

## **Understanding choice behavior towards plastic consumption: An emerging market investigation**

Kautisha Pradeep, Sharma Rajesh, Mangla Sachin Kumar, Jabeen Fauzia, Usama Awan

This is a Final draft version of a publication  
published by Elsevier  
in Resources, Conservation and Recycling

**DOI:** 10.1016/j.resconrec.2021.105828

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### **Please cite the publication as follows:**

Kautisha, P., Sharma, R., Mangla, S.K., Jabeen, F., Usama, A. (2021). Understanding choice behavior towards plastic consumption: An emerging market investigation. Resources, Conservation and Recycling, vol. 174. DOI: 10.1016/j.resconrec.2021.105828

**This is a parallel published version of an original publication.  
This version can differ from the original published article.**



Full length article

## Understanding choice behavior towards plastic consumption: An emerging market investigation

Pradeep Kautish<sup>a,\*</sup>, Rajesh Sharma<sup>b</sup>, Sachin Kumar Mangla<sup>c,d</sup>, Fauzia Jabeen<sup>e</sup>, Usama Awan<sup>f</sup><sup>a</sup> Department of Marketing, Institute of Management, Nirma University, Ahmedabad-382481, Gujarat, India<sup>b</sup> Symbiosis Centre for Management Studies, Nagpur, Constituent of Symbiosis International (Deemed University), Pune, Maharashtra, India<sup>c</sup> Jindal Global Business School, O.P. Jindal Global University, Sonapat Haryana, India<sup>d</sup> Plymouth Business School, University of Plymouth, PL4 8AA, United Kingdom<sup>e</sup> College of Business, Abu Dhabi University, Zayed City, Abu Dhabi, United Arab Emirates<sup>f</sup> School of Business and Management, Lappeenranta Lahti University of Technology LUT, Finland

## ARTICLE INFO

## Keywords:

Environmental concern  
 Perceived consumer effectiveness  
 Choice behavior  
 Connectedness to nature  
 Love for nature  
 Plastic Consumption

## ABSTRACT

Globally, plastic production and consumption have led to a large amount of plastic waste. Plastic solid waste poses a serious menace to the environmental wellbeing. Plastic pollution is a matter of great concern for planetary creatures as plastic consumption is detrimental to human and animal welfare. The present research investigates the empirical relationships among environmental concern, perceived consumer effectiveness, connectedness to nature, love for nature, and choice behavior for plastic consumption. The hypothesized relationships are conversant with the norm activation model (NAM), and the theoretical framework is based on the *Biophilia Hypothesis*. The research tested the hypotheses employing a covariance-based structural equation modeling. The cross-sectional data was collected via an online survey with 745 respondents from across the country, viz., India. The findings propose that environmental concern and perceived consumer effectiveness drive connectedness to nature and love for nature, with perceived consumer effectiveness being the critical construct in both conditions. Environmental concerns do not directly influence choice behavior, but perceived consumer effectiveness directly affects choice behavior. In comparison, perceived consumer effectiveness have the strongest effect on connectedness to nature and love for nature. In addition, connectedness to nature and love for nature partially mediate the relationship of environmental concern and perceived consumer effectiveness with choice behavior for plastic consumption in an emerging economy.

### 1. Introduction

Across the globe, plastic is a ubiquitous pollutant, and its tenacity in the ecosystem and underlying harmful effects that it causes to living organisms and the total environment is the darkest reality of an urbanized lifestyle (Kautish et al., 2020; Puskic et al., 2020; Soga et al., 2018). Due to its physical advantages, such as low cost, design versatility, lightweight, strength, formability, and bio inertness, modern societies heavily rely on plastic production and consumption (Nielsen et al., 2020; Sharma et al., 2021a). Over the past four decades in the newly industrialized and emerging markets (Sharma et al., 2020a; 2020b), e.g., India, Pakistan, and South Africa, more than 15 billion metric tons of plastic has been produced and consumed as single-use plastic that includes: plastic bottles, plastic bags, disposal items, plastic cutlery, and food

packaging, etc. (Kautish, 2016; Khan et al., 2020b). An emerging market is transitioning from a low income, less developed, often pre-industrial economy towards a modern, industrial economy with a higher standard of living, leading to more plastic consumption (Gaur and Mani, 2018; Khan et al., 2020a). The recent COVID-19 catastrophe has underlined the indispensable consumption of plastic in daily life that enormously contributed to public safety and healthcare measures (Parashar and Hait, 2021; Sharma et al., 2021b). Since its invention in the 1950s, plastic has significantly facilitated convenience. It used to be considered a 'scientific wonder' for a long time. Still, now it is being reviled as a 'sustainability scourge' due to its harmful chemical properties and damaging after-effects to the natural surroundings (Alam et al., 2018; Kautish, 2015; Nkwachukwu et al., 2013; Puskic et al., 2020).

\* Corresponding author.

E-mail addresses: [pradeep.kautish@nirmauni.ac.in](mailto:pradeep.kautish@nirmauni.ac.in) (P. Kautish), [professor.rajeshsharma@gmail.com](mailto:professor.rajeshsharma@gmail.com) (R. Sharma), [sachin.kumar@plymouth.ac.uk](mailto:sachin.kumar@plymouth.ac.uk) (S.K. Mangla), [fauzia.jabeen@adu.ac.ae](mailto:fauzia.jabeen@adu.ac.ae) (F. Jabeen), [Usama.Awan@lut.fi](mailto:Usama.Awan@lut.fi) (U. Awan).

<https://doi.org/10.1016/j.resconrec.2021.105828>

Received 9 April 2021; Received in revised form 21 July 2021; Accepted 25 July 2021  
 0921-3449/© 2021

The World Economic Forum (2020) highlighted that if plastic production and consumption continue to grow with the present trajectory, the amount of plastic entering the ocean will triple in volume by 2040 (Eckstein et al., 2019; Fadeeva and Berkel, 2021). Plastic production will account for more than 20 percent of the world's total crude oil consumption by 2050. The existing urban waste management practices are deficient in reducing plastic consumption-generated solid waste (Dhir et al., 2021). It has been reported from emerging markets that a significant amount of ecological destructions are associated with excessive use of chemical additives during plastic usage, disposal, and recycling processes (Hahladakis et al., 2018; Sharma et al., 2021c; Tandon et al., 2020a). The present situation is devastating because plastic pollution causes millions of sea creatures' death and adversely affects human health (Dean et al., 2018; Peters and Bratton, 2016).

Hitherto the rising general awareness, environmental knowledge, and concern about sustainability, most individuals desire to have a clean and healthy natural environment (Ari and Yilmaz, 2017; Bhatt et al., 2020). The situation calls for shared tenacities among stakeholders to seriously discuss plastic pollution as a global disaster since the environmental concerns are linked to individual lifestyles. It is crucial to understand individuals' choices regarding plastic consumption and their connection with the environment (Khan et al., 2020b; Sharma et al., 2021d). In other words, the current research is an initial attempt to understand how individuals may play a critical role in driving change in consumption and production practices of plastics. After all, to curb disastrous plastic-led pollution, well-informed and empowered consumers can encourage and promote sustainable business practices for human well-being by reducing or removing plastic pollution (De Marchi et al., 2020).

Worldwide there is a rising environmental concern towards plummeting plastic consumption and a visible attitudinal shift towards enforcing circular economy (Dauvergne, 2018; Dilkes-Hoffman et al., 2019). During 'Our Ocean Conference 2018', initially, there was a pledge from six international corporations, including Nestlé, PepsiCo, The Coca-Cola Company, Unilever, and Walmart, to use hundred percent recyclable, compostable, or reusable packaging 2025' (Ellen MacArthur Foundation, 2018). Later on, the number of corporations rose to eleven committing to the pledge. More than 280 corporations signed up to the global commitment Despiteto abolish plastic waste and pollution by 2030 (Ellen MacArthur Foundation, 2018; Sala et al., 2020; Sharma and Kautish, 2020). A plethora of studies have analyzed the factors that affect sustainable consumption or pro-environmental behaviors (Kang and Moreno, 2020; Minton et al., 2018; Tandon et al., 2021b), but insufficient attention paid to plastic consumption, especially in emerging markets (Ari and Yilmaz, 2017; Khan et al., 2020b). There is thus a clear need to research the underlying psychological factors, including choice behavior towards the nature-based phenomenon, that influence consumers' decision-making process for plastic consumption (Khan et al., 2020a).

In recent years, the advancement of non-plastic product consumption has attracted academic scholars and practitioners (Khan et al., 2020a; Ragaert et al., 2020). To date, while there is undoubtedly a wide-ranging body of literature on pro-environmental choice behavior concerning several product categories related to nature-based facets, e.g., energy-efficient appliances, organic food, sustainable products, green apparels are traceable in the emerging market contexts (Arbués and Villanúa, 2016; Kumar and Yadav, 2021; Kushwah et al., 2019a; López-Mosquera et al., 2015). Amidst a clear sense of global urgency and increased concern over plastic pollution by governments and corporations, and well evident support from the scientific community, there is a research gap to understanding the consumer-centric approach towards nature-based phenomenon and underlying cognitive factors prevailing plastic consumption choice warrants reflection to save mother earth (Dilkes-Hoffman et al., 2019; Schuttler et al., 2018).

In the backdrop of the global efforts to effectively manage plastic waste and pollution, it is imperative to understand the consumers' level of environmental concern and the level of perceived consumer effectiveness towards plastic pollution. The present study is piloted in India because traditional, religious and spiritual Indian belief system not only advocated people responsibility towards nature and society but also it has always well documented the importance of the connection between men and nature in ancient literature (Kala and Sharma, 2010; Sharma and de Paço, 2021). As per the Advaita life philosophy, the same 'Atman' (inner spiritual soul) is present inside every creature of the planet, bringing life and connect us to the self, other beings, and nature (Shaw, 2016). Kushwah et al. (2019a; 2019b) identified that environmental concern is a crucial contributor in building a connection with self, other people, and biosphere or human-nature relationship. Kautish and Dash (2017) hypothesized that perceived consumer effectiveness as a realm-specific belief that individual determinations can be instrumental in carving a change in resolving the environmental problems specifically in the emerging market contexts, e.g., India. Connectedness to nature and love for nature refer to the bond individuals share with nature, linked to their own beliefs, deep emotions, and behavior (Mayer and Frantz, 2004; Whitburn et al., 2020). In response to the research gaps described above, the prime objective of the current research was to develop a theoretical structure that clarifies customers' pro-environmental friendly choice behavior towards plastic consumption. The study aims to respond to its three research questions (RQs) grounded in the context of an emerging market, e.g., India:

- **RQ1:** What are the critical antecedents of user choice behavior towards plastic consumption in India?
- **RQ2:** Do connectedness to nature and love for nature significantly mediate the impact of environmental concern and perceived consumer effectiveness on choice behavior for plastic consumption?
- **RQ3:** Do connectedness to nature and love for nature mediate the impact of environmental concern and perceived consumer effectiveness on choice behavior for plastic consumption?

Previous research on pro-environmental behavior and the identified research gap in the plastic consumption domain guided the study. We developed a conceptual model that extends the norm activation model (NAM) framework by incorporating significant behavioral measures, namely environmental concern, perceived consumer effectiveness, and demographic characteristics as a control variable. We tested our model using a cross-sectional dataset collected from 745 participants across Indian states from all four regions. This research has substantial implications for different stakeholders comprising scholars, plastic manufacturers, plastic consumers, practitioners, and policymakers. The study findings will enable various stakeholders to understand the nitty-gritty of environmental concern and perceived consumer effectiveness paradigms from consumers' connectedness to nature, love for nature, and choice behavior towards consuming plastic products in an emerging market scenario. Furthermore, study results will enable them to interpret the association of environmental concern and perceived consumer effectiveness with connectedness to nature, love for nature, and choice behavior for plastic products. The practitioners may utilize the findings to develop suitable marketing and promotional strategies, e.g., nature-based branding, nature-based campaigns, to improve the company image and facilitate their brand identity creation in the emerging market context (Chauhan et al., 2021; Sharma et al., 2020b).

The entire paper is structured as follows: the succeeding sections introduce the study's theoretical framework and exhaustively review the previous scholarly work related to pro-environmental behavior and plastic consumption. The research methodology section specifies the research approach, research design, data collection, sample, measures, data curation, and analysis. A presentation of results follows. In the later sections, we discuss the findings in light of their contribution to

the theory, literature, and managerial implications. Lastly, the study details limitations and suggests future research directions in the emerging market context to reduce the ecological footprints concerning plastic production and consumption.

## 2. Conceptual framework

Globally unsustainable production and consumption caused environmental deterioration, and emerging markets are no exception (Goossens et al., 2018; Sala et al., 2020). In today's world, with increasing levels of environmental degradation all around due to human activities, there is a requirement to understand why people exhibit pro-environmental choice behavior. The personal costs (i.e., consumption risk, product price) of pro-environmental choice behavior are generally more conspicuous than personal gains (Kang and Moreno, 2020; Kautish et al., 2020). A rational decision-making approach would customarily predict that individuals' pro-environmental choice behavior will not be voluntarily practiced by individuals (Collado and Evans, 2019).

### 2.1. Norm activation model

The current study operationalizes the NAM model as it posits that basically, two aspects determine the personal norms: first, the mindfulness that performing (or not performing) the specific activity (behavior) has a few assured consequences and second, the feeling of responsibility for completing the particular action to bring change (Ateş, 2020; Schwartz, 1977). The norm activation model (NAM) is considered a widely acclaimed and conferred model that describes altruistic and environmentally friendly behaviors (He and Zhan, 2018; van der Werff and Steg, 2015). Originally, Schwartz (1977) developed NAM and personal norms as a core construct of the model to explain pro-environmental behavioral facets. Schwartz (1977) stated that these subjective norms are dynamically experienced as "feelings of moral obligation not as intentions" (p. 227), and personal criteria predict individual behavior. De Groot and Steg (2009) provided strong evidence that an individual must be mindful of the consequences of behavior before experiencing responsibility; in turn, feelings of guilt stimulate personal norms, and those activated, subjective criteria prompt individual behavioral choices (p. 428). As per Fig. 1 for representing the NAM, we used this model to explore how connectedness to nature and love for nature are associated with personal norms (individual level of environmental concern and stimulated perceived consumer effectiveness) and choice behavior for non-plastic consumption in an emerging market context.

## 3. Literature review and hypotheses development

Worldwide emerged, and emerging economies face environmental problems, i.e., climate change, water, and air pollution due to plastic consumption (see Heldbreder et al., 2019; Sharma et al., 2020b). Additionally, emerging markets' urban consumer advancements combined with the heavy dependence on online shopping and takeaway facilities for home delivery have led to an increased demand for plastic-led or unsustainable packaging practices. Despite the continuous restrictions in many emerging countries, including India, China, Brazil, Pakistan, and Russia (ET, 2019; Kautish, 2013; Khan et al., 2020a; Parashar et al., 2020), there is an upsurge for single-use plastics (SUPs) and other plastic-based alternatives.

### 3.1. Environmental concern

Crosby et al. (1981; p. 22) defined environmental concern as a strong positive attitude towards environmental protection, and later on, Gill et al. (1986) demarcated environmental concern as a general or global attitude that got an indirect influence on behavior choices (p. 540). Environmental concern is a multidimensional construct that embraces ecologically accountable engagements, pro-environmental attitudes, and environmental values embedded in emerging markets, e.g., India (Kautish and Dash, 2017; Kautish and Sharma, 2020). In the scholarly explorations, environmental concern is deliberated as individuals' level of knowledge and awareness concerning harmful and adverse consequences of an act that is not environmentally friendly and against individuals' value disposition (Armstrong and Stedman, 2019; Minton and Rose, 1997). In its broadest sense, Rhead et al. (2015) posit that environmental concern indicates "the degree to which individuals are aware of problems regarding the environment, their support of efforts to solve such problems" (p. 176). This environmental concern may drive a global movement that offers a unique opportunity for general consumer-centric environmental engagement beyond the immediate resolution of the environmental problems such as plastic pollution due to plastic production and consumption in emerging markets (Kautish and Soni, 2012; Sharma and do Paço, 2021).

### 3.2. Perceived consumer effectiveness

For the first time, Kinnear et al. (1974) illustrated perceived consumer effectiveness (PCE) as a measure of an individuals' belief that they can have an active role to play in environmental protection or pollution reduction. Ellen et al. (1991) demarcated PCE as a 'realm-specific consumer belief that the individuals' efforts or endeavors can

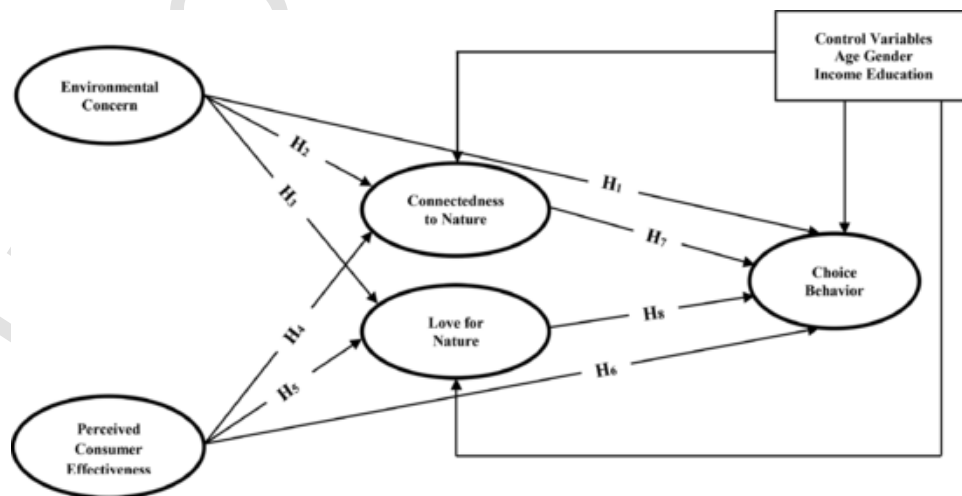


Fig. 1. Conceptual model

make a big difference in the resolution' (p. 103). In other words, PCE is the consumers' perception of what degree to which their activities can make a difference in resolving environmental problems (Ellen et al., 1991). As a construct, PCE is comparable to self-efficacy, which refers to the personal belief in one's ability to achieve common objectives through efforts (Bandura, 1986). Attitude is considered a function of salient thought (Tandon et al., 2020b); but, PCE is not the same as attitude regarding its approach towards 'evaluation of an issue' (Wesley et al., 2012). In the literature on sustainable consumption from emerging markets, PCE has been recognized by numerous scholars as a strong predictor of environmentally sustainable consumer behavior in a variety of product categories, e.g., green products, sustainable apparel, organic food, etc. (Dagher and Itani, 2014; Kautish and Dash, 2017; Kim, 2011; Mostafa, 2006; Tan, 2011).

### 3.3. Connectedness to nature

In the early evolutionary phases of civilization, physically and psychologically, humans were more connected to nature than the modern industrialized world. This situation implies a possible disconnect with natural surroundings primarily because of people's effort towards rapid urbanization, leading to a vacuum or humanly isolation from vital environmental cues, i.e., plastic, air, and water pollution (Koop and van Leeuwen, 2017; Peters and Bratton, 2016). Human activities are primarily focused on non-environment interventions coupled with technological impediments. Urbanization is affecting peoples' capability to connect with nature in their day to day chores, possibly constructing a void or a human-nature disconnect which is assumed to influence our empathetic view towards other creatures and aspiration to help in environmental conservation efforts (Mayer et al., 2009; Sharma et al., 2020a; Wilting et al., 2017). The connectedness to nature is related to the understanding of how individuals recognize themselves with the heart. It is epitomized by the range of terms used to explain the phenomenon, e.g., passionate empathy with nature (Kals et al., 1999), connectivity with nature (Dutcher et al., 2007), empathizing with nature (Schultz, 2000; 2001), inclusion with nature (Schultz, 2001; 2002), nature relatedness (Nisbet et al., 2009; Nisbet and Zelenski, 2013), connectedness to nature (Brügger et al., 2011), nature connectedness (Howell et al., 2011) and connection with nature (Tam, 2013).

### 3.4. Love for nature

Over the last century, people have witnessed increasing environmental problems due to rapid technological inventions such as plastic, polymers, and synthetic cloth. Gradually, individuals take ownership of ecological deterioration, and a positive emotional influence (e.g., love, affection, affinity, care) is evident in their pro-social consumption paradigms (Cavanaugh et al., 2015). Love as a feeling has three constituents which are classic positive emotions: passion, intimacy, and commitment (Sternberg, 1986; 1997). Previous research has discussed the positive effects of emotions (i.e., guilt and pride) on sustainable consumption choices on pro-environmental behavior sustainable consumption choices (Antonetti and Maklan, 2014; Onwezen et al., 2013), but love for nature has never been surveyed. Wang and Wu (2016) discovered significant effects of respect and anger on sustainable consumption choices; likewise, negative emotions (e.g., fear and anxiety) induced appeals reinforce people's intentions to get engage in pro-environmental behavior facets (Chen, 2016). It is well evident that love for nature can directly affect sustainable consumption (Dong et al., 2020; Lastovicka and Sirianni, 2011). According to the philosophies of love, emotions can directly affect individual decision-making and judgments (Perkins, 2010). Love for nature resonates with consumer levels of bonding, compassion, commitment, and intimacy with nature, affecting usage or choice behavior. Secondly, love symbolizes the level of commitment between individual and nature, thus aids in narrowing down the psycho-

logical distance (e.g., volunteerism) between individual and nature, encouraging sustainable consumption practices (Omoto and Packard, 2016).

### 3.5. Environmental concern, connectedness to nature, and choice behavior

In behavioral research related to ecological aspects, environmental concern is always considered an individual's level of cognizance towards environmental problems (Prakash and Pathak, 2017). For a very long, environmental concern is highlighted as one of the basic cognitive measures to predict individuals' environmentally friendly behavior in green marketing-related scholarly work. In general, it holds the individuals' mindfulness or connectedness towards environmental complications and a deep inclination to resolve related problems (Roberts and Bacon, 1997; Kautish and Sharma, 2021). Furthermore, it entails the sense of responsibility to safeguard the environment, exemplified with an individualistic emotional appeal that echoes their level of engagement with environmental conservation (Kautish and Sharma, 2020). Connectedness to nature denotes the relationship individuals' share with nature- it is primarily related to and often defined by individuals' pro-environmental beliefs, attitudes, emotions, and behavioral dispositions towards nature in terms of environmental concern (Frantz et al., 2005; Mayer and Frantz, 2004; Whiteheart et al., 2020).

The plastic-led environmental vulnerabilities have grown into an area of increased attention in business practice and a scholarly debate from psychosocial, economic, and public policy perspectives related to sustainable consumption (Khan et al., 2020a; 2020b; Luís et al., 2020). The choice of product attributes (e.g., sustainable packaging) is directly or indirectly influenced by individuals' level of environmental concern or connectedness to nature to protect the environment (Dilkes-Hoffman et al., 2019; Kautish and Dash, 2017). In turn, it impacts consumer perceptions about the product offerings and underlying choice behavior (Martinho et al., 2015). Previous studies have acknowledged the consumers' displeasure towards plastic consumption, notwithstanding its widespread usage (Orset et al., 2017), and started showing interest in other substitutes such as biodegradable plastic (Dilkes-Hoffman et al., 2019). Therefore, the study suggests the following hypotheses:

- H<sub>1</sub>: Environmental concern has a direct impact on choice behavior.
- H<sub>2</sub>: Environmental concern leads to the connectedness to nature.

### 3.6. Environmental concern and love for nature

Fransson and Gärling (1999) stated that environmental concern is the "appraisal of, or an attitude toward the realities of individuals' behavior, or others' behavior with concerns for the environment (p. 370). Since the measure of environmental concern required to be solving the environmental problems at individual level disparate to collective orientations. In other words, environmental concern led to individualistic mindfulness or exposure is not related to their collectivistic predispositions (i.e., waste recycling) to resolve the natural troubles at a universal level (Tandon et al., 2020b). Research evidence suggests that environmental concern has a direct, positive, and significant influence on several cognitive and behavioral facets (e.g., empathy) which further impact the perspectives towards ecological issues (Schultz, 2000) and lead to positive emotions (e.g., care or love for nature) (Perkins, 2010; Perrin and Benassi, 2009). Schultz (2000) contends that individual environmental concerns are related to the intensity or degree to which they view themselves interconnected with nature (p. 391). The environmental conservation-driven interconnection with nature takes the perspective of animals (fauna). Being impaired by pollution creates a significantly higher level of environmental concerns for the wellbeing of other creatures (Cavanaugh et al., 2015). Based on the arguments presented above, the study hypothesizes as:

H<sub>3</sub>: Environmental concern leads to the love for nature.

### 3.7. Perceived consumer effectiveness, connectedness to nature, love for nature, and choice behavior

Ellen et al. (1991) validate that PCE towards environmental problems is distinct from environmental concerns or green attitudes and provides a unique contribution to the predictability of environmentally conscious consumer behavior, for instance, consumer choice for non-plastic product consumption (Crowley, 2020). Consumer concerns about the environment might not effortlessly culminate into pro-environmental behaviors: however, individuals with strong PCE or belief, and blend of connectedness to nature, and a love for nature may result in support of their concerns (Cavanaugh et al., 2015; Dong et al., 2020). The self-efficacy-oriented beliefs and primitive beliefs underlying environmental attitudes, e.g., connectedness to nature and love of nature, may influence the likelihood of performing sustainable consumption (Geng et al., 2015). By nature, human lives are entrenched with positive emotions, e.g., the need to feel connected, loved, and loving others (Hutcherson et al., 2008). As in many environmental or sustainability-oriented studies, PCE (e.g., ecological belief) had been demarcated as an internal locus of control detained by an individual that one's actions can make a difference in preserving the environmental well-being (Cleveland et al., 2012; Ohtomo and Ohnuma, 2014). Based on these relationships described above, the study hypothesizes that:

H<sub>4</sub>: Perceived consumer effectiveness has an impact on connectedness to nature.

H<sub>5</sub>: Perceived consumer effectiveness has an impact on love for nature.

H<sub>6</sub>: Perceived consumer effectiveness has an impact on choice behavior.

### 3.8. Connectedness to nature, love for nature, and choice behavior

Connectedness to nature denotes individuals' cognitive, experiential, and emotional relationship with nature (Mayer and Frantz, 2004). Ecological and social psychologists have moved their attention from materialistic and narrow-focused issues to the wide-ranging human-nature connectedness (Clayton and Opatow, 2003; Nisbet and Zelenski, 2013). According to psychologists, connectedness to nature and love for nature are associated with social intimacy, altruism, and outlook-building (Mayer and Frantz, 2004). The necessity to associate with a human community, the desire to connect with others, and the longing to become a participant of a social community have together been deliberated as rudimentary human needs (Fiske, 2004). Expanding on the notion of the need to connect with nature, Edward Osborne Wilson (1984) coined the term *Biophilia* to describe it as 'humanity's instinctive affinity for and interest in building connections with the outer natural world, which assumes that humans hold the biological need to connect with and fit into the broader natural ecosphere. Wilson (1984) defined *Biophilia* as 'the innate propensity to focus on life and lifelike progressions' (p. 1). Wilson (1993) further elaborated on *Biophilia* in the context of conservation ethics as it encompasses a set of wisdom-oriented rules that 'fall along several emotional continuums: from attraction to aversion, awe to indifference, and peacefulness to panic-driven anxiety' (p. 31).

Stephen R. Kellert (2005) offers an additional explanation in the form of the *Biophilia Hypothesis*, which declares the presence of a biosphere-based, innate human need to connect with life and lifelike developments (e.g., love for nature)...The human need for nature is interconnected...to the impact of the natural world on individuals' cognitive, emotional, aesthetic, and spiritual development. The *Biophilia* conception, thus, powerfully proclaims that a comprehensive human choice-driven search for a logically coherent and satisfying existence is closely dependent upon individuals' connection with nature (Vining et al.,

2008). As an underlying dimension or intervening variable for environmental facets, connectedness to nature and love of nature can be observed through explicit and implicit measures. The explicit and implicit processes encompass diverse psychological progressions in behavioral determination, e.g., choice behavior (Kushwah et al., 2019a; 2019b). Hence the current study endeavors to survey the choice behavior towards everyday plastic consumption to validate the emerging market, e.g., Indian context corresponding to the reflections narrated above; the following hypotheses are proposed:

H<sub>7</sub>: Connectedness to nature has an impact on choice behavior.

H<sub>8</sub>: Love for nature has an impact on choice behavior.

### 3.9. Mediating influence of connectedness to nature and love for nature

From the standpoints of environmental psychology, a sense of relatedness or a sense of being connected a central theme of the natural world, e.g., connectedness to nature and love for nature, humans experience psychological gains such as social or personal well-being (Mayer et al., 2009). The underlying characteristics of connectedness to nature are comparable to personality traits as it is also moderately stable over time and across life situations. The three components of love (passion, intimacy, and commitment) are quite interactive as stronger desire brings more vital intimacy and commitment; similarly, stronger intimacy may bring stronger passion and dedication or vice-versa. Human beings continuously share an inborn need to connect with other forms of life and living creatures around, but some human beings experience it explicitly, and some feel it implicitly (Nisbet et al., 2009). Human interaction or collaboration with natural surroundings often involves various ecological entities, i.e., self-identity, other humans' identity, other than human creatures' wellbeing, and ecosystem synergies (Brügger et al., 2011; Jordan, 2009). Therefore, when humans experience strong ecological entity validation, specifically environmental concern and perceived consumer effectiveness, harming the planet or ecosystem culminates into harming themselves (Hinds and Sparks, 2008; Poortinga et al., 2019). How much individuals empathize with the natural atmosphere is the key to human-nature relationships, e.g., connectedness to nature and love for nature in the milieu of their level of environmental concern and perceived consumer effectiveness matters (Jaiswal and Kant, 2018).

Connectedness to nature as a thought often fails to quantify the individuals' emotional link towards nature or individuals' emotional bonding with nature and nature-based phenomena. Instead, it only measures cognitive belief (Perrin and Benassi, 2009; Tam, 2013). Still, the concept of connectedness to nature has superior psychometric properties to embrace the new environmental paradigm. Thus, it serves as a critical predictor of ecology-oriented choice behavior and subjective well-being for consumers (Howell et al., 2011; Mayer and Frantz, 2004; Mayer et al., 2009). To explain the emotional facets, Kals et al. (1999) proposed a theory of emotional affinity, which entails traits related to nature, i.e., love for nature. Continuing in surrounding nature (present and past experiences) is considered to be valuable to individuals' emotional connectedness, which positively affects emotional affinity and these experiences comprise the self-extension involvements (direct interactions with nature) or the self-expansion involvements (distant interactions with nature). Based on the above arguments, initializing from the cognitive-emotional path, connectedness to nature, and love for nature reveals an individuals' cognition and nature-based experiences. Thus, the present research examines the underlying mediating impact of connectedness to nature and love for nature to understand choice behavior. Therefore, the study hypothesizes the following:

H<sub>9a</sub>: Connectedness to nature substantially mediates the linkage between environmental concern and choice behavior

- H<sub>9b</sub>: Love for nature substantially mediates the linkage between environmental concern and choice behavior.
- H<sub>10a</sub>: Connectedness to nature substantially mediates the linkage between perceived consumer effectiveness and choice behavior.
- H<sub>10b</sub>: Love for nature mediates the relationship between perceived consumer effectiveness and choice behavior.

### 3.10. Role of demographic variables

The public opinion of the societal members to consider plastic as a malicious polluter has continuously get raised in the media reports and newspaper articles stressing the concerns for aggravated environmental situations due to the mismanagement of plastic wastes (Chen et al., 2020). Sustainable consumption embraces various environmental conservation practices such as recycling, reducing energy usage, decreasing household waste, dropping plastic consumption, and promoting environmentally friendly purchases (Sharma et al., 2021e). In the present study context, sustainable consumption relates specifically to non-plastic product consumption. A plethora of researches has investigated the consumer characteristics related to plastic consumption (Confente et al., 2020; Khan et al., 2020a; Luís et al., 2020) and drivers of sustainable consumption (Dilkes-Hoffman et al., 2019; Meng and Leary, 2021). A few studies have suggested demographics variables are of limited significance (Joshi and Rahman, 2017), preferring psychographic and behavioral variables (Arbués and Villanúa, 2016; Kautish et al., 2019).

In contrast, other sets of researches proclaim that demographic characteristics like age, gender, income, education, and household characteristics (i.e., family structure) are key variables to understand sustainable consumption and stressed the importance of these variables (Kumar and Yadav, 2021; Li et al., 2017; Qian et al., 2019). Additionally, the accessibility of diverse demographics across the population can facilitate effective segmentation for better target-oriented behavioral change campaigns for different consumer segments (Grimmer and Wooley, 2014), and it is particularly appropriate for the emerging markets, where green consumers' profiling and market segmentation is often challenging for practitioners (Jaiswal et al., 2020; Kumar and Yadav, 2021). Hence, based on the arguments given above, we offer the last and final hypothesis as follows:

- H<sub>11</sub>: The relationships among connectedness to nature, love for nature, and choice behavior will vary across demographic variables, e.g., gender, age, income, and education.

## 4. Research methodology

The study employed a cross-sectional design and a hypo-deductive method in which the constructs are categorized in two clusters, functional and structural, an arrangement that determines the hypotheses creation and the statistical tests to be executed on the dataset to strengthen the proficiency of the research findings (Mesly, 2015, p. 69). In the subsequent sections, the details about methods are presented.

### 4.1. Research context and product category

The current study was conducted in the emerging market, e.g., India, which is encountered severe environmental threats due to plastic pollution and rising unsustainable consumption. But Indian population has a relatively higher level of awareness and knowledge about the harmful impact of plastic consumption and is committed to beat plastic pollution (Business Standard, 2018; Singh and Mathur, 2019). Plastic was chosen as the focused product category for this study owing to two main reasons. First, the plastic problem contributes to global warming and climate change and its other adverse environmental impacts (Heldbreder et al., 2019; Sharma et al., 2021b), particularly in emerging markets like India. Second, the Government of India is also keen on

discouraging plastic consumption and promoting sustainable consumption (Kautish et al., 2019; Khan et al., 2020b).

### 4.2. Sample and data collection

With the intention to analyzing representative data and ensure diversity of the entire country, the study leveraged the resource credibility of Amazon Mechanical Turk (MTurk). Therefore, one state capital from each of the eastern (E), western (W), northern (N), and southern (S) regions of the country were selected to collect samples. As per the Indian census data, Kolkata (E), Mumbai (W), New Delhi (N), and Bengaluru (S) are the top populous state capitals from these four regions of the country (Kapoor and Dwivedi, 2020). The study data were collected during January-February 2021 from all participants almost at the same point in time; thus, the researchers used the cross-sectional design (Spector, 2004) and the sample data with the aim of a minimum of 100 responses from each of these four state capitals were collected with the help of MTurk services. On the recommendations of Paolacci and Chandler (2014), specific measures were applied to adequately generate the quality data, such as the participants were invited from all four regions to increase the representativeness of the population, the sample was paid sufficiently before actual data collection a pilot sample of 25 participants was administered and only once the invitation to participate was sent to the potential respondents (Simcox and Fiez, 2014).

MTurk workers or respondents tend to be demographically different, and most belong to India (Paolacci and Chandler, 2014). The targeted population was Indian citizens from the four regions above 18 years of age. Keeping the time and cost constraints in mind, convenience (non-probability) sampling was considered appropriate. The minimum suggested the number of responses for the SEM model structure with five latent variables, 48 observed variables, 0.2 effect size, 0.8 statistical power, and *p*-value 0.5 was 376 (Soper, 2021; Stevens, 1996). A total of 782 responses were gathered, but only 745 responses were utilized for data analysis due to outlier problems. Data cleaning on 782 datasets for sensitivity (questionnaire with sig. < 0.001 and SD < 0.5 were eliminated), univariate and multivariate outlier (Leys et al., 2018) tests were performed. Finally, 745 clean responses were acquired; the demographic description of the same is given in Table 1. The demographic characteristics of study participants included age, gender, in-

**Table 1**  
Details about respondents (N = 745)

Criteria	Frequency	%
<b>Gender</b>		
Female	327	43.90
Male	418	56.10
<b>Age (in years)</b>		
18-25	104	13.96
26-40	297	39.86
41-55	232	31.14
Above 55	112	15.04
<b>Status</b>		
Single	357	47.91
Married	388	52.09
<b>Education</b>		
Graduate	249	33.43
Postgraduate	284	38.12
Professional	212	28.45
<b>Occupation</b>		
Service	358	48.05
Business	272	36.51
Others	115	15.44
<b>Household income level (monthly)</b>		
INR 35,000/- to INR 50,000/-	136	18.25
INR 50,001 to INR 1,00,000/-	269	36.10
INR above 1,00,000/-	340	45.65

Note: INR = Indian National Rupee

come, education, occupation, and marital status. The participants' age varied from 18 to 55 years. A total of 418 (56.10%) were male 327 (43.90%) were female. More than 33% (n=249) of the participants were graduates, more than 38% (n=284) were postgraduate, and more than 28% (n=212) were professionally qualified. More than 18% (n=136) participants' monthly household income was in the range of INR 35,000/-INR 50,000/-, more than 36% (n=269) participants' monthly household income was in the range of INR 50,001/- INR 100,000/- and more than 45% (n=197) participants' monthly household income was above INR 100,000/-.

4.3. Measures

The research instrument or questionnaire was designed to measure the influencing factors of consumers' plastic consumption-related choice behavior based on prior research on the theme. The measurement constructs and scale items used were adapted from previously validated measures after a careful analysis of the literature. The preliminary draft of the questionnaire was pretested on 40 respondents from divergent backgrounds (including university students, marketing professors, and the general public), and based on their feedback, a few minor language corrections were incorporated (see Table 2). The scale items for environmental concern and perceived consumer effectiveness were adapted from Heo and Muralidharan (2019). Tandon et al. (2020b), scale items for connectedness to nature was adapted from Dong et al. (2020), and Perrin and Banassi (2009), love for nature was adapted from Dong et al. (2020) and Lastovicka and Sirianni (2011), lastly, choice behavior was adapted from Kushwah et al. (2019a; 2019b) and Lin and Huang (2012). The questionnaire was designed using unbiased language and included simple statements with choices offered to be marked either on a 7-point Likert-type scale or a 5-point Likert-type scale (Likert, 1932).

4.4. Common method bias (CMB)

To reduce the effect of CMB and to ensure robust results, in addition to carefully constructing the scale items, following the recommendations of Podsakoff et al. (2003), the study participants were informed that their responses would be evaluated anonymously, utmost confidentiality will be maintained, and there are no correct or incorrect answers to the questions given in the questionnaire (p. 883). Furthermore, in line with the guidelines of Podsakoff et al. (2003), the present research operationalized a seven-point Likert-type scale for dependent variables and a five-point Likert-type scale for independent variables to rectify the CMB concerns related to self-reported cross-sectional data (Lindell and Whitney, 2001). Additionally, Harman's one-factor test in which one-static factor gets mined from all principal constructs to clarify below 50 percent of the variance (Harman, 1976). The data analysis revealed that the first factors explained only 32.74 percent of the variance. In addition, the correlation above 0.9 indicates CMB, but in the current research, the relationship between environmental concern and connectedness to nature has the strongest correlation with 0.57 (Ali et al., 2020); thus, the threat of CMB was minimized in the study.

5. Data analysis

According to the aim of the study and subsequent hypothesized model, data analysis is being completed using covariance-based structural equation modeling (CB-SEM) using IBM SPSS AMOS v. 26.0. Following the guidelines provided by Hair et al. (2015), the data was first put through confirmatory factor analysis (CFA) to calculate the model fit indices and evaluate the reliability and validity measurement. Secondly, the SEM was performed to test hypotheses by employing a two-step research approach (Anderson and Gerbing, 1988). Lastly, moderation with control variables was executed.

**Table 2**  
Constructs, scale items and descriptive statistics

Environmental Concern	Mean	SD	Loadings
The Environmental pollution due to plastic consumption is one of the most critical environmental concerns today.	4.26	1.23	0.750
The importance of the environment is many folds, so I avoid plastic consumption.	5.42	1.05	0.765
There is no much consideration has been given to environmental protection in recent times to avoid plastic consumption.	4.96	1.14	0.797
Concerns relating to the natural environment are essential for me, so I avoid plastic consumption.	5.23	1.03	0.788
Increasing devastation of the environment is a grave concern, so I avoid plastic consumption.	4.74	1.12	0.881
Environment protection is an excellent human ethos, so I intentionally avoid plastic consumption. (rc)	2.86	1.35	0.796
There has to be great concern about the environment among citizens, so I avoid plastic consumption.	5.74	1.07	0.734
There is no severe other issue facing human society than environmental pollution due to plastic consumption.	5.40	1.02	0.862
Globally, we are doing enough to protect the environment and counter plastic pollution. (rc)	5.66	1.07	0.825
We must try to preserve the natural environment for future generations by avoiding plastic pollution.	5.32	1.21	0.817
We should allocate some share of the national resources for environmental protection and avoiding plastic pollution.	5.27	1.13	0.792
The benefits of environmental protection in the form of avoiding plastic consumption justify the costs involved in it.	5.24	1.12	0.788
<b>Perceived Consumer Effectiveness</b>			
It is worthy for potential consumers to make efforts to protect the environment by avoiding plastic consumption.	5.41	1.02	0.862
When I purchase products, I attempt to consider the plastic waste out of my consumption.	5.66	1.07	0.825
When I purchase products, I try to understand whether my plastic consumption will affect the environment.	5.32	1.20	0.816
Each consumer affects environmental problems due to plastic consumption.	5.27	1.13	0.793
I can make a meaningful difference by avoiding plastic consumption.	5.25	1.11	0.787
Each consumer can positively affect the natural environment and society by not using consuming plastic-made products.	5.18	1.14	0.816
<b>Connectedness to Nature</b>			
By avoiding plastic consumption, I usually feel a sense of openness with the natural environment around me.	5.84	1.17	0.886
By avoiding plastic consumption in my routine, I considerably think about the natural environment as a community to which I belong.	5.85	1.15	0.764
By avoiding plastic consumption in my life, I can identify and appreciate the presence of other living organisms on this planet.	5.84	1.17	0.885
By avoiding plastic consumption in my life, I frequently feel disconnected from nature. (rc)	5.85	1.15	0.764
By avoiding plastic consumption in my life, when I reflect on my life, I visualize myself as part of a more extensive cyclical process of natural inhabitant.	5.22	1.18	0.817
By avoiding plastic consumption in my life, I often feel a connection with plants and animals.	4.32	1.45	0.712
By avoiding plastic consumption in my life, I sense my belonging with the mother earth in the same way as it belongs to me.	2.96	1.63	0.766
By avoiding plastic consumption in my life, I profoundly understand how my activities adversely affect the natural environment.	3.73	1.23	0.774
By avoiding plastic consumption, I habitually feel part of the network of life.	5.09	1.34	0.806
By avoiding plastic consumption, I feel that all creatures of the mother earth, human and nonhuman share a mutual 'life force.'	5.31	1.31	0.751
By avoiding plastic consumption, I feel entrenched within the larger natural world.	5.13	1.43	0.784

(continued on next page)



Table 2 (continued)

Environmental Concern	Mean	SD	Loadings
By avoiding plastic consumption, I can reflect on myself as an associate at the top of the hierarchy that survives in natural surroundings.	3.63	1.52	0.742
By avoiding plastic consumption, I often feel that I can contribute to the minor part of the natural ecosystem around me.	5.35	1.13	0.794
By avoiding plastic consumption, I can make sure of my well-being and the natural world.	4.80	1.45	0.757
<b>Love for Nature</b>			
I attempt to visualize the nature around me without plastic consumption and feel happy about it.	5.24	0.91	0.793
Sometimes just experiencing nature without plastic can be very stimulating to me.	5.38	0.94	0.763
When I am not surrounded by nature, I find myself craving to see it without plastic substances.	4.42	1.53	0.729
The day I will touch nature without plastic will be a dream come accurate for me.	4.46	1.31	0.704
I know that nature without plastic is of little interest to the maximum number of people around me.	4.34	1.33	0.716
I realize that I don't understand natural surroundings and plastic led pollution in the environment. (rc)	5.24	0.91	0.793
I relish spending time with nature and avoiding plastic consumption in my personal life.	5.37	0.94	0.761
I am pleased to share myself and my possessions with nature by avoiding plastic consumption.	4.42	1.53	0.729
I am always keen on learning about nature and the environment without plastic consumption.	4.47	1.31	0.704
I would love to keep in touch with nature by not buying plastic products.	4.34	1.33	0.715
I can't imagine leaving nature and plastic consumption. (rc)	5.13	1.32	0.732
I think nature is irreplaceable, so we should avoid plastic consumption.	4.64	1.28	0.824
<b>Choice Behavior</b>			
I make sure to purchase products that do not add to plastic pollution.	5.17	1.22	0.810
I have switched to products that do not add to plastic pollution.	5.21	1.28	0.831
Whenever I have a product alternative between two or more identical products, I buy products that do not add to plastic pollution.	5.38	0.94	0.763
I make sure to purchase household utensils or accessories that do not add to plastic pollution.	4.41	1.52	0.728

Annotation: rc = Reverse Coded

5.1. Exploratory factor analysis

Before analyzing the measurement model, an exploratory factor analysis (EFA) was executed using SPSS v. 25 to ascertain the extraction of the principal factors (Hair et al., 2015). A Bartlett test of sphericity (3782.439) and the measure of sampling adequacy or Kaiser-Meyer-Olkin (KMO) statistics (0.862) conclude a substantial correlation among variables to approve the use of factor analysis (Pallant, 2016). Principal component analysis was performed to extract a set of factors. On recommendations of Comrey and Lee (1992), all the variables within the factors were found to have communalities more than 0.50 (communality below 0.4 and loading below 0.45 were deleted). Furthermore, all factors comprising dependent and independent variables

Table 3 Reliability, validity, and collinearity estimates

	ASV	AVE	MSV	CR	VIF	Tolerance	CB	CN	PCE	EC	LN
CB	0.291	0.748	0.343	0.785	2.45	0.46	<b>0.745</b>				
CN	0.193	0.656	0.352	0.891	2.18	0.51	0.581	<b>0.822</b>			
PCE	0.242	0.693	0.325	0.852	1.87	0.49	0.452	0.411	<b>0.774</b>		
EC	0.185	0.724	0.297	0.864	2.34	0.38	0.544	0.383	0.545	<b>0.795</b>	
LN	0.220	0.572	0.332	0.843	1.96	0.54	0.563	0.424	0.472	0.558	<b>0.832</b>

Annotations: EC = Environmental Concern; PCE = Perceived Consumer Effectiveness; CN = Connectedness to Nature; LN = Love for Nature; CB = Choice Behavior; VIF = Variance Inflation Factor; ASV = Average Shared Squared Variance; AVE = Average Variance Extracted; MSV = Maximum Shared Squared Variance; CR = Composite Reliability

were inputted with Rotation Sums of Squared Loadings. Five latent constructs attaining Eigenvalues above '1' testified to 72.157 percent of the total variance mined after varimax rotation. To be on the safer side for normality assumption (Mardia coefficient = 231.45; critical ratio = 46.32), the study chosen the maximum likelihood estimation (MLE) technique and bootstrapping procedure for 1,000 resample (West et al., 1995). Bollen-Stine's adjusted p-value was taken to test the null hypothesis during the bootstrapping process, and adjusting the model with incremental, absolute, and parsimonious measurements aided in validating the model's adjustments (Preacher and Hayes, 2008).

5.2. Measurement model: Reliability and validity analyses

The CFA results of the measurement model revealed a good model fit with a MLE method and the current study comprehensively verified the statistical fit and construct validity, viz.,  $\chi^2/df = 2.853$ ; CFI = 0.968; IFI = 0.967; NFI = 0.958; TLI = 0.959; GFI = 0.948; PGFI = 0.670; RMSEA = 0.057; SRMR = 0.037, as per the recommended thresholds if normed chi-square value  $\chi^2/df$  ranges between 2 and 5, CFI, IFI, NFI and TLI are more than 0.90 (Hu and Bentler, 1999), PGFI is above 0.50 and RMSEA and SRMR are less than 0.08 and 0.05 respectively then the model fit indices are confirmatory in nature. As displayed in Table 2, all the standardized factor loadings were above 0.70 (ranges from 0.712 to 0.886). Table 3 demonstrate that the composite reliability of all five latent constructs (ranges from 0.785 to 0.891) is well above the recommended value of 0.70 (Neuman, 2007); thus, the model has adequate internal consistency and reliability. Moreover, the AVE estimates of all the latent constructs (ranges from 0.572 to 0.748) are more than the suggested value of 0.50, and the ASV values (ranges from 0.185 to 0.291) and MSV values (ranges from 0.297 to 0.352) are less than the AVE values, so the observable variance of all the constructs that are explicated by latent constructs is more than the number of variables explained by error (Bagozzi and Yi, 1988; Hair et al., 2015).

The discriminant validity is verified by comparing the AVE values and the correlation coefficient of constructs (Fornell and Larcker, 1981). If the square root of the AVE value is more than the correlation coefficient, it is presumed that the variable has good discriminant validity. The square root estimate of the AVE value of each construct is more than its correlation coefficient, which confirms the discriminant validity of the variables (see diagonals in Table 3). The multicollinearity of formative constructs was also calculated with variance inflation factor (VIF) values. The model constructs presented the VIF values not exceeding the conventional score of 3.30, i.e., VIF for environmental concern model: 2.34; VIF for perceived consumer effectiveness model: 1.87; VIF for connectedness to nature model: 2.18; VIF for love for nature model: 1.96 and VIF for choice behavior model: 2.45. The tolerance values were more than the threshold estimate of 0.20 for all the constructs. All the correlations estimates between constructs were below 0.90, specifying that multicollinearity should not be an issue in the study (Grewal et al., 2004).

5.3. Structural model: Hypotheses testing

CB-SEM was employed to test the hypothesized model testing. The results of the structural model presented a decent model fit which is verified with statistical fit, viz.,  $\chi^2/df = 2.732$ ; CFI = 0.967; IFI = 0.968; NFI = 0.957; TLI = 0.958; GFI = 0.951; PGFI = 0.668; RMSEA = 0.055; SRMR = 0.036 (Hair et al., 2015). The regression weights of the hypothesized relationships and corresponding probability estimates were supported in the hypothesis testing. The outcomes indicated (see Table 4) that except H<sub>1</sub>: ( $\beta = 0.08$ ;  $p > 0.05$ ) which substantiate the fact that environmental concern has a weak direct relationship with pro-environmental behaviour in some countries owing to cultural factors (Tam and Chan, 2017), rest all the hypotheses were accepted in the study, namely H<sub>2</sub>: ( $\beta = 0.17$ ,  $p < 0.001$ ); H<sub>3</sub>: ( $\beta = 0.19$ ,  $p < .001$ ); H<sub>4</sub>: ( $\beta = 0.48$ ,  $p < .001$ ); H<sub>5</sub>: ( $\beta = 0.31$ ,  $p < .001$ ); H<sub>6</sub>: ( $\beta = 0.29$ ,  $p < .001$ ); H<sub>7</sub>: ( $\beta = 0.38$ ,  $p < .001$ ) and H<sub>8</sub> ( $\beta = 0.27$ ,  $p < .001$ ) and well corroborate with the previous research on sustainable consumption (Kautish and Sharma, 2020; Kautish and Dash, 2017). As displayed in the Fig. 2, the hypothesized model explained 19.2 per cent variance in connectedness to nature, 36.5 per cent variance in love for nature and 54.7 per cent in choice behaviour for plastic consumption. All R<sup>2</sup> values revealed robust outcomes, since, in consumer behavioural researches, any R<sup>2</sup> value of more than 20 per cent is deliberated to be reasonably good (Hair et al., 2015). The findings of the study provide strong support for environmental concern, connectedness to nature and choice behaviour among consumers from emerging market.

Table 4  
Hypotheses testing

Hypotheses	Path relationship	$\beta$ - value	Significance	Decision
H <sub>1</sub>	EC → CB	0.08	ns	Rejected
H <sub>2</sub>	EC → CN	0.17	< 0.001	Supported
H <sub>3</sub>	EC → LN	0.19	< 0.001	Supported
H <sub>4</sub>	PCE → CN	0.48	< 0.001	Supported
H <sub>5</sub>	PCE → LN	0.31	< 0.001	Supported
H <sub>6</sub>	PCE → CB	0.29	< 0.001	Supported
H <sub>7</sub>	CN → CB	0.38	< 0.001	Supported
H <sub>8</sub>	LN → CB	0.27	< 0.001	Supported

Annotations: ns = Non-significant; EC = Environmental Concern; PCE = Perceived Consumer Effectiveness; CN = Connectedness to Nature; LN = Love for Nature; CB = Choice Behavior

5.4. Mediation: Direct and indirect effects

As per the suggestions of Hayes (2013), the current study employed PROCESS Macro Model IV to perform the mediation analysis to understand the indirect effects of love for nature and connectedness to nature on the association between environmental concern and perceived consumer effectiveness with choice behavior for plastic consumption. The data analysis shown that love for nature and connectedness to nature partially mediated the link between environmental concern with choice behaviour for plastic consumption: PE<sub>Direct</sub> = 0.19, 95% confidence interval (CI) (CI 0.0869 – 0.2173); PE<sub>Indirect Effect (love for nature)</sub> = 0.17, BCa 95% (CI 0.1041 – 0.2215); PE<sub>Indirect Effect (connectedness to nature)</sub> = 0.10, BCa 95% (CI 0.2158 – 0.3314). Correspondingly, both love for nature and connectedness to nature also reasonably mediated the relationship between perceived consumer effectiveness and choice behaviour for plastic consumption: PE<sub>Direct</sub> = 0.29, 95% (CI 0.1815 – 0.3239); PE<sub>Indirect Effect (love for nature)</sub> = 0.16, BCa 95% (CI 0.1032 – 0.1923); PE<sub>Indirect Effect (connectedness to nature)</sub> = 0.11, BCa 95% (CI 0.1121 – 0.1428). Table 5 and Table 6 depicted that the nonappearance of zeros in the bootstrapped CIs substantiates partial mediation for all the relationships mentioned above. The study findings are in tandem with previous research on sustainable consumption practices (Ali et al., 2020; Bhatt et al., 2020; Soga et al., 2018; Tandon et al., 2020b; Taylor, 2018).

5.5. Control variables

Notable studies (see Botetzagias et al., 2015; Taylor, 2018) have reported that socio-cultural and demographic variables, i.e., age (Otto and Kaiser, 2014); gender (López-Mosquera et al., 2015); income (Brochado et al. 2017) and education (Barth et al., 2014) can potentially affect consumers' sustainable behavior. Therefore the current study is controlled for gender, age, income and education in the hypothesized model. The data analyses specified that connectedness to nature was influenced by all the demographic variables, viz., gender ( $\beta = 0.15$ ,  $p > 0.05$ ), age ( $\beta = 0.14$ ,  $p > 0.05$ ), income ( $\beta = 0.12$ ,  $p > 0.05$ ) and education ( $\beta = 0.13$ ,  $p > 0.05$ ). Furthermore, love for nature was not influenced by any of the demographic variables, e.g., gender ( $\beta = 0.41$ ,  $p < 0.05$ ), age ( $\beta = 0.51$ ,  $p < 0.05$ ), income ( $\beta = 0.46$ ,  $p < 0.05$ ) and education ( $\beta = 0.43$ ,  $p < 0.05$ ). Finally, education did not affect choice behavior ( $\beta = 0.51$ ,  $p > 0.05$ ), while gender ( $\beta = 0.13$ ,  $p > 0.05$ ), age ( $\beta = 0.11$ ,  $p > 0.05$ ), and income ( $\beta = 0.12$ ,  $p < 0.001$ ) did affect the choice behavior for plastic consumption so H<sub>11</sub> have varied

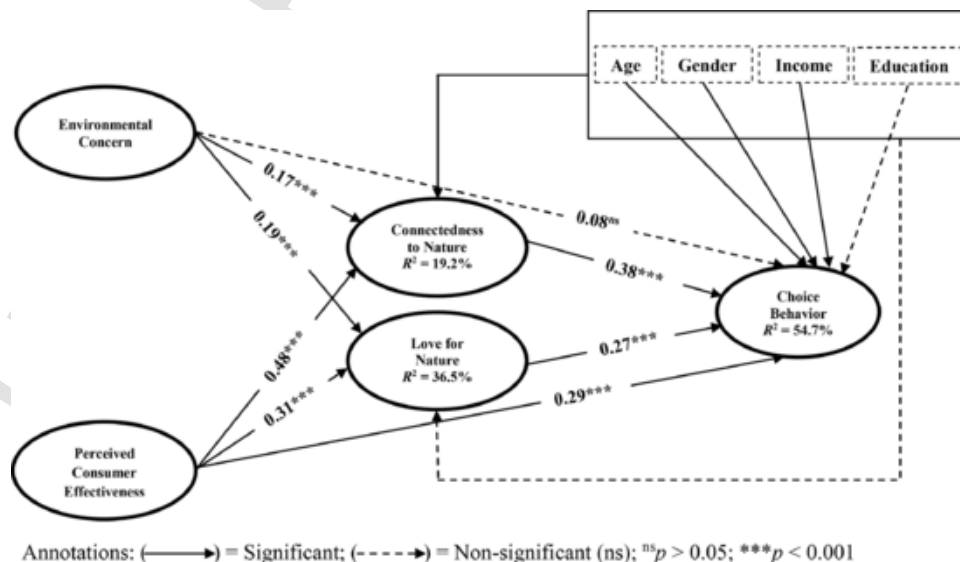


Fig. 2. Structural model Annotations: (—→) = Significant; (- - - - →) = Non-significant (ns); <sup>ns</sup> $p > 0.05$ ; <sup>\*\*\*</sup> $p < 0.001$

**Table 5**  
Mediation results

EC → CN and LN → CB		$\beta$ - estimate	Standard Error	t - estimate	p - estimate	Lower Level of Confidence Limit	Upper Level of Confidence Limit
EC → CN		0.23	0.03	10.13	0.00	0.1845	0.2724
EC → LN		0.41	0.02	13.04	0.00	0.3427	0.4611
EC → CB		0.19	0.03	5.06	0.00	0.0869	0.2173
CN → CB		0.43	0.04	10.17	0.00	0.3725	0.5455
LN → CB		0.35	0.03	9.44	0.00	0.2998	0.4530
Total effect of EC → CB		0.16	0.04	7.88	0.00	0.8843	0.2082
PCE → CN and LN → CB		$\beta$ - estimate	Standard Error	t - estimate	p - estimate	LLCI	ULCI
PCE → CN		0.27	0.02	11.20	0.00	0.2146	0.3127
PCE → LN		0.53	0.02	18.38	0.00	0.4671	0.5842
PCE → CB		0.29	0.04	6.85	0.00	0.1815	0.3239
CN → CB		0.44	0.03	11.02	0.00	0.3548	0.5281
LN → CB		0.32	0.03	8.78	0.00	0.2482	0.3924
Total effect of PCE → CB		0.53	0.04	15.81	0.00	0.4536	0.5910

Annotations: EC = Environmental Concern; PCE = Perceived Consumer Effectiveness; CN = Connectedness to Nature; LN = Love for Nature; CB = Choice Behavior

**Table 6**  
Indirect effects

	Effect	Standard Error	Lower Level of Confidence Limit	Upper Level of Confidence Limit
EC → CN → CB	0.10	0.02	0.2158	0.3314
EC → LN → CB	0.17	0.03	0.1041	0.2215
PCE → CN → CB	0.11	0.03	0.1121	0.1428
PCE → LN → CB	0.16	0.02	0.1032	0.1923

Annotations: EC = Environmental Concern; LN = Love for Nature; PCE = Perceived Consumer Effectiveness; CN = Connectedness to Nature; CB = Choice Behavior

results for demographic variables and got partially supported. The aforesaid findings are in line with the results of past studies on sustainable consumption (Nguyen et al., 2019; Shiel et al., 2020).

**6. Discussion**

H<sub>1</sub> hypothesizes the relationship between environmental concern and choice behavior was not supported, but H<sub>2</sub> and H<sub>3</sub>, which hypothesize the relationship of environmental concern with connectedness to nature and love for nature correspondingly, were supported by the results. These results could be because consumers are concerned about the deteriorating quality of the environment and feel connected to nature with love but are unable to understand that plastic products can damage the environment. The notion gets approved as consumers' choice behavior can make a difference in the environmental quality. The results described above regarding environmental concern are in tandem with the past studies (Eom et al., 2016; Kushwah et al., 2019a; 2019b; Tam and Chan, 2015). One more possible explanation could be that consumers perceive that non-plastic products' production may require many energy resources not linked to pro-environmental facets. It gets reflected in a negative association with environmental concerns (Kautish, 2018; Kautish and Dash, 2017). Nevertheless, the current research outcomes specify that cognitive constructs play a decisive role in developing pro-environmental behavior. It is in line with the previous investigations conducted with environmental concern as a construct in an emerging market context, i.e., India (Kautish and Sharma, 2020; Muralidharan et al., 2015; Muralidharan and Xue, 2016).

H<sub>4</sub> and H<sub>5</sub>, which hypothesize a link of perceived consumer effectiveness with connectedness to nature and love for nature, were also

supported by our findings inter alia with past studies in which perceived consumer effectiveness was confirmed to be behavior-specific and perceived consumer effectiveness further enriches the likelihood of indulgence in sustainable consumption (Heo and Muralidharan, 2017; Kautish and Dash, 2017). Understandably, the previous studies also posit that the Indian people who have a positive attitude towards the environment and perceive the effectiveness of their efforts in mitigating environmental problems certainly feel connected to nature and develop a love for the same (Parashar et al., 2020; Sharma and de Paço, 2021).

H<sub>6</sub>, which hypothesizes a positive association between perceived consumer effectiveness and choice behavior, was also supported. Across the world, the policymakers are facing the challenge of motivating people towards sustainable consumption practices, and the current policy initiatives primarily focus on positively or negatively incentivizing the eco-friendly choice behavior (Berger and Corbin, 1992). These findings indicate that efforts should be towards instigating personal norms by identifying self-efficacy oriented choice behavior, e.g., moral engagement, self-regulation, etc. To design public awareness programs and communication strategies to promote sustainable consumption (Sharma and do Paço, 2021).

In addition, H<sub>7</sub> and H<sub>8</sub>, which examine the positive relationship of connectedness to nature and love for nature with choice behavior, were supported by the findings. In the last few years, there is a growing consensus that individuals in modern societies are becoming more concerned about nature, feeling connected to their surroundings, and feeling responsible for natural environmental deterioration for themselves and other species on the planet (Whitburn et al., 2020). H<sub>9a</sub> and H<sub>9b</sub>, which test the mediating influence of connectedness to nature and love for nature on the linkage between environmental concern and choice behavior, respectively, were supported by the study results, endorsing the existence of partial mediation in the case of both the relationships. These findings corroborate with Biophilia Hypothesis (Wilson, 1984) that the individuals understand the importance of consumption patterns that affect nature in varied insightful ways to build an environmentally sustainable society for all living creatures of the planet. H<sub>10a</sub> and H<sub>10b</sub>, which propose a positive indirect effect of environmental concern on choice behavior through connectedness to nature and love for nature, respectively, were also reinforced by the current findings. These results endorse the Norm Activation Model (NAM) as well. The study outcomes add substance to the argument that environmental concern may not directly affect the choice behavior for sustainable consumption. Still, when the target consumers are exposed to nature and nature-based experiences, they always feel connected to nature and fall in love with the environment's natural beauty. This study underlines the psychological significance of the human-nature connection not just for the

well-being of nature or the natural environment *per se* but also for the human-being and planet-wide creatures.

Finally, H<sub>11</sub>, which proposes the relationships among connectedness to nature, love for nature, and choice behavior vary across demographic features, i.e., gender, age, income, and education, is also partially supported by the findings. Concerning demographic variables, the current research identified age, gender, and income as better predictors of sustainable choice behavior for plastics than education. Recently, [Chekima et al. \(2016\)](#) and [Sharma and do Paço \(2021\)](#) pointed out how positive attitudes towards environmentally friendly products do not get translated into sustainable consumption due to consumers' limited knowledge about green product alternatives, thus improving their understanding through educational inputs appears to be a logical approach to encourage choice behavior. The past researches also validated education as the critical demographic factor to ensure environmentally sustainable consumption practices ([Botetzagias et al., 2015](#); [López-Mosquera et al., 2015](#)) therefore governments, especially in emerging markets like India, should increase their educational initiatives to promote non-plastic consumption practices mere banning plastic bags or imposing restrictions may not give better outcomes.

### 6.1. Theoretical contributions

The study findings build on and extend prior research in the growing area of sustainable consumption and production mandate among SDGs, which the United Nations has recognized as a significant *Research Priority* area to better nature well-being ([Kautish et al., 2020](#)). The present research contributes to the existing literature on sustainable consumption and the Norm Activation Model (NAM) utility in predicting pro-environmental behavior (Biophilia Hypothesis), specifically in emerging market consumers' choice behavior plastic consumption. The present study's investigation of Indian consumers' non-plastic consumption has contributed by operationalizing a few socio-psychological constructs, e.g., environmental concern and perceived consumer effectiveness with connectedness to nature and love for nature for choice behavior non-plastic consumption an emerging market context. The research identifies significant determinants of choice behavior for sustainability and inspires to ponder igniting individuals' implicit passion for protecting nature. A universal perspective of the paper is that if individuals' got a sense of connectedness to nature, then surely they will not be likely to damage the nature and natural environment, as they will have a notion that harming the wildlife would be equals to hurting themselves ([Brügger et al., 2011](#)). In the long-term perspective, it would be prudent to foster individuals' connectedness to nature and endorse emotional and cognitive bonding, i.e., love for nature, between humans and the natural environment, which will increase the sensitivity of being one with nature. Past studies have also verified that connectedness to nature and love for nature promotes pro-environmental behavior patterns ([Dong et al., 2020](#); [Whitburn et al., 2020](#)) in association with environmental concern and perceived consumer effectiveness ([Schultz, 2004](#); [Schultz and Tabanico, 2007](#); [Schultz et al., 2002](#)). As connectedness to nature and love for nature are intrinsic human life perspectives that are not likely to changes in the short term, it is vital to internally or externally reinstate one's connectedness to nature for long-term benefits ([Rosa and Collado, 2020](#)).

Additionally, the study lucidly presented an indication for the coherence of Leopard's visualization that feeling in terms of a sense of community, belongingness, embeddedness, kinship, and egalitarianism towards nature are all facets of a broader dimension to feeling connected to nature ([Mayer and Frantz, 2004](#)). It would be an actual routine for individuals to devote considerable time amidst natural environment and have direct emotional connect with nature (i.e., camping in forests, traveling in nature-based theme parks, mountaineering, etc.) to intensify connectedness to nature. Individuals experience nature which builds an emotional and cognitive natural bond, e.g., love for nature,

consequently maintaining a pro-environmental lifestyle (e.g., non-plastic consumption) that then activates sustainable choice behaviors. In conclusion, the study highlights individual psychological differences among Indian consumers by examining the controlled influence of demographic variables such as gender, age, income, and education on consumers' connectedness to nature, love of nature, and choice behavior for plastic consumption. Emphasizing the critical role of control variables (gender, age, income, and education) will also be documented as a noteworthy contribution to the existing literature (see [Chekima et al., 2016](#)) because scholars have acknowledged the moderating influence of individual dissimilarities in consumer behavior ([Kumar and Yadav, 2021](#); [Qian et al., 2019](#)). The research adds to the general concern for sustainable consumption practices in the NAM milieu, specifically by enhancing the understanding of choice behavior for plastic consumption.

### 6.2. Managerial implications

From the practice-oriented point of view, the study advocates the significance of connectedness to nature and love for nature as triggers to choice behavior for plastic consumption. The need to understand choice behavior for plastic consumption is particularly timely due to increasing environmental concerns with new sustainability priorities (e.g., Sustainability Development Goals) comprising the Plastic Strategy recommended by the European Commission, which embraces revolutionary projects aimed toward converting urban waste and ocean garbage into raw materials (see [Kautish et al., 2020](#); [Magnier et al., 2019](#)). Thus, connectedness to nature and love for nature should be communicated in the marketing strategy to promote non-plastic consumption. The public shaming technique can be utilized to evoke a sense of nature connectedness and action orientation in advertising strategy ([Brennan and Binney, 2010](#)). In accordance, the marketers may dovetail a nature-oriented message inserted through a public shaming practice to deepen the logic towards environmental concern ([Kautish, 2016](#); [Shaw et al., 2017](#)). Consumers' perceived consumer effectiveness about plastic production and consumption is good enough to acknowledge its potential threat to the environment, so they are willing to change their choice towards non-plastic based products.

Furthermore, to upsurge the nature-based retail visits, a few signboards with the social message, "Is the person next to you choosing non-plastic packaging and cloth bags while purchasing merchandise?" may be demonstrated at the billing desk and entrance gate. In continuation, the present study can embrace the notion of nudge marketing. A nudge intends to place individuals in a social setting that encourages them to adopt a particular behavior style without any external compulsion ([Rettie et al., 2014](#)). There at stake is not a temporary attitudinal modification of consumers, but a long-lasting behavioral transformation will encompass the corporate landscape as well ([Kautish, 2016](#)). In the present case with the NAM conception, the activation of positive descriptive norm functions as a category of nudge deployed to encourage purchasing of products with non-plastic packaging material. A similar kind of nudge could be placed at the point of sale. Manufacturers or marketers can cue product packaging about the social or individual norms about non-plastic compliance as a government directive or ascribed responsibility.

Moreover, the current study ratifies the relatively meager environmental concern ascribed to the below standard quality of environmental learning aspects facilitated by the Indian education system. The Indian education curriculum for primary and secondary education is quite deficient about 'the logical conception, information, and ability required to tackle the environmental issues' ([Kautish et al., 2019](#)). To efficaciously stimulate a circular economy led sustainability orientation in the emerging markets, it will be required to embark on educational campaigns for students and customers that provide adequate information about natural-based experiences which is getting contaminated

due to plastic production and consumption (Cleary et al., 2020; Sharma and do Paço, 2021). Corporations could use socially relevant marketing activities or promotional events to facilitate non-plastic product awareness, develop positive attitudes, intentions, and choose behavior among consumers (Kautish et al., 2020).

## 7. Conclusion

The prime objective of the research was to empirically evaluate the determinants of connectedness to nature and love for nature towards choice behavior for non-plastic consumption in the light of environmental concern and perceived consumer effectiveness. Although inevitable in urban societies from emerging markets, unsustainable plastic consumption and inefficient plastic production are among the most pertinent and complex problems faced by the human race. Alongside sustainable movement, consumption complexities and the circular economy challenge is augmenting it being a contemporary threat for society (Kautish, 2016; Khan et al., 2020a; Tandon et al., 2021a). Therefore, the pressing goal of environmental sustainability is to embark on radical lifestyle changes (i.e., energy-efficient, organic, and non-plastic consumption) to reduce their ecological footprints (Sharma et al., 2020b) and pursue practical environmental actions (Jaca et al., 2018; Kautish and Sharma, 2019). Sustainable product alternatives made up of non-plastic compounds can help reduce greenhouse gas emissions during plastic manufacturing and reduce waste-generated litter problems. The conceptual model explains a decent explanatory power (adjusted  $R^2 = 0.547$ ; e.g., 54.7%) in determining consumers' choice behavior to purchase non-plastic products. Opportunities for reducing non-recyclable plastic waste are highest in emerging markets, e.g., India, where rapid population growth, urban lifestyle, disposable income, and economic activities intensify plastic production and consumption. To date, general public adoption of non-plastic material has been sluggish in these emerging markets but owing to government initiatives such as Swachh Bharat Abhiyan (Clean India Mission) and Sabka Saath Sabka Vikas (Collective Effort, Inclusive Development). Even non-government initiatives such as sustainable and adaptive agriculture promotions have led to public acceptance of sustainability-oriented behavior in the last few years.

### 7.1. Limitations and directions for future research

Although the research divulges innovative and stimulating findings concerning the relationships among environmental concern, perceived consumer effectiveness, connectedness to nature, love for nature, and choice behavior for plastic consumption, besides its own merits, the study has a few limitations. The research followed the prescribed guidelines to ensure superior data quality and offer meaningful insights into psychological phenomena. Still, social desirability bias usually getting observed in cross-sectional studies could not be completely ruled out as we measured the choice behavior of individuals through self-reported data. The measurement might be oversimplified (e.g., structural equation modeling), demanding the development of a more elaborative method (i.e., experimental design) in future researches. In other words, the participants' perception about the environmental concern, perceived consumer effectiveness, connectedness to nature, and love for nature might not accord with the objectivity and rational reality portrayed in the research. In addition to environmental concern and perceived consumer effectiveness, other relevant psychological or psychographic variables might be included as exogenous variables in the conceptual model to improve the models' sufficiency in predicting choice behavior. The present study is confined to plastic consumption. Future research could test the hypothesized model in other sustainability areas, e.g., organic product consumption, energy-efficient appliances, biodegradable products, and eco-friendly retail contexts. Another limitation of the present research is that it only surveyed six state capitals

from northern India; thus, future research may expand the sample to state capitals or other districts in different states in India and other countries from emerging markets.

Consequently, the study findings are not generalizable to the large plastic-consuming population strata of the developed and developing countries. It is suggested that researchers in the future should undertake similar quantitative and qualitative investigations with different samples. In addition, it would be even more helpful to investigate consumers' attitudes, behavioral intentions, and choice behavior over a substantial period by conducting a longitudinal data-based study.

## Uncited References:

Onwenzon et al., 2013, Orr, 1993, Westley et al., 2012, Davis et al., 2009

## CRedit authorship contribution statement

**Pradeep Kautish:** Conceptualization, Visualization, Methodology, Data curation, Formal analysis, Investigation, Writing – original draft, Writing – review & editing. **Rajesh Sharma:** Conceptualization, Data curation, Writing – review & editing. **Sachin Kumar Mangla:** Writing – review & editing, Data curation. **Fauzia Jabeen:** Writing – review & editing, Data curation. **Usama Awan:** Writing – review & editing, Data curation.

## Declaration of competing interest

Referring to the manuscript, "Understanding choice behavior towards plastic consumption: An emerging market investigation" hereby we would like to declare that there is no conflict of interest among authors and any other party directly or indirectly. We have not received any financial support for this manuscript and nor we intended the same at any stage. We have followed ethical procedure to conduct the study.

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