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Advocacy bias in the green marketing literature: Where seldom is heard a discouraging word

Erik L. Olson

Department of Marketing, BI Norwegian Business School, 0484 Oslo, Norway

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ABSTRACT

Advocacy bias is characterized by a preponderance of published articles that support an academic discipline's favored causes and paradigms, and by the consequent relative absence of bias countering skeptical/falsifying publications. Such imbalance between paradigm/cause advocates and skeptics can be an indication of a research process that has been corrupted by a widely shared scholarly desire to generate supportive results. The current research makes an empirical contribution to the advocacy bias literature with a content analysis based framework that assesses the level of green marketing (GM) advocacy bias among 107 GM related articles from marketing's *Financial Times* (FT) list journals and 9 GM related special issues (SI). Evidence of widespread GM advocacy bias is indicated by the almost complete lack of GM skeptical/falsifying articles. It is hoped that this first empirical examination of advocacy bias within the marketing discipline will inspire more discussion and research on the topic.

1. Introduction

Reducing the bias that is inevitable in almost all human endeavors is a key element of the scientific method (Krimsky 2013; MacCoun 1998; Merton 1973), and the focus of the current research is advocacy bias, which is defined by scholarly devotion to a favored cause or paradigm that can corrupt the research process to yield supportive results (Duarte et al. 2015; Ioannidis 2005; Redding 2013). Such bias is typically attributed to the advocacy induced 'blindness' of scholars to the weaknesses and faults of their favored cause/paradigm, and/or to the increasing politicalization and social activism of many academic disciplines (Cofnas et al. 2018; Duarte et al. 2015; Redding 2013; Tierney 2021). Widespread advocacy is also thought to corrupt the research funding and peer review processes as biased gatekeepers give added scrutiny and more frequently reject skeptical proposals and manuscripts that unsympathetically address problem areas that could provide falsifying results and reveal the limitations of their favored cause/paradigm (Krimsky 2013; Ioannidis 2005; Grundmann 2011; Popper 2005).

Advocacy bias can therefore thwart the self-correcting tendencies of the scientific method by keeping an opposing side of skeptics from emerging to counter the 'blindness' and activism of advocates (Duarte et al. 2015; MacCoun 1998; Redding 2013). A commonly cited example in recent years is the high proportion of leftist/liberal leaning scholars and gatekeepers in many academic disciplines, which has resulted in the dominance of peer reviewed literature advocating politically correct social justice viewpoints regarding contentious variables such as gender, race, and sexual orientation, and is a suspected causal factor in the widespread inability to replicate published research results in several fields (Duarte et al. 2015; OSC 2015; Redding 2013; Risnick 2018). Advocacy bias is therefore characterized by the dominance of peer reviewed articles featuring cause/paradigm validating topics and results, and by the relative absence of paradigm correcting publications featuring skeptical/falsifying topics and research designs (Cofnas et al. 2018; Duarte et al. 2015; Redding 2013; Tetlock 1994).

The advocacy bias literature is dominated by anecdotal evidence and conceptual discussion, and as a result there are no established frameworks or published empirical studies focusing on advocacy bias within the marketing discipline. The current research addresses this gap with a content analysis based framework to determine the degree of green marketing (GM) advocacy bias across a sample of 107 GM articles published between 2009 and 2018 in *Financial Times* list (FT) marketing journals and nine GM related special issues (SI). GM and the related sustainability cause are chosen as the focus of this analysis due to their regular appearance in marketing journals, and because past criticisms of the marketing discipline and several recent advocacy bias examples in related fields suggest that GM is likely to be susceptible to advocacy bias. The results reveal that the vast majority of sampled articles are motivated by a desire to support the GM paradigm and sustainability cause,

E-mail address: erik.olson@bi.no.

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while very few seek to understand or realistically address GM problem areas, although SI articles are significantly more likely to report GM falsifying conclusions than FT articles.

2. Background

The GM research community's potential susceptibility to advocacy bias is apparent when examining the history of GM and the sustainability movement, which both evolved out of fears about environmental degradation and unsustainably high consumption levels. Criticisms about wasteful consumption are nothing new to the marketing discipline, which has been accused of using ethically questionable persuasion tactics to create materialistic cultures since the early days of the modern business era, but such criticisms became even more intense with rise of the environmental movement in the 1960s and 70s (Farmer 1987; Kilbourne et al. 1997; Olson 1995). Many prominent marketing scholars responded to these sustainability related criticisms by advocating GM as a paradigm for repurposing the discipline's tools of persuasion and market understanding to address the dangers posed by unsustainable consumption (e.g. Kassarjian 1971; Kotler and Levy 1971; Kotler and Zaltman 1971; McDougal et al. 1981). Such advocacy by influential scholars could therefore encourage large portions of the marketing discipline to use their scholarship to support the sustainability cause and their discipline by demonstrating GM effectiveness in mitigating sustainability threats such as climate change, resource depletion, pollution, and inequitable resource distribution (UN 2021). GM/sustainability advocacy dominance within the marketing discipline and wider public might also inhibit paradigm self-correction by making would-be GM skeptics fearful of receiving the same type of career damaging rejection and vilification by funders, colleagues, and the media that 'politically incorrect' climate and environmental scientists have experienced after demonstrating errors in mainstream climate models and predictions (Curry 2016; Pielke 2016; Richardson 2019).

Advocate 'blindness' and the possible penalties associated with skepticism towards a discipline's favored causes/paradigms (particularly for potentially contentious ones such as GM/sustainability), means that any framework utilized to determine the degree of advocacy bias within a literature needs to identify skeptical/falsifying content that should be regularly published by a discipline not dominated by advocates, but rarely or never published when advocates dominate. The current roster of potentially rare GM skeptical/falsifying content is derived from extensive background research of GM/sustainability related topics from a wide variety of peer reviewed (although not articles from the current sample) and non-refereed sources (e.g. think-tanks, NGOs, popular media) over the history of the GM paradigm, which skeptics could have potentially incorporated into manuscripts during the 2009–18 study period. The next sub-sections will describe the 'discouraging' content that GM advocates are likely to avoid or reject across the three part framework utilized for bias assessment: 1) article motivation and positioning, 2) sampling and research design, and 3) results reporting and conclusions. This material is then used to determine the degree of advocacy bias within the sampled GM literature by measuring the proportion of articles with advocating/validating content relative to the proportion presenting paradigm challenging/falsifying content within each of the framework elements.

2.1. Reasons for skepticism in article motivation and positioning

GM failures: Marketing scholars can offer solid evidence of GM's influence in mitigating several sustainability threats via the successful promotion of the environmental movement and selected green policies, behaviors, and technologies (Davis 2008; Moore 2015; Olson 2018a). Yet a review of GM history also reveals a large number of failures, downsides, and dark-sides that should make open-minded observers skeptical about the paradigm and sustainability cause. Among the reasons for GM skepticism, perhaps the most important is the general failure of green marketers to persuade wide swaths of citizenry to voluntarily adopt most sustainable technologies and behaviors, which means examples of sustainable mass-market products/behaviors are rare and that the more common GM outcome is a small and unprofitable market share and frequent dependence on government aid (Gleim et al. 2013; Gleim and Lawson 2014; Olson 2013a, 2013b; Tierney 2015; Tobin 2020).

Another failure that GM skeptics might investigate involves the potential credibility damage caused by the many failed predictions and warnings of environmental disaster utilized by the larger body of 'green marketer' environmentalists, scientists, academics, managers, politicians, journalists, and celebrities to promote the sustainability cause and/or GM solutions (Bastasch 2015; Dugan 2014; Moore 2015). For example, the modern environmental movement and the GM paradigm both grew out of fears created by works such as the 1968 best seller *The Population Bomb* and 1972's *Limits to Growth* that predicted widespread starvation and the imminent depletion of oil and other natural resources due to unsustainable human consumption, yet during the intervening years obesity has become a major public health issue and fossil fuels still supply 80+% of rising global energy demand (Monbiot 2011; Moore 2015; Todd 2019). Similarly, trust in recent 'green marketer' predictions of apocalyptic climate change may be tempered by decades of media stories involving deadlines for 'required' drastic reductions in human sourced greenhouse gas emissions that have thankfully passed without the predicted dire consequences (Delingpole 2020; Stein 2020). Despite polling and research results that demonstrate widespread public concern for the environment (Hall et al. 2018), GM skeptics might therefore consider the degree to which such predictive failures are responsible for the low ranking of environmental threats as public policy concerns (Delingpole 2016; Dugan 2014; Olson 2018b), and the consequent degree these failures limit public responsiveness to GM persuasion efforts (Rogers 1975).

Yet even when GM efforts are successful at encouraging the adoption of sustainable practices and technologies, GM skeptics might consider whether such positive outcomes could be leading to unintended reversals caused by rebound effects, moral licensing, or other factors that explain the rising popularity of larger cars/appliances/homes, more frequent/further travel, or other consumption activities that offset expected reductions in resource use and emissions (Davis 2008; Olson 2013a; Phipps et al. 2013; Sorrell 2009). Investigations into such reversals may also help explain how decades of major private and public sector efforts have failed to stop rising global consumption despite warnings from experts that current resource use and emissions are 40 to 80% above sustainable levels (Carrington 2018; Davis 2008; Middleton 2020; Todd 2019).

GM downsides: Research consistently finds most people are unwilling to make significant sacrifices to accommodate sustainability downsides such as higher prices or less convenience relative to 'unsustainable' alternatives, and GM skeptics might therefore investigate the degree to which such tradeoffs explain the value-action gap between widespread environmental concern and the much rarer adoption of sustainable practices and lifestyles (Gleim and Lawson 2014; Olson 2013a; Palmer et al. 1995; Pujari et al. 2003; Tobin 2020). Low voluntary levels of sustainable behavior adoption also mean that many of the most encouraging signs of sustainability progress are commonly attributed to government regulations, mandates, and subsidies rather than the persuasive power of private sector green marketers (Lipton and Krauss, 2011; Olson 2015, 2018a), although recent protests over onerous new environmental regulations and taxes in Europe demonstrate that mandates cannot by themselves eliminate sustainability downsides (Kotkin 2020; Schaart 2019). Thus GM skeptics might consider investigating the challenges facing green marketers in overcoming public resistance to the even more painful tradeoffs and restrictive environmental policies proposed by public policy makers, and the macro-level sustainability downsides of more regulation including lost political and economic freedoms, and lower economic growth (Kotkin 2020; Olson 2018b;

Tobin 2020).

GM dark-sides: GM skeptics could also address the credibility dampening potential of GM dark-sides that involve the use of ethically questionable persuasion tactics by 'green marketers' desperate to overcome GM failures and downsides (Olson 2018b). For example, the Climategate and Fakegate scandals involved the ethically questionable efforts of prominent climate scientists to silence and disparage skeptics offering evidence that mainstream climate models were exaggerating global warming predictions and related consequences (Grundmann 2011; Olson 2018b), while the Dieselgate scandal involved Volkswagen's fraudulent promotion of 'clean diesel' technology on vehicles equipped with software that cheated on increasingly stringent emission standards (Clemente and Gabbioneta 2017). A skeptic could also consider the ethical and persuasion problems created by the many prominent 'green marketers' who espouse environmental sacrifice and resource use equity while hypocritically living large resource and emission footprint lifestyles themselves (Gunster et al. 2018; Summers 2019; Worrall 2019).

The willingness of the public to make significant sustainability sacrifices is also likely to be influenced by the perceived truthfulness of GM claims regarding the efficacy of promoted sustainability remedies (Rogers 1975), and research suggests that much of the public believes environmental benefits are often exaggerated for a variety of sustainable products (Chen and Chang, 2013; Gleim et al. 2013). Thus another GM dark-side that skeptics could examine involves not only the credibility dampening effects of corporate greenwashing, but also the growing number of NGO and public sector greenwashing cases arising from their use of exaggerated/untruthful information to promote 'sustainable' technologies, practices, and policies such as renewable energy, electric cars, organic food, plastic bag bans, and recycling (Darwall 2018; Kinnaman 2010; Lomborg 2013; Messenger 2018; Olson 2015, 2017; Schmidt et al. 2017; Semuels 2019; Seufert et al. 2012; Shellenberger 2018; Shriver 2018; Tierney 2015). 'Green marketer' suggestions to replace capitalism with socialism as the means to achieve more equitably sustainable consumption (e.g. Friedman 2009; Klein 2014; Randers 2017) also creates a researchable sustainability dark-side based on the disastrous environmental and human rights records of government dominated economies such as China, Cuba, Venezuela, and former USSR (DiLorenzo 1992; Regan 2019; Shellengberger, 2021).

As these examples illustrate there are many possible GM failures, downsides, and dark-sides that could motivate and position GM scholarship to better understand the many challenges facing green marketers and the limitations of the GM paradigm, which are reflected in the following research question:

> RQ1: What proportion of published GM scholarship is positioned to demonstrate GM success and virtue as a sustainability solution and/or business opportunity relative to articles positioned to address GM failures, downsides and dark-sides?

2.2. Sampling and research design

Research design choices have a major influence on the likelihood that studies achieve desired results (Duarte et al. 2015; Ioannidis 2005; MacCoun 1998). Since GM is the application of marketing science to the task of mitigating problems associated with unsustainable consumption levels, it would be expected that real world relevance and validation should be top priorities for GM researchers. Yet as the following subsections explain, the many GM failures, downsides, and dark-sides noted previously also mean that research designs that realistically reflect these GM problem areas are likely to yield many GM falsifying outcomes that advocates would prefer to avoid reporting.

Sampling: A major GM challenge involves the need to persuade the vast majority of citizens around the world to voluntarily adopt sustainable behaviors that will likely require substantial and painful reductions/changes in their current (or aspirational) consumption (Gleim et al. 2013; Kennedy 2009; Olson 2013a). Thus GM skeptics would be expected to utilize samples that include difficult to persuades segments such as the large number of people negatively impacted by GM downsides and dark-sides, while advocacy bias is indicated by the dominance of sampling among segments who have previously been identified as more receptive/sympathetic to GM appeals including the relatively young, educated, economically comfortable, politically Left, and sustainable technology/behavior adopters (Dunlap et al. 2000; Ginsberg and Bloom 2004; Hornsey et al. 2016; Hall et al. 2018).

Research Design: A skeptic would be expected to use research designs that push back against prevailing paradigm norms and/or seeks to find paradigm limits by accurately measuring long-term behavioral results in real world relevant environments (Ioannidis 2005; MacCoun 1998; Popper 2005). In contrast, GM advocates are expected to utilize 'easy to be green' stimuli/contexts, and avoid addressing GM/sustainability downsides and dark-sides or measuring possible long-term behavioral/outcome reversals (Monbiot 2011; Olson 2013a, 2015). A similar contrast is expected regarding the common underlying rationale for GM initiatives and environmental public policies, which is the a real or perceived need to correct market failures that lead to inadequate levels of sustainable behaviors (Grossman 2009; Lipton and Krauss, 2011; Olson and Biong 2015). Skeptics are thus expected to utilize research designs featuring predictors or benchmarks that accurately reflect the generally poor environmental performance of government controlled economies and/or freedom restricting regulations (i.e. green mandates, taxes, and regulations), while GM advocates will likely avoid such unpleasantries and/or focus on voluntary/rewarding (i.e. education, subsidies) interventions.

2.3. Results reporting and conclusions

Advocates often promote GM initiatives based on the promise of sustainability and economic benefits (e.g. Porter and van der Linde 1995; Unruh and Ettenson 2010), but the many problem areas noted previously suggest that GM initiatives will frequently show disappointing results. The high likelihood of discouraging GM outcomes together with the increasing pressure marketers face in demonstrating positive returns on marketing program investments (Hanssens and Pauwels 2016), suggests that GM skeptics will frequently report calculated/predicted sustainability and economic results to demonstrate GM limitations, while a widespread failure to report such results is an indicator of GM advocacy because advocates would otherwise certainly want to publicize significant positive results. Similarly, the frequent GM failure rate would suggest a high likelihood of generating GM falsifying outcomes when using real world relevant research designs, and therefore a dominance of publications featuring GM validating conclusions is also an indicator of GM advocacy bias.

As these examples illustrate there are many possible areas where research design and results reporting choices could artificially increase the chances of generating and reporting GM validating results and conclusions, which are reflected by the following research questions:

> RQ2: What proportion of published GM scholarship feature 'easy to be green' samples and research designs relative to samples and designs that reflect the real world difficulties facing green marketers?
> RQ3: What proportion of published GM scholarship report positive or no sustainability and economic results and GM validating conclusions relative to those that report GM falsifying sustainability or economic results and conclusions?

3. Method

Article Sample: The sample consists of GM related literature published between 2009 and 2018, and includes 31 articles from FT list

marketing journals (i.e. *Journal of Marketing*/JM, 12 articles; *Journal of Consumer Research*/JCR, 11; *Journal of Marketing Research*/JMR, 6; *Marketing Science*/MS, 2), and 76 articles from 9 GM related special issues (i.e. *International Journal of Consumer Studies*/IJCS (Peattie and Collins 2009), 14 articles; *Journal of Business Research*/JBR (Lee et al. 2009), 3; *Journal of Macromarketing*/JMacM (Kilbourne 2010; McDonagh and Prothero 2014; Prothero & McDonagh, 2015), 25 articles in 3 issues; *Journal of the Academy of Marketing Science*/JAMS (Hult 2011), 10; *Journal of Marketing Management*/JMM (McEachern and Carrigan 2012), 12; *Industrial Marketing Management*/IMM (Gupta et al. 2014), 6; and *International Journal of Advertising*/IJA (Yoon and Oh 2016), 6). The FT journals are chosen because their status corresponds

GM Literature Reviews and Conceptual publications:

1. *Successes:* Increasing frequency of GM related topics/keywords in marketing literature; 'Big-name' scholar proponents of GM topics; GM literature influence on practitioners.
2. Conceptual/literature search consideration of GM failures, downsides, and dark-sides including issues noted in other categories such as greenwashing, environmental hypocrisy, failed environmental predictions, failed green products (low adoption, low sales, financial losses); Losses of political and economic freedoms and reduced economic growth; Energy and food poverty; Poor eco/cost performance of many 'green' products and services such as electric vehicles, organic food, most recycling, renewable energy, plastic bag bans.

Green Technology adoption:

1. *Successes:* Growth in the development and adoption of many green technologies including electrified vehicles (e.g. EV and hybrids), renewable energy (e.g. solar, wind, geothermal, bio-fuels), energy efficient appliances and electronics, homes, cars, planes, cleaner production processes (e.g. less energy, water, chemical use), products/packaging made from recycled or other environmentally friendly materials; Development of some 'big name' green brands (i.e. Tesla, Body Shop, Patagonia, Simple Green).
2. *Benefits:* Lower operating costs (EVs, energy efficient products); Lower pollutants; Income and jobs from new green technologies/industries; Reputational advantages for green producers/brands (customer loyalty, ability to charge higher prices, brand equity).
3. *Ethical dark-sides:* Child labor used in the mining of EV battery raw materials; Energy poverty caused by more expensive green energy prices; Higher food prices and subsequent food poverty caused by land diverted from food production to bio-fuel production; Taxpayer funded green subsidies go mostly to wealthy adopters/investors and increase inequities.
4. *Sustainability dark-sides:* Bird kills and loss of wild-life habitat from renewable energy and bio-fuel farms; Heavy natural resource depletion, fossil fuel use, and pollution from the mining, raw material processing, manufacture, transport, and use of many green products including solar panels, wind generators, grid expansion, electric vehicles; Disposability problems for obsolete electric vehicle batteries, solar panels and wind generator blades that are difficult or impossible to recycle.
5. *Economic tradeoffs and failures:* Disposal problems for obsolete electric vehicle batteries, solar panels and wind generator blades that are uneconomic to recycle; High costs of taxpayer funded green subsidies; Low share/profitability of most green technologies unless heavily subsidized; Regulatory compliance costs for green technology adoption mandates.
6. *Economic tradeoffs and failures (consumer):* Higher prices, low reliability and other shortcomings of green products such as short-range and long recharging times for electric cars; short lifespan and need for redundant power sources for when the wind doesn't blow or the sun doesn't shine, poor energy content of bio-fuels; Possible rebound effects or moral licensing effects (i.e. more purchases, more use, larger sizes) that offset environmental gains.
7. Use of false, misleading, or exaggerated eco-claims by 'green marketers' that include minimizing or ignoring the failures, downsides, and dark-sides above, or hypocritical behavior (i.e. not behaving green themselves).

Exhibit 1. Context specific successes, benefits, failures, downsides, and dark-sides for article coding.

Environmentally Friendly Waste Disposal:

1. *Successes:* Growth in the recycling by both industry and households in most developing countries; High levels of recycling for several types of trash including metals and paper; Generally lower levels of litter in most developing countries; Generally favorable citizen attitudes towards recycling, composting, and other eco-friendly waste disposal methods.
2. *Benefits:* Generally lower levels of litter in most developing countries; Reductions in resource use/pollutants from recycling of some types of materials (e.g. aluminum); Less air, ground and water pollution where proper disposal is practiced; Some income potential for certain types of recycling (e.g. aluminum).
3. *Ethical dark-sides:* Use of false, misleading, or exaggerated eco-claims such as running out of landfill space, plastic trash from developed nations is a major source of ocean pollution; claiming that incinerating trash is 'recycling'; Shipping trash long distances to low cost countries for processing – often involving child labor.
4. *Sustainability dark-sides:* Emissions from shipping trash long distances to low cost countries for processing that often involves landfills or incineration; Extra emissions from multiple trash-pickups for separate recycling bins and from cleaning trash for recycling.
5. *Economic tradeoffs and failures:* High costs of trash sorting for recycling; Low profits or need for taxpayer subsidies to cover recycling losses; Higher cost of eco-friendly trash collection service; Negative economic/eco benefits of recycling for about 90% of trash.
6. *Economic tradeoffs and failures (consumer):* Time required for trash cleaning/sorting for recycling; Consumer dislike for products made from recycled materials; Higher price of eco-friendly trash collection service including penalties for non-compliance with recycling/composting mandates; Moral licensing effects that offset environmental gains; Low recycling and other environmentally friendly waste disposal rates in developing countries.
7. Use of false, misleading, or exaggerated eco-claims by 'green marketers' that include minimizing or leaving out failures, downsides, and dark-sides above or hypocritical behavior (i.e. not properly disposing of trash themselves).

Sustainable/ethical food adoption:

1. *Successes:* Growth in the development and adoption of organic, slow food, Fairtrade products including by major retailers such as Whole Foods and Walmart; Generally favorable citizen attitudes towards sustainable/ethical foods.
2. *Benefits:* Perceived benefits in taste and environmental friendliness; Economic benefits for local producers/farmer's markets; Preservation of heirloom species of crops and animals – biodiversity protection; Improved animal welfare; Better soil health from sustainable farming; Reputational/brand equity advantages for sustainable producers/brands.
3. *Ethical dark-sides:* Lower organic yields and lower efficiency of ethical foods can lead to food poverty and possible starvation of the poor; False/misleading use of 'organic' or 'natural' labels; Use of unsubstantiated claims regarding health or taste benefits of organics; Use of largely untested and unregulated 'natural' pesticides and insecticides in organic farming; Reliance on poorly paid workers in ethical food farming and production.

Exhibit 1. (*continued*).

most closely to the influential and selective journals from other disciplines where replication failures have been attributed to advocacy biases (Duarte et al. 2015; OSC 2015), and the selected time frame represents a decade with many GM related SIs demonstrating the importance of the GM/sustainability to the marketing discipline. The use of FT and SI articles also allows comparisons of advocacy bias between GM related publications from regular issues of marketing's most selective journals, and GM related SI publications from journals with more variable selectivity and specialization focus.

The sample is derived from an article by article search of marketing journals on the FT list during the entire ten year period and a search for relevant GM SIs published during the same decade, with article inclusion based on a search of the abstract, keywords, introduction, literature review, and method sections of all the journal sampling frame articles

Sustainable/ethical food adoption continued:

4. *Sustainability dark-sides:* Higher food miles associated with organic and Fair-trade products; Lower crop yields from organic farming methods that require more land and thereby reduce wildlife habitat; More greenhouse gases emitted by slower animal maturity and crop cycles caused by organic/ethical food farming.
5. *Economic tradeoffs and failures:* Higher production costs for most green/ethical foods; Low market share and questionable profit levels for green/ethical foods; High regulatory compliance costs for organic certification.
5. *Economic tradeoffs and failures (consumer):* Higher prices for green/ethical foods; Moral licensing effects that offset environmental gains; Lower quality of some ethical foods; Lack of trust in organic or natural brands/labels/producers – don't believe they are truly organic/natural and/or beneficial.
6. Use of false, misleading, or exaggerated eco-claims by 'green marketers' that include minimizing or leaving out failures, downsides, and dark-sides above, or hypocritical behavior (i.e. not behaving green themselves).

Sustainable Resource Use:

1. *Successes:* Development of new sources of supply/substitutes, greater efficiency and resource reuse to extend existing supplies – fewer fears of running out of natural resources; Increased wildlife and biodiversity protection; Generally favorable citizen attitudes towards sustainable resource use, sustainably produced products, and environmental protection.
2. *Benefits:* Economic benefits from nature tourism; Species preservation; More resources for future generations; Reputational/brand equity advantages for sustainable producers/brands.
3. *Ethical dark-sides:* exaggerated predictions about imminent depletion of natural resources such as oil, minerals, crop land, forests, water; Misleading/false negative information about plastic bag environmental impact; Lack of a measurable working definition for the word 'sustainable'; Greenwashing about sustainability initiatives – exaggerating environmental benefits.
4. *Sustainability dark-sides:* Reusable shopping bags can use more resources than plastic bags and carry germs that cause illness if not frequently washed.
5. *Economic tradeoffs and failures:* Higher production costs for sustainably produced products; Loss of income and employment in raw materials extraction and processing industries – especially impacting developing countries and global equity.
6. *Economic tradeoffs and failures (consumer):* Higher prices, lower convenience, comfort, and quality from sustainably produced products; Possible rebound effects or moral licensing effects (i.e. more use or more intense use) that offset environmental gains.
7. Use of false, misleading, or exaggerated eco-claims by 'green marketers' that include minimizing or leaving out failures, downsides, and dark-sides above, or hypocritical behavior (i.e. not behaving sustainably themselves).

Exhibit 1. (*continued*).

for relevant GM content. Article inclusion required at least some content devoted to the application of marketing theory, literature, or tools to a 'GM context', which is defined as any marketing actor or target audience (e.g. citizen/manager/policy maker, organization) involved with activities and/or outcomes pertaining to sustainable product/program marketing, environmental protection (e.g. biodiversity protection, pollution/climate change mitigation, etc.), or sustainability goals (e.g. sustainable and equitable natural resource use), including those expressing skepticism or demonstrating negative GM/sustainability outcomes. Sustainability is the focus of all SIs with the exception of the 'anti-consumption' themed JBR and 'social and environmental advertising' themed IJA SIs, and any non-GM articles are excluded from the SI content analysis.

Background Research: Coding categories were developed from the previously described background research on GM/sustainability issues utilizing keyword searches for GM relevant articles and literature reviews from a wide variety of academic/popular and marketing/non-marketing outlet sources. The background research was utilized to uncover general GM/sustainability issues and also context specific content for each of the 107 articles, and included searches for motivation/

positioning, research design elements, and results reporting that authors could have been potentially incorporated into balanced, realistic, or skeptical manuscripts during the sampled decade. This includes context specific GM benefits/successes and GM failures/downsides/dark-sides and related sustainability and/or economic outcomes, consumer satisfaction levels, sustainability tradeoffs, outcome reversals, government influences, and ethical controversies. Exhibit 1 displays background research derived exemplars of advocate and skeptic category content for the most popular sample article contexts that were applied to the article positioning and method coding categories displayed in Tables 1 and 2 for GM advocacy bias assessment. RQ2′s assessment of research design accuracy in addressing the real world challenges of the context under study is also based on the background research and utilizes four dimensions: 1) sustainability attribute tradeoffs, 2) other context specific sustainability difficulties and dark-sides, 3) relevant government influences such as green regulations, mandates, and subsidies, and 4) use of longitudinal data reflecting context purchase/use cycles.

Positioning and Motivation Content Coding: Sample article content from the introduction and literature review/background sections and related hypotheses and research questions were the primary source of the motivation and positioning category judgments, and coders were instructed to utilize as many categories as needed to cover the relevant content (see Table 1 rows 1–8), which was then used for article classification into one of the broad classes of article motivation and positioning used for GM advocacy bias assessment displayed in the bottom portion of Table 1 (rows 9–13). Articles classified as pure GM Advocates are those where the coders found positioning/motivation content that fit into one or more GM advocacy categories (rows 1–4), but no content that fit any skeptical categories (rows 5–8). In contrast, the GM Balanced category consists of articles with content that fit into one or more GM advocacy and skepticism categories, and the GM Skeptic category consists of an article with positioning that fit only into GM skepticism categories. Two categories also emerged from the instructions given to coders to note any article content that did not clearly fit the existing categories, which included the Sustainability Advocating GM Skeptics (hereafter referred to as SAGS) based on article motivation/positioning displaying clear sustainability cause advocacy combined with expressions of GM skepticism, and the second consisting of Green Context articles that were found to have no GM specific motivations/positioning but utilized a green/sustainability context to test a more widely applicable theory or model.

Method Content Coding: Coding content for the research design content categories listed in Table 2 is taken primarily from empirical article method and results sections. A review of relevant background literature focusing specifically on GM advocacy or skeptic biases in the article samples formed the basis for coding decisions related to sampling (see Table 2 rows 1–3). This background research revealed that university students and Amazon MTurk panel members vastly over-represent segments with the demographic and political leaning that have been indentified in previous research as much more likely than the general population to support GM/sustainability causes and solutions, while vastly under-representing the older, less educated, working-class, religiously observant, politically Right demographics and pro-industry viewpoints typically found to be more skeptical about sustainability threats and GM efforts (Dunlap et al. 2000; Hall et al. 2018; Hornsey et al. 2016; Levay et al. 2016; Soffen 2014). Consequently, articles featuring samples of sustainable behavior/technology adopters are coded as purposely chosen GM friendly samples, while articles featuring students and MTurk samples or otherwise disproportionately representing the economically comfortable, highly educated, political Left, and/or pro-sustainability viewpoints are coded as demographically GM friendly samples. In contrast, samples dominated by or purposely chosen to represent GM skeptical demographics or otherwise displaying GM or sustainability skepticism are coded as GM Skeptical (Ginsberg and Bloom 2004; Hall et al. 2018; Roser-Renouf et al. 2016), while samples said to broadly represent the geographic or literature (for literature

Table 1
Article Motivation and Positioning Results.

	Overall	FT (a)	SI (b)	empirical	conceptual
	n = 107	31	76	82	25
Positive GM Motivations and Positioning Categories:					
1. GM as a sustainability fix and/or business opportunity.	74%	81%	71%	70%	85%
a. The need to address sustainability issues (i.e. sustainable consumption/resource use; climate change, pollution, nature preservation, resource equity). IJA = 95% (c)	50	48	51	44	69 (2)
b. GM as a business opportunity (i.e. GM generated sales, profits, share, ROI, reputation, loyalty). IJA = 94%	47	52	45	44	54
2. Demonstrate GM's ability to persuade practitioners/citizens to adopt sustainable attitudes, behaviors, products. IJA = 90%	33	48	26 (2)	33	31
3. Examine business/ citizen sustainable role models. IJA = 85%	31	6	41 (3)	35	15 (1)
4. Demonstrate GM research importance/ opportunity. IJA = 97%	17	3	22 (2)	11	35 (3)
GM Skeptical Motivations and Positioning Categories:					
5. Skepticism about GM abilities to solve sustainability problems (i.e. sustainable/ equitable resource use/ emissions). IJA = 98%	9	0	13 (2)	2	31 (3)
6. Focus on GM failing to achieve positive outcomes (i.e. low green adoption rates, poor financial returns, sustainability failures and unintended reversals – rebound, ML). IJA = 88%	8	13	7	11	0 (1)
7. Focus on GM downsides (i.e. tradeoffs/high costs). IJA = 90%	6	0	8	5	8
8. Focus on GM dark-sides (i.e. ethical scandals, hypocrisies such as greenwashing, exaggeration/deception to sell sustainability, green marketers failing to live green lifestyles). IJA = 100%	0	0	0	0	0
Overall Motivation and Positioning Categorization (RQ1):					
9. Pure GM Advocacy – no skeptical positioning/ motivation.	76%	68%	79%	78%	68%
10. Sustainability Advocacy with GM Skepticism (SAGS).	9	0	13 (3)	2	32 (3)
11. GM Balance – GM advocacy and GM skepticism.	8	13	7	11	0 (1)
12. GM Skepticism – no GM or sustainability advocacy.	1	0	1	1	0

(*continued on next page*)

Table 1 (*continued*)

	Overall	FT (a)	SI (b)	empirical	conceptual
	n = 107	31	76	82	25
13. Green Context – non-green motivation/ positioning. IJA = 98%	6	19	0 (3)	7	0

Notes: (a) FT = Financial Times journal JM, JMR, JCR, MS; (b) SI = Special Issues: IJCS, JBR, JMacM, JAMS, JMM, IMM, IJA; (c) IJA = inter-judge agreement; (1) (2) (3) = difference between FT & SI % or Empirical & Conceptual % significant at 0.1, 0.05, and 0.01. .respectively.

reviews) population of interest are coded as non-biased. In order to avoid overzealous coding of articles as GM advocacy biased, coders were instructed to use only a single sample category representing the least GM friendly sample within the article. Thus if only one sample (of several) used a non-biased or GM skeptical sample the article was coded as non-GM biased even if other samples were judged GM friendly.

Coding of the four research design dimensions followed a two-step process (see Table 2 rows 4a-d), with the first step involving a comparison of the accumulated background material along with an evaluation of the internal consistency of the article content to determine if the dimension was relevant to the article's real world context or stated purpose. If the dimension was judged relevant, then the article content was coded as GM advocacy biased when such content was absent or unrealistically spun to minimize its potentially negative effects. For example, if the background research or an article's own positioning indicated the relevance of public policy or green attribute tradeoffs in the context under study, these bias indicators were coded as relevant for the corresponding government influence and tradeoff dimensions of the research design appraisal. If this relevant content was then found to be missing or unrealistic in the research design, the article was coded as GM advocacy biased. All dimensions except government influence were judged relevant for all the empirical articles, and reported bias percentages for the government dimension reflect only the 30% of articles where public policies were judged relevant. To again minimize overzealous coding of articles as GM advocacy biased, the judges were instructed to code the article as non-GM biased if any part of the research design was in compliance with a non-bias judgment on the dimension. Thus if only one of many relevant sustainability related tradeoffs was accurately used as stimuli or in questioning, or only one study (of several) accurately described a GM downside or used long-term data, the article was coded as unbiased even if other related elements contained indications of GM advocacy.

Results and Conclusion Content Coding: Coding content for the sustainability and economic results reporting categories listed in Table 2 (rows 5–7) are primarily taken from each article's results, discussion, and conclusion sections and followed a similar two-step coding process, where the first step was an evaluation of the relevance/possibility of providing a calculated/predicted sustainability or economic outcome from the context of interest based on the accumulated background material and article content. Thus coders were instructed to examine article positioning and related background research to determine if sustainability and/or economic outcomes categories were relevant to the article context, which proved to be the case for 93% of empirical articles with the exceptions being those featuring content analysis looking for sustainability themes/keywords in academic (e.g. Chabowski et al. 2011; Cronin et al. 2011) or popular media and corporate sources (e.g. McDonagh and Brereton 2010; Nikolaeva and Bicho 2011). To minimize overzealous or biased coding, category relevant articles were coded as non-GM biased for any type of quantitative sustainability (i.e. resources used/saved, emissions generated/reduced, waste generated/reduced, resources redistributed) or economic result/prediction (i.

Table 2
Article Method Choices and Results Reporting.

	Overall	FT	SI	Advocate	Balance	SAGS	GC (a)
	n = 82	30	52	64	9	2	6
Sample and Research Design (RQ2):							
1. GM friendly sample.	78%	83%	75%	77%	78%	100%	100%
a. sample purposely chosen for sustainability practices (i.e. green technology adopters, consumption minimizers). IJA = 96%	33	13	44 (3)	31	33	50	50
b. sample has green demographics/viewpoints (i.e. students, MTurk, wealthy, educated, urban, Leftist politics). IJA = 98%	47	69	32 (3)	45	44	50	50
2. Population representative sample (unbiased). IJA = 100%	20	13	23	23	22	0	0
3. GM skeptic sample (i.e. known green skepticism, less green demographics; lower socio-economic, rural, Right). IRA = 100%	2	3	2	2	0	0	0
4. Research design realism: % lacking realism across dimensions.	98	97	98	98	89	100	100
- % of four realism categories lacking real world realism.	76	75	77	78	65	65	71
a. Realistic sustainability tradeoff use? IJA = 86%	12	10	13	11	22	0	33
i. tradeoffs mentioned in positioning? IJA = 95%	64	87	54 (3)	67	67	30	83
b. Realistic/challenging stimuli or questioning (i.e. probes into GM problem areas/weaknesses, no use of exaggerated pro-green descriptions)? IJA = 90%	30	44	23 (2)	24	67	50	33
c. Realistic government influence (i.e. lacking relevant subsidies, mandates, regulations). IJA 90%	20	6	28 (2)	39	33	0	17
i. Support govt. interventions in positioning? IJA = 96%	56	32	66 (3)	56	33	100	33
d. Long-term data (i.e. equal to purchase cycle). IJA = 88%	33	40	29	33	22	50	50
Results Reporting and Conclusion (RQ3):							
5. Sustainability results calculated/predicted for context (i.e. resource use, emissions, pollutants). IRA = 100%	11	23	2 (3)	12	11	0	0
a. Positive sustainability results reported. IRA = 100%	9	23	0 (3)	12	0		
b. Macro-Sustainability results reported. IRA = 100%	0	0	0	0	0	0	0
6. Economic/Financial results calculated/predicted (i.e. ROI, profit, sales, mkt. share, brand equity). IRA 99%	9	17	4 (2)	5	22	0	17
a. Positive financial results reported. IRA = 100%	5	10	2	5	11		0
7. GM/sustainability validating conclusion (i.e. overall favorable green/GM sentiments) IRA = 86% (empirical%/conceptual%)	62 (55/ 80)	81 (2)	54 (3)	67	22	60	67

Notes: (a) GC = Green context, SAGS = sustainability-advocating GM skeptic; (2) (3) = FT & SI% significant at 0.05, 0.01.

e. GM derived ROI, profits/losses, share price, costs/price, change in asset value) even if other variables/values were relevant for the context. The conclusions for all articles (including non-empirical) were coded for GM/sustainability valence, with articles coded as GM/sustainability falsifying when serious failures or faults were mentioned that indicated skepticism about the chosen GM/sustainability context.

Inter-judge Agreement: Utilizing the content analysis procedures outlined by Kassarjian (1977), two coders thoroughly discussed the category definitions and context background material to resolve uncertainties about their Yes/No judgments. Differences between judges were resolved through discussion after the coding task, and the inter-judge agreement (IJA) rates range from 85 to 100% across the indicators (see tables 1 and 2), which suggest the procedures provided good guidance for consistent coding (Rust and Cooil 1994). The steps taken to avoid overzealously inflating the reported rates of GM/sustainability advocacy also mean that the coding results are conservative representations of GM advocacy.

4. Results

Articles cited in the following results reporting are simply exemplars or outliers of the dominant patterns found, and are therefore not criticisms of any individual article validity.

Article Contexts: Although not used as indicators of GM advocacy bias, there are some significant differences in the number and popularity of contexts utilized by the 107 articles. At 26% of the articles (3% FT, 36% SI, $p < .01$) the most popular context is Academic Literature Reviews/Conceptual manuscripts that include both quantitative keyword searches in general sustainability literatures (e.g. Chabowski et al. 2011), and qualitative reviews of literature and concepts from more specific academic literatures such as eco-labeling effectiveness (e.g. Horne 2009), social marketing and demarketing (e.g. Kotler 2011), supply chain sustainability (e.g. Closs et al. 2011), and Corporate Social Responsibility (e.g. Peloza and Shang 2011). Other popular contexts are Green Product/Technology Adoption including electrified cars and renewable energy used by 16% of articles (32% FT, 9% SI, $p < .05$); Sustainable/Ethical Food Adoption including organic, Fairtrade, and slow food at 12% (13% FT, 12% SI); Environmentally friendly Waste Disposal including recycling and composting at 11% (23% FT, 7% SI, $p < .05$); and Sustainable Resource Use mostly focused on water and energy savings at 10% (19% FT, 7% SI, $p < .1$). The other 6 contexts including Pollution & Emission Reduction, Consumption Minimizing Role Models, and Green/Sustainable: Corporate Strategy, Behavior Consistency, Consumer Knowledge, and Themes in popular/corporate media are utilized by the remaining 25% of the articles, with FT and SI articles represented in 7 and 11 of the 11 total context categories respectively.

4.1. GM advocacy motivations/positioning

Among all the articles, 74% are motivated by a desire to solve/avoid sustainability problems, and/or by GM's growing popularity and business opportunities, with 50% stressing sustainability imperatives (48% FT, 51% SI, see Table 1 rows 1,1a) and 47% the business prospects (52% FT, 45% SI, rows 1, 1b). For example, Olsen et al. (2014), Park (2009), and Kumar and Christodoulopoulou (2014) advocate GM as a means of increasing brand equity, market share, and competitive advantage respectively. GM understanding and tools are also advocated as an effective means to improve sustainability persuasion/adoption by 33% of the articles (48% FT, 26% SI, row 2), as exemplified by articles focusing on how GM could effectively encourage more sustainable behaviors (e.g. Rettie et al. 2012; White et al. 2011) or overcome sustainability downsides/difficulties such as attribute tradeoffs (e.g. Lin and Chang 2012; Luchs et al. 2010), or moral licensing (e.g. Juhl et al. 2017). GM market understanding in the highlighting of sustainable practices or segments as potential role models is the focus of 31% of the articles (6% FT, 41% SI, row 3), with several articles examining low consumption groups (e.g. Cherrier 2009; Gorge et al. 2015; Shaw and Moraes 2009), or early adopters of sustainable technologies and practices (e.g. Ekstrom and Salomonson, 2014; Moon and DePelsmacker 2012; Thogersen and Zhou 2012). GM is also promoted as a promising research context by 17% of the articles (3% FT, 22% SI, row 4) as exemplified by literature reviews demonstrating GM's importance via changes in GM article/keyword frequency over time (e.g. Cronin et al. 2011, Peloza and Shang 2011).

GM Skeptic Motivations/Positioning: Across all the articles, 9% (0% FT, 13% SI, see Table 1 row 5) are motivated by support for the sustainability cause while arguing for more government control of commerce and personal behavior because of their general skepticism regarding GM effectiveness in achieving desired sustainability results (e.g. D'Souza and Taghian 2010; Prothero et al. 2010; Varey 2010). Motivation/positioning focusing on a specific GM failure to achieve positive sustainability or economic outcomes was the focus of 8% (13% FT, 7% SI, row 6), as exemplified by the Geilens et al. (2018) study of the possible negative financial impact of Walmart's sustainability mandates on their suppliers, and the Morgan and Birtwistle (2009) examination of the relatively low sustainability concern among young fast fashion consumers. GM downsides were the focus of 6% of the articles (0% FT, 8% SI, row 7) as exemplified by the Ramirez et al. (2014) examination of sustainable supply chain tradeoffs, and the Peattie and Peattie (2009) discussion regarding difficulties in using social marketing to reduce consumption. No articles were motivated/positioned to examine GM dark-sides such as green marketer ethical scandals or hypocrisies (row 8).

RQ1 – Bias in Motivation/Positioning: The coding resulted in 76% of the 107 articles being classified as pure GM Advocates with no skeptical category motivation/positioning (68% FT, 79% SI, see Table 1 row 9). The 9% sustainability cause advocating GM skeptic articles from row 5 received the SAGS classification (0% FT, 13% SI, row 10), while another 8% (13% FT, 7% SI, row 11) are classified GM Balanced because they advocate some type of GM practice or ability, but are also motivated to investigate GM downsides or failures such as unintended sustainability reversals caused by rebound effects or moral licensing (e.g. Karmarkar and Bollinger 2015; Strandbakken 2009; Sun and Trudel 2017), or segments unconcerned/inconsistent with their sustainability behaviors (e.g. McDonald et al. 2009; Ngo et al. 2009; Rameriz et al. 2014, Reich et al. 2018). An SI article (e.g. Taylor and Sarkees 2016) examining the negative impact of green public policies on corporate economic results is the only pure GM Skeptic (row 12), while a further 6% use a Green Context (19% FT, 0% SI, row 13) to test more widely applicable theories including social contagion (e.g. Narayanan and Nair 2013), network effects (e.g. Shriver 2015), information retrieval (e.g. Reczek et al. 2018), social approval (e.g. Olson et al. 2016), and message assertiveness (e.g. Grinstein and Kronrod 2016).

The large disparity between the 76% classified as pure GM Advocates and the 18% with at least a partial dose of GM skepticism likely understates the overall level of GM advocacy because of the universal avoidance of many troubling GM failures, downsides, and dark-sides including most listed in Exhibit 1. For example, the only article to investigate sustainability skepticism and its impact on public trust in environmental science and GM solutions limited their inquiry to a hypothetical Big Oil funded 'astroturfing' campaign (Kang et al. 2016). Thus none of the articles considered the effects of any of the widely publicized cases of failed or exaggerated predictions of environmental disaster or other ethically questionable persuasion efforts originating from GM/environmental sources. Green marketer hypocrisies were also universally avoided as exemplified by the Giesler and Veresiu (2014) study of the austerity oriented sustainability discussions emanating from the Davos World Economic Forum, which failed to consider the hypocrisy implications of the jet-setting participant's large resource footprints (Summers 2019). Similarly, most articles utilizing sustainable/ethical product/behavior adoption contexts such as biofuels (e.g. Shriver 2015),

solar panels (e.g. Bollinger and Gillingham 2012), electrified cars (e.g. Moon and DePelsmacker 2012; Narayanan and Nair 2013), trash recycling (e.g. Trudel et al. 2016, White et al. 2014), and ethical/sustainable foods (e.g. Chaudhury and Albinsson 2015; Krystallis, Grunert, de Barcellos, Perrea, & Verbeke, 2012; Thogersen 2010; Thogersen and Zhou 2012; Varul 2009) unquestioningly accepted the 'conventional wisdom' regarding their environmental/ethical virtues and therefore failed to address relevant dark-sides and downsides in their motivation/positioning. Thus the RQ1 findings demonstrate that the vast majority of articles focus on GM success stories and sustainable role models, while virtually none are motivated to examine the potentially falsifying implications of the most serious GM dark-sides, downsides, or failures.

4.2. Sample and research design

Although not used as indicators of GM advocacy there are a number of significant differences between the FT and SI articles in terms of method choices starting with the 97% of the FT articles that are empirical versus 68% of the SI articles, with the remainders comprised of anecdotal essays, conceptual discussions, or non-quantitative literature reviews ($p < .01$). This rather large proportion of non-empirical articles in a field with a scholarly history going back decades is acknowledged by a few SI articles, which note that a great deal of the sustainability/GM related literature is conceptual or anecdotal with surprisingly little empirical proof of its hypothesized abilities and advantages (e.g. Cronin et al. 2011; Ramirez et al. 2014; Hoejmose et al. 2014). Among the empirical articles, purely quantitative methods are employed significantly more often among FT articles (97%) versus SI articles (42%), while the respective figures for articles employing only qualitative methods are also significantly different (3% vs. 43%) with the remainder using a mixture (all $p < .01$). The most common methods are experiments (70% vs. 13%), qualitative interviews (3% vs. 37%), quantitative surveys (10% vs. 29%), secondary data modeling (27% vs. 2%), and qualitative content analysis (3% vs. 17%) for the FT and SI articles respectively (all differences but content analysis significant at $p < .05$, content analysis $p < .1$). Among the motivation and positioning groups, the pure GM Advocate articles are 81% empirical, while the GM Balanced, Green Context, and pure GM Skeptic articles are 100% empirical, and only 2 of 10 SAGS articles are empirical (Note: since all but the GM Advocacy group have 10 or fewer articles significance tests are omitted). GM Advocates utilize purely quantitative methods versus purely qualitative methods 47% and 27% respectively, while the GM Balanced are 67%/22%, Green Context and GM Skeptic are 100% quantitative, and the SAGS empirical articles are 1 of each.

RQ2 – Sample Bias: RQ2 asks what portion of articles use 'easy to be green' samples, and among the 82 empirical articles 78% are found to feature only GM friendly samples (83% FT and 75% SI, see Table 2 row 1). This includes 33% of all empirical articles specifically choosing samples based on sustainable consumption behaviors and lifestyles including consumption minimizer groups (e.g. Gorge et al. 2015; Shaw and Moraes 2009), ethical food proponents (e.g. Chaudhury and Albinsson 2015; Thogersen 2010), and green practice/technology adopters (e.g. Bollinger and Gillingham 2012; Brindley and Oxborrow 2014; Hoejmose et al. 2014; Narayanan and Nair 2013) (13% FT and 44% SI, row 1a). The remaining 47% of empirical articles with GM friendly samples are comprised of respondents with demographics/viewpoints likely to be more receptive/sympathetic to GM persuasion and sustainability causes (69% FT and 32% SI, row 1b), which includes the 11% of articles utilizing samples from non-Western/developed countries that all drew their respondents from wealthy or educated segments such as Chinese BMW buyers (e.g. Brough et al. 2016), and Brazilian, South Korean, and Taiwanese university students (e.g. Chen 2016; Dalpian et al. 2015; Yoon et al. 2016). GM friendly samples similarly dominate all the motivation/positioning groups, while only two articles purposely chose samples thought to be skeptical or critical of GM efforts (e.g. Grinstein and Nisan 2009; Taylor and Sarkees 2016) (3% FT, 2% SI, row 3). As the only FT article with a skeptical sample the Grinstein and Nisan (2009) results may explain why advocates avoid challenging samples, as their skeptic group was 90% less responsive to the same Israeli water demarketing campaign versus the wealthier and more educated comparison group.

In contrast, only 20% of empirical articles use representative samples (13% FT, 23% SI, row 2), yet all the geography based samples represent developed countries that are among the top 15% 'greenest countries' in the world (e.g. Belgium, Canada, Denmark, Greece, Israel, New Zealand, U.K., U.S., EPI 2018). While these samples from relatively green countries are not coded as biased, the dominance of wealthy and educated samples does mean that none of the empirical articles test GM effectiveness on respondents representing the billions of low income and impoverished people around the world who are potentially the most negatively impacted by both environmental degradation and sustainability product/policy tradeoffs that reduce economic growth and increase living costs (Darwall 2018; Farmer 1987; Lomborg 2018; Olson 2017).

RQ2 – Research Design Bias: Tradeoff realism is one the four research design dimensions used to answer RQ2, and 64% of the articles acknowledge at least one context specific tradeoff (see Table 2 RQ2 row 4ai), but only 12% utilize research designs that realistically include at least one relevant tradeoff (10% FT, 13% SI, row 4a). For example, Peloza et al. (2013) uses a realistically higher price for the sustainable alternative, but reduces the tradeoff pain by giving respondents money to make their choice, while several Waste Disposal articles mention but did not subject their respondents to the burden of trash sorting. The dimension 2 results find that 70% of the empirical articles utilize GM friendly/sympathetic stimuli/questioning and therefore fail to ask questions that probe and accurately address relevant non-tradeoff GM difficulties and dark-sides (56% FT and 77% SI, row 4b). This lack of probing and realism is exemplified by the articles utilizing searches for sustainability keywords and themes in academic literature or popular media, as none specifically searched for negative or GM falsifying content such as those listed in Exhibit 1. GM sympathy is also apparent among the articles motivated by a desire to demonstrate GM's ability to overcome sustainable product liabilities such as a lack of strength, quality and effectiveness (e.g. Brough et al. 2016; Lin and Chang 2012; Luchs et al. 2010; Newman et al. 2014), as all unrealistically assume these tradeoffs are simply 'faulty' consumer beliefs that are overcome with relatively cheap and easy 'corrective' communications. Hence none employed research designs that considered why green marketers so rarely issue 'corrective' communications if in fact such tradeoffs are imaginary, nor the ethical dark-sides and legal repercussions of making false claims of equivalence with 'unsustainable' alternatives. There was also a lack of interest in probing the possible sustainability hypocrisies of 'green marketers' or the respondents themselves among the empirical articles. For example, a common motivation among articles studying low consumption segments is the hope that they might provide more sustainable role models for wider audiences, yet none measured the resource/emission footprints of the studied cohorts to determine if they were truly 'sustainable', nor tested the attractiveness of their austere lifestyles with 'normal' consumers. Similarly, none of the articles questioned low consumption role models or any other sustainability influencers about common attitudinal inconsistencies including opposition to possible sustainability solutions such as GMO foods and nuclear power (Monbiot 2011; Olson 2017; Paarlberg 2021).

Although 56% of the articles promote sustainability related public policies in their motivation/positioning (see row 3ci), dimension 3 results show only 20% of the empirical articles use research designs that accurately reflect relevant government coercion or subsidy in their chosen context stimuli or questions (6% FT and 28% SI, row 3c). For example, the social contagion models utilized by Bollinger and Gillingham (2012) and Narayanan and Nair (2013) study how neighbor influence led to greater hybrid car and solar panel adoption in California neighborhoods respectively, but neither study's model include the

subsidies offered by the state to encourage such adoption, nor compare the significant contagion effects found in California with those in less subsidized markets. Even the articles utilizing a public sector GM context only tested communication based influence attempts to encourage water savings or recycling, and therefore did not include any sort of freedom inhibiting tax or mandate that commonly accompany such efforts (e.g. Grinstein and Nisan 2009; White et al. 2011; White and Simpson 2013). The dimension 4 results show that long-term data is used in only 33% of the empirical articles, and although these studies were classified as unbiased they most often featured longer-term data that did not track behavior at the individual respondent level to rule out sustainability reversals caused by longer-term reversion to the mean, rebound effects, or moral licensing (40% FT and 29% SI, row 4d). The importance of long-term data in accurately determining true sustainability levels is demonstrated by one of the few articles featuring data that tracked individual behavior over time, where White et al. (2011) found initial GM induced recycling improvements reduced by half after 6 months.

In terms of accurately reflecting the green marketing challenges of each article's context across all 4 dimensions, 98% lack realism in at least 1 dimension (97% FT, 98% SI, row 4), with only two articles utilizing realistic research designs across all 4 dimensions (e.g. Brindley and Oxborrow 2014; Gielens et al. 2018). Thus the average article utilizes GM friendly method choices in approximately 3 out of the 4 realism dimensions (76% overall, 75% FT, 77% SI, row 4-) and are similarly high across all the article motivation/positioning groups, which suggests that even articles motivated by at least some GM skepticism are reluctant to challenge GM/sustainability with research designs that capture the difficulties facing green marketers.

4.3. Research results and conclusions

RQ3 asks what proportion of articles report sustainability and/or economic results and GM validating conclusions. In terms of sustainability/economic results reporting, only 11% of the empirical articles measure or calculate any tangible sustainability consequence such as reduced resource use (23% FT and 2% SI, see Table 2 row 5), and only 9% any tangible economic consequence such as ROI (17% FT and 4% SI, row 6). Sustainability and economic results reporting are similarly rare among all the article motivation/positioning groups, which is in stark contrast to the 74% of articles motivated by a desire to solve/avoid sustainability threats and/or by GM's business opportunities. Furthermore, 0% of the empirical articles translate their context results into macro-level estimates of sustainable resource use or emissions (row 5b).

The reason for this lack of sustainability or economic results reporting may be hinted at by the 9 empirical articles utilizing a Sustainable Resource Use context that is home to 4 of the 8 empirical articles providing sustainability results (44% of context articles), and 3 of the 7 to calculate any economic result (33% of context articles). For example, 3 articles focus on how GM tools can reduce towel and light use and consequent water and energy consumption among hotel guests, and are able to demonstrate lower operating costs and better sustainability results for the participating hotels (e.g. Baca-Motes et al. 2013; Giebelhausen et al. 2016; Wang et al. 2017). Similarly, in calculating the lower water use resulting from a government led demarketing campaign, Grinstein and Nisan (2009) avoid the need to report the lower sales and consequent poor financial results that might discourage private sector demarketing efforts, while Karmarkar and Bollinger (2015) find store efforts to reduce plastic bag use results in a positive financial outcome due to moral licensing induced sales of profitable indulgent groceries. Thus the Sustainable Resource Use context is where 'win-win' outcomes for the marketer/user and the environment appear to be most likely, and is home to 4 out of the 7 articles and 2 of 4 articles showing positive sustainability and economic results respectively. In contrast, among the other 73 empirical articles only 5% calculate any sustainability or economic results, while only 4% and 3% respectively are able to demonstrate positive outcomes (rows 5a and 6a). Yet even among the 'win-win' Sustainable Resource Use context articles there was no probing to determine how real or durable the gains were. For example, none of the hotel guest articles attempted to calculate whether the sustainability benefits of the measured water/energy savings might be offset by rebound or moral licensing effects such as additional travel by guests, which is a strong possibility given the frequent flying rationalization found among large portions of environmentally concerned travelers in the SI article by Rokka and Moisander (2009). Similarly, Karmarkar and Bollinger (2015) did not address the possible negative sustainability impact of the growth in food sales they report, or consider the discouraging sustainability outcomes from plastic bag restrictions found among the literature reviewed by the Ritch et al. (2009) SI article.

The discouraging GM conclusions of Ritch et al. (2009) and Rokka and Moisander (2009) exemplify the 46% of SI articles reporting GM falsifying conclusions such as inconsistently sustainable respondents (e.g. Dalpian et al. 2015; McDonald et al. 2009; Ngo et al. 2009), or the ineffectiveness/unattractiveness of examined sustainability policies and strategies (e.g. Horne 2009; Standbakken 2009; Taylor and Sarkees 2016) (see Table 2 row 7 top). In contrast, a significantly lower 19% of the FT articles report GM/sustainability falsifying conclusions, as the vast majority of studies report GM validating improvements in sustainability attitudes, intentions, and behaviors (e.g. Grinstein and Kronrod 2016; Luchs et al. 2010; Narayananan and Nair 2013; Trudel et al. 2016), or success in private and public sector GM programs (e.g. Grinstein and Nisan 2009; Juhl et al. 2017; Olsen et al. 2014; White et al. 2011). Among the article motivation and positioning groups, only the GM Balanced group reports less than a majority of articles (22%) with GM/sustainability supporting conclusions. The 55% rate of GM/sustainability validating conclusions across all empirical articles is also significantly lower than the 80% among non-empirical articles (row 7 bottom, $p < .05$). This suggests that pro-GM/sustainability conclusions may be easier to generate in theory than empirically even when 'easy to be green' research designs and samples predominate, and perhaps also explains why nearly 25% of the GM/sustainability advocating articles are not empirical.

5. Discussion

While the current research makes a contribution with the first empirical study of advocacy bias within marketing, this discussion starts with an acknowledgement of the potential limitations of the content analysis based framework developed for this task. Since the coding is based on the written content of the sampled articles surviving the review processes of the sampled journals, it is impossible know whether the sampling frame misses a verdict changing cache of GM skeptical/falsifying articles published elsewhere. Fortunately, reassurance in the GM advocacy bias verdict is provided by the extensive background research utilized to develop the coding categories, which went far beyond the sampling frame that is the focus on this analysis, and revealed very few GM skeptical/falsifying publications in marketing journals. Thus a large undiscovered cache of GM skeptical/falsifying marketing publications is highly unlikely, and indeed most of the GM skeptical background material used to compile Exhibit 1 came from non-marketing journals, NGO publications, and popular media sources. Furthermore, the relative lack of skeptical positioning among the sampled articles also means there were few references to GM dissenting literature, and this can only mean that little such literature exists or that it was not cited by the current sample's authors due to advocacy induced avoidance/blindness, which supports a GM advocacy bias verdict in either case. Nevertheless, this potential limitation together with the inherent impossibility of directly measuring the cognitive biases of this sample's authors and gatekeepers also means there is no viable way to determine the degree to which advocacy induced 'blindness', skeptic fears of rejection/ridicule, journal gatekeeper biases, or other factors explain the dominance of GM/sustainability advocating publications. These limitations therefore mean

that it is once again important to acknowledge that the GM advocacy bias verdict and accompanying implications are not based on critical judgments regarding the validity and relevance of individual articles, but instead on overall sample patterns and comparisons between the FT and SI articles, which are discussed as they relate to the GM paradigm and sustainability cause in the following sub-sections.

Few GM skeptical/falsifying articles: Despite 50+ years of GM scholarship and practitioner efforts, there has been disappointingly little success in converting widespread pro-sustainability attitudes into widely popular and profitable sustainable practices and behaviors (Carrington 2018; Gleim et al. 2013; Gleim and Lawson 2014; Tobin 2020). This would suggest that hypothesizing against the GM paradigm together with the use of real world relevant research designs would provide an easier path towards achieving significant results if the primary scholarly goal was not GM advocacy. A verdict of widespread GM advocacy bias is therefore supported by this sample's almost total lack of interest in addressing the GM failures, downsides, and dark-sides listed in Exhibit 1. Similarly, only a small minority of articles made any attempt to measure the economic or sustainability outcomes of their GM context despite GM's applied nature and the dominance of article positioning based on GM sustainability and/or economic benefits, and the almost universal employment of GM friendly research designs.

Thus none of the articles provide empirical evidence of sustainability or economic benefits when dealing with skeptical or impoverished populations, or when the full costs of sustainability are accurately presented, addressed, and calculated. Instead the vast majority of FT and SI articles continue the marketing discipline tradition of advocating GM as a virtuous, effective, and potentially profitable sustainability problem solver. The consistency of GM advocacy dominance across all of the framework's three parts also suggests that most journal gatekeepers did not deem real world relevance to be acceptance prerequisites, but even this evidence of GM advocacy dominance cannot be used as prima fascia falsification of the GM paradigm without comparing GM capabilities and limitations relative to 'other-side' alternatives.

The other-side: Among a group of marketing scholars it might be expected that the 'other-side' would be represented by free-market advocates who believe marketers and public policy makers should not need to 'trick' or 'force' businesses and consumers to adopt the sustainable behaviors that most claim to desire. Instead they might cite examples of the free-market's responsiveness to price signals and resource shortages, which over the past 50+ years have successfully defused dire sustainability predictions with innovative new sources of supply (e.g. deep sea oil drilling, higher yield crops), resource substitutes (e.g. wireless systems replacing copper wires), efficiency enhancements (e.g. improved building insulation), and the rise of grass roots environmental movements. A free-market advocating other-side might also point to the unprecedented reductions in poverty and increased standards of living that are widely credited to the deregulation of many global markets during recent decades, and the greater willingness and ability of comparatively wealthy people to support and adopt sustainability policies and technologies (Chandy and Gertz 2011; Farmer 1987; Kennedy 2009; Miltimore 2019; Moore 2015). Yet this review finds little such free-market advocacy, and instead the other-side is represented by the 10 SAGS articles that advocate increased government control of commerce and personal behavior up to the public ownership of industry and suspension of democracy, which is a viewpoint at least partly shared by over half of the entire article sample also advocating government intervention to at least supplement if not always replace GM's focus on persuasion and voluntary behavioral change,

The presence of this regulatory focused other-side might therefore be expected to manifest itself with empirical demonstrations of the superior sustainability benefits of government control versus GM, but this review finds no such empirical comparison. Furthermore, only 20% of the empirical articles and 0% of the SAGS articles include realistic levels of government intervention in their research designs, which begs the question: why is there so little scholarly interest in realistically comparing GM with the regulatory other-side? Perhaps GM advocates wish to avoid such comparisons because they would embarrassingly reveal how often GM is ineffective and thereby heavily reliant on government coercion and subsidies for their market 'success' (Olson 2018a; Olson and Biong 2015; Yonk 2015)? On the other hand, government control advocates may wish to avoid comparisons that highlight socialism's historic legacy of human rights abuse and poor sustainability and economic performance (DiLorenzo 1992; Farmer 1987; Monbiot 2011; Regan 2019). Yet whatever the cause, the lack of such empirical comparison means that advocates on both sides are failing in their paradigm self-correction roles, perhaps because each shares a common advocacy based fear of subjecting their favored paradigm to potentially falsifying challenges the include each side's respective failures, downsides, and dark-sides. In any case, advocates who ignore or sympathetically address problem areas do not make those problems disappear, nor provide much useful understanding that is likely to further their cause in the face of supposed solutions that cannot be replicated in challenging real world environments.

Possible advocacy bias remedies: There is little doubt that most GM/sustainability advocates hope their scholarship and practice can make the world a better place, but the widespread lack of paradigm correcting push-back found in this review leads to the question of how the marketing discipline can achieve greater balance between 'good cause' advocacy and the active skepticism that is the hallmark of scientific progress and validity (Duarte et al. 2015; Merton 1973; Popper 2005). Calls for more research addressing the type of GM failures, downsides and dark-sides listed in Exhibit 1 will only be heeded when journal gatekeepers start to encourage and more frequently publish submissions offering such 'politically incorrect' viewpoints and/or falsifying results and conclusions. The career importance of publishing in elite journals also means that elite outlet gatekeepers play an outsized role in supporting paradigm push-back attempts, but the relative lack of GM falsifying conclusions found among the FT articles unfortunately suggests that GM advocacy is strongest among the manuscripts surviving the rigorous review processes of marketing's most selective journals.

Reviewers of manuscripts addressing any 'good cause' or 'politically correct' topic where skepticism and falsifying results are likely to be viewed as unpopular and risky should therefore be trained and encouraged to more heavily weight the degree to which the positioning, research design, and results correspond to the 'facts on the ground' in their manuscript validity and relevance evaluations. For example, reviewers should consider the relative degree to which GM skeptical/falsifying and GM advocating/validating submissions more accurately reflect the context of the submitted manuscript's real world situation and outcome, which will frequently involve questionable sustainability benefits, painful tradeoffs, inadvertent increases in consumption and emissions, poor sustainable behavior/product adoption rates, low profitability, and a continuing need for GM 'trickery' and government 'help'. Reviewers should also be encouraged to utilize thought experiments where they consider how the verdict they render on a 'politically incorrect' manuscript might change if the submission instead offered a politically correct conclusion with the same weaknesses and limitations (Duarte et al. 2015; Tetlock 1994). For example, would a GM falsifying manuscript featuring a sample of coal miners and a GM validating manuscript utilizing a Greenpeace sample receive the same evaluation and acceptance/rejection decision? Finally, reviewers should be reminded that scientific progress is built on the pursuit of knowledge, but that knowledge does not always lead to viable or effective solutions to difficult problems (Gray 2004; Lomborg 2018; Olson 2018b). Thus reviewers should not penalize manuscripts because they fail to demonstrate an effective and attractive solution to very demanding and long-standing problems such as sustainability, but should instead evaluate 'discouraging' manuscripts by their ability to provide understanding regarding the limitations of popular paradigms.

6. Conclusion

Marketing's success in generating great material wealth by effectively addressing the needs and desires of a growing world population has led to ever higher levels of consumption, which has also contributed to a variety of real sustainability problems that GM advocates seek to mitigate (Kotler 2011; Peattie and Peattie 2009). While the current review finds widespread advocacy across the GM articles published in marketing's elite journals and special issues, it is important to note that GM advocacy does not mean that individual article results are irrelevant or invalid in addressing their particular sustainability issue, context and samples, but does mean that the overall relevance, validity, and limitations of the GM paradigm have not been established due to the lack of skeptical viewpoints, empirical challenges, and other-side comparisons.

Although the GM paradigm and sustainability cause are the focus of the current sample and analysis, future research should investigate advocacy bias levels for other 'good causes' and 'politically correct' paradigms to help uncover the degree to which it might be career damaging or otherwise risky to author or publish manuscripts offering skeptical/falsifying 'push-back'. Such work might adapt the background research and content analysis based framework developed here to identify and classify the paradigm/cause problem areas and challenges that skeptics could address, but which would likely be rarely seen among the motivations and positioning, sampling and method choices, and results reporting of published scholarship dominated by advocates. It is important to acknowledge, however, that compiling an equivalent to Exhibit 1′s list of failures, downsides, dark-sides for other favored causes/paradigms is likely to be a challenge for advocates who are biased to avoid or downplay faults. These compilation efforts might therefore begin with thoughtful consideration about why a 'good' cause or 'valid' paradigm needs scholarly advocacy and private/public sector interventions to achieve 'desired' beliefs, support, and behaviors, and/or requires gatekeeper 'protection' from skeptical viewpoints, empirical challenges, and falsifying evidence.

Future scholarship might also consider other possible advocacy bias sources and remedies including the role of popular/social media coverage and funding sources in promoting advocacy and hampering skepticism, the degree to which marketing PhD students are selected and trained for diversity of thought and tolerance for dissent, the inclusion of bias workshops and debates at marketing conferences or in special issues to demonstrate the paradigm correcting benefits of viewpoint diversity, and marketing journal/organization recognition for influential skeptical/falsifying publications. Such investigations may also lead to the use or development of other qualitative and/or quantitative advocacy bias frameworks, and offer opportunities to compare results across different contexts and disciplines to empirically verify the degree to which advocacy biases are contributing to replication failures and other validity problems. Greater discussion and research aimed at identifying, understanding, and reducing advocacy bias should be a top priority, because advocacy generated results in the absence of any significant skepticism and paradigm correcting push-back will almost certainly lack the validity and relevance needed for real world applicability and replication, and consequently put the credibility of marketing science at risk.

CRediT authorship contribution statement

Erik L. Olson: Conceptualization, Data curation, Investigation, Methodology, Supervision, Validation, Writing – original draft, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Erik Olson is a professor of Marketing at BI Norwegian Business School in Oslo Norway. His research on marketing communication effects, new product development, and green marketing has been published in many outlets including the *Journal of Business Research, Journal of Academy of Marketing Science, Journal of Product Innovation Management, Journal of Advertising, Marketing Letters, European Journal of Marketing, and Journal of Cleaner Production.*