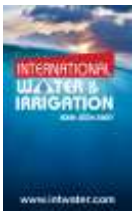

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Research On Green Marketing Methods Under the Guidance of The New Era of Artificial Intelligence and Its Impact on Green Purchase Intention

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Abstract: Specifically, it seeks to determine the influence of people's past behaviour on their intentions to buy these products and on their decision to switch to buying environmentally friendly food. With certain modifications, the Theory of Planned Behaviour (TPB) served as the theoretical foundation. In particular, additional factors were included, such as prior conduct, expertise, and belief in plant-based diets. The information was gathered from 650 Polish consumers of green goods. We used an online surveying method. The study's conclusions indicate that past conduct is a strong indicator that, for the most part, characterises consumer purchase patterns for sustainably produced food. This article aims to explore the notion that intentions to purchase ecologically friendly food are also significantly correlated with attitudes. Additionally, the propensity to buy environmentally friendly food items is favourably influenced by several factors, including knowledge, trust, and the standards of society. There is a statistically significant relationship between perceived behavioural control and the strength of the perceived control. 57% of the variance in customers' intentions to purchase ecologically friendly food may be explained by the enlarged model. This study offers a new viewpoint on the discrepancy between positive sentiments towards ecologically friendly food and actual purchase patterns by including past behaviour into the TPB.

Keywords: Consumer; Green Purchase; Green Purchase Behaviour Gap; Green Food; TPB; Past Behaviour; Green Marketing; Sustainable Development; Consumer’s Attitude

I. Introduction

Though industrialization and urbanisation have been the main drivers of rapid economic growth on a global scale, they have also significantly contributed to energy inefficiency and environmental degradation at the same time, leading to an unsustainable trajectory [1]. Even though China has had great economic success since implementing reform and opening up, the country still faces challenges including environmental pollution and inefficient energy use. This is because it is often believed that industrialization and environmental harm are related [2]. As a consequence, China's

economy has not grown as quickly or with the same quality as before. China must so prioritise developing new engines of economic expansion and pursuing an internal model of economic reform and environmental efficiency optimisation. There is an immediate need for this. It is now evident that promoting a new vision for green development and emphasising the synergistic relationship between environmental preservation and economic growth are two of the most crucial approaches to addressing these problems [3]. Green economic growth is one example of how sustainable development aims to achieve a balance between environmental protection and economic expansion. In several nations, the main focus of economic development has been ecologically responsible economic expansion [4]. This shift is important because it would enable China solve the pressing

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issues associated with its previous growth strategy and transition to a more balanced and sustainable economic trajectory.

The impact of artificial intelligence (AI), which is a relatively new technology, on the economy and society has been the subject of a great deal of discussion [5]. This is occurring at the same time as the revolution known as Industry 4.0 is getting underway. Due to the fact that artificial intelligence is a wide technology, a great number of researchers have explored the effects that it has on technological growth and productivity [6]. [7] One of the perspectives that can be found within these research is that artificial intelligence has the ability to both encourage technological innovation and increase productivity. Another point of view, on the other hand, indicates that artificial intelligence might potentially give birth to a productivity paradox, which would have a detrimental influence on the increase of productivity [8]. In spite of the fact that there is a considerable discussion on the impact that artificial intelligence has on technical innovation and production, a conclusive conclusion has not yet been reached. In spite of the ongoing development of new technologies such as artificial intelligence, the widespread occurrence of serious environmental problems is a substantial obstacle to the achievement of global sustainability by the world. This seeming contradiction further emphasises the need of maintaining a balanced outlook. On the other hand, questions about artificial intelligence and sustainable development, in particular those concerning its ability to support green development and its regional variations, continue to be largely unaddressed about.

Next, the concept of "Bartik instrumental variables" is used to create a regional industrial robot penetration index. After that, the efficacy of environmentally aware development is assessed using the improved Super-SBM model. Unlike the previous linear tests [9], our findings show that artificial intelligence has a nonlinear impact on green development. They thereby add to the continuing debate on the advancement of AI. Additionally, this study explores the different consequences of artificial intelligence while accounting for differences in the resources and technologies involved. Our goal in conducting this analysis is to determine AI's potential green value. Third, this study adds to what's already been done by looking at how new green technologies and better corporate structures affect how artificial intelligence and green energy work together. Unlike earlier studies that only looked at the connection between digital progress and energy [10], the environment [11], and economic growth [12], this study also considers how important it is to develop green technologies and bring old industrial structures up to date in order to fully understand the connection between AI progress and GEG. The fourth part of the study looks at how the expected effects of artificial intelligence on green growth will spread across the area. The results of this study help us learn more about how artificial intelligence affects green growth in different areas, both within and between regions. It's also a useful guide for the goal of organising the growth of green economies across the area and pushing for the creation of a "digital power."

II. Literature Review

A. Green Buying Goal

There is a term known as "green purchase intention" (GPI), which describes the future propensity of a customer to buy things that are in line with environmental conservation [13]. Similar to this, Sheng [14] asserts that the GPI is the forerunner of behaviour and denotes a purposeful action plan that empowers an individual to achieve a certain set of goals. Many investigations have found that attitude is one of the primary elements that influences the intention to buy an organic product [15,16,17]. This is reasonable when one considers that intention is the first stage in the process of making a purchase in the first place.

"Green consumption," "adoption of ecological or organic products," and "green purchasing" [18, 13] are terms that have been used in academic study to describe different ways of shopping that are good for the environment. The term "green consumption" refers to a mindset that is environmentally conscious and aware of the issues that are affecting the environment [19]. The primary goal of this style of consumption, according to Liobikiene and Bernatoniene [20], is to lessen the influence that consumers have on the environment. This type of consumption does not concentrate on reducing the amount of things that customers purchase.

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Over the course of time, a number of research have reached the conclusion that consumers' awareness of environmental preservation has led them to actively promote green consumption [13,21,22]. However, there is a big difference between what buyers say they will do and what they actually do when they buy environmentally friendly goods [15]. Both "green purchase inconsistency" and "green behavioural attitude gap" [13] are terms that are used to describe the disparity or gap that exists between the positive attitude that customers have towards the environment and the actual purchasing behaviour that they engage in. As a result of this, businesses in the modern era are required to adjust their ways of thinking in order to meet the competitive needs of the modern market [23].

Millennials, on the other hand, are thought to be the biggest group of customers in the world, and they tend to buy things that are good for the environment [15]. The Millennial generation is a good group to study because they care about the environment, can afford to buy organic products, and spread the word about their buying choices so that others will do the same. The fact that people are interested in this area [13] supports this.

B. Environmental Awareness

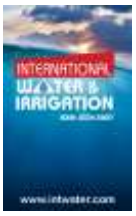
Expecting people to act in ways that are good for the world requires a lot of thinking processes [16]. According to Jaiswal and Kant, caring about the earth and wanting to buy organic items are related in a good way. The two parts of the EA are the sensitive dimension and the desire dimension, according to the study by Bulbul et al. [17]. Regarding the sensitivity dimension, customers have a high threshold for environmental issues. This indicates that, in addition to their goal of purchasing organic products, they also plan to recycle and reduce their energy use, among other actions related to environmental conservation [18]. The willingness factor is the propensity to develop consumption habits associated with environmental preservation notwithstanding the high prices and limited supply of certain products [17]. The willingness dimension is the name given to this tendency.

Numerous studies have looked at the relationship between the desire to purchase organic products and environmental consciousness. According to one of these research, environmental awareness does not always translate into personal action for the sake of environmental conservation. Instead, environmental awareness plays a significant influence in environmentally conscious behaviours. Conversely, Shelest et al. [20] discovered that environmental knowledge plays a key role in forecasting environmentally friendly actions. In addition, EA may be a motivating element for people to behave in an ecologically conscious way, according to Aliman and Astina [21]. There is a favourable association between environmental stewardship and environmental stewardship among college students, according to Hansman et al.'s [22] investigation of the variables influencing environmental stewardship. The study's findings indicate that a person's level of environmental awareness (EA) is closely correlated with how concerned they are about environmental issues and how likely they are to engage in "green" actions. Conversely, Carducci et al. [23] found that a higher level of environmental indifference allows an individual to engage in a range of activities that improve the climate and environment. According to Bulbul et al.'s study [24], one way to combat environmental pollution is to raise public awareness of a range of environmental and climate change issues. People may then behave in an environmentally beneficial way as a consequence of this knowledge, which eventually improves the state of the environment [26]. The literature that has been published in scholarly publications indicates that a number of studies have integrated environmental assessment (EA) into more extensive frameworks to assess its influence on environmentally aware consumption. In light of the data previously provided, the following suggestions have been made:

C. Green Self-Identity

A person's self-identity is made up of all the different roles they play, which finally make them act in the same way [27]. Self-identity refers to the

collection of values that are held by every individual and have the potential to motivate them to carry out certain behaviours [28]. People are considered to have a general social identity (GSI) if they identify with the environment, which allows them to have environmental awareness and cognitive attitudes that are congruent with purchasing organic items [29]. This line of thought is based on the idea that people who identify with the



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environment are more likely to purchase organic products. When the GSI is seen from an epistemological perspective, Kumar asserts that it is composed of two dimensions: (a) cognition and (b) emotion. When we talk about the emotion component, we are referring to the degree of empathy that customers have for the earth in order to stop its environmental degradation.

Moreover, Khare [30] said that the beneficial impact of GSI influences the desire to purchase ecologically friendly items; nevertheless, Barbarossa and De Pelsmacker discovered that GSI precedes the intention to purchase green products. Both of these findings are mentioned in the previous sentence. Studies such as Confente et al.'s [31] have shown that GSI directly and dramatically increases the possibility that customers would buy bioplastic goods by influencing their judgements about the value of ecologically identified items. To be more precise, no research has looked at the likelihood that this variable affects millennials' environmental sentiments in order to motivate them to buy organic goods.

D. Subjective Norms

Social norms, or SNs, are thought to represent the influence that society has on how a certain conduct develops [22]. This concept is formed by the interaction of two factors: (a) normative belief and (b) motivation to comply. Normative beliefs are people's ideas about how other people would want them to behave in a certain situation. The urge to comply to the opinions of others, on the other side, is referred to as compliance motivation. According to the empirical research, there is a high link between social networks and a wide variety of environmentally conscious behaviours, one of which is the desire to buy organic items [24].

Academic research on green conduct, according to Ricci et al. [40], lends credence to the notion that these standards, which have a significant impact on people's behaviour, may be highly important. This is a result of the norms' capacity to influence certain behaviours. Furthermore, a number of studies have shown that young consumers have a tendency to take into account the views and expectations of people who are perceived to be significant to them, such as friends, family, and coworkers, while participating in environmentally conscious behaviour [15,41,42,43]. According to the findings of Wang et al. [22], social networks have a considerable and favourable impact on environmentally conscious purchasing decisions. To add insult to injury, persons who are driven to acquire ecologically designated items do so because they have gotten favourable recommendations regarding green products [2]. This demonstrates that customers' near environs impact their intents to purchase [22,43].

The literature clearly supports SNs [20,25,41,42,43], and research has shown that these norms have an influence on millennials' intentions to make green purchases [15,13]. However, some studies have questioned the significance that these norms have in green purchasing intentions [44]. Paul et al. [46] and Kumar et al. have shown, however, that these variables have little effect on purchase intention. According to Thogersen and Zhou [45], social media has little influence on a buyer's propensity to purchase organic goods in China, including organic food. Conversely, Taufique and Vaithianathan's results suggest that the presence of SNs has no discernible effect on purchase intention.

These norms suggest that there is appropriate social pressure to engage in certain activities, but their impact on green consumption has not yet been shown [19]. Considering this, several studies have questioned their influence on the views of those who identify as environmentally conscious [44]. An instance of this may be seen in the study of Kumar et al., which proposed that social networks had little impact on the desire of users to buy eco-friendly goods such organic food. Conversely, Taufique and Vaithianathan concluded that social norms (SNs) have little effect on the direct influence that they have on behavioural intention. Although these criteria suggest that some activities have an intrinsic social impact, it is currently unknown whether or not they have an influence on green consumption [19]. The following theories are put out in light of the data above and the little literature that examines the relationship between societal norms and millennials' desire to make environmentally responsible purchases in terms of their EAT and GSI:

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Hypothesis 3 (H3). According to millennials, subjective standards have a beneficial impact on their attitude towards the environment.

Hypothesis 3a (H3a). The green self-identity of millennials is favourably influenced by subjective standards in a good way.

E. Environmental Attitude

An individual's attitude is how they feel about an action, whether they like it or not. Researchers Ajzen and Fishbein [29] say that attitude has two parts: (a) behavioural belief, which is how aware a person is of the consequences of a certain behaviour; and (b) outcome evaluation, which is how positive or negative a person thinks the possible consequences of a behaviour are. The four dimensions of attitude are made up of these two aspects. A lot of writers have said that EAT is one of the best ways to tell if someone is buying things that are good for the earth. What Jaiswala and Kant found in their study led them to believe that customers are motivated by cognitive factors that have a secondary effect on GPI through the role that attitude plays as a facilitator.

A new study also found that EAT makes people much more likely to buy organic foods [15,13,43]. People who study consumer studies still don't know what role attitude plays because they think GPI [44] doesn't go into enough detail on it. A lot of research has shown that having environmentally friendly views is important for understanding environmentally friendly behaviour, and it is clear that these views have an impact on buy intention [47]. Taking all of this into account, the following argument is put forward:

An illustration of the research model that has been hypothesised may be seen further down.

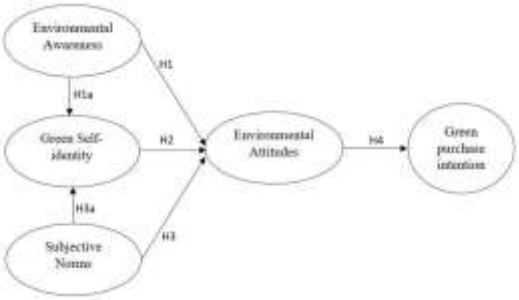

Figure 1: Modelling Research Hypothesis.

III. Research Methodology

Ethical considerations were taken into account while developing the questionnaire for the survey. For the purpose of this online survey research, potential human participants have the ability to choose whether or not they want to participate in the study. The individuals who finished filling out the questionnaire were included in the survey research. Candidates were provided with information on the survey study prior to completing the questionnaire they were given to fill out. Anonymity was maintained throughout the study, and participation was entirely voluntary. The collection of data was done only for the goal of analysing the features of the population at a certain moment in this particular time period. All of the people who took part in the survey study were assured of maintaining their anonymity.

Before the participants in the study finished filling out the questionnaire, all of the potential volunteers in the research were given a recruitment question, which was as follows: "Have you purchased any green food in the past three months?" Once it was done, students proceeded to the primary questionnaire.

Three separate sections of a completed questionnaire were completed. The first section of the questionnaire included comprehensive survey information. The survey's affiliation and author were included in this information. It also included information on the expected duration of the study and specifics about the research's secrecy. The estimations suggested that it would take a consumer ten minutes to complete the questionnaire. The goal of the

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survey was explained to each and every participant. The study's goal was to look at the attitudes and behaviours of customers who are interested in buying ecologically friendly goods. Furthermore, participants were encouraged to answer the questionnaire using their own personal experiences or perspectives in a variety of fields. This instruction was provided to them. An introduction that was short provided an explanation of the duration of the questionnaire. Both of the components that made up the second half of the questionnaire were completed. Data on consumption and purchase patterns in the market for environmentally friendly products were gathered in the first part. The second portion had a total of thirty-two statements. A certain proposition is presented to the participants, and they are asked whether they agree or disagree with it. The issues in question were rated by the respondents using a Likert scale of seven points, where one indicates strong disagreement and seven indicates strong agreement. It has been shown that the Likert scale is a useful tool in earlier research.

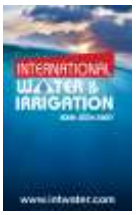
In the third section of the questionnaire, respondents were asked to provide information on their socio-demographic characteristics. A pilot research was carried out with thirty customers in order to remove any flaws or inaccuracies that may have been present in the questionnaire.

In the course of the study, 650 Polish customers who reported having made purchases of environmentally friendly food items over the course of the previous three months were included. Applicants who were eligible to take part in the research and who fulfilled the requirements were given a link to the questionnaire. An invitation was sent out via social media, and an email was also sent out along with the invitation.

The age distribution of the sample population was similar to that of the Polish population with Internet access. The distribution of the respondents and the percentages found in the Polish population's structure according to each place of residence were correlated. An illustration of the gender structure is as follows: Seventy percent of women and thirty percent of men. Rather than men, women are more often than not in charge of purchasing food for their households. Moreover, past studies have shown that women are more likely than males to buy environmentally friendly food [59,60]. The respondents of the survey represented a broad spectrum of educational backgrounds.

Table 1: Participant Traits

Metrics	Items	Percentage
Age	18–24	13%
	25–35	30%
	36–45	28%
	46–55	17%
	55 and more	12%
Gender	Male	30%
	Female	70%
Place of residence	Village	31%
	Town, up to 40 thousand	19%
	Town, from 40 thousand to 100 thousand	13%
	City, from 100 thousand to 500 thousand	12%
	City, above 500 thousand inhabitants	25%
Number of children	0	23%
	1	1%
	2	10%
	3–4	47%
	5 and more	19%



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During the course of one month, the research was carried out, and it was finished in January of 2019. The use of the online survey technique was chosen since it is both very efficient and relatively inexpensive in terms of data collecting. The use of surveys as a technique is used in a significant amount of research that is concerned with the investigation of consumer behaviour. This is done to guarantee that there is a possibility of contacting clients and to make it possible for the study to be carried out in a time frame that is quite short. In addition, doing research using an online survey is an efficient method for analysing intents in the green food industry, and it offers a cheap cost for conducting research.

The IBM SPSS Statistics 27.0 statistical tool was used in order to conduct the analysis of the empirical material that emerged from the findings.

IV. Methods And Results

A. Pilot Study

Our alterations were evaluated in a pilot study that was carried out in order to examine the hypotheses that were presented via the use of three experiments. During the process of recruiting participants, we made use of a well-known and trustworthy online survey platform known as WJX. As is the case with SurveyMonkey and Amazon Mechanical Turk [58], this platform is reliable and has a sizable pool of responders that come from a wide range of demographic backgrounds. We used a screening question to determine whether or not the participants had bought green goods or brands during the previous year. This was done to verify that the participants had a comprehensive awareness of green products and brands. Every single participant who was recruited was above the age of 18 and had prior experience with environmentally conscious consumption.

The selection of environmentally friendly items for the construction of experimental materials and the design of scenarios were both based on an exhaustive assessment of the relevant literature (for example, [9,59]). For the purpose of ensuring that the results of our study are applicable to a wider audience, we conducted each experiment using a diverse set of items and commercials. These brands were chosen because they had embraced PST communication. On the basis of these brands, nine typical environmentally friendly items were chosen in order to reduce the impact that the preferences of a wide range of consumers may have on the results of our experiment. In order to understand how customers feel about PST in relation to environmentally friendly items, we investigated whether or not the attractiveness of product advertising was appropriate for communicating the transformation of product information. Because of this, we chose items that had the potential to raise customers' awareness of the change of product information about the product. Last but not least, out of the nine goods, the four that were the most obviously PST-oriented and diversified in terms of their greenness were selected. One of the items was utilised for supplemental analysis, while the other three were employed as the primary experimental materials.

Ninety participants (Mage = 26 years) were requested to participate via WJX in our pilot test, which was designed to assess their perceptions of product change in respect to the nine previously specified elements. A four-item scale adapted from Winterich [9] was used to assess participants' perceptions of the product's transition. The toothpaste, pants, energy drink, and designer bag were selected as the main and auxiliary experimental items based on the results of our inquiry. When compared to other green goods, these different products have a higher chance of evoking a link between the customer and the product transformation via the use of green advertising appeals. Through the use of fake names for the items, we were able to control the effect of the customer's pre-existing brand awareness on their replies [61]. To be more specific, the energy drink with the brand name "SUPERHUMAN," the designer bag with the brand name "ECOLIFE," the toothpaste with the brand name "ORAL CLEAN," and the jeans with the brand name "REJEANS"

B. Study 1

In the first study, the impact of providing PTS on green buy intention was the hypothesis that was intended to be tested. When compared to the control, we anticipated that the presence of PTS would result in a greater desire to buy environmentally friendly products. In Study 1, we constructed the experimental situations in accordance with

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the fake energy drink brand "SUPERHUMAN," which we utilised. The results also confirmed that the favorability of SUPERHUMAN was neutral. Therefore, it was determined that any prejudice resulting from prior brand familiarity was very improbable.

Participants and Design

The WJX platform, which is a dependable resource for the gathering of experimental data, was used to enrol a total of two hundred participants [58].

People who were asked to take part wrote down the names of their favourite films to help them plan their thoughts before the poll started. After that, they watched an ad for eco-friendly goods and answered a few questions about it as part of an ad poll. The subjects were randomly shown one of the two green ads that had been tried ahead of time for this study and any future studies that would use their PTS. The advertisement satisfied the product change criteria by informing the participants about the recycled materials used in the container of the SUPERHUMAN energy drink brand. An advertisement also demonstrated the whole product transformation process, demonstrating how the energy drink bottle may be transformed into a new item of the same kind or into an item of a different kind, such as furniture. The scenario in the control case dealt with the market product that SUPERHUMAN created using resources that were recovered (for further details, see Appendix A).

As soon as the commercial was over, the volunteers were asked if they knew about PTS and if they would be willing to buy environmentally friendly products. Additionally, we used how the participants thought the COVID-19 pandemic affected their answers to the sustainability problems as a control variable to show how the pandemic affected their responses [62].

Measurements and Manipulation

The respondents were asked to score their feelings about the green advertisement message after they completed two short questions based on Winterich et al. [9]. Some of the comments in the samples were "I plan to buy a green brand in the future because it cares about the environment." The sample items ranged from 1 (strongly disagree) to 7 (strongly agree), with a coefficient of 0.86. A question that was taken from Zhang et al. [10] was used by us in order to assess the influence that people felt the COVID-19 epidemic had on them. A score of one indicates that the COVID-19 epidemic had a significant impact on your green consumption behaviour, while a score of seven indicates that it had a significant impact. Appendix D is a presentation of all of the things that might be measured.

Results and Discussion

Among them were principal impacts. We tested our hypotheses using analysis of covariance (ANCOVA) [64], where the control variable was the perceived influence of COVID-19. According to the study's findings, people were more likely to buy environmentally friendly products when a PTS message was offered as opposed to a generic green message ($M_{Presenting} = 5.78$, $SD_{Presenting} = 0.85$; $M_{Control} = 5.27$, $SD_{Control} = 0.84$, $F = 14.47$, $p = 0.00 < 0.01$) (see Figure 2 for more information). This suggests further that showing a green brand's PTS might persuade consumers to buy green products. Customers' desire to purchase eco-friendly products was unaffected by how the COVID-19 pandemic was regarded ($p = 0.59 > 0.05$). Even without the apparent impact of the COVID-19 epidemic as a control variable, the PTS effect remained. As a result, Hypothesis 1 is validated.

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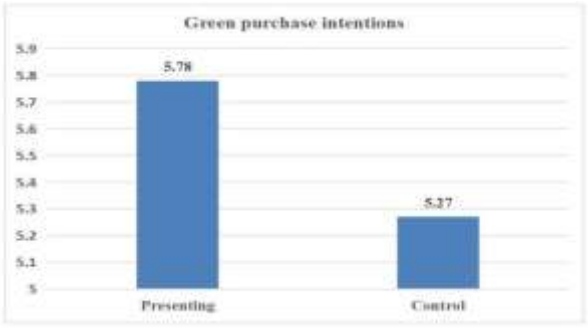

Figure 2: Study 1 Results.

For discussion. Compared to communicating a broad message about the environment, the outcomes of Study 1 demonstrated that displaying PTS had the potential to improve customers' desire to make environmentally conscious purchases. On the other hand, the mechanism that underlies the connection between the existence of PTS and the desire to make a purchase is not precisely understood. In addition, the first study did not investigate any possible modifiers that might have an effect on the creation process of customers' purchase intention via the purpose of PTS.

C. Study 2

Findings from Study 1 were repeated in Study 2 using a different product type and sample to show that our effect is generalizable. We also wanted to find out if the perceived coolness of green brands affects the effect of displaying PTS and consumers' desire to buy green products (H2).

Within the scope of Study 2, a hypothetical designer bag brand known as ECOLIFE was selected. For the purpose of determining the level of perceived familiarity and favorability with the brand, a preliminary test was administered to 54 undergraduate business students. In terms of past brand awareness, there was no discernible influence (MFamiliarity = 1.98, standard deviation = 0.79; MFavorability = 3.94, standard deviation = 0.49).

Participants and Design

Through the use of the online platform, a total of 182 legitimate replies were gathered, with about 62.5% of them being female. There were more than fifty-three percent of respondents who were now employed, and sixty-one point four percent of those workers possessed a bachelor's degree or more. In the same manner as in the first study, the participants were given the opportunity to perform the "mind-clearing task" that had been conducted before. A scenario was then offered to them in the form of an online questionnaire. This scenario depicted a hypothetical firm called ECOLIFE that was offering a trendy bag. Following this, everyone who took part in the study was given a random assignment to one of the two commercials. One of the advertisements was for a bag made by ECOLIFE that included PTS.

Manipulations and Measures

For the purpose of verifying the manipulation of PTS and evaluating the purchase intention (= 0.88) and the perceived influence of COVID-19, we used the identical manipulation check and assessment items that were utilised in Study 1. For more specific information, consider the terms "remarkable," "unique," and "subculture" to determine the level of coolness associated with a niche brand, such as a "green" brand. Consequently, this notion was tested using a total of nine questions.

Results and Discussion

When the PTS message was shown to the participants, they were more likely to agree with the assertion that recycling the green product may increase its value. This was in contrast to the participants who were in the

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condition where they did not receive the PTS message (MPresenting = 5.53; MControl = 4.23; t (180) = 13.38, p = 0.00 < 0.01), which indicates that the manipulation of PTS could be considered successful.

Principal impacts included. As a control variable, the perceived effect of the COVID-19 epidemic was employed in the ANCOVA analysis that was performed in order to assess the hypotheses that were provided. The findings, as shown in Figure 3, indicated that there was a noteworthy main impact for green buy intention (MPresenting = 5.86, MControl = 5.43; F = 11.98, p < 0.01). There was no correlation between the perceived impact of the COVID-19 epidemic and the desire to buy environmentally friendly products (p = 0.71 > 0.05). As a result, Hypothesis 1 passed.

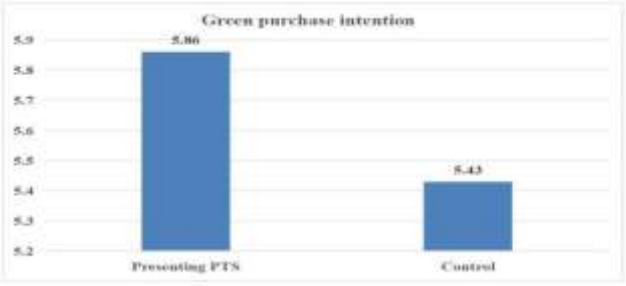

Figure 3: Study 2 Results.

Our findings from Study 2 were further supported by the fact that participants' intention to conduct a financial transaction increased when PTS was presented to them as contrasted to the control group. Furthermore, we were able to confirm the underlying process causing the observed effect. However, our study did not look at how the link between PTS and purchase intent would change if traceability information was included in the advertisement. In order to examine the potential moderating impact that customer traceability information may have on the relationship between purchase intention and purchase intention, we conducted Study 3. This was carried out to close the gap that we found.

D. Study 3

The purpose of this study was to repeat the findings from our earlier research in a variety of product categories and to determine whether or not the level of customer awareness about traceability influences the connection. The subject design of Study 3 consisted of two subjects: a presenting vs a control group, and a high versus a low level of traceability knowledge. Sixty-two college students were asked to take a preliminary exam in order to get information about their impressions of which brands they are acquainted with and which ones they like. The findings indicated that the prior brand awareness impact was not likely to result in any prejudice (MFamiliarity = 2.77, standard deviation = 0.86; MFavorability = 4.32, standard deviation = 0.57 as shown in the results).

Participants and Design

Through the use of the internet, 369 clients participated in this study; their average age was 33.6, and 59.4% of them were female. 59.6% of respondents had a bachelor's degree or above, and 51.8 percent of respondents were now working. After finishing the "mind-clearing task," participants had to reply to a stimulus that was part of the online survey. A brief summary of the ORAL CLEAN brand and its products was provided in the questionnaire. Each participant received one of the four circumstances via a random approach. Customers with low levels of competence are informed that information about eco-friendly items is available via the use of a QR code.

Manipulations and Measures

The same items used in Study 2 were employed to alter PTS and ascertain respondents' attitudes on green purchase intention (α = 0.88), green brand coolness (Extraordinary: ± = 0.82; Original: ± = 0.84; Subculture: ± = 0.87), and the degree to which they believed COVID-19 was important. We also measured people's knowledge of digital

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tracking from purchases using a three-item scale based on Asif et al. [67]. The statement "I am familiar with QR codes that are used to track products" was our example.

Results and Discussion

Check to make sure the change is correct. More so than those who got the control message, PTS receivers saw that the environmentally friendly product might be upgraded to a higher-value product. According to the statistical analysis, PTS was used effectively in both product categories ($t(367) = 15.02$, $p = 0.00 < 0.01$), with MPresenting = 5.33 and MControl = 4.04. Consequently, the results of our tests for traceability knowledge and PTS manipulation were positive.

Primary and interaction effects are the two different categories. The first hypothesis is that more consumers want to make green purchases as a result of PTS signals rather than control messages. As for the control variable, there was no statistically significant difference ($p = 0.57 > 0.05$) between the consumers' impression of the effect of the COVID-19 outbreak and their willingness to buy ecologically friendly things. As a result, Hypothesis 1 was validated.

Our study also used Model 4 of the PROCESS method to do a mediation analysis to see if the perceived coolness of the green brand mediated the effect of PTS (compared to control) on buy intention (H2). In the study, it was found that PTS had a statistically significant indirect effect on buy intention through green brand coolness ($b = 0.47$, SE = 0.08, 95% CI [0.32, 0.63]). It was also clear that it had a direct effect on the person's likelihood to buy ($b = 0.29$, SE = 0.10, 95% CI [0.10, 0.50]), which meant that hypothesis 2 was true.

One important thing to note is that the combination effect of customer tracking information and PTS on green buying intention ($F = 84.60$, $p =$) is statistically significant. This study found that when people knew more about

consumer traceability, those who got PTS messages wanted to buy more environmentally friendly products than those who got generic green messages (MHigh_Presenting = 5.34; SD = 0.64; vs. MHigh_Control = 4.55; SD = 0.65; $p = 0.00 < 0.05$). It was more likely for people who heard general green messages than for people who heard PTS messages to buy green things (Mlow_Presenting = 4.35; standard deviation = 0.60; versus MLow_Control = 4.81; standard deviation = 0.72; $p = 0.00 < 0.05$). This happened when the people involved didn't know as much about customer tracking. So, the theory H3 (Figure 4) was proven to be true.

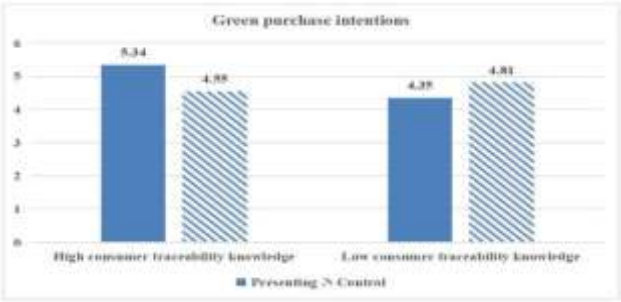

Figure 4: Study 3 Results.

Moderate mediation was looked at in more detail. Hypothesis 4 says that the coolness of green brands would act as a go-between for the effects of PTS and customer understanding on buy intention. We decided to use the PROCESS Model 8 to look at the role of perceived green brand coolness [66] in a situation where consumers knew a lot about transparency but didn't know much about it. As an extra control variable, how people thought the COVID-19 outbreak affected them was used. The outcomes showed that the coolness of green brands played a role in the relationship between customers' plans to buy and their knowledge of tracking. The value for the interaction was -0.55, and the 95% confidence range was from -0.89 to -0.21. When people knew more about tracking, PTS had a big, secondary effect on their decision to buy through the coolness of green brands ($b = 0.80$, SE = 0.10, 95% CI [0.61, 0.99]). This means that green brand coolness may have played a role in the link between

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PTS and the desire to buy. This happened most often when there was a lot of information about how to track down a customer. Importantly, PTS also had an indirect effect on buy intention through the coolness of green brands. However, this effect was much smaller when consumers didn't know much about consumer tracking (indirect effect = 0.25, standard error = 0.05, 95% confidence range [0.18, 0.22]). Because of this, and the fact that people don't know as much about tracking, it's likely that the coolness of a green brand may also play a role in the relationship between buy intention and buy intention (see Table 2). These results show that H4 is correct.

Table 2: Moderated Mediation Effect.

Index of Moderated Mediation (Difference between Conditional Indirect Effect)				
	Index	Bootse	BootLLCI	BootULCI
	−0.55	0.17	−0.89	−0.21
	Effect	Bootse	BootLLCI	BootULCI
Low traceability knowledge	0.25	0.05	0.18	0.22
High traceability knowledge	0.80	0.10	0.61	0.99

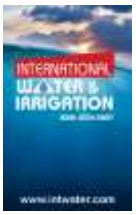
To be more specific, we discovered that PTS worked better than general green messages at getting people to want to buy when they knew a lot about tracking. When customers didn't know much about tracking, on the other hand, large green messages made them more likely to buy than PTS signals alone. Also, how cool people thought green brands were played a role in how customer understanding of tracking and product technical standards (PTS) affected their decision to buy. To put it another way, when people know a lot about how products can be tracked, showing a PTS message is a cool way for a brand to show how environmentally friendly it is, which makes people more likely to buy. On the other hand, when consumers had a limited level of understanding of traceability, such an impact was dramatically diminished.

E. Supplementary Analysis

We chose the REJEANS brand of fake jeans as an extra example to look at how consumers answered in order to confirm that customer tracking knowledge and PTS have an effect on the desire to make a green purchase. This was done to make sure that the two factors really did affect the desire to buy green products. Through the online tool, we got 310 real answers. Most of the people who answered (60.6%) were women.

V. Conclusions

It is essential to bear in mind that the findings of this research have consequences not only for management but also for the development of marketing strategies that are favourable to the environment. People are becoming more aware of and concerned about the environment. As a result, many businesses are making plans and coming up with new ideas to be more eco-friendly. Customers who care about the environment can get things from these companies that are made to meet their needs. It's important for these companies to know what makes people choose to buy environmentally friendly products so they can use that information in their green marketing strategies. Not only should the goal of marketing strategies, especially promotional programmes, be to teach or inform customers, but they should also aim to give customers a wider range of experiences when they shop and to encourage them to feel good about buying and eating food that is good for the environment. It would be better for people to buy environmentally friendly goods if marketing campaigns that focused on giving buyers more experiences and were carried out accurately at the local level, even if they were more expensive. Customers become more aware of the environment and find it easier to spot sustainable goods when they try them. Eating foods that are good for the environment also makes them more determined to make choices that are good for the environment. This is good because it lowers the amount of damage that happens to the world.



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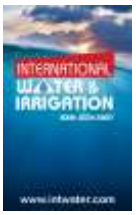

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