

A CONCEPTUAL FRAMEWORK TO UNDERSTAND THE ROLE OF ANTHROPOMORPHISM IN DRIVING CIRCULAR ECONOMY

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ABSTRACT

Research on the circular economy has been gaining attention in the last decade but only few studies have concentrated on the consumer behaviour change aspect and its multiple dimensions. It is suggested that sustainable development can be accomplished only if individuals have a favourable attitude towards the environment that in turn motivates sustainable behaviour. A number of behavioural obstacles prevent the growth of circular economy and can be overcome by appropriate behavioural interventions. One such intervention is strengthening human-nature relationship to inculcate pro-circular behaviour. Anthropomorphism (attributing human-like characteristics to non-human entity) of nature helps to improve connectivity with environment. A conceptual framework is integrated to explain the role of anthropomorphism in driving circular economy (i.e. reduce, reuse and recycle) while also considering the interplay of individual level factors. Along with the framework, future research agendas and propositions are made. This research can serve both academicians and practitioners in developing a better understanding of the use of anthropomorphic intervention for persuading consumer towards CE.

Keywords: Sustainable Development, Circular Economy, Communication, Behaviour Change, Anthropomorphism.

INTRODUCTION

The role of marketing is not only about satisfying the needs and wants of consumers but also goes beyond to consider and address the issues of environment and society at large thereby giving rise to sustainable marketing (Sheth & Parvatiyar, 1995). Our society has been following the linear ‘take-make-dispose’ consumption practices since decades. This approach further contributes to the various environmental challenges like climate change, resource scarcity, pollution, loss of biodiversity (Chandler, 2018). The demand of products and services is increasing at an unprecedented rate in major economies that calls for the need to place restriction on the rate of material throughputs to have sustainable development (Kalmykova et al., 2018). This can be accomplished by making a shift from the linear approach to a circular bio-based economy models (Michelini et al., 2017; Su et al., 2013). This circular economy (CE) model is emerging as a new sustainability paradigm and if adopted has the potential to ensure that our society and economy remains prosperous within the environmental limits (Geissdoerfer et al., 2017). This will also contribute to many of the Sustainable Development Goals (SDGs) approved by the United Nations in 2015 as well as to the important agendas of major global forums like Bonn Climate Change Conference (2017), United Nations Environmental Programme (2016) etc. However, despite its significance the studies related to circular economy and behaviour change still remains underrepresented (Wastling et al., 2018; Muranko et al., 2018; Daae et al., 2017). There are enormous obstacles that prevent the growth of circular economy and researchers in the

past have called for significant strategies to facilitate its adoption (e.g. Hopkinson et al., 2018; Geng & Doberstein, 2008, etc).

There are mainly two perspectives to be considered while reviewing circular economy namely marketing (demand side) and business strategy (supply side). There are few studies that focus on the supply side (i.e. seller) perspective in the existing literature (Jabbour et al., 2017). However, there is a dearth of literature that focus on the consumer perspective. This is much needed because just having system in place at a macro (i.e. ecosystem, value co-creation) or meso (business model, customer engagement) level will not help unless there is an equal participation at the micro level (consumer) too (Khor & Hazen, 2017). There is also global consensus on the need to create a fit at the micro-level of the CE that can drive the pro-circular consumer behaviour. The understanding of the social, economical, cultural and ethical factors at the micro-level will help not only the organization but also the policy makers to better align their strategy (Blomsma & Brennan, 2017; Milios, 2018). There are few studies in the existing literature focusing on marketing and communication perspective that guides businesses on how to market their circular products or services and influence consumer behaviour (Chamberlin & Boks, 2018).

The biggest challenge in the sustainable consumer behaviour domain as noted by researchers is the '*attitude-behaviour gap*' (e.g. Carrington et al., 2014; Hassan et al., 2016; Vermeir & Verbeke, 2006). There are two main reasons for this attitude behaviour gap. As mentioned by Kahneman & Tversky (1982), there are two different human mental systems (dual action model) namely system 1 and system 2. System 1 is fast, automatic and sub-conscious whereas system 2 is slow, logical, arduous and conscious. We humans being lazy in nature usually avoid cognitive efforts and most of the daily decisions are based on system 1. Therefore we cannot have a distant view while taking decisions. Most of the environmental issues are often temporally distant and the benefits or the negative consequences of doing or not doing a particular action take a longer time to manifest. Besides, the environmental issues are also socially distant i.e. diffusion of responsibility where the outcomes affect the society at large and not a particular individual. For example, wasting paper or not recycling for a few months may not lead to noticeable consequences. Hence such cognitive biases need to be overcome to address this gap and make sustainable development a reality (McDonald et al., 2015; Singh & Giacosa, 2019). Nudging is the creation of stimuli to make people act in a certain manner. Nudges are most suited when the results of making a choice are not apparent i.e. a delayed effect of the choice, when information is too complex to understand, learning is not possible, feedback is not available and the results of indulging in an activity is ambiguous (Balz et al., 2014). Therefore we propose that nudging strategies work in development of CE.

The present study proposes that anthropomorphism (assigning human-like attributes to non-human entity) can also act as a nudge and affect people responses in the context of CE too. The application of use of anthropomorphism being widespread, this area is gaining attention from marketers and academic researchers and number of research within this area is increasing (e.g. Aggarwal & McGill, 2007; Kim & McGill, 2011, etc). Research have supported that anthropomorphism has practical effect on consumer judgement and behaviour (e.g. Waytz et al., 2010). However, the efficiency or the role of anthropomorphism as a communication strategy in the context of environment is limited (e.g. Ahn et al., 2014; Tam et al., 2013; Williams et al., 2015) and the results are complex and contradictory. With the aim of understanding the effect of anthropomorphism to promote pro-circular behaviour and to identify the underlying mechanism that drives such behaviour, an extensive review of literature is done and a conceptual framework

is been suggested. Thus, the current study aims to throw some insights on the use of anthropomorphism to drive the behaviour change for enhancing sustainability through enacting circular behaviour by addressing the following emergent questions:

1. How can anthropomorphism and the CE be articulated theoretically?
2. What are the main research propositions that can be derived from the relationship between anthropomorphism and the CE?

Consequently, the three original contributions of this study are:

1. To suggest a new conceptualization of the '*consumer side*' of CE business models by integrating anthropomorphism and the CE.
2. To propose a middle-range theoretical framework for this new field of research and practice by identifying the interplay between latent inter-relationships triggered by consumer perspective.
3. To propose new research propositions which emerge from the integrative research framework.

MATERIALS AND METHOD

The present study is an initial exploration of communication practices for driving behaviour towards CE. It is based on thorough review of literature related to anthropomorphism and circular behaviour using the four electronic databases namely Emerald, Science Direct, EBSCO and Google Scholar spanning last two decades (2000-2019). The time period 2000 was selected as a starting point because that decade saw the emergence of the seminal works related to this area.

LITERATURE REVIEW

Sustainable Development

Sustainable development is defined as

"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland Commission, 1987).

Circular Economy

The term '*Circular Economy*' has many definitions which have evolved over the years. This paper will define the term as follows:

"In a circular economy the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste [is] minimized" (Ghisellini et al., 2016).

Circular economy use as its core the 3 R principle namely reduce, reuse and recycle. The circular economy makes sustainability more likely as it reduce dependency on raw virgin resources (Sauvé, et al., 2016). CE optimize the use of by-products, wastes or recycling of discarded products as the primary source of resource materials and to reduce pollution generated at each step (Pinjing et al., 2013). Waste is treated as something that cannot be used, reused, repurposed or recycled; it is treated as an end product with no life. In the context of circular economy, such waste neither should be produced nor be consumed (Ghisellini et al., 2016). CE contributes to the improvement in well-being of the society (Heck, 2006) and the planet as a

whole. The goal of CE is to resolve struggle between environmental protection and economic development.

Pro-circular Behaviour

Pro-circular behaviour is defined as

“An action which is brought about due to prioritizing resource-efficiency. This behaviour benefits or at least reduces damage to the environment, economy and society” (Muranko et al., 2017).

Anthropomorphism

Guthrie (1993) defined

“Anthropomorphism as seeing the humans in non-human forms and pervades human judgement.”

The motivation and the general tendency to anthropomorphise everything and to use anthropomorphic thinking is to know the world around you (Guthrie, 1993); to build social connectedness with the surroundings as an effective and competent social agent (Mourey et al., 2017); and need to belong (Baumeister & Leary, 1995). Gurthie (1993) suggested three forms of anthropomorphism: the partial, the literal and the accidental. Partial anthropomorphism is when people attribute some human-like trait to an object but do not consider the whole object as a human. By contrast, literal means people consider whole object as a human. Accidental anthropomorphism is when people see some elements of human form in inanimate objects by chance/coincidence.

Anthropomorphism and Pro-circular Behaviour

A literature review of anthropomorphism in the context of sustainability is given in the Table 1.

Table 1 LITERATURE REVIEW OF ROLE OF ANTHROPOMORPHISM IN DRIVING SUSTAINABLE CONSUMER BEHAVIOUR	
Study	Findings
Atran et al. (2002)	The belief of presence of spirits in nature makes a person more protective towards nature.
Gebhard et al. (2003)	Young children readily assign human-like attributes to object and possess higher intention to protect those objects.
Chan (2012)	Established the link between assigning human-like features to objects and sustainability.
Tam et al. (2013)	Established link between conservation behaviour and assigning human-like features to nature.
Ahn et al. (2014)	Established guilt as the underlying mechanism between pro-social behaviour and assigning human-like feature to message promoting social cues.
Williams et al. (2015)	Extended findings by Ahn et al. (2014) and suggested sympathy and not guilt as the underlying mechanism.
Ketron & Naletelich (2019)	Established the role of emotion imbued in an anthropomorphic messenger promoting environmental behaviour by validating the finding of Williams et al., 2015. They also proposed that sad faces are more effective in boosting sustainability because they are seen as victims. However, when payment is required to be made to save the victim, the individuals are not motivated to act instead they believe that anthropomorphised sad

	messenger is a marketing agent nullifying the feeling of sympathy.
Zhu et al. (2019)	The paper found the effect of perceived social distance of anthropomorphised messenger on the conservation intention. They found that when the anthropomorphised messenger is positioned as a child as compared to a mother, then the individuals are more likely to protect a child as compared to a mother because of the mediating effect of perceived weakness and perceived responsibility that an individual holds towards a child. This relationship is further dependent on the moderating role of a power state of the individual.

Thus existing literature suggest that using anthropomorphism can have a rich potential in creating an automatic attention and can evoke strong emotions toward the environment for sustainability.

Research Gap & Objective

The 3Rs principles of CE namely reduction, reuse and recycle are given prominent attention by industry and academia, however, the important role played by consumers in actualizing the CE concept is also equally important and requires attention (Klaver, 2018; Guo et al., 2017; Borrello et al., 2017; Ghisellini et al., 2016; Geng et al., 2016). Communication is an effective tool to persuade a consumer towards desired behaviour especially effective sustainable initiatives, conservation programs and policy development (Jacobson et al., 2015). Most of the efforts to communicate sustainable behaviour and to instill behaviour change are based on information deficit model and are done by using mass media communications such as advertisements and promotional campaigns as their strategy (Sturgis & Allum, 2004). However, as noted by researchers, such strategies cannot be effective in the long run to drive the behaviour (Bergquist & Nilsson, 2016). Hence finding ways of tailoring these messages at each stage is worthwhile to be more effective. This paper is an attempt to guide how better communication strategies can be formulated to drive the behaviour change towards circular economy. Anthropomorphism is one such useful strategy to drive behaviour change towards sustainability. Extant literature in the recent decade have discussed and elaborated upon some of the key constructs that play a key role in the context of anthropomorphism and sustainable consumer behaviour (Tam et al., 2013; Ahn et al., 2014; Williams et al., 2015; Kotron & Naletelich, 2019; Zhu et al., 2019). However, the role of anthropomorphism in the context of circular economy (reduce, reuse and recycle) is underexplored and a key question to address as noted by Kotron & Naletelich (2019) is "*Does anthropomorphic cues exert influence for recycling or reuse?*" Looking holistically, there are fewer discussions in the literature about contextual factors such as mediating and moderating factors which shape such behaviour via anthropomorphism. In view of the probable gaps in the literature, this study intends to explore some of the direct, mediating and moderating factors on the relationship between anthropomorphism and pro-circular behaviour. Knowing about such contextual factors may help in controlling some of them with fair degree of understanding to reap the benefits of sustainable consumer behaviour to a larger extent. This understanding has some important implications for marketers in the societies.

Theoretical Background of Research on Pro-circular Behaviour

The important theories considered to understand how effective communication can lead to pro-circulars behaviour are Theory of Reasoned Action by Fishbein & Ajzen (1980), Theory of Planned Behavior by Ajzen (1991), Value Theory by Schwartz (2010) and Three Factor Theory of Anthropomorphism by (Epley et al., 2007).

1. The theory of Reasoned Action states that attitude towards a given behaviour is formed by one's belief on the outcome that a particular action would lead and also on the evaluation of benefit that the outcome would generate. A favourable attitude would lead to a favourable intention to perform a given behaviour. Later on, it was found that person's subjective norm i.e. others' perception about that particular behaviour is also important and therefore the theory of reasoned action is extended to theory of planned behaviour by adding perceived behavioural control (PBC). PBC is defined as the person's belief as to how easy or difficult performance of the behaviour is likely to be (Ajzen & Madden, 1986). Prior research has shown that variables of theory of planned behaviour can be aptly used in order to drive intentions and behaviour (Fife-Schaw et al., 2007).
2. Another important theory to be considered while considering sustainable consumer behaviour is the Schwartz value theory that implies that the pro-social and moral values that an individual has can drive his behaviour towards others. Hence those who values are concerned with one's self interest only and are egoistic in nature are less likely to behave in accordance to the benefit of others. They are therefore also less likely to adopt environmental behaviour as compared to the individual who have pro-social orientation.
3. Guthrie (1993) considered anthropomorphism as an automatic psychological process (mental system 1). Later, Epley et al. (2007) provided a psychological account of anthropomorphism itself to explain when and why people are likely to anthropomorphise non-human agents and how they think about it. As per the three factor theory of anthropomorphism, effectance, sociality and elicited agent knowledge are the motivational triggers (mental system 2). Effectance means the need to make sense of the actions of other agents to reduce uncertainty concerning their behaviour. Sociality is the need of people to maintain social connections. Elicited Agent Knowledge is the knowledge about human or self in general to serve as a base for inductive reasoning when considering non-human agents.

RESULT

The Pro-Circular Change Model developed by Muranko et al. (2018) is based on the well-developed theory of planned behaviour which is underused in the context of circular economy. As per the P-CCM model, behaviour change interventions are used for driving behaviour towards a particular goal by targeting the constructs of behavioural intention which in turn aims to shift attitude, subjective norms or control beliefs (TPB construct). Thus, anthropomorphism can be used as a behaviour change intervention to effectively increase those beliefs and inculcate pro-circular values. Anthropomorphism can induce either intrinsic or extrinsic values (depending on an individual) which in turn can motivate an individual to perform pro-circular behaviour. The paper proposes a research framework to enable us to capture the relationship between anthropomorphism and circular economy and develop propositions as result based on the in-depth literature review by using P-CCM as the base. There is a substantial theoretical background which acts as scaffolding to our proposed conceptual framework.

Anthropomorphism of Nature

Researchers found anthropomorphism as one of the potential methods to promote sustainable behaviour. Using anthropomorphic cues can influence judgement and can affect future behaviour. Considering the three factor theory of anthropomorphism, anthropomorphized objects can trigger cognitive, affective or motivational responses in individuals (Miesler et al., 2011d; Kim & McGill, 2011; Landwehr et al., 2011, Tam et al., 2015). Anthropomorphism of nature shortens the distance between the self and nature (Zhu et al., 2019) thereby allow to form self-identity with nature as if alive and worthy of concern by evoking emotions and strong protective links. This also actuates saviour effect towards its protection (Ketron & Naletich, 2019). Extant literature suggests that product anthropomorphism affects consumers' product replacement intentions because consumers are primed to consider the product as human and hence functionality of the product is not the concern to them (Chandler & Schwarz, 2010).

Taking this further, we propose that anthropomorphism of nature makes people less willing to replace the products knowing that the act of product disposition has harmful impact on environment. People usually invest resources to maintain social relationship and are willing to make sacrifices to help the needy, sick, old, weak (Levine & Moreland, 2002). On the similar lines we propose that consumers are more willing to reduce/recycle products when nature is anthropomorphised to improve condition of environment thereby promoting pro-circular behaviour. Thus, activities like reuse, reduce and recycle are likely to be taken up by the consumer to protect the nature when it is anthropomorphised.

Proposition: Anthropomorphic representation of nature leads to a more favourable attitude towards intention to reduce, reuse, and recycle leading to a pro-circular behaviour.

Connectedness to Nature

Connectedness to nature is defined as

'The extent to which an individual includes nature within his/her cognitive representation of self' (Schultz, 2002).

Given the relationship between attitude and behaviour (Frymier & Nadler, 2007), perception towards the environment are of concern in shaping environmental behaviour. Accordingly, understanding how to improve human affiliation with nature may be a vital research area linked to sustainability efforts. Connectedness to nature is emerging as an important construct to establish environmentally sustainable relationship. Literature on environment psychology suggest that connectedness to nature is an important determinant of sustainable behaviour and positively affect attitude and behaviour (e.g., Schultz, 2000; Schultz, 2001; Mayer & Frantz, 2004) by improving environmental concern and willingness to sacrifice for the nature (e.g. Barbaro & Pickett, 2016; Gosling & Williams, 2010). However, its influence as an emotional appeal while designing message strategies it yet to be explored. Existing literature suggest that individuals highly connected are motivated to process information more extensively using system 2 (Meyers-Levy & Peracchio, 1996). Also highly connected individuals engage in more concrete thinking with regard to nature hence we expect humanizing nature or any other environmental object enhances people's sense of connectedness towards them thereby arousing people sense of guilt for being the cause of harm (Ahn et al., 2014) or sense of joy or pride or generativity by protecting it with individuals highly connected to nature due to more elaboration of information. Taken together, it is logical to assume that people who are more closely connected to nature show more pro-circular attitude, they are more inclined to reduce the consumption, reuse and engage in recycling behaviour to protect nature which is anthropomorphised. Hence we assume connectedness to nature mediates the relationship between anthropomorphism and pro-circular attitude.

Proposition: Connectedness to nature mediates the relationship between anthropomorphism and pro-circular attitude.

Perceived Environmental Efficacy

Perceived self-efficacy is concerned with people's beliefs in their ability to influence events that affect their lives (Bandura, 2010). With reference to the social psychological literature, one of the psychological barriers to conservation actions is people's disbelief in the effectiveness of their actions (Tam, 2014). There is also a concern if there act would actually

contribute to improve the environment due to lack of environment response efficacy (Axelrod & Lehman, 1993). When people anthropomorphize nature, they tend to consider it and the environmental issues to be more understandable and controllable; hence it is worthy to consider exploring the role of efficacy (Tam et al., 2013). Perceived environmental effectiveness (PEE) is an issue-specific motivation for consumption. PEE is an estimate of the degree to which one's own consumption decision (i.e., purchasing green products) provides an answer to a specific problem - environmental issues (Ellen et al., 1991). One part of PEE is perceived consumer effectiveness (PCE). PCE is a specific motivation and refers to the extent to which an individual thinks their decisions make a difference with respect to environmental issues (Straughan & Roberts, 1999). The other part of PEE is perceived product effectiveness (PPE). Consumers purchase products that they trust will meet their needs and expectations. Inclusion of PEE provides an explanation of how generalized environmental motivations transfer into behaviour. Past research has shown that anthropomorphism provides people with a sense of mastery and control (Epley et al., 2007).

Proposition: Perceived Environment Efficacy towards social and environmental issues is likely to mediate the relationship between anthropomorphism and pro-circular behaviour.

Power State

Power means the possessions of resources or control over it within a social structure or hierarchy (Magee & Galinsky, 2008). Possessing resources enables one to assist others. Also when people are in position of power, they may feel perceived sense of responsibility towards environmental behaviour such as Willingness to recycle. Existing literature suggest that powerful consumer apply feeling of mastery to the anthropomorphised slot machine and believe that they can control it while powerless feel higher perceived risk when gaming with it (Kim & McGill, 2011). Building on this insight we propose that when nature is anthropomorphised, it is likely to trigger stronger responsible behaviour from the powerful. As noted earlier issues with regard to environment are socially and temporally distant therefore people lack a sense of responsibility for the issues with regard to environment. Anthropomorphisation of nature can trigger a communal orientation on the part of the powerful, and lead them to care more about the welfare of the environmental. The environmental objects leads to communal orientation on part of powerful making them less selfish and more generous towards the weak. This is also supported by findings of Kwak et al. (2015) that suggest that brand anthropomorphism increases the perceived unfairness of price increases for agency-oriented consumers, who tend to maximize their own self-interests and decreases the perceived fairness of price for communion-oriented consumers, who generally consider the needs of others.

Proposition: Our relative power state moderates the mediating effect of connectedness to nature on the relationship between anthropomorphic nature and pro-circular behaviour.

Proposition: Our relative power state moderates the mediating effect of PEE on the relationship between anthropomorphic nature and pro-circular behaviour.

Personal Values

Human values are important motivational construct of behaviour to be accounted for considering sustainable consumer behaviour (Bardi & Schwartz, 2003; Thøgersen & Ölander, 2002; Grunert & Juhl, 1995; Sener & Hazer, 2008). As noted by Steg et al. (2014), as human values differ from one individual to another, in order to promote the sustainability aspect by

appropriate triggering of personal values the concurrent activation of select situational factors is needed. Literature in the past has placed emphasis on the role of personal values in driving ethical attitudes, intentions and behaviour (Fritzsche & Oz, 2007). Schwartz & Bardi (2001) defined values as

"Desirable trans-situational goals, varying in importance, that serve as guiding principles in people's lives."

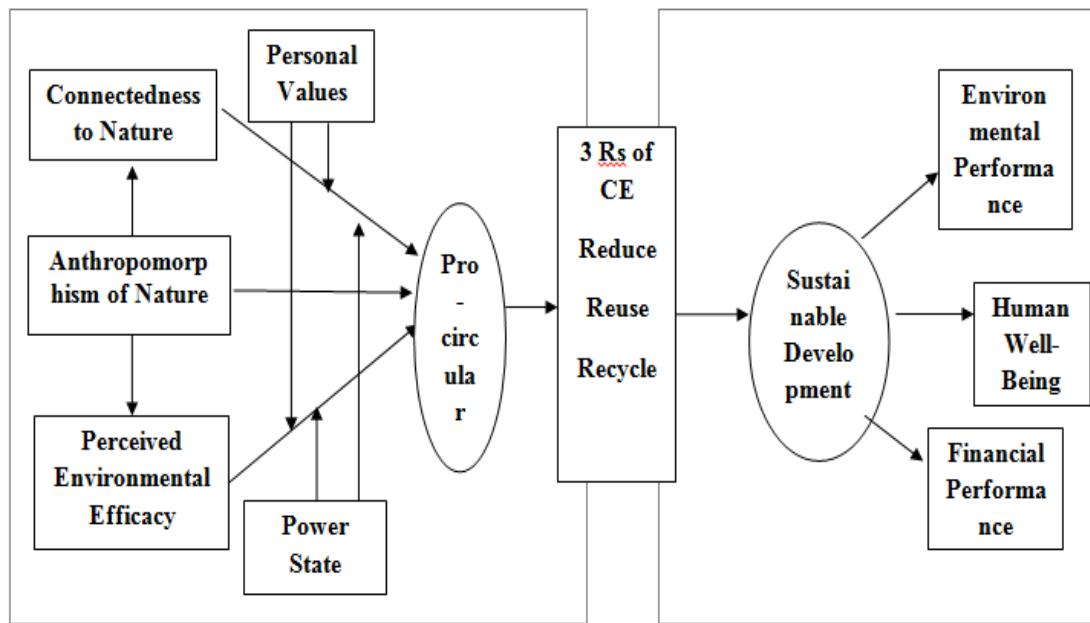
They represented total ten values out of which two are relevant while discussing behaviour change towards environment. Of the ten values represented by them, we focus on two values namely intrinsic i.e. the pursuit of self-interest and extrinsic i.e. the welfare of society and nature (Schwartz, 1994). A study by Wang & Juslin (2011) found that people with extrinsic values have moral awareness and are more likely indulge in ethical decision-making and corporate social responsibility. Another study by Kausch (2013) concluded that extrinsic are more positive towards the environmental corporate sustainability as compared to economic corporate sustainability. Extrinsic values are the self-transcendence ones that are associated with concerns about bigger-than-self issues and people with more extrinsic values are more likely to be concerned with the issues of society or environment at large whereas intrinsic values are the self enhancement ones which relate to power, wealth or social recognition (Muranko et al., 2018). There is a lack of familiarity of the CE concepts among individuals therefore the role of values and beliefs in the formation of pro-circular attitudes becomes important (Muranko et al., 2019). Accordingly we believe that there is a link between personal values and sustainable behaviour. Those individuals with self-transcendence values are expected to have broader sustainability conceptions since the values these conceptions are built on explicitly transcend the maximization of individual utility emphasizing the welfare of society and nature. On this line we believe that pro-circular values are ones that consider the social, economic and environmental matters as important to oneself and think beyond the self. Therefore we propose that people with self-transcendence values show a stronger pro-circular attitude with the intention to protect the nature and work for its betterment.

Proposition: Personal values of the consumer are likely to moderate the mediating effect of PEE on the relationship between anthropomorphic nature and pro-circular behaviour.

Proposition: Personal values of the consumer are likely to moderate the mediating effect of Connectedness to nature on the relationship between anthropomorphic nature and pro-circular behaviour.

Proposition: People with self-transcendence values show a stronger pro-circular attitude as compared to people with self-enhancement.

The conceptual framework is presented in the Figure 1.



**FIGURE 1
PROPOSAL OF A RESEARCH FRAMEWORK INTEGRATING
ANTHROPOMORPHISM AND CE**

DISCUSSION

The importance of consumer psychology is well-established in the literature in order to mitigate the environmental issues (Gifford, 2008). Using anthropomorphic cues in sustainability messages thus act as a psychological tool to effectively overcome the behavioural barriers to encourage pro-circular behaviour. Today in modern society there is a lack of direct interaction of human beings with the natural environment (Mayer & Frantz, 2004) impacting their behaviour towards natural environment. From this perspective, the development of concepts like anthropomorphism and connectedness to nature would contribute to encourage them to take green initiative. Anthropomorphism is a necessary antecedent of human-nature relationships i.e. nature must be viewed as humans - humans who have intentions, emotions and agency in order for consumers to form relationships with them. The framework also points out from the extant literature how individual characteristics namely personal values, connectedness to nature, power state and efficacy can shape pro-circular behaviour. It also signals opportunities to enhance sustainable performance and sustainable well-being of the society as the state of environment and human health are causally linked (Nisbet & Gick, 2008). We contribute to this stream by connecting different theories in different disciplines to modify consumer behaviour in the desired direction. The discovery of the important role of anthropomorphism in CE opens a way to future conceptual and empirical research including this construct. These findings contribute to the meagre literature on anthropomorphism as a psychological vehicle of sustainability (i.e., Ahn et al., 2014; Chan, 2012; Root-Bernstein et al., 2013; Tam et al., 2013) as well as meagre conceptual foundation on CE business models (Planing, 2015, Korhonen et al., 2018, Stahel, 2016, Geng et al., 2016). The paper proposes a “*bottom-up approach*” where consumers are active stakeholders of the economy. It is difficult to adjust their behaviour therefore the interplay

of the multiple psychological, sociological and cultural factors needs to be incorporated into communication strategies for successful promotion of CE. In addition to the propositions derived from the framework which serves to guide future research, we next discuss implications for practice and theory.

Implications for Practice

In order to promote sustainability, there is a need to encourage pro-environmental behaviour through explicit communications such as signs requesting conservation of resources by curtailment of its use, reuse or recycle; ethical and responsible product disposition and purchase of eco-friendly products or recycled/refurbished products. The proposed framework has important managerial implications. First, given the importance of advertising as a source of information for consumers about circular economy, the study aims to provide useful insights to the advertising practitioners in developing improved techniques for information dissemination. For example, the appropriate use of anthropomorphism as a communication tool at various touch points for example, placement of anthropomorphic environmental messenger can effectively motivate consumer to reduce product trash or disposal as well as actuate preference for recycling to save nature. The communication and interaction between organization and consumers can be enhanced by using anthropomorphic visuals and narratives to reduce consumer resistance towards the message. This, in turn, can reduce substantial cost over a period of time and can affect customer engagement and even behaviour change. Second, for managers and consultants dealing with CE policies and practices, this work adds a structured debate on how to unlock CE business models by carefully planning persuasive communication strategies that may boost or hamper CE initiatives. They can effectively draw upon factors like connectedness to nature, efficacy, and personal values in their communication strategies to deal with sustainable consumption behaviour. The study helps policymakers by first informing them about the cognitive biases delaying the transition to CE and ways to overcome it through effective intervention and by designing more persuasive promotional campaigns to encourage circular economy among consumers.

Implication for Theory

The framework also has a number of implications for theory by drawing critical insights from behavioural economics, psychology and sociology. First, it contributes directly to the body of knowledge on anthropomorphism as one of the marketing strategies for driving pro-circular behaviour. This work adds an integrated framework and an original conceptualization of the enablement of the CE through anthropomorphism. The proposals developed herein also have implications for developing theory to further understand the CE. We highlight that CE business models require clear support from proper communication to the consumers and enablers in order to contribute to sustainable consumer behaviour. We also offer several theoretical propositions to be tested through further research efforts in the field of the '*consumer side*' of CE business models.

Limitations and Future Research Directions

First, while we present an integrative theoretical framework, we do not aim to provide an exhaustive or comprehensive model. Therefore, by incorporating other relevant literature, one

could develop a more nuanced vision of relevant dimensions. The constructs identified in the model needs to be operationalized and the conceptual model tested using appropriate sampling in the future works. This has strong practical implications and requires empirical investigation that is beyond the scope of our deductive theoretical study. The constructs like anthropomorphism, connectedness to nature and self-transcendence values are related to sustainable behaviour however with some differences with respect to the cultural background of the individuals (Gelbrich et al., 2012). Hence future research should consider culture as an important variable. There is also scope for testing and comparing the model performance in cross-cultural settings. Future research could also enrich our framework by expanding the list of variables and investigating more complex interactions between them. Qualitative studies can also be taken up to yield greater insights into the psychology of consumer to understand the role of anthropomorphism towards CE.

CONCLUSION

Sustainable development is one of the major challenges that our society is currently facing and willingness to participate in circular economy has been notoriously difficult to develop. The circular economy model has economic and environmental benefits yet non-acceptance at the micro-level is a challenge. The paper identifies the cognitive biases of consumers that act as barriers in adoption and diffusion of CE. To promote sustainable consumer behaviour through special means like reduce, reuse and recycle to have the bio-based circular approach, messages needs to be designed and positioned strategically. The current study suggests anthropomorphism as one of the ways that companies can use to devise communication strategy to nudge behaviour towards CE.

REFERENCES

- Aggarwal, P., & McGill, A.L. (2007). Is that car smiling at me? Schema congruity as a basis for evaluating anthropomorphized products. *Journal of Consumer Research*, 34(4), 468-479.
- Ahn, H.K., Kim, H.J., & Aggarwal, P. (2014). Helping fellow beings: Anthropomorphized social causes and the role of anticipatory guilt. *Psychological Science*, 25(1), 224-229.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, 50(2), 179-211.
- Ajzen, I., & Madden, T.J. (1986). Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control. *Journal of Experimental Social Psychology*, 22(5), 453-474.
- Atran, S., Medin, D., Ross, N., Lynch, E., Vapnarsky, V., Ek, E., ... & Haenn, N. (2002). Folkeontology, Cultural Epidemiology, and the Spirit of the Commons: A Garden Experiment in the Maya Lowlands, 19912001. *Current Anthropology*, 43(3), 421-450.
- Axelrod, L.J., & Lehman, D.R. (1993). Responding to environmental concerns: What factors guide individual action?. *Journal of Environmental Psychology*, 13(2), 149-159.
- Balz, J., Sunstein, C., & Thaler, R. (2014). Choice architecture. E. Shafir, *The behavioral foundations of public policy*, 428-439.
- Bandura, A. (2010). Self-efficacy. *The Corsini encyclopedia of psychology*, 1-3.
- Barbaro, N., & Pickett, S.M. (2016). Mindfully green: Examining the effect of connectedness to nature on the relationship between mindfulness and engagement in pro-environmental behavior. *Personality and Individual Differences*, 93, 137-142.
- Bardi, A., & Schwartz, S.H. (2003). Values and behavior: Strength and structure of relations. *Personality and social psychology bulletin*, 29(10), 1207-1220.
- Baumeister, R.F., & Leary, M.R. (1995). The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497.

- Bergquist, M., & Nilsson, A. (2016). I saw the sign: Promoting energy conservation via normative prompts. *Journal of Environmental Psychology*, 46, 23-31.
- Blomsma, F., & Brennan, G. (2017). The emergence of circular economy: A new framing around prolonging resource productivity. *Journal of Industrial Ecology*, 21(3), 603-614.
- Borrello, M., Caracciolo, F., Lombardi, A., Pascucci, S., & Cembalo, L. (2017). Consumers' perspective on circular economy strategy for reducing food waste. *Sustainability*, 9(1), 141.
- Brundtland Commission. (1987). Our Common Future. *Oxford University Press*: Oxford.
- Carrington, M.J., Neville, B.A., & Whitwell, G.J. (2014). Lost in translation: Exploring the ethical consumer intention-behavior gap. *Journal of Business Research*, 67(1), 2759-2767.
- Chan, A.A.H. (2012). Anthropomorphism as a conservation tool. *Biodiversity and Conservation*, 21(7), 1889-1892.
- Chandler, J., & Schwarz, N. (2010). Use does not wear ragged the fabric of friendship: Thinking of objects as alive makes people less willing to replace them. *Journal of Consumer Psychology*, 20(2), 138-145.
- Chandler, W. (2018). *Energy and environment in the transition economies: between cold war and global warming*. Routledge.
- Daae, J., Chamberlin, L., & Boks, C. (2017). Dimensions of sustainable behaviour in a circular economy context.
- Ellen, P.S., Wiener, J.L., & Cobb-Walgren, C. (1991). The role of perceived consumer effectiveness in motivating environmentally conscious behaviors. *Journal of Public Policy & Marketing*, 10(2), 102-117.
- Epley, N., Waytz, A., & Cacioppo, J.T. (2007). On seeing human: a three-factor theory of anthropomorphism. *Psychological Review*, 114(4), 864.
- Fife-Schaw, C., Sheeran, P., & Norman, P. (2007). Simulating behaviour change interventions based on the theory of planned behaviour: Impacts on intention and action. *British Journal of Social Psychology*, 46(1), 43-68.
- Fishbein, M., & Ajzen, I. (1980). Understanding attitudes and predicting social behavior.
- Fritzsche, D., & Oz, E. (2007). Personal values' influence on the ethical dimension of decision making. *Journal of Business Ethics*, 75(4), 335-343.
- Frymier, A.B., & Nadler, M.K. (2007). The relationship between attitudes and behaviors. *Persuasion: Integrating Theory, Research and Practice*, 4th ed.; Kendall Hunt Publishing: Dubuque, IA, USA, 42-58.
- Gebhard, U., Nevers, P., & Billmann-Mahecha, E. (2003). Moralizing trees: anthropomorphism and identity in children's relationships to nature. *Identity and the natural environment: The psychological significance of nature*, 91-111.
- Geissdoerfer, M., Savaget, P., Bocken, N.M., & Hultink, E.J. (2017). The Circular Economy-A new sustainability paradigm?. *Journal of Cleaner Production*, 143, 757-768.
- Geng, Y., & Doberstein, B. (2008). Developing the circular economy in China: Challenges and opportunities for achieving leapfrog development. *The International Journal of Sustainable Development & World Ecology*, 15(3), 231-239.
- Geng, Y., Sarkis, J., & Ulgiati, S. (2016). Sustainability, well-being, and the circular economy in China and worldwide. *Science*, 6278(Supplement), 73-76.
- Ghisellini, P., Cialani, C., & Ulgiati, S. (2016). A review on circular economy: the expected transition to a balanced interplay of environmental and economic systems. *Journal of Cleaner Production*, 114, 11-32.
- Gifford, R. (2008). Psychology's essential role in alleviating the impacts of climate change. *Canadian Psychology/Psychologie Canadienne*, 49(4), 273.
- Gosling, E., & Williams, K.J. (2010). Connectedness to nature, place attachment and conservation behaviour: Testing connectedness theory among farmers. *Journal of Environmental Psychology*, 30(3), 298-304.
- Grunert, S.C., & Juhl, H.J. (1995). Values, environmental attitudes, and buying of organic foods. *Journal of Economic Psychology*, 16(1), 39-62.
- Guo, B., Geng, Y., Sterr, T., Zhu, Q., & Liu, Y. (2017). Investigating public awareness on circular economy in western China: A case of Urumqi Midong. *Journal of Cleaner Production*, 142, 2177-2186.
- Guthrie, S. (1993). Faces in the clouds: A new theory of religion. New York, NY: *Oxford University Press*.
- Hassan, L.M., Shiu, E., & Shaw, D. (2016). Who says there is an intention-behaviour gap? Assessing the empirical evidence of an intention-behaviour gap in ethical consumption. *Journal of Business Ethics*, 136(2), 219-236.
- Heck, P. (2006). Circular economy-related international practices and policy trends. *Consulting Report for the World Bank Project on Policies for Promotion of a Circular Economy in China*. The World Bank, Beijing, 30.
- Hopkinson, P., Zils, M., Hawkins, P., & Roper, S. (2018). Managing a complex global circular economy business model: opportunities and challenges. *California Management Review*, 60(3), 71-94.

- Jabbour, C.S.J., de Sousa Jabbour, A.B.L., Sarkis, J. & Filho, M.G.F. (2017). Unlocking the circular economy through new business models based on large-scale data: an integrative framework and research agenda. *Technological Forecasting and Social Change*.
- Jacobson, S.K., McDuff, M.D., & Monroe, M.C. (2015). *Conservation education and outreach techniques*. Oxford University Press.
- Kahneman, D., Slovic, S.P., Slovic, P., & Tversky, A. (Eds.). (1982). *Judgment under uncertainty: Heuristics and biases*. Cambridge university press.
- Kalmykova, Y., Sadagopan, M., & Rosado, L. (2018). Circular economy from review of theories and practices to development of implementation tools. *Resources, Conservation and Recycling*, 135, 190-201.
- Kausch, C. (2013). Attitudes toward corporate sustainability-a multi-item scale and a multi-country empirical analysis.
- Ketron, S., & Naletelich, K. (2019). Victim or beggar? Anthropomorphic messengers and the savior effect in consumer sustainability behavior. *Journal of Business Research*, 96, 73-84.
- Khor, K.S., & Hazen, B.T. (2017). Remanufactured products purchase intentions and behaviour: Evidence from Malaysia. *International Journal of Production Research*, 55(8), 2149-2162.
- Kim, S., & McGill, A.L. (2011). Gaming with Mr. Slot or gaming the slot machine? Power, anthropomorphism, and risk perception. *Journal of Consumer Research*, 38(1), 94-107.
- Klaver, J. (2018). Individual Sustainable Consumption and the Circular Economy: *Research challenges and Opportunities*.
- Korhonen, J., Nuur, C., Feldmann, A., & Birkie, S.E. (2018). Circular economy as an essentially contested concept. *Journal of Cleaner Production*, 175, 544-552.
- Kwak, H., Puzakova, M., & Rocereto, J.F. (2015). Better not smile at the price: The differential role of brand anthropomorphization on perceived price fairness. *Journal of Marketing*, 79(4), 56-76.
- Landwehr, J.R., McGill, A.L., & Herrmann, A. (2011). It's got the look: The effect of friendly and aggressive "facial" expressions on product liking and sales. *Journal of Marketing*, 75(3), 132-146.
- Levine, J.M., & Moreland, R.L. (2002). Group reactions to loyalty and disloyalty. In *Advances in group processes*, 203-228. Emerald Group Publishing Limited.
- Magee, J.C., & Galinsky, A.D. (2008). 8 social hierarchy: The self-reinforcing nature of power and status. *Academy of Management Annals*, 2(1), 351-398.
- Mayer, F.S., & Frantz, C.M. (2004). The connectedness to nature scale: A measure of individuals' feeling in community with nature. *Journal of Environmental Psychology*, 24(4), 503-515.
- McDonald, R.I., Chai, H.Y., & Newell, B.R. (2015). Personal experience and the psychological distance of climate change: An integrative review. *Journal of Environmental Psychology*, 44, 109-118.
- Meyers-Levy, J., & Peracchio, L.A. (1996). Moderators of the impact of self-reference on persuasion. *Journal of Consumer Research*, 22(4), 408-423.
- Michelini, G., Moraes, R.N., Cunha, R.N., Costa, J.M., & Ometto, A.R. (2017). From linear to circular economy: PSS conducting the transition. *Procedia CIRP*, 64, 2-6.
- Miesler, L., Leder, H., & Herrmann, A. (2011). Isn't it cute: An evolutionary perspective of baby-schema effects in visual product designs. *International Journal of Design*, 5(3), 17-30.
- Milios, L. (2018). Advancing to a Circular Economy: three essential ingredients for a comprehensive policy mix. *Sustainability Science*, 13(3), 861-878.
- Mourey, J.A., Olson, J.G., & Yoon, C. (2017). Products as pals: Engaging with anthropomorphic products mitigates the effects of social exclusion. *Journal of Consumer Research*, 44(2), 414-431.
- Muranko, Z., Andrews, D., Chaer, I., & Newton, E.J. (2019). Circular economy and behaviour change: Using persuasive communication to encourage pro-circular behaviours towards the purchase of remanufactured refrigeration equipment. *Journal of Cleaner Production*, 222, 499-510.
- Muranko, Z., Andrews, D., Chaer, I., Newton, E.J., Proudman, P., & Longhurst, M. (2017). Incentivising pro-circular behaviours: proposing a new enhanced capital allowance scheme for remanufactured products-the case of refrigerated display cabinets in the United Kingdom. *Energy Procedia*, 123, 369-374.
- Muranko, Z., Andrews, D., Newton, E.J., Chaer, I., & Proudman, P. (2018). The pro-circular change model (P-CCM): proposing a framework facilitating behavioural change towards a circular economy. *Resources, Conservation and Recycling*, 135, 132-140.
- Nisbet, E.K., & Gick, M.L. (2008). Can health psychology help the planet? Applying theory and models of health behaviour to environmental actions. *Canadian Psychology/Psychologie Canadienne*, 49(4), 296.
- Pinjing, H., Fan, L., Hua, Z., & Liming, S. (2013). Reference to the circular economy as a guiding principle. *Waste as a Resource*, 37, 144.

- Planing, P. (2015). Business model innovation in a circular economy reasons for non-acceptance of circular business models. *Open Journal of Business Model Innovation*, 1(11).
- Root-Bernstein, M., Douglas, L., Smith, A., & Verissimo, D. (2013). Anthropomorphized species as tools for conservation: utility beyond prosocial, intelligent and suffering species. *Biodiversity and Conservation*, 22(8), 1577-1589.
- Sauvé, S., Bernard, S., & Sloan, P. (2016). Environmental sciences, sustainable development and circular economy: Alternative concepts for trans-disciplinary research. *Environmental Development*, 17, 48-56.
- Schultz, P.W. (2000). New environmental theories: Empathizing with nature: The effects of Perspective taking on concern for environmental issues. *Journal of Social Issues*, 56(3), 391-406.
- Schultz, P.W. (2001). Assessing the structure of environmental concern: Concern for the self, other people, and the biosphere. *Journal of Environmental Psychology*, 21, 327-339.
- Schultz, P.W. (2002). Inclusion with nature: The psychology of human-nature relations. In P. Schmuck, & W.P. Schultz (Eds.), *Psychology of sustainable development*. Dordrecht: Kluwer Academic Publishers
- Schwartz, S.H. (1994). Are there universal aspects in the structure and contents of human values?. *Journal of Social Issues*, 50(4), 19-45.
- Schwartz, S.H. (2010). Basic values: How they motivate and inhibit prosocial behavior. *Prosocial motives, emotions, and behavior: The better angels of our nature*, 14, 221-241.
- Sener, A., & Hazer, O. (2008). Values and sustainable consumption behavior of women: a Turkish sample. *Sustainable Development*, 16(5), 291-300.
- Sheth, J., & Parvatiyar, A. (1995). Ecological imperatives and the role of marketing. *Environmental marketing: Strategies, practice, theory, and research*, 3-20.
- Singh, P. & Giacosa, E. (2019). Cognitive biases of consumers as barriers in transition towards circular economy, *Management Decision*, 57(4), 921-936.
- Stahel, W.R. (2016). The circular economy. *Nature News*, 531(7595), 435.
- Steg, L., Bolderdijk, J.W., Keizer, K., & Perlaviciute, G. (2014). An integrated framework for encouraging pro-environmental behaviour: The role of values, situational factors and goals. *Journal of Environmental Psychology*, 38, 104-115.
- Straughan, R.D., & Roberts, J.A. (1999). Environmental segmentation alternatives: a look at green consumer behavior in the new millennium. *Journal of Consumer Marketing*, 16(6), 558-575.
- Sturgis, P., & Allum, N. (2004). Science in society: re-evaluating the deficit model of public attitudes. *Public Understanding of Science*, 13(1), 55-74.
- Su, B., Hshmati, A., Geng, Y. & Yu, X. (2013). A review of the circular economy in China: moving from rhetoric to implementation, *Journal of Cleaner Production*, 42, 215-227.
- Tam, K.P. (2015). Are anthropomorphic persuasive appeals effective? The role of the recipient's motivations. *British Journal of Social Psychology*, 54(1), 187-200.
- Tam, K.P., Lee, S.L., & Chao, M.M. (2013). Saving Mr. Nature: Anthropomorphism enhances connectedness to and protectiveness toward nature. *Journal of Experimental Social Psychology*, 49(3), 514-521.
- Thøgersen, J., & Ölander, F. (2002). Human values and the emergence of a sustainable consumption pattern: A panel study. *Journal of Economic Psychology*, 23(5), 605-630.
- Vermeir, I., & Verbeke, W. (2006). Sustainable food consumption: Exploring the consumer attitude-behavioral intention gap. *Journal of Agricultural and Environmental Ethics*, 19(2), 169-194.
- Wang, L., & Juslin, H. (2011). The effects of value on the perception of corporate social responsibility implementation: A study of Chinese youth. *Corporate Social Responsibility and Environmental Management*, 18(4), 246-262.
- Wastling, T., Charnley, F., & Moreno, M. (2018). Design for circular behaviour: considering users in a circular economy. *Sustainability*, 10(6), 1743.
- Waytz, A., Cacioppo, J., & Epley, N. (2010). Who sees human? The stability and importance of individual differences in anthropomorphism. *Perspectives on Psychological Science*, 5(3), 219-232.
- Williams, L.A., Masser, B., & Sun, J. (2015). Revisiting the effect of anthropomorphizing a social cause campaign. *PloS one*, 10(9), e0138886.
- Zhu, H., Wong, N., & Huang, M. (2019). Does relationship matter? How social distance influences perceptions of responsibility on anthropomorphized environmental objects and conservation intentions. *Journal of Business Research*, 95, 62-70.