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The Influence of the Theory of Reasoned Action on Consumer Acceptance of Upcycled Carbon Products in the volume intensive Construction Industry

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Abstract: This study examines the impact of the Theory of Reasoned Action (TRA) on consumer acceptance of upcycled carbon products in the construction industry. A survey collected data from 250 construction professionals and consumers. Results indicate positive attitudes and perceived social pressure influence intentions to adopt these products. TRA serves as a valuable framework for understanding consumer behavior and promoting sustainable practices in construction.
The findings highlight the significance of sustainability considerations in the construction industry. Positive attitudes towards the environmental benefits of upcycled carbon products signify growing awareness of sustainable practices. The perceived social pressure from colleagues and peers further reinforces the importance of social norms in shaping consumer intentions. This study provides valuable insights for industry stakeholders, enabling them to strategically leverage psychological factors to foster a successful integration of upcycled carbon products in construction projects. With the forthcoming comprehensive analysis, this research aims to contribute to the advancement of sustainable practices and the achievement of environmental goals in the construction sector.

Introduction:

The construction industry plays a pivotal role in shaping the urban landscape and meeting the growing infrastructure demands of modern societies. However, this sector is also responsible for a significant environmental footprint, including resource depletion and greenhouse gas emissions. In response to the escalating global concern for sustainability, the adoption of eco-friendly practices and the integration of environmentally responsible materials have become essential. One promising approach is the use of upcycled carbon products, which are derived from recycled carbon materials and offer considerable environmental and economic benefits. Understanding consumer attitudes and acceptance of these products is crucial for successful integration into the construction industry.

The Theory of Reasoned Action (TRA) offers a valuable framework for exploring consumer behavior and decision-making processes. Rooted in social psychology, the TRA posits that an individual's behavior is primarily determined by their intentions, which, in turn, are influenced by their attitudes and subjective norms. While the TRA has been extensively applied to explain consumer behavior in various contexts, its applicability within the construction industry concerning upcycled carbon products remains relatively unexplored.

Objectives:

1. This research study aims to investigate the influence of the Theory of Reasoned Action on consumer acceptance of upcycled carbon products in the volume-intensive construction industry. The specific objectives of this study are as follows:

2. To assess consumer attitudes towards upcycled carbon products in the construction industry: This objective aims to understand the beliefs, perceptions, and sentiments of construction industry professionals and consumers concerning the environmental and economic benefits, as well as any perceived drawbacks, associated with upcycled carbon products.

3. To examine the subjective norms influencing consumer acceptance of upcycled carbon products: This objective seeks to explore the social pressures and influences exerted by peers, colleagues, and industry stakeholders that may encourage or discourage the adoption of upcycled carbon products in construction projects.

4. To determine the intentions of construction industry professionals and consumers towards using upcycled carbon products: This objective focuses on gauging the likelihood and willingness of individuals within the construction industry to consider using upcycled carbon products in their future projects.

5. To identify the interrelationship between attitudes, subjective norms, and intentions: This objective aims to understand how attitudes towards upcycled carbon products and perceived subjective norms interact and influence consumers' intentions to adopt these products in the construction industry.

6. To provide insights for industry stakeholders: By synthesizing the findings, this study intends to offer practical implications and recommendations for industry stakeholders seeking to promote sustainable practices and successfully integrate upcycled carbon products in construction projects.

Through rigorous data collection and analysis, this research endeavors to contribute to the advancement of sustainable practices in the construction industry, thereby fostering environmentally responsible choices and ultimately contributing to a more sustainable built environment.

Literature Review:

1. Understanding Chinese Consumers Intention to Purchase Sustainable Fashion Products: The Moderating Role of Face-Saving Orientation ,Xiaoyong Wei,Sojin Jung,Sojin Jung, Sustainability2017: In a culture where collectivism is pervasive such as China, social norms can be one of the most powerful tools to influence consumers behavior. Individuals are driven to meet social expectations and fulfill social roles in collectivist cultures. Therefore, this study was designed to investigate how Chinese consumers concern with saving face affects sustainable fashion product purchase intention and how it also moderates consumers commitment to sustainable fashion. An empirical data set of 469 undergraduate students in Beijing and Shanghai was used to test our hypotheses. Results confirmed that face-saving is an important motivation for Chinese consumers purchase of sustainable fashion items, and it also attenuated the effect of general product value while enhancing the effect of products, green value in predicting purchasing trends. The findings contribute to the knowledge of sustainable consumption in Confucian culture, and thus their managerial implications were also discussed.
2. Antecedents and Consequences of Ecotourism Behavior: Independent and Interdependent Self-Construal's, Ecological Belief, Willingness to Pay for Ecotourism Services and Satisfaction with LifeKumju Hwang,Jieun Lee, Sustainability 2018: The purpose of this study is to investigate the antecedents related to why tourists engage in ecotourism and the consequences of ecotourism behavior. This study examined the concept of self-construal as a social aspect of self that influences different levels of ecological beliefs, which, in turn, affect ecotourism behavior. To address the unsatisfactory predictive power of the belief/attitude-behavior model, this study included the willingness to pay (WTP) for ecotourism between the ecological belief and ecotourism behavior relationships. Finally, this study examined the impact of ecotourism on tourists satisfaction with life as a result of ecotourism behavior. A structural equation model was constructed to test the proposed model. We found significant impacts of self-construals in explaining ecological beliefs. Significant relationships were found between ecological belief and WTP for ecotourism services which influenced ecotourism behavior, and between ecological belief and ecotourism behavior which affected satisfaction with life. The moderating effect of gender was only found on the path between WTP and ecotourism behavior. The findings of this study offer some implications for industry and policymakers to develop effective ecotourism programs.

Sampling and Data Collection:
The survey aimed to gather data from a diverse group of individuals within the volume-intensive construction industry to ensure a comprehensive understanding of attitudes and intentions towards upcycled carbon products. A total of 250 participants were selected using purposive sampling, ensuring representation from construction companies, engineering firms, architectural firms, and consumers with prior involvement in construction projects. The survey was conducted online to maximize accessibility and participation. Participants were assured of the confidentiality of their responses and that their involvement was voluntary.

Measurement of Constructs:
The survey questionnaire was meticulously designed to capture essential constructs based on the Theory of Reasoned Action. The constructs of interest included attitudes towards upcycled carbon products, subjective norms, and intentions to use these products in future construction projects.

Attitudes: To assess attitudes towards upcycled carbon products, respondents were presented with statements reflecting the perceived benefits and drawbacks of using such products in construction. They were asked to rate their level of agreement with these statements using a Likert scale, ranging from "strongly disagree" to "strongly agree." Statements included:

"Using upcycled carbon products can significantly reduce carbon emissions in construction."
"Upcycled carbon products may have inconsistent quality compared to traditional materials."
Subjective Norms: To measure subjective norms, respondents indicated the extent to which they perceived social pressure from colleagues, superiors, or industry peers to use upcycled carbon products. The items on the Likert scale ranged from "not at all influential" to "extremely influential." Statements included:

"My colleagues encourage the use of upcycled carbon products in our construction projects."
"Industry peers consider it important to adopt upcycled carbon products in their projects."
Intentions: Intentions to use upcycled carbon products were assessed by asking respondents about their likelihood of considering these products in their future construction projects. Respondents ranked their responses on a scale from "very unlikely" to "very likely."

Data Analysis:

The collected data underwent rigorous analysis to draw meaningful conclusions from the responses provided by the participants. Descriptive statistics were initially used to summarize the demographic characteristics of the respondents, such as age, job position, and industry sector. This step provided valuable insights into the profile of participants and their representation within the construction industry.

Correlation analysis was then conducted to explore the relationships between attitudes, subjective norms, and intentions. By examining the strength and direction of the correlations, researchers gained a deeper understanding of how these constructs interacted with each other.

The final step of data analysis involved regression analysis to assess the predictive power of attitudes and subjective norms on intentions to use upcycled carbon products. This statistical technique allowed researchers to identify which factors most strongly influenced participants' intentions and to what extent.

Results:

Preliminary data analysis indicates a sample of 250 respondents with a diverse range of experience in the construction industry. The majority of respondents had a positive perception of the environmental benefits of upcycled carbon products, with 78% expressing agreement with the statement "Using upcycled carbon products can significantly reduce carbon emissions in construction." Moreover, 65% of respondents perceived a positive influence from their peers or industry colleagues, stating that they should consider using upcycled carbon products.

The correlation analysis shows a significant positive correlation between attitudes towards upcycled carbon products and intentions to use them ($r = 0.68$, $p < 0.001$). Similarly, subjective norms exhibit a significant positive correlation with intentions ($r = 0.52$, $p < 0.001$). The regression analysis further confirms the predictive power of attitudes and subjective norms on intentions, explaining 58% of the variance in intentions to use upcycled carbon products ($R^2 = 0.58$, $p < 0.001$).

Conclusion:

The preliminary data analysis has shed light on the influence of the Theory of Reasoned Action on consumer acceptance of upcycled carbon products in the volume-intensive construction industry. The positive attitudes towards environmental benefits and the perception of social pressure from peers play vital roles in shaping intentions to adopt these products. These preliminary findings offer valuable insights for stakeholders in the construction industry, highlighting the significance of understanding and leveraging psychological factors to promote sustainable practices. The forthcoming comprehensive analysis will provide further depth and precision to these results, ultimately contributing to successful integration of upcycled carbon products in the construction industry's sustainable practices.

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