outlined in extant research, researchers have connected altruistic values with consumer post–purchase activities. For example, Leckie *et al.* (2021) found that altruistic values influence attitudinal brand loyalty via customer engagement behavior with green brands.

Past research has revealed a positive influence of customers' biospheric values on their environmentally friendly behavior. For example, individuals exhibiting strong biospheric values are inclined to donate to environmental causes (De Groot and Steg, 2008), partake in collaborative consumption (Roos and Hahn, 2019), or purchase green brands (Kim and Seock, 2019). For these individuals, post–purchase behavior is principally driven by the ecological value generated from green product offerings (Sivapalan *et al.*, 2021).

Egoistic values drive "individuals to pursue [their] self-interest and behave in a way to achieve self-gratification" (Saleem *et al.*, 2018, p. 16). Prior research offers mixed findings concerning the connection between egoistic values and environmentally friendly consumption. Some suggest customers select products based on need-fulfilling product attributes, thus limiting pro-environmental consumption (e.g., Roos and Hahn, 2019), while others suggest customers are more likely to adopt sustainable choices as these decisions contribute to self-interest (e.g., health/safety; Joshi and Rahman, 2015). Reward-seeking egoistic helping behavior (Batson and Shaw, 1991) suggests that, following a purchase, consumers feel they are creating a better world for themselves, including a better quality of life, while symbolizing their environmentalism externally (De Angelis *et al.*, 2012).

In the following sub-sections, we discuss how dual concern theory can explain how self-interested (egoistic values) and other-interested (biospheric and altruistic values) motives can coexist through customer engagement to achieve expected benefits before presenting the study's proposed hypotheses.

2.3 Dual concern theory

Prior literature examining drivers of green consumer behavior has typically adopted the TPB (e.g., Hosta and Zabkar, 2021) or the value-belief-norm (VBN; Stern, 2000) theory. Despite offering valuable insight, these perspectives center on consumers' rational, normative green behavior, thus failing to capture the aforementioned tension, resulting actions, or achievement of higher-order psychological outcomes. Specifically, by overlooking the simultaneous occurrence of customers' self-transcendence motives and self-enhancement motives, TPB fails to address inner conflict and complexity inherent in green-oriented decision-making (Groening *et al.*, 2018; Sivapalan *et al.*, 2024). While VBN partly addresses customers' internal/external motivations (i.e., personal values/moral norms), it neglects both the hallmarks and higher-order psychological outcomes associated with post–purchase GBE (Gollnhofer *et al.*, 2019; Papista and Krystallis, 2013), thus meriting further scrutiny.

Addressing these theoretical shortcomings, we use dual concern theory. The theory suggests the existence of psychological relationships among personal values and motivations (i.e., self-interested vs. other-interested; Pruitt and Rubin, 1985). Specifically, the theory postulates individuals typically make decisions and are motivated to take actions they believe will lead to expected positive benefits (Butts *et al.*, 2019). In decision-making processes, self-interested and other-interested motives, although conflicting, can coexist. For example, eco-tourists may be motivated by both self-interested (e.g., positive emotions from supporting the destination's environmental protection initiatives; Erlandsson *et al.*, 2016) and other-interested motives (e.g., by selflessly helping the host community preserve their environment; Cameron and Payne, 2011).

Viewed through a dual concern theory lens, specific thoughts, feelings, or actions, such as engaging with a green brand, may simultaneously satisfy self-enhancement *and* self-interested motives. In this instance, customers may partake in actions deemed beneficial to nature and/or others because this behavior may lead to a healthier environment for themselves (Prakash *et al.*, 2019). Thus, in our study, dual concern theory provides credence for our argument that while self-transcendence motives, as prompted by altruistic/biospheric values, may clash with self-enhancement motives that are chiefly driven by egoistic values (Schwartz, 1992), customers' post–purchase GBE can be leveraged to reduce or resolve this tension.

3. Hypothesis development

3.1 Psychological benefits associated with customer brand engagement

We focus on desired self-identity and perceived life-meaning rewards (Chuah *et al.*, 2020; Gollnhofer *et al.*, 2019) since they represent critical psychological outcomes in sustainable consumption. *Desired self-identity* denotes how customers see, feel and present themselves to others (Batra *et al.*, 2012). The ethical consumption literature suggests customers construct their identity and desired self-concept from ethical consumption (Pickett-Baker and Ozaki, 2008). *Perceived life-meaning rewards* reflect the psychological benefits customers perceive from engaging in activities that make life both meaningful and purposeful (Batra *et al.*, 2012).

Deploying dual concern theory, we explore how customers' altruistic, biospheric and egoistic values drive the development of their desired self-identity and perceived life meaning rewards through their engagement with green brands after purchase, which may be explained as follows. First, a plethora of marketing studies highlight how engagement mediates the association of particular variables (e.g., Machado *et al.*, 2019), which we expect occurs in consumers' green consumer behavior (Chuah *et al.*, 2020; Chuang and Chen, 2023). For example, Abbas *et al.* (2018) find engagement as a mediator between an organization's customer-perceived corporate social responsibility activity on one hand, and loyalty, advocacy and feedback intent on the other. Likewise, Piligrimienė *et al.* (2020) report that customers' engagement with green brands mediates the relationship between several individual internal (e.g., environmental attitude) and external environmental (e.g., conditions for sustainable consumption) factors and green purchasing.

Prior research also offers evidence of the relationship between personal values and engagement. For example, de Morais *et al*. (2021) identify altruism as customers' primary motivation for circular economy engagement. Relatedly, altruistic customers exhibit engagement behaviors, including recommending sustainable brands or conversing with others on social media (Vander Schee *et al*., 2020). While there is a paucity in knowledge concerning the effect of biospheric values on engagement (Kadic-Maglajlic *et al*., 2019), we argue that customers may perceive they are positively impacting the environment by engaging with a green brand even after purchase, particularly when their values align with the brand (Harrigan *et al*., 2018). Moreover, despite mixed evidence on egoistic values, we argue that customers displaying heightened awareness of environmental degradation are likely to engage with green brands post–purchase if they are creating a healthier environment for themselves (Prakash *et al*., 2019).

According to dual concern theory, customers take necessary actions to achieve their desired benefits. Therefore, we argue customers will likely engage with brands that exhibit high (vs. low) green orientation, which is conducive to the development of perceived life meaning (Batra *et al*., 2012; Vlachos and Vrechopoulos, 2012), positive affect and perceived rewards (Hartmann *et al*., 2017). Therefore:

H1. Post–purchase customer engagement with green brands positively mediates the relationship between their (a) altruistic values, (b) biospheric values, and (c) egoistic values and desired self-identity.

H2. Post–purchase customer engagement with green brands positively mediates the relationship between their (a) altruistic values, (b) biospheric values, and (c) egoistic values and perceived life-meaning rewards.

3.2 Moderating role of perceived effort worthiness

Perceived effort worthiness is the perceived effort a customer is willing to put into achieving positive results (Lagomarsino *et al*., 2020). With green offerings, customer-perceived effort worthiness involves assessing the costs and benefits of undertaking product-related effort and its benefit to the environment (Lagomarsino *et al*., 2020).

Based on the perceived value derived from their post–purchase engagement, customers will tend to reflect on their decision-making (De Groot and Steg, 2008; Pizzutti *et al*., 2022). A key consideration in this process is their effort to use the brand to achieve perceived favorable outcomes (Zhang *et al*., 2011). For example, customers who are willing to learn about manufacturers' green products may see their purchase go further (e.g., by learning how to maintain the product to lengthen its useable life), while those who expend less effort likely see fewer benefits in this regard (Pizzutti *et al*., 2022).

Therefore, we propose perceived effort worthiness drives individuals' goal attainment, subsequently influencing their desired identity, self-worth and intrinsic rewards (Covington, 1984; Dunn *et al*., 2019). Thus, for customers who believe their effort exerted in using green brands is worth it, we expect to see stronger effects of their brand engagement on desired self-identity and perceived life-meaning rewards, given higher predicted goal achievement associated with their behavior. Therefore,

H3. The indirect effect of customers' (a) altruistic values, (b) biospheric values and (c) egoistic values on desired self-identity via post–purchase customer engagement with green brands will be stronger for customers displaying high (vs. low) perceived effort worthiness.

H4. The indirect effects of customers' (a) altruistic values, (b) biospheric values, (c) egoistic values on perceived life-meaning rewards via post–purchase customer engagement with green brands will be stronger for customers displaying high (vs. low) perceived effort worthiness.

4. Methodology

4.1 Data collection and sampling procedures

To test our hypotheses (see Figure 1), we collected data via an anonymous online survey. Here, a sampling frame of electric/hybrid vehicle owners in Australia was randomly drawn from a reputable panel company. A qualifying question (whether respondents had purchased an electric/hybrid vehicle in the past two years) was used to determine participants' eligibility. Respondents with a "yes" answer were only eligible to proceed. Then, respondents were prompted to write the brand/model of the (last) purchased vehicle, and the identified vehicle's brand/model was auto-filled into subsequent survey questions.

The sample comprises 368 useable responses (50.27% female, 49.46% male, 0.27% not disclosing gender). The age distribution included: 14.13% for 18–24, 41.85% for 25–34, 24.18% for 35–44, 9.24% for 45–54, 5.71% for 55–64 and 4.89% for 65 or over. Moreover, 50.54% of the participants had a bachelor's degree, 22.01% a postgraduate degree, 15.49% had a diploma/certificate and 11.96% a high school qualification.

4.2 Measures

We deployed established multiple-item measures, comprising 7-point Likert scales (1 = strongly disagree; 7 = strongly agree). Three consumer behavior academics scrutinized the applicability of the scales, revealing no issues. Thus, the survey's face and content validity were supported (Hair *et al.*, 2018).

To measure personal values, Saleem *et al.*'s (2018) instrument, comprising altruistic (4 items), biospheric (3 items) and egoistic (3 items) values, was adopted. To measure customer engagement, we used the cognitive processing (3 items), affection (4 items) and activation (3 items) scale developed by Hollebeek *et al.* (2014). Perceived effort worthiness (3 items) was taken from Lagomarsino *et al.*'s (2020) scale, while desired self-identity (3 items) and perceived life-meaning rewards (3 items) were adapted from Chuah *et al.* (2020).

Finally, we included customer experience as a covariate. Here, three items were used from Ullah *et al.* (2021) and one from Gao *et al.* (2020) to measure how a focal brand's product offers a pleasant consumption experience that meets customer expectations. Table 1 summarizes the construct measures and their respective psychometric properties.

4.3 Pretest and preliminary analysis

A pretest (n = 50) for preliminary checks (e.g., data distribution, Cronbach's alpha) revealed no problems. Post-data collection, we conducted further checks, including examining extreme values in the data, yielding no issues. Then, multivariate analysis assumptions were tested (Hair *et al.*, 2018). Here, skewness and kurtosis values suggested the data were normally

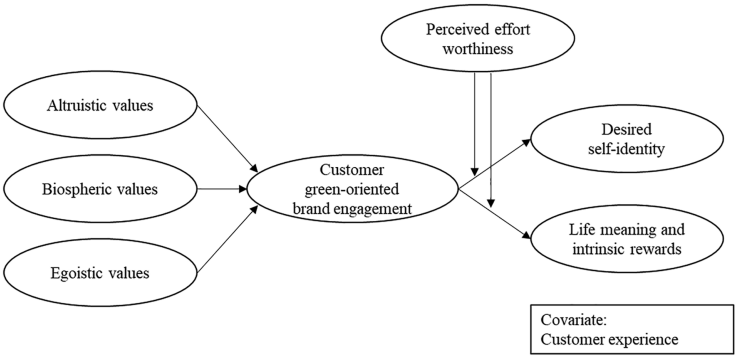

Figure 1. Conceptual model. Source: Authors' own work

Table 1. Measurement items

Measurement items	Std. Loading	*t*-value
Egoistic values ($\alpha = 0.92$, CR = 0.92 and AVE = 0.79)		
A clean environment provides me with better recreation opportunities	0.87	55.49
Environmental protection is beneficial to my health	0.88	61.06
Environmental protection will provide a better world for my children and me	0.92	75.54
Altruistic values ($\alpha = 0.89$, CR = 0.89 and AVE = 0.74)		
Pollution generated here harms people all over the earth	0.83	42.87
The effects of pollution on public health are worse than we realize.*	–	–
Environmental protection will help people have a better quality of life	0.86	49.87
Environmental protection benefits everyone	0.88	53.48
Biosphere values ($\alpha = 0.85$, CR = 0.85 and AVE = 0.66)		
Modern development threatens wildlife	0.81	33.394
Over the next several decades, thousands of species of plants and animals will become extinct	0.87	42.415
The balance of nature is delicate and easily upset	0.76	28.336
Green-oriented brand engagement (a second-order construct)		
Cognitive processing ($\alpha = 0.92$, CR = 0.92 and AVE = 0.79)		
Using this brand gets me to think about the brand	0.86	53.19
I think about this brand a lot when I'm using it	0.90	65.99
Using this brand stimulates my interest to learn more about the brand	0.90	67.55
Affection ($\alpha = 0.92$, CR = 0.92 and AVE = 0.75)		
I feel very positive when I use this brand	0.86	52.78
Using this brand makes me happy	0.87	58.28
I feel good when I use this brand	0.89	67.21
I am proud to use this brand	0.85	50.27
Activation ($\alpha = 0.90$, CR = 0.90 and AVE = 0.74)		
I spend a lot of time using this brand compared to other brands	0.85	43.96
Whenever I'm using this type of product, I usually use this brand	0.86	45.85
I use this brand the most	0.88	51.47
Desired self-identity ($\alpha = 0.89$, CR = 0.90 and AVE = 0.74)		
This brand makes me look the way I want to look	0.86	46.48
This brand is able to make me feel the way I want to feel	0.85	43.10
This brand reflects how I want to be seen	0.88	50.96
Perceived life meaning rewards ($\alpha = 0.84$, CR = 0.84 and AVE = 0.64)		
This brand is able to do something that makes my life more meaningful	0.83	35.79
This brand is able to contribute something toward making my life worth living	0.78	30.17
This brand is able to contribute something that fulfils my life	0.78	29.87
Perceived effort worthiness ($\alpha = 0.87$, CR = 0.87 and AVE = 0.70)		
Using this brand can make a difference in protecting the environment	0.84	41.09
Using this brand is valuable with regard to helping the environment	0.87	46.34
This brand is able to contribute something that fulfils my life	0.80	33.81
Consumer experience ($\alpha = 0.89$, CR = 0.89 and AVE = 0.68)		
I feel joy when I use the smart features of this brand	0.78	33.04
I feel this brand offers me features that produce the best results for me	0.83	40.94
My feelings toward this brand are very positive	0.84	42.76
Overall, this brand meets my needs and covers my expectations	0.84	42.44

Note(s): Std. = Standardized factor loading, α = Cronbach's alpha, CR = Construct reliability, AVE = Average variance extracted value and *Removed item

Source(s): Authors' own work

distributed (skewness –1.35 to 0.52, kurtosis –0.17 to 2.87). Results of the preliminary checks indicated the data's validity.

5. Results

5.1 Measurement model testing

Confirmatory factor analysis (CFA) was employed using Mplus 7.4 to analyze the measurement model. Fit indices exhibited good model fit [$\chi^2_{(419)} = 728.98$; CMIN/DF = 1.74; RMSEA = 0.045; CFI = 0.97; TLI = 0.96; and SRMR = 0.033]. As shown in Table 1, all items achieved internal consistency and convergent validity since the value of Cronbach's alpha and composite reliability were >0.84 (exceeding the minimum 0.70), while the minimum average variance extracted (AVE) was 0.64, >0.50 threshold (Fornell and Larcker, 1981). Table 2 shows that discriminant validity was established since the square root of each construct's AVE value exceeded its highest correlation with any other constructs (Voorhees *et al.*, 2016).

5.2 Common method bias (CMB) assessment

To minimize common method bias (CMB), the measurement items were designed for clarity, while associated items were scattered through the survey (Malhotra *et al.*, 2006). CMB was assessed using a marker variable (i.e., "I feel frustrated when I engage in a do-it-yourself project"). Lindell and Whitney (2001) suggest using the second-smallest positive correlation to more conservatively estimate the impact created by CMB. The results in Table 2 show that the two lowest marker variable correlations (rM1 = 0.018 and rM2 = 0.020) remained within the 0.20 minimum criteria (Malhotra *et al.*, 2006), suggesting CMB as non-problematic.

5.3 Structural model estimation

To test the hypotheses, we deployed structural equation modeling (SEM) with maximum likelihood estimation. Structural model fit indices revealed a suitable fit to the data: [$\chi^2_{(194)} = 382.117$; CMIN/DF = 1.97; RMSEA = 0.051; CFI = 0.97; TLI = 0.96; and SRMR = 0.039]. Table 3 shows

Table 2. Descriptive statistics, inter-construct correlations and discriminant validity results

	1	2	3	4	5	6	7	8	9	10	11
1. Altruistic values	*0.86*										
2. Biospheric values	0.58	*0.81*									
3. Egoistic values	0.69	0.49	*0.89*								
4. Green-oriented brand engagement	0.61	0.47	0.63	NA							
5. Cognitive processing	0.51	0.33	0.56	0.86	*0.89*						
6. Affection	0.61	0.43	0.59	0.87	0.68	*0.87*					
7. Activation	0.43	0.43	0.46	0.81	0.47	0.57	*0.86*				
8. Desired self-identity	0.38	0.28	0.36	0.56	0.47	0.57	0.39	*0.86*			
9. Life meaning and intrinsic rewards	0.46	0.34	0.46	0.65	0.62	0.59	0.43	0.55	*0.80*		
10. Perceived effort worthiness	0.47	0.44	0.47	0.54	0.42	0.58	0.39	0.41	0.48	*0.84*	
11. Customer experience	0.54	0.40	0.53	0.52	0.35	0.57	0.42	0.43	0.42	0.64	*0.82*
12. Marker variable	0.00	−0.04	0.06	0.09	0.08	0.02	0.11	0.05	0.03	0.02	−0.07
Mean	5.61	5.43	5.45	5.19	4.99	5.39	5.20	4.96	4.96	5.31	NA
Standard deviation	1.09	1.04	1.18	0.93	1.17	1.00	1.12	1.24	1.17	1.11	NA

Note(s): Values in italic font indicate the square root of average variance extracted (AVE) values; NA = Not applicable

Source(s): Authors' own work

Table 3. Structural model results

Specified relationships	β	S.E.	*t*-value
Altruistic values → GBE	0.31***	0.09	3.57
Biospheric values → GBE	0.05	0.06	0.82
Egoistic values → GBE	0.30***	0.07	3.95
GBE → Desired self-identity	0.58***	0.06	9.39
GBE → Perceived life-meaning rewards	0.77***	0.06	13.85
Covariate			
Consumer experience → GBE	0.25***	0.06	4.36
Consumer experience → Desired self-identity	0.10	0.07	1.42
Consumer experience → Perceived life-meaning rewards	−0.00	0.07	−0.06

Note(s): GBE = Green brand engagement; β = Standardized coefficients; S.E. = Standard error; Significant at $^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$ (two-tailed test)

Source(s): Authors' own work

altruistic and egoistic values significantly impact post–purchase customer engagement with green brands ($\beta = 0.31$, $p < 0.001$ and $\beta = 0.30$, $p < 0.001$, respectively). However, results show biospheric values do not drive engagement ($\beta = 0.05$, $p > 0.10$). Post–purchase customer engagement with green brands was found to significantly and positively affect desired self-identity ($\beta = 0.58$, $p < 0.001$) and perceived life-meaning rewards ($\beta = 0.77$, $p < 0.001$). Moreover, customer experience (covariate) significantly and positively impacted customer engagement with green brands ($\beta = 0.25$, $p < 0.001$); however, it did not influence desired self-identity ($\beta = 0.10$, $p > 0.10$) or perceived life-meaning rewards ($\beta = -0.004$, $p > 0.10$).

We employed non-parametric bootstrapping-based regression to test the mediating effect of customers' GBE (Zhao *et al.*, 2010) with 5,000 bootstrapping iterations at 95% confidence intervals (CIs). The results in Table 4 reveal the existence of significant indirect effects of

Table 4. Mediation analysis results

Direct effects	Std. Estimate	S.E.	*t*	*p*
Altruistic values → Desired self-identity	−0.06	0.11	−0.50	>0.05
Biospheric values → Desired self-identity	−0.01	0.09	−0.07	>0.05
Egoistic values → Desired self-identity	−0.18	0.09	−1.92	>0.05
Altruistic values → Perceived life-meaning rewards	−0.02	0.12	−0.12	>0.05
Biospheric values → Perceived life-meaning rewards	−0.02	0.09	−0.28	>0.05
Egoistic values → Perceived life-meaning rewards	−0.04	0.10	−0.42	>0.05

Panel B: indirect effects	Std Estimate	S.E.	LLCI	ULCI
H1a Altruistic values → GBE → Desired self-identity	0.23**	0.08	0.10	0.38
H1b Biospheric values → GBE → Desired self-identity	0.04	0.06	−0.50	0.14
H1c Egoistic values → GBE → Desired self-identity	0.23**	0.08	0.11	0.38
H2a Altruistic values → GBE → Perceived life-meaning rewards	0.26**	0.09	0.11	0.42
H2b Biospheric values → GBE → Perceived life-meaning rewards	0.05	0.07	−0.05	0.16
H2c Egoistic values → GBE → Perceived life-meaning rewards	0.26**	0.09	0.12	0.42

Note(s): GBE = Green brand engagement, Std. = Standardized coefficient, S.E. = Standard error; LLCI = lower-limit confidence interval (95%); ULCI = upper-limit confidence interval (95%). Significant at $^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$ (two-tailed test)

Source(s): Authors' own work

altruistic ($\beta = 0.23$, 95% CI [0.10, 0.38]) and egoistic values ($\beta = 0.23$, 95% CI [0.11, 0.38]) on customers' desired self-identity, as mediated by their engagement with green brands. However, non-significant results were attained for the indirect effect of biospheric values on desired self-identity, as mediated by customer engagement with green brands ($\beta = 0.04$, 95% CI [−0.50, 0.14]). The direct effects of altruistic, biospheric and egoistic values on desired self-identity are non-significant ($p > 0.05$), suggesting the effects of altruistic and egoistic values on customers' desired self-identity are *indirect only*, demonstrating support for H1a and H1c, but not H1b.

Further, there is an indirect effect of altruistic ($\beta = 0.26$, 95% CI [0.11, 0.42]) and egoistic values ($\beta = 0.26$, 95% CI [0.12, 0.42]) on perceived life-meaning rewards, as mediated by customer engagement with green brands; however, biospheric values are non-significant ($\beta = 0.05$, 95% CI [−0.05, 0.16]). The direct effects of altruistic, biospheric and egoistic values on perceived life-meaning rewards are also non-significant ($p > 0.05$), suggesting the effects of altruistic and egoistic values on perceived life-meaning rewards are *indirect only*, yielding support for H2a and H2c, but not H2b.

Following this, we used SPSS PROCESS Macro (Model 14 with 5,000 bootstrap samples; Hayes, 2018) to test the moderated mediation (H3-H4) in our model. The results provide the interaction terms and lower and upper 95% CIs (Hayes, 2018).

The findings in Table 5 show that the conditional, indirect effects of altruistic, biospheric and egoistic values on desired self-identity through customer engagement with green brands

Table 5. Moderated-mediation analysis results

Indirect paths	β	S.E.	LLCI	ULCI	p
H3a Altruistic values → GBE → Desired self-identity					
Low perceived effort worthiness	0.22	0.05	0.12	0.33	<0.05
High perceived effort worthiness	0.26	0.05	0.17	0.38	<0.05
Index of moderated mediation	0.02	0.02	−0.02	0.08	>0.10
H3b Biospheric values → GBE → Desired self-identity					
Low perceived effort worthiness	0.15	0.04	0.07	0.24	<0.05
High perceived effort worthiness	0.18	0.05	0.10	0.30	<0.05
Index of moderated mediation	0.02	0.02	−0.01	0.06	>0.10
H3c Egoistic values → GBE → Desired self-identity					
Low perceived effort worthiness	0.22	0.05	0.12	0.33	<0.05
High perceived effort worthiness	0.26	0.05	0.17	0.38	<0.05
Index of moderated mediation	0.02	0.02	−0.02	0.08	>0.10
H4a Altruistic values → GBE → Perceived life-meaning rewards					
Low perceived effort worthiness	0.19	0.05	0.10	0.28	<0.05
High perceived effort worthiness	0.31	0.05	0.22	0.43	<0.05
Index of moderated mediation	0.06	0.02	0.02	0.11	<0.05
H4b Biospheric values → GBE → Perceived life-meaning rewards					
Low perceived effort worthiness	0.15	0.04	0.08	0.23	<0.05
High perceived effort worthiness	0.24	0.05	0.14	0.34	<0.05
Index of moderated mediation	0.04	0.02	0.01	0.08	>0.10
H4c Egoistic values → GBE → Perceived life-meaning rewards					
Low perceived effort worthiness	0.19	0.05	0.10	0.28	<0.05
High perceived effort worthiness	0.31	0.05	0.22	0.42	<0.05
Index of moderated mediation	0.06	0.02	0.02	0.10	<0.05

Note(s): GBE = Green brand engagement; All reported coefficients are unstandardized; S.E. = Standard error; LLCI = lower-limit confidence interval (95%); ULCI = upper-limit confidence interval (95%). Significant at $^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$ (two-tailed test)

Source(s): Authors' own work

did not vary across customers exhibiting low (vs. high) perceived effort worthiness. Thus, H3a–c are not supported. Instead, the indirect effects of altruistic and egoistic values on perceived life-meaning reward, as mediated by their engagement with green brands, differ across those displaying low (vs. high) perceived effort worthiness, supporting H4a and H4c. We next discuss the key implications of these findings.

6. Discussion

We explored how self-transcendence motives prompted by altruistic/biospheric values and self-enhancement motives, chiefly driven by egoistic values, influence customers' GBE in the post–purchase stage of the customer journey. Grounded in dual concern theory, we postulated that following purchase, customers engage with green brands as a coping mechanism to reduce potential inner tension created by dueling values and attain the psychological benefits of desired self-identity and perceived life-meaning rewards.

Findings show post–purchase customer GBE mediates the effect of altruistic and egoistic values on desired self-identity and perceived life meaning rewards, supporting the co-existence of altruistic and egoistic values (De Groot and Steg, 2008; Prakash *et al.*, 2019). Our findings, however, extend beyond prior work showing the influence of these values on purchase decisions by demonstrating that they also activate psychological benefits *through* engagement with green brands following purchase.

Despite this, an insignificant result was attained for customers' biospheric values. This may indicate biospheric values are more influential in purchase-related decision-making (vs. *post–purchase* engagement) for EFVs. Specifically, post–purchase customer engagement with green brands is driven by a concern for people (e.g., themselves, family and others) more than the environment. This aligns with Agarwal *et al.*'s (2025) assertion that in a green product post–purchase setting, continued activity following purchase is predicated on the influence of others.

Furthermore, when exposed to multiple messages framed as environmentally friendly, in certain individuals possessing stronger biospheric values, such messages lose their significance, resulting in inaction (Nguyen *et al.*, 2024). Thus, it is plausible that continued messages focusing on environmental benefits following purchase diminish one's willingness to engage with EFV brands.

Additionally, it could be implied that those who are more concerned about the environment are less inclined to attribute positive environmental outcomes to car brands (Bretter *et al.*, 2025). Thus, these individuals, while purchasing EFVs, only use them when necessary and do not exert operand and operant resources for GBE post–purchase (Hollebeek *et al.*, 2014). Conversely, it is possible that while individuals identify as having higher biospheric values, these are not the primary driver of their EFV behavior. This phenomenon is known as "environmental hypocrisy", where economic considerations are the primary driver of EFV action rather than pro-environmental sentiments (Squalli, 2024).

We also tested perceived effort worthiness as a moderator in our model. Results show perceived effort worthiness moderates the indirect effects between altruistic and egoistic values on perceived life-meaning rewards through engagement, but not desired self-identity. This result is plausible as individuals receive the mental reward associated with expended effort to engage with a brand, as driven by their need to assist others. That is, if such individuals view engaging with green brands as "worth it", then this engagement generates a sense of greater purpose to their lives (Ryan and Deci, 2000). In contrast, individuals trying to cultivate a desired self-identity do not necessarily view the perceived effort to engage with a green brand as sufficiently worthy to influence identity shaping (Lemarié *et al.*, 2019).

6.1 Theoretical implications

Prior research on green consumer behavior has predominantly highlighted dueling altruistic and egoistic values as core drivers of purchasing (e.g., Shang *et al.*, 2023; Kumar and Ghodeswar,

2015), often overlooking how these values drive thoughts, feelings and actions post–purchase. Addressing this gap, we adopted dual concern theory to explore how customers' personal values facilitate their engagement with green brands following purchase, thus impacting their psychological benefits of desired self-identity and perceived life-meaning rewards (Gutman, 1982), thus shifting the focus of green consumption behavior research from pre-purchase motives to post–purchase engagement. Theoretically, we have broadened the scope of dual concern theory by applying it to the post–purchase stage of sustainable consumption.

Second, we contrast most existing research that has shown biospheric values as a driver of green brand consumer behavior (e.g., Perera *et al.*, 2022; Saleem *et al.*, 2018) by demonstrating that when it comes to customer engagement following purchase, biospheric values are insignificant.

Third, prior research on customer engagement with green brands has typically focused on favorable brand-related outcomes (e.g., brand loyalty/purchase intent; Parihar *et al.*, 2019). However, our analyses extend beyond the customer engagement-loyalty interface to demonstrate that customers engage with green brands to achieve higher-order psychological benefits.

Fourth, our analyses contribute to customer engagement and ethical consumer behavior literature by demonstrating perceived effort worthiness as a moderator. Specifically, we found perceived effort worthiness moderates the indirect relationships between altruistic/egoistic values and perceived life-meaning rewards through customer engagement with green brands, extending insight into the powerful impact of motivational achievement on intrinsic rewards (Cacioppo and Petty, 1982; Dunn *et al.*, 2019). That is, understanding the role of perceived effort worthiness enhances the acumen of how customers perceive the impacts of their pro-environmental resource investments in green brands to achieve favorable psychological benefits.

6.2 Managerial implications

This research has implications for marketers. First, we recommend marketers pursue Customer Engagement Marketing (Harmeling *et al.*, 2017) to foster engagement with green brands following purchase. Customers displaying higher (vs. lower) engagement with green brands are predicted to receive significant psychological benefits from interacting with these brands, thus likely reducing post–purchase cognitive dissonance and boosting customer/firm relationships and lifetime value.

Specifically, we advise green brand marketers to segment and target customers based on their altruistic/egoistic motives and psychological benefits in their customer engagement marketing strategies. Here, marketers can launch innovative, pro-environmental offerings and leverage these to encourage customer engagement following purchase. For example, via communications and brand community development, marketers can suggest how engaging with the brand contributes to meeting their own and others' well-being. Such profiles are expected to be powerful in reaching and communicating more effectively with audiences (e.g., by personalizing content).

Second, marketers do not need to call on customers' biospheric values to generate post–purchase engagement with green brands. Specifically, the findings suggest that human-centric values significantly shape customer engagement. Brands may wish to highlight that green offerings will contribute to quality of life (e.g., well-being/attainment of favorable psychological benefits), rather than pushing a typical "green" message. Brands may also stress the congruency between the brand and customers' altruistic values to emphasize that both parties' positive actions are helping others. For example, clothing brand Everlane demonstrates the alignment of its core values with its ethical manufacturing process, stimulating customers' desire to associate with this brand.

Third, we recommend marketers primarily target those exhibiting high (vs. low) perceived effort worthiness, given the benefits accruing to the consumer via favorable impact on perceived life-meaning rewards. For example, firms can target these individuals with

user-generated content strategies, given these customers' elevated involvement, or adopt these individuals as influencers. Through these strategies, marketers can go beyond offering customers purely extrinsic rewards and offer intrinsic rewards by encouraging engagement with green brands following their purchase.

6.3 Limitations and future research

Despite its contribution, this study has limitations that provide future research avenues. Firstly, the Australian EFV represents a high-involvement context, thus likely biasing customers' post–purchase brand engagement. Therefore, further studies can replicate or extend our research design in other (e.g., low involvement or cross-cultural) contexts (Hubbard and Armstrong, 1994). Second, we deployed a cross-sectional survey, and potential biases in self-reported measures constrain generalizability and depth. We advise researchers to explore the proposed relationships through a longitudinal analysis, allowing monitoring of any changes concerning the dynamic nature of green brand customer engagement (Brodie *et al.*, 2011). In addition, like any cross-sectional research, our findings can only capture a snapshot of consumer engagement with green brands. Conceptually, desired self-identity and perceived life-meaning rewards and customer engagement with green brands can emerge simultaneously. Therefore, further research can establish temporal precedence by employing an experimental design.

Third, this study explores customer-perceived effort worthiness as a moderator. Despite the significant moderating effect, other variables likely exist that moderate the proposed associations. For example, understanding message framing effects (e.g., prevention vs. promotion; Lagomarsino *et al.*, 2020) is worthy of further investigation. Alternatively, understanding customer-based factors, including personality or sociopolitical views, will enhance scholarly understanding of customer-perceived benefits emanating from post–purchase GBE (Johnstone and Tan, 2015).

Finally, this research theorized and empirically examined the development of customers' desired self-identity and perceived life-meaning rewards as they ensue from engagement with green brands post–purchase. The proposed research design did not incorporate the potential emergence of other consumer engagement benefits (e.g., moral/discreet emotions). Correspondingly, further research may wish to investigate customer-perceived benefits of their engagement with green brands.

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