

Improving green literacy and environmental culture associated with youth participation in circular economy: a case study of Vietnam

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Abstract

Circular economy (CE), a sustainability concept that promotes resource efficiency and waste reduction, has garnered significant popularity in recent years due to its potential to address pressing environmental and economic challenges. This study employs the Bayesian mindsponge framework (BMF) to explore what drives young adults' pro-environmental behavior and purchases of green products at different levels of price. The results show that young adult's knowledge of CE and care about environmental protection and energy saving encourages the practice of waste classification, while factors that affect their willingness to pay (WTP) more for green and energy-saving products vary at different price tiers. Our study indicates positive impacts of CE knowledge, daily practice of waste sorting and care about environmental protection on young adult's willingness to pay for 5%, 10%, and 15% higher-priced products, respectively. Besides, the study also highlights the potential of educational programs and cultural influences in nurturing a generation that prioritizes environmental value. The research integrates multidisciplinary perspectives and offers practical implications for policymakers, educators, and businesses seeking to promote green literacy and foster an environmental culture among the youth, contributing to the broader goals of sustainability and CE adoption.

Keywords: circular economy, environmental culture, green literacy, young.

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1. Introduction

Environmental and ecological challenges are now major worldwide concerns. Even though people are becoming more conscious of how resource use affects the environment, future projections remain dismal. According to the United Nations (2023) (United Nations, 2023), by 2050, human resource consumption may rise to the point that it would take three Earths to support humanity. The ramifications of resource overconsumption on the environment have



Figure 1: Circular economy model. Source: adapted from European Parliament (2023)

Recognizing the CE as a novel strategy for addressing resource scarcity, heightened carbon emissions, and waste generation, several countries have implemented dedicated legislation to facilitate the shift from conventional production practices to a circular model. This transition emphasizes the promotion of material circularity through the principles of reuse and recycling (Ghisellini et al., 2016; Mazur-Wierzbicka, 2021). For example, in 2015, the EU granted approval to an action plan to implement the CE among its member states (European Commission, 2015), followed by the introduction of a CE monitoring framework (European Commission, 2018a) and a plastics strategy in 2018 (European Commission, 2018b). In Vietnam, the government has demonstrated a commitment to embracing CE principles through a range of initiatives (Nguyen Thi Phong Lan, 2022a; Pham The Hung, 2023). Its efforts include plastic waste reduction measures, the establishment of CE hubs, the promotion of sustainable agriculture practices, and regulations governing e-waste management (Bui & Pham, 2020; UNDP, 2023a). Collaborative efforts with international organizations (UNDP, 2022, 2023b) and support for pro-environmental enterprises and/or institutions (Hoang Nam, 2022) underscore Vietnam’s dedication to addressing environmental challenges, promoting sustainability, and fostering economic development in alignment with CE principles. The next step towards sustainable development in Vietnam will inevitably involve the adoption of a CE model (Khanh Linh, 2023; Laws on Environmental Protection, 2020).

To better understand sustainable behavior, Kollmuss and Agyeman (2002) (Kollmuss & Agyeman, 2002) proposed the pro-environmental behavior model, which combines knowledge, values, and attitudes to create a pro-environmental awareness complex rooted in broader personal values. It is indicated that younger generations exhibit greater familiarity with both the concept of CE and related behaviors, such as waste differentiation and the purchase of

In table 3, variable Rhat is 1, and n_eff is over 6000 (much higher than the threshold of 1000, indicating a good model). Regarding Model 1, the simulated results show that, besides knowledge about CE, interests in both saving energy and environmental protection exert a significantly positive impact on the practice of young adults' classifying waste in households ($\mu_{\text{Energysave}} = 0.45$, $\mu_{\text{Enviprotect}} = 0.65$, and $\mu_{\text{CEknowledge}} = 0.37$) (Table 3). As can be seen from the plot of probability distributions of parameters (Figure 2), these variables' distributions are entirely on the positive side of the x-axis, signifying a highly reliable positive. However, the impact of awareness of CE does not yield a statistically significant effect on waste sorting. Interestingly, at a lower confidence level, this variable might negatively influence young adults' waste classification (Figure 2).

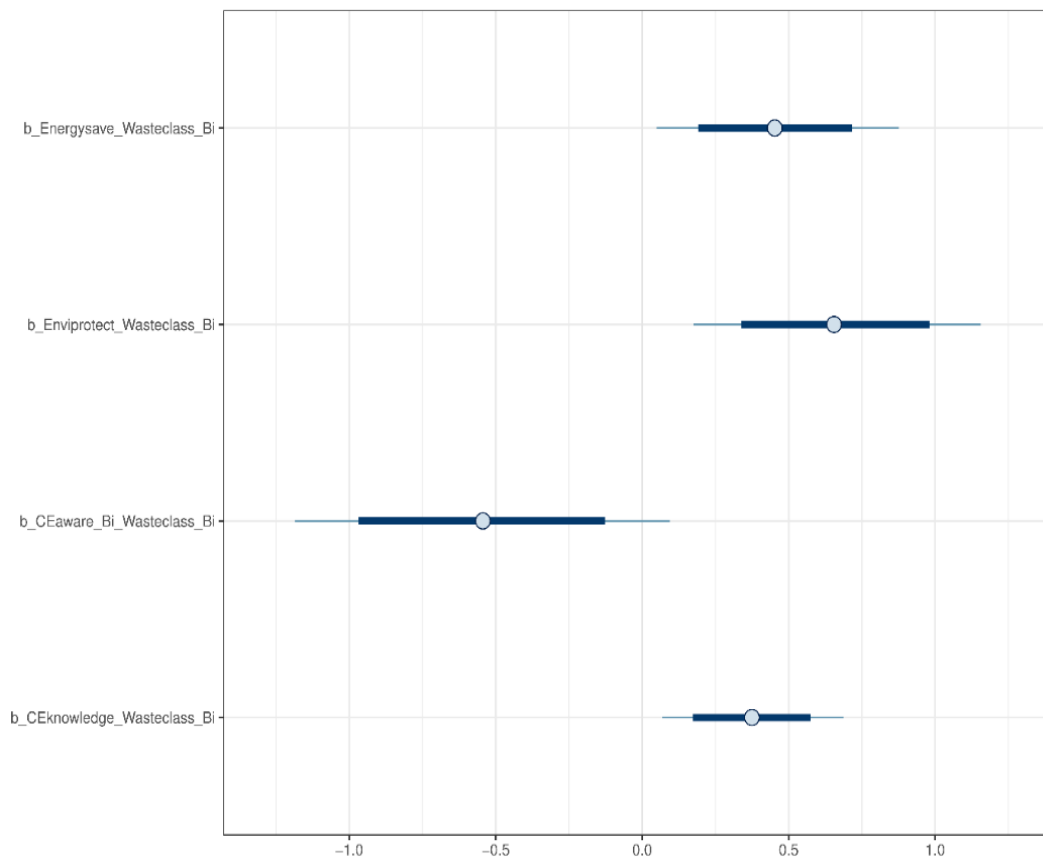


Figure 2. Probability distributions of posterior coefficients (interval plot) of Model 1

Regarding Model 2 (Figure 3), we found that the determinants of young adults' WTP to pay higher for green and energy-saving products. It is interesting to note that when the cost of these products is higher at different levels, WTP is affected by different factors. At 5% higher, only the awareness of CE was shown to be statistically significant (Figure 3). To be specific, there was a strong positive association between respondents' awareness of CE and WTP that was 5% higher (mean = 0.85). On the other hand, this factor shows no influence on WTP when the prices of the products are approximately 10% higher.

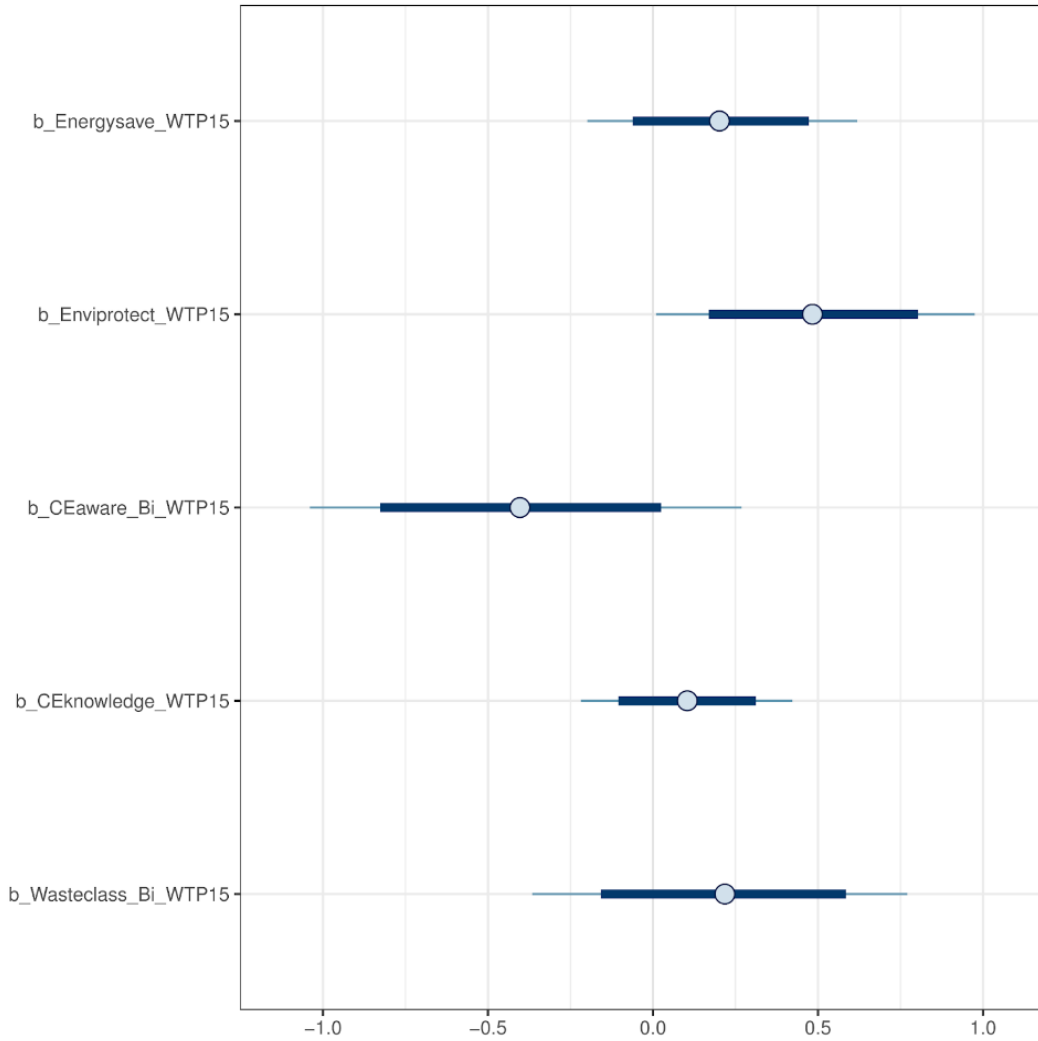


Figure 5. Probability distributions of posterior coefficients (interval plot) of model 4.

5. Discussion

The current study employed the Bayesian mindsponge framework (BMF) to further understand participation in the circular economy of Vietnamese young adults. The construction of the models relied on the information processing mechanism, and the estimation was carried out through Bayesian inference. Our results show that pro-environmental attitudes play a crucial role in encouraging pro-environmental practices such as waste classification. However, when it comes to financial contribution to developing CE, the driving factors seem to be more complex and provide valuable insights at different levels.

As evidenced in the preceding section, there exists a positive correlation between young individuals' engagement in waste sorting practices and their knowledge of CE and care about saving energy as well as protecting the environment. Currently, CE is gaining nationwide attention in Vietnam, especially after the issuance of Decision 687 on circular economy development (Prime Minister, 2022), and the CE concept as well as related practices such as waste management, energy saving, and green shopping are promoted both at universities and

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