

# Artificial Intelligence and Consumer's Perception: A Research on Environmentally Conscious Consumer

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**Abstract**—The purpose of this study is to explore the limited exploration of the simultaneous influence of beneficial artificial intelligence, destructive artificial intelligence, and risky artificial intelligence on green purchase intention and green purchase behaviour using the Technology Acceptance Model (TAM) and Innovation Resistance Theory (IRT). Further, it also checks the impact of green purchase intention on green purchase behaviour. Data was collected using a well-structured questionnaire from 124 consumers through online mode and analyzed using Confirmatory Factor Analysis (CFA) for reliability and validity concerns and Structural Equation Modelling (SEM) for interaction among the variables. The study's results exhibit the positive impact of beneficial artificial intelligence on green purchase intention and green purchase behaviour. Also, it reveals that destructive artificial intelligence has a positive impact on green purchase intention but a negative impact on green purchase behaviour. In addition, green purchase intention is found to be the predictor of green purchase behaviour. The extant literature is found on the impact of artificial intelligence on purchase behaviour. However, no research has been done on consumer perception of artificial intelligence and its impact on green purchase intention and green purchase behaviour as per the author's knowledge. This study contributes to the literature of artificial intelligence as well as green consumer behaviour.

**Keywords**—Artificial intelligence, Green purchase intention, Green purchase behaviour, Technology acceptance model (TAM), Structure equation modelling (SEM), Innovation resistance theory (IRT)

## I. INTRODUCTION

Artificial Intelligence (AI) is not merely a technological advancement; however, a potent transformative influence that positively impacts societies through cost and risk reduction, enhances credibility, and innovative outcomes to deal with intricate challenges [87]. The widespread integration of artificial intelligence structure spans in numerous society areas [17], provides a range of circumstances for the competitive market [38], along with influencing consumers' experiences [70], dealings [53], and commitment [50]. The escalating analytical capabilities, existing data, contextual awareness, and emotion recognition potential of artificial intelligence empower the tailoring of personalized contribution. This, in turn, makes it easier to create and maintain genuine consumer engagements and connections that have long-lasting appeal [31, 38, 57, 70].

An environmentally sustainable product makes a smaller contribution to environmental issues compared to a regular product. This differentiation stems from the sustainable traits

that characterize its components, production methods, transmission techniques, disposal/recycling procedures, or product features, for example, decreased power usage [67]. Several researches highlight the positive impact of a consumer's perception of a product's environmental sustainability on their intention to make a purchase [19, 46, 66]. Practitioners, researchers, and consumers in general have recently become interested in the digitization of social behaviours, operations, and goods. Researchers have developed novel digital innovations, such as artificial intelligence, to improve the sustainable development of items. Therefore, artificial intelligence refers to the cognition demonstrated by advanced technology, as opposed to the cognitive abilities displayed by humans and other creatures [68]. The skills it has includes, self-sufficient interpretation of the environment, learning through experience, conclusion-making, solution execution, and stronger interaction with human beings and other artificial intelligence interfaces [73].

The current research landscape is limited to the impact of beneficial artificial intelligence, destructive artificial intelligence, and risky artificial intelligence on green purchase behaviour. While there is existing literature on the influence of environmental sustainability on consumer behaviour and the positive effects of beneficial artificial intelligence, there is a research gap in comprehensively understanding the interplay between these factors. The importance of bridging this gap lies in the evolving landscape of artificial intelligence technologies and their potential consequences on sustainable consumer choices [94].

Existing studies have explored the positive impact of the sustainability of the environment and surroundings on consumer purchase intention [19, 46, 66]. However, there is a lack of in-depth analysis regarding how the introduction of beneficial artificial intelligence, designed to enhance environmental sustainability, may affect green purchase behaviour. Furthermore, the potential negative impact of destructive artificial intelligence on such behaviour is an understudied area [94]. The effect of risky artificial intelligence in this context adds another layer of complexity, as consumers may weigh the potential risks associated with artificial intelligence technologies in their decision-making process. Understanding how risky artificial intelligence, beneficial artificial intelligence and destructive artificial intelligence influence green purchase intention and green



purchase behaviour is crucial for developing a comprehensive understanding of the dynamics at play.

However, the current study aims to explore the limited exploration of the simultaneous influence of beneficial artificial intelligence, destructive artificial intelligence, and risky artificial intelligence on green purchase intention and behaviour. It is important to stay ahead of the curve in understanding how emerging technologies impact sustainable consumer choices and can inform both policymakers and businesses in shaping a more environmentally conscious marketplace.

## II. LITERATURE REVIEW

### A. Artificial intelligence

Marketers have been using artificial intelligence for a long time to gather consumer data [51]. With the continuous innovation in artificial intelligence, consumers have become more conscious of the power of artificial intelligence. The unethical use of artificial intelligence as happened in the case of Facebook and Cambridge Analytica [18] has led to a major shift in the acceptance of artificial intelligence by the consumer. Artificial intelligence has become a perfect solution for convenience for both companies as well as consumers [94, 86, 51]. The development in AI-enabled technologies like chatbots, voice-based artificially intelligent tools (Siri, Alexa etc.), text editors, generative AI software (Gemini, ChatGPT etc.) wearable AI, facial recognition AI (Snapchat) and navigation AI have elevated the customer experience [96].

Artificial intelligence is a machine which imitates the functions of the human mind when given data and interprets it in the desirable form with the help of pre-programmed instructions [51, 73, 86, 96, 98]. The benefits of artificial intelligence cannot be overlooked in terms of the amount of data (can deal in Big Data), speed, accuracy and source to name a few [98, 8]. Right from chatbots for solving queries, personalized advertising, and determining long-term customers there are several reasons why artificial intelligence has taken the front seat while dealing with consumers [47, 61]. Generative AI has sped consumers' acceptance of artificial intelligence as it can create new content within seconds [25, 40].

Even though artificial intelligence is going through a lot of advancement every day, human decision-making capability and the fact that artificial intelligence is the result of the human brain cannot be ignored [51]. In terms of the relationship of artificial intelligence with consumers, it is still contradictory. Some researchers believe the consumer has a positive relationship with artificial intelligence as it depends upon their trust in the brand using artificial intelligence [5, 51, 52]. Features like ease of use, no time barriers, cost savvy, convenience and ability to create new content have given a positive outlook to the consumer for using artificial intelligence [69]. This dimension of artificial intelligence adoption is called beneficial AI [94].

However, few researchers suggest that there is a negative relationship between artificial intelligence and consumer acceptance. Risky artificial intelligence and destructive

artificial intelligence, both denote the negative side of artificial intelligence. Risky AI is a broader term and includes issues that can harm the consumer, intentionally or unintentionally [94]. The fact that consumers fear the misuse of their data and find themselves in an ambiguous situation while trusting new technologies using artificial intelligence [10, 51] is considered as risky AI. Risky AI encompasses issues such as privacy concerns, algorithmic biases, loss of control, misuse of data (hacking), job displacements and less transparency about data usage by the organization [56].

Destructive artificial intelligence is the extreme extent to which artificial intelligence can be used and encompasses potential issues that pose a threat to humanity. Consumers feel the loss of control over their data when artificial intelligence is concerned as they perceive it as an intrusive or invasive development in innovation [82]. AI-enabled technologies are largely algorithm-driven which poses a danger of causing accidents (AI-driven healthcare technologies; driverless cars, robot-run restaurants etc.), political instability, and technological manipulations to name a few are included in destructive AI. Moreover, destructive AI comprises weaponized AI, deepfake videos, AI-driven accidents, AI surpassing human intelligence, and manipulation of public opinion [82, 94]. The perception of consumers regarding the adoption of artificial intelligence is moving on a continuum of positive (Beneficial artificial intelligence) to negative (Destructive and Risky artificial intelligence).

Diverse fields such as information technology, business, healthcare, education and arts have collaborated with artificial intelligence to generate new ideas or solve problems [14, 20, 29, 34, 103]. Various challenges associated with the adoption of artificial intelligence include regulatory challenges in terms of AI authorship for generative AI content [76]; inappropriate use of AI [88]; fear of AI replacing jobs in the market [104]; lack of empathy in AI-based voice assistants while responding to distress conditions. Perception towards artificial intelligence impacts consumer intention and consumer behaviour [3, 92, 96]. Moreover, previous studies indicate the mediating relationship between the attitude of the consumer and green purchase behaviour [3, 59, 90]. Frank [27] suggested that artificial intelligence if integrated into the product has a multiplying impact on consumer purchase intention and even provides a competitive advantage to the brand. The utility of artificial intelligence is one of the predictors of consumer behaviour [1]. Bhagat et al. [11] show the positive impact of artificial intelligence on purchase intention, thereby creating a ground for current research.

Various brands have realized the importance of artificial intelligence in making customer's journeys more convenient [30]. Using the data of consumers, brands curate customized experiences for customers (ibid). André et al. [7] and Khan et al. [45] have found out artificial intelligence-integrated products posit positive purchase intention. Khan et al. [45] also suggest that artificial intelligence has a positive impact on consumer behaviour. Since artificial intelligence has been significantly used in numerous fields such as information technology, business, healthcare and education, research on its impact on green intention and green purchase behaviour is still in a nascent stage.

Among other factors like green awareness, environmental concerns, environmental knowledge, eco-innovativeness is also found to be an important predictor of green purchase intention and further green purchase behaviour [43, 79] but no research has been found on the relation between consumer's perception of artificial intelligence and green purchase intention. Eco-innovation has been a significant factor which deals with finding innovation in reducing the negative impact on the environment and thereby reducing carbon footprint [63]. Artificial intelligence could be regarded as a breakthrough in the field of innovation. The increasing advent of sustainability requires the exploration of beneficial artificial intelligence, destructive artificial intelligence and risky artificial intelligence and their impact on green purchase intention and green purchase behaviour to understand the consumer's perception of adopting artificial intelligence and using it for green behaviours.

Using the aspects of the Technology Acceptance Model (TAM) [22] and Innovation Resistance Theory (IRT) [71], this study aims to add to the existing body of knowledge, the consumer's motivation to use artificial intelligence using factors such as beneficial artificial intelligence, destructive artificial intelligence and risky artificial intelligence and its impact on green purchase intention and green purchase behaviour. TAM has passed the test of time and is found to be a robust model and strong explanatory power for studying new technology adoption in this case artificial intelligence in the purview of green behaviour by the consumer [60, 77, 80]. IRT would help to dig out the reasons for consumers to avoid adopting artificial intelligence [35, 81]. Beneficial AI (perceived usefulness and perceived ease of use) has been adapted and modified for research from the TAM model and destructive and risky AI (usage barrier, risk barrier, image barrier and tradition barrier) has been adapted and modified for research from IRT theory. From the above review of literature, the following hypotheses are formulated:

H<sub>1</sub>: Beneficial AI has a significant influence on green purchase intention.

H<sub>2</sub>: Beneficial AI significantly influences green purchase behaviour.

H<sub>3</sub>: Destructive AI has a significant influence on green purchase intention.

H<sub>4</sub>: Destructive AI has a significant influence on green purchase behaviour.

H<sub>5</sub>: Destructive AI has a significant influence on risky AI.

H<sub>6</sub>: Risky AI has a significant influence on green purchase intention.

H<sub>7</sub>: Risky AI has a significant influence on green purchase behaviour.

#### B. Green purchase intention and green purchase behaviour

Keeping the environment in perspective, consumers are shifting towards more conscious choices [44] and they expect brands to be transparent about the green efforts made by them. Therefore, the expectations of the consumer or experience with

the product influence the formation of the attitude as well as the purchase intention of the consumer [4, 48, 105]. [97] indicate that consumers have the intention to protect the environment and pay more for the same but still, there is less increase in the demand for green products [15, 44]. Green purchase intention is the intent to purchase a product by the consumer keeping the environmental concern in perspective [4, 89, 90].

Attitudes towards green products, environmental concern, perceived consumer effectiveness, eco-innovativeness and perceived environmental knowledge, and openness to experience are found to be the predictors of green purchase intentions and green purchase behaviour [13, 39, 44]. Few studies suggest the impact of COVID-19 on the shift of consumer choices to green products [23, 101, 102]. Social influence and social vision are also linked to environmentally conscious behaviour [12, 42, 62].

Green purchase behaviour refers to the actual purchase of the green product by the consumer. The green product indicates an environment-friendly product that contributes more to safeguarding nature [42]. Furthermore, there is a surge in the usage of digital methods in various areas of life [4, 41] which provides more scope for the interaction of consumers with artificial intelligence for making greener choices. The theory of planned behaviour advocates that attitude and perception impact the intention to buy and the intention to buy further influences the actual purchase behaviour for the product [2, 84]. Previous researches also indicate the impact of green purchase intention on green purchase behaviour [83, 91, 100]. This research explains the relationship between green purchase intention and green purchase behaviour in light of the perception of consumers towards artificial intelligence. From the above review of literature, the following hypothesis is formulated:

H<sub>8</sub>: Green purchase intention positively influences green purchase behaviour.

### III. METHODOLOGY

#### A. Measures

Data was collected using a well-structured questionnaire developed based on the research framework. The items of the questionnaire were adapted from previous studies and duly modified as per the current research context. This study contains five variables: beneficial artificial intelligence, destructive artificial intelligence, risky artificial intelligence, green purchase intention and green purchase behaviour. The items used for these variables and the sources are given in Table 1. Beneficial artificial intelligence was measured using four items developed by [93]. The scale ranged from 1 (strongly disagree) to 5 (strongly agree). Internal consistency was checked using Cronbach's alpha and was found to be 0.881. Destructive artificial intelligence was measured using four items developed by Tussyadiah and Miller [93]. The scale ranged from 1 (strongly disagree) to 5 (strongly agree). Internal consistency was checked using Cronbach's alpha and was found to be 0.73.

TABLE I: ITEMS AND SOURCE

Items	Source
<b>Beneficial artificial intelligence</b> A1. Artificial Intelligence (AI) helps in easy decision-making for purchases of products or services. A2. AI saves time, freeing up humans to pursue other activities A3 AI has better skills at solving complex problems A4. AI has a positive impact on our economy.	Tussyadiah and Miller [93]
<b>Destructive artificial intelligence</b> A5. AI can cause accidents involving humans A6. Humans are manipulated by intelligent machines or technologies A7. AI has harmful impacts on our environment A8. There are criminal use of AI technologies.	Tussyadiah and Miller [93]
<b>Risky artificial intelligence</b> A9. AI can lead to companies/government with more access to personal data/behaviour A10. AI cause job losses. A11. There is less security of personal data and privacy.	Tussyadiah and Miller [93]
<b>Green purchase intention</b> B12. I am willing to purchase the green product. B13. Overall, I am glad to purchase green product because it is environmentally friendly B14. I intend to rebuy green product because of environmental concern	Woo and Kim [99] Alagarsamy et al. [3]
<b>Green purchase Behaviour</b> C15. When there is a choice, I always choose the product that contributes to the least amount of pollution C16. If I understand the potential damage to the environment that some products can cause, I do not purchase those products. C17. I have switched products for ecological reasons	Roberts [72] Alagarsamy et al. [3]

Risky artificial intelligence was measured using three items developed by [93]. The scale ranged from 1 (strongly disagree) to 5 (strongly agree). Internal consistency was checked using Cronbach’s alpha and was found to be 0.847. Green purchase intention was measured using three items developed by Woo and Alagarsamy et al. [3] and Kim [99]. The scale ranged from 1 (strongly disagree) to 5 (strongly agree). Internal consistency was checked using Cronbach’s alpha and was found to be 0.923.

Green purchase behaviour was measured using three items developed by Alagarsamy et al. [3] and Roberts [72]. The scale ranged from 1 (strongly disagree) to 5 (strongly agree). Internal consistency was checked using Cronbach’s alpha and was found to be 0.875. Table 2 shows all the values of Cronbach’s alpha are more than 0.7, therefore it is acceptable [65]. The value for the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy came out to be 0.782 which is also significant.

TABLE II. CONSTRUCT'S CRONBACH'S ALPHA

Construct	Cronbach's Alpha
Beneficial AI	0.881
Destructive AI	0.73
Risky AI	0.847
Green Purchase Intention	0.923
Green Consumer Behaviour	0.875

The data was collected with the help of a questionnaire using the convenience sampling method. Google form was used to collect the data from the respondents. An online link was provided to them with a time frame of two months to answer the survey questions and share it with the people in

their circle to gather responses. Time constraints and low response rates led the survey to be stopped after two months. Overall, 300 responses were received, but 124 samples were deemed fit for data analysis after data cleaning [6].

Demographics showed that most respondents are young, under the age group of 25 to 30 years (27 per cent) and 30 to 35 years (21 per cent). 50 per cent of the respondents are male and 47 per cent are female respondents. Most respondents (48 per cent) earn more than ₹50,000 per month. The majority (56 per cent) of the respondents are post-graduates, 23 per cent are graduates, 5 per cent are having Doctoral degrees, 10 per cent have professional or other qualifications and 6 per cent have studied up to 12<sup>th</sup> standard.

*B. Data analysis*

The study aimed to analyze the impact of beneficial artificial intelligence, destructive artificial intelligence and risky artificial intelligence on green purchase intention which will further lead to green purchase behaviour. Additionally, it also tries to assess if beneficial artificial intelligence, destructive artificial intelligence and risky artificial intelligence directly impact green purchase behaviour. Further, it tries to explore if destructive artificial intelligence is the predictor of risky artificial intelligence. As the questionnaire was adapted from previous studies confirmatory factor analysis was directly conducted [16]. The confirmatory factor analysis results are detailed in Table 3.

Convergent validity was assessed based on composite reliability (CR) and average variance extracted (AVE). CR should be more than 0.7 and AVE should be more than 0.5 and



CR should be more than AVE to establish convergent validity (58). For discriminant validity, AVE should be more than the maximum shared variance (MSV) (26). For convergent and discriminant validity, one statement is removed whose factor

loading was less for the variable destructive artificial intelligence. Table 3 shows all conditions for convergent validity and discriminant validity are satisfied. Figure 1 shows the model for confirmatory factor analysis.

TABLE III. CONVERGENT AND DISCRIMINANT VALIDITY

	CR	AVE	MSV	MaxR(H)	Green_Purchase_INT	Behavioural	Destructive	Risky	Green_Purchase_BHV
Green_Purchase_INT	0.925	0.804	0.596	0.928	<b>0.897</b>				
Behavioural	0.886	0.662	0.248	0.897	0.483	<b>0.814</b>			
Destructive	0.753	0.505	0.282	0.766	0.327	-0.007	<b>0.711</b>		
Risky	0.851	0.658	0.282	0.876	0.250	0.063	0.531	<b>0.811</b>	
Green_Purchase_BHV	0.878	0.706	0.596	0.880	0.772	0.498	0.037	0.025	<b>0.840</b>

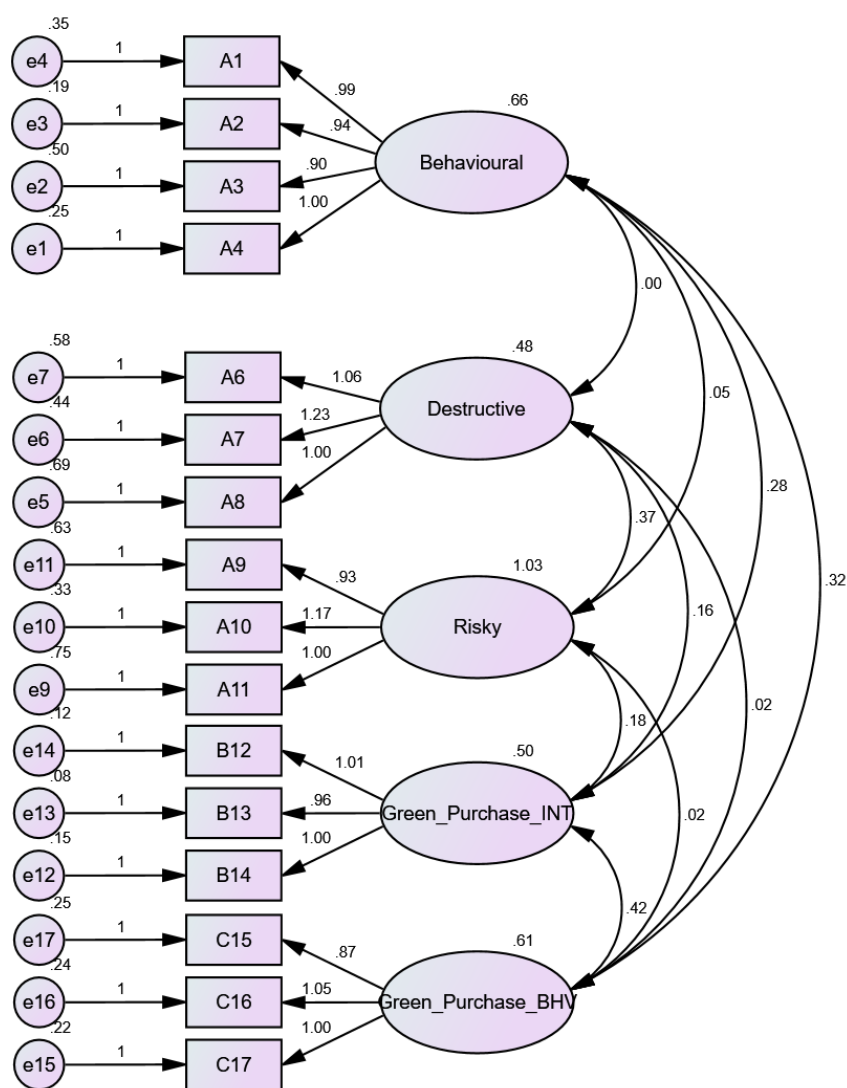


FIGURE I: CONFIRMATORY FACTOR ANALYSIS

Figure 2 shows the path model to examine the causal relationship between the variables. The fitness of the structural model was examined using five common model-fit measurements; Relative Chi-square (CMIN/df), Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), Normed Fit Index (NFI), Comparative Fit Index (CFI) and Root Mean Square Approximation Error (RMSEA). In this

model, the CMIN/df value is 0.171 and is in the acceptable range [33, 36, 37]. Values of other indicators such as GFI (0.999), AGFI (0.992), NFI (0.999), CFI (1.0) and RMSEA (0.0) are found to be satisfactory [33, 36, 37].

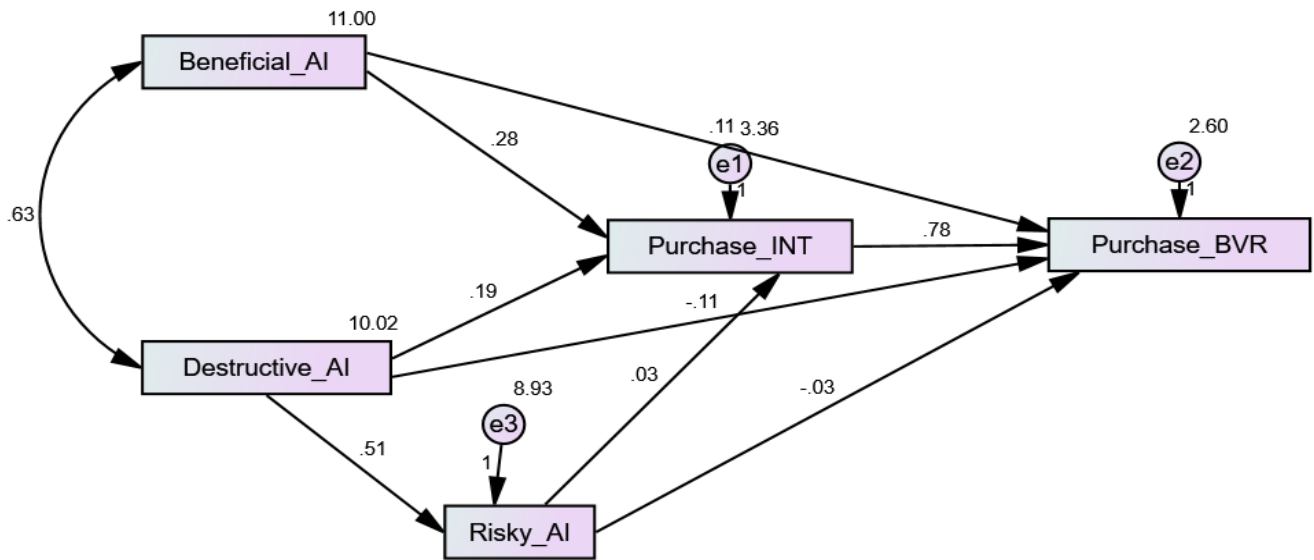


FIGURE II: PATH MODEL

Out of total eight hypotheses, six were found to be significant (Table 3). Hypotheses testing shows beneficial AI has a significant influence on green purchase intention ( $\beta = 0.281$ ,  $P < 0.05$ ). Thus, H<sub>1</sub> is accepted and the beta value shows positive magnitude. Also, beneficial AI is a predictor of green purchase behaviour ( $\beta = 0.049$ ,  $P < 0.05$ ), thus, accepting the H<sub>2</sub>. Destructive AI is found to have a significant positive influence on green purchase intention ( $\beta = 0.19$ ,  $P < 0.05$ ), therefore accepting the H<sub>3</sub>, but a negative impact on green purchase

behaviour ( $\beta = -0.11$ ,  $P < 0.05$ ), therefore accepting H<sub>4</sub>. Moreover, destructive AI is also found to positively predict risky AI ( $\beta = 0.513$ ,  $P < 0.05$ ) thus accepting H<sub>5</sub>. Furthermore, Risky AI is neither a predictor of green purchase intention ( $\beta = 0.033$ ,  $P > 0.05$ ) nor green purchase behaviour ( $\beta = -0.034$ ,  $P > 0.05$ ), therefore failing to accept both H<sub>6</sub> and H<sub>7</sub>. And lastly, green purchase intention is found to positively influence green purchase behaviour ( $\beta = 0.782$ ,  $P < 0.05$ ), thus accepting H<sub>8</sub>. Table 4 shows the summary of the hypotheses testing results.

TABLE 4: SUMMARY OF HYPOTHESES TESTING RESULTS

H	Relationship		Estimate	S.E.	C.R.	P	Magnitude	Result
H1	Purchase_INT	<--- Beneficial_AI	0.281	0.05	5.636	***	Positive	Accepted
H2	Purchase_BVR	<--- Beneficial_AI	0.112	0.049	2.284	0.022	Positive	Accepted
H3	Purchase_INT	<--- Destructive_AI	0.19	0.059	3.186	0.001	Positive	Accepted
H4	Purchase_BVR	<--- Destructive_AI	-0.11	0.054	-2.021	0.043	Negative	Accepted
H5	Risky_AI	<--- Destructive_AI	0.513	0.085	6.027	***	Positive	Accepted
H6	Purchase_INT	<--- Risky_AI	0.033	0.055	0.603	0.546	Positive	Fail to accept
H7	Purchase_BVR	<--- Risky_AI	-0.034	0.049	-0.708	0.479	Negative	Fail to accept
H8	Purchase_BVR	<--- Purchase_INT	0.782	0.079	9.866	***	Positive	Accepted

IV. DISCUSSION

An increase in the use of artificial intelligence could help businesses incite positive changes in the behaviour of the consumer from a sustainable marketing perspective [92]. AI is a brilliant system designed to influence the intention and behaviour of consumers using chatbots, AI-based home assistants, robotic devices and other AI-optimized tools [93]. The usage of artificial intelligence in behaviour modification would work if the consumer perceives the artificial intelligence to be a trustworthy technology. This study aims to understand the perception of consumers towards the use of artificial intelligence concerning green purchase intention and green purchase behaviour.

Artificial intelligence has been used as a decision-making tool for automation processes, better decision making and enhancing productivity [21]. The current outcome supports hypotheses 1 and 2 and indicates the positive impact of

beneficial artificial intelligence on green purchase intention as well as green purchase behaviour. Previous studies support that the beneficial artificial intelligence or the positive perception of artificial intelligence is due to the trust factor as well as the customization offered by the artificial intelligence tools [5, 50]. Moreover, convenience to customer, cost and benefit analysis and ease of use offered by artificial intelligence could be the factors that lead to favourable green purchase intentions and green purchase behaviour [50, 51, 68]. Artificial intelligence has made decision-making easy by providing a huge amount of information on any subject matter at the fingertips. The interaction of artificial intelligence with consumers leads to the generation of consumer data regarding purchases, likes, dislikes, attitudes about green products and many more [78]. Consumers might have concerns as to how companies might be using their data. This sensitive issue leads to the other two variables i.e. destructive artificial intelligence and risky artificial intelligence.



Data implies that destructive artificial intelligence influences green purchase intention as well as green purchase behaviour, supporting hypotheses 3 and 4. Investigating further, it shows that destructive artificial intelligence also has a positive impact on green purchase intention but a negative impact on green purchase behaviour. Earlier studies are of the view that people often find artificial intelligence difficult to understand [50, 75], as they are not aware of the use of their data by companies using artificial intelligence [48]. Moreover, the concerns of consumers regarding the ethical use [32] of their transactional data, loss of human touch, data breaches and transparency issues could be the reason for the negative relation between destructive artificial intelligence and green purchase behaviour. Results also indicate that destructive artificial intelligence also influences risky artificial intelligence, supporting hypothesis 5. This is because the consumer feels that the control is lost over the data which distresses the consumer, for they feel violated and exploited [5, 10, 68]. Interestingly, risky artificial intelligence is not found to be the predictor of green purchase intention as well as green purchase behaviour, thus, not supporting hypotheses 6 and 7. This finding contradicts previous studies that have stressed that the riskiness of using artificial intelligence could lead to negative relations between artificial intelligence with consumers [10, 68]. Perceived risk associated with using artificial intelligence has always been a factor affecting the trust of the consumer but this study refutes this.

Finally, green purchase intention positively impacts green purchase behaviour, thus supporting hypothesis 8. Past studies indicate green purchase intention is a strong predictor of green purchase value (desire to use products that meet individual's sustainability criteria) and green purchase behaviour [3, 79, 90, 96]. Willingness to buy green products is driven by the intention to contribute to the sustainability cause and practice environmentally conscious behaviour [3, 64, 92]. Based on the results, it is clear that consumers are positive about the perceived benefits of artificial intelligence but up to a certain extent only that it does not breach their data privacy and barges in to take control of their lives.

#### V. MANAGERIAL IMPLICATIONS

Artificial intelligence has shown immense advancement in recent years. The concept of artificial intelligence is quite old but the development in its usability and its reach has widened. Therefore, this study addresses the issue of acceptability and perception of consumers in the context of artificial intelligence. The results of the study can provide insights into the industries dealing with green products and sustainability. The industries that are trying to incorporate artificial intelligence tools to modify the behaviour [93] of the consumer and encourage the usage of green products could use the results of this research. This would help them understand that consumers perceive artificial intelligence to be beneficial in terms of information search, decision-making, content generation and product recommendation. Advancement in artificial intelligence has a lot of benefits for the community as the vast amounts of data could be used to identify trends and assist in scientific research for development in the fields of medicine, sustainable methods of production, less carbon emissions, green procurement and

responsible disposition of products. At the same time, they also fear data breaches, algorithm biases, violation of privacy rules, AI weaponization and ethical misuse. Artificial intelligence is still a sophisticated concept for consumers and therefore, its implementation should also be accompanied by awareness and by providing answers to questions on data breaches and data privacy as well as the contribution of artificial intelligence to the green behaviour of the consumer. Firms can effectively integrate beneficial artificial intelligence while mitigating the effects of destructive and risky artificial intelligence, through stringent rules and regulations for the usage of consumer data, following the ethical code of conduct and being transparent about their work. Further, its implications also extend to academia as it is also an addition to the literature on artificial intelligence and its use in green marketing because it provides the model for understanding the perception of the consumer towards artificial intelligence and green consumer behaviour.

#### VI. CONCLUSION

Artificial intelligence has many benefits such as proactive behaviour, strategic decision-making based on algorithms, minute detailing, generating new content and control. However, consumers have ethical considerations about its usage as fear of job displacements, realignment of roles, privacy concerns, algorithmic biases, loss of control, and misuse of data are some dark sides of artificial intelligence. This study focuses on both beneficial artificial intelligence and destructive artificial intelligence, thus, taking into account both optimistic and pessimistic views about the consumer's perception of artificial intelligence concerning purchase intentions and purchase behaviour towards green products. Artificial intelligence is an unbiased source of information for consumers about green products. AI agents such as chatbots and voice assistants can provide customized suggestions to the consumer. This could help a consumer in better decision-making. Moreover, marketers can use artificial intelligence to communicate sustainability commitments by making the product journey transparent with the consumers. Consumer will make smart decisions based on calculated risks and conscious choices to reduce the hazards of impulsive decision-making, thus understanding their attitude and behaviour towards green purchases.

The negative side of artificial intelligence is data privacy, the fear of the wrong use of consumer data, the decline in human interaction, distrust or scepticism about technology acceptance, and the fear of AI taking over human intelligence. However, the era of sustainability calls for integrating artificial intelligence in marketing and using it to encourage consumers to engage in environmentally conscious behaviour. This is possible by acknowledging both the beneficial and destructive sides of artificial intelligence and finding a balance between the extent of artificial intelligence usage and human interaction to build stronger community.

#### VII. LIMITATION AND FUTURE WORK

This research work aims to identify what consumers perceive regarding AI and how that perception impacts green consumer behaviour. The study is carried out under certain limitations. Firstly, the study focuses only on the impact of pro-



environmental behaviour factors on the green purchase intentions and green purchase behaviour of consumers. Pro-environmental behaviour simply means green, sustainable or environmentally friendly behaviour. The impact of AI is measured under three dimensions namely, Beneficial AI, Destructive AI, and Risky AI. Perceived risk related to acceptance of new technology has always played an important role in forming intention and behaviour, however, this study found that risky AI is not the predictor of green purchase intention and green purchase behaviour. Future research could be conducted to find out the reason for the same. Further, destructive AI has a positive impact on green purchase intention but a negative impact on green purchase behaviour. Future research could address this particular limitation by using qualitative techniques like focus groups and combining them with experimental design [54] to get deeper insights into adopting artificial intelligence for green behaviour. Another limitation of this study is the small sample size. Another limitation of this study is that it does not measure the impact of trust in the company offering AI tools, brand familiarity and awareness [28, 54] which could be other factors that impact the willingness to adopt AI for green behaviour.

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#### AUTHORS` CONTRIBUTIONS

All authors have participated in drafting the manuscript. All authors read and approved the final version of the manuscript.

#### CONFLICT OF INTEREST

The authors certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

#### DATA AVAILABILITY

The data supporting the findings of this study are available upon request from the authors.

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