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Assessing the Impact of Nudging on Armenian Generation Z University Students' Attitudes Toward Green IT Adoption

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Abstract

This paper investigates the extent to which nudging influences Armenian Generation Z university students' attitudes toward Green IT adoption, focusing on green computers as a concrete and operational example of sustainable digital technologies. Building on the Technology Acceptance Model (TAM) and Nudge Theory, the study addresses the following research question: To what extent does nudging influence Armenian Generation Z university students' attitudes toward Green IT adoption compared to a non-nudged baseline? A quasi-experimental, survey-based design was employed, comparing two independent samples of first-year undergraduate students collected at the same Armenian university across two waves (N = 377). Mediation analyses show that nudging primarily affects behavioral intention indirectly through changes in overall attitudes. This study contributes to the Green IT and nudging literatures by integrating behavioral insights into TAM and provides policy-relevant implications for higher education institutions in resource-constrained and institutionally fragile contexts such as Armenia.

Keywords

« Green IT » ; « nudge » ; « TAM » ; « green computer » ; « Armenia » ; « Generation Z »

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1. Introduction

According to the joint report by the International Telecommunication Union and the World Bank (2024), which contributed to the Green Digital Action at COP28 and beyond, two thirds of the world's population is now online; meanwhile, 2.6 billion people remain unconnected to the internet.¹ At the same time, the digital sector's share of global carbon dioxide (CO₂) emissions is estimated to range from 1.5 to 4 percent —levels comparable to those of commercial aviation or maritime transportation—with at least 1.7 percent of global emissions directly attributable to the ICT sector.² This dual dynamic—characterized by the rapid expansion of digital technologies alongside their growing environmental footprint—raises critical concerns regarding the sustainability of ongoing digital transformation. In this context, the need for Green IT becomes increasingly salient, as it seeks to harmonize technological progress with ecological responsibility by promoting energy-efficient infrastructures, sustainable digital practices, and environmentally conscious user behaviors (Nakandala, Yang, Elias, & Fanousse, 2024); (Bhat et al., 2024). Green IT encompasses various domains that can be broadly categorized into two key areas. First, it involves leveraging traditional IT to minimize energy consumption and reduce environmental pollution. Second, it promotes the use of specifically design IT for sustainability (Denis-Rémis, Codou, & Lebraty, 2011). Our present research focuses on green computers as a concrete embodiment of Green IT. Our study, carried out in a particular context, Armenia, concentrates on Generation Z (Gen Z) students as key target group for our research, as they are the next workforce, leaders, and entrepreneurs whose values will shape corporate strategies, innovation, and green entrepreneurship (Figiel & Badar, 2025), also they are heavy technology users and “digital natives” (Di Pillo, Palombi, & Strazzullo, 2025), (Pegan, Marzi, & Ranfagni, 2025). Therefore, our paper investigates the impact of nudging on the adoption of Green IT practices among Generation Z students in Armenia. Nudging, as conceptualized in Nudge Theory (Sunstein & Thaler 2008), refers to subtle modifications of the choice environment that influence individuals' behavior without restricting options or significantly altering economic incentives. Unlike traditional approaches based on regulation or persuasion, nudges leverage cognitive biases and automatic decision-making processes, making them particularly relevant for encouraging sustainable practices such as Green IT adoption. However, existing research has largely overlooked how such behavioral mechanisms interact with technology acceptance processes, which motivates this study to examine their combined effects through the following research question: **“To what extent does nudging influence Armenian Generation Z university students' attitudes toward Green IT adoption compared to a non-nudged baseline”?** We establish a stream that integrates “green nudges” with the Technology Acceptance

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Model (TAM), which remains one of the foundational frameworks for explaining user adoption of information systems in various domains (Savari & Khaleghi, 2025), (Kamrath, Wensing, De Steur, & Bröring, 2025). Although more recent technology adoption models have been developed (e.g., UTAUT or UTAUT2), the TAM was selected to be integrated in our study for three primary reasons. First, TAM is particularly well suited to the analysis of a specific and well-defined technological object, namely green computers, which aligns closely with the scope of this study. Second, TAM is grounded in perceptual mechanisms, notably perceived usefulness (PU) and perceived ease of use (PEU), which is theoretically compatible with the non-normative logic of nudging. Nudges are not intended to alter individuals' moral values or deeply held beliefs, but rather to subtly influence perceptions and choices within a given decision-making environment. Third, the parsimony and robustness of TAM make it especially suitable for a comparative experimental design, employed in this study, which contrasts a nudged condition with a non-nudged baseline. This integration allows us to examine how nudging complements the model in shaping attitudes toward Green IT adoption.

The Armenian context constitutes a highly relevant empirical setting, as prior research has not yet examined the attitudes of Gen Z university students toward Green IT adoption. First, focusing on Armenian Gen Z university students constitutes a theoretically meaningful sampling choice. These students evolve in a country undergoing rapid digital transition, characterized by strong international connectivity alongside constrained infrastructures and resources. They are simultaneously exposed to global sustainability norms and to local practices that do not always reflect these norms, generating a fertile normative tension. Within this configuration, nudges operate as a cognitive bridge between global sustainability expectations and local realities, shaping perceptions and intentions in a context where formal institutional guidance remains limited.

Second, facing major environmental challenges—such as air pollution, poor waste management, and low energy efficiency—Armenia can be conceptualized as a context of institutional vulnerability and resource constraints, making it particularly suitable for examining the effectiveness and mechanisms of nudges. In such settings, traditional policy instruments face important limitations: financial incentives are costly to implement, environmental regulation remains relatively limited, and large-scale awareness programs are difficult to deploy. Against this backdrop, nudging emerges as a frugal public policy and frugal managerial tool, well adapted to low-resource environments. Indeed, nudges are not merely “marginal” tools; they are central mechanisms in constrained contexts.

Moreover, the low level of institutionalization of Green IT in Armenia renders the empirical setting particularly revealing. Unlike in many Western countries, Green IT practices are weakly standardized, poorly formalized, and rarely embedded in organizational policies or dominant sustainability discourses. Thus, the observed attitudes are less “pre-formatted” by dominant discourses. The effect of the nudge is more directly observable, as it does not compete with already internalized norms. The Armenian context thus becomes a “natural laboratory” for studying the formation of PU and attitudes. Finally, taken together, the Armenian context and its Gen Z population provide a uniquely informative setting for understanding how nudging mechanisms influence technology adoption under conditions of institutional fragility, limited resources, and normative ambiguity.

Therefore, this research makes a twofold theoretical contribution at the intersection of nudging theory and the TAM. On the one hand, it shows how nudging can enrich TAM by transforming it from a static model into a contextual, dynamic and behavioral framework. On the other hand, it demonstrates how TAM provides the nudging literature with a structured explanatory lens, moving beyond the assessment of nudge effectiveness toward an understanding of the perceptual and attitudinal mechanisms underlying sustainable technology acceptance.

By situating the analysis in Armenia, this research also provides empirically grounded insights that may inform both national higher education reforms and international sustainability programs aligned with the SDGs (Sustainable Development Goals).

This section covers the introduction of the study. The next section reviews the literature on Nudge Theory and Green IT. It is followed by a presentation of the research methodology, after which the results and conclusions are discussed. The paper concludes with a summary highlighting the study's limitations and directions for future research.

2. Literature revue

2.1. Theoretical Framework: Nudge Theory

Nudge theory, developed primarily by Richard Thaler and Cass Sunstein (2008), is rooted in the oxymoronic concept of "libertarian paternalism." This approach seeks to influence individuals' decisions for their own well-being (paternalism) while preserving their complete freedom of choice (libertarian) (Sunstein & Thaler, 2003). Thaler and Sunstein (2008, p. 6) define a nudge as *"any aspect of the choice architecture that alters people's behavior in a predictable way without forbidding any options or significantly changing their economic incentives."* Unlike mandates or bans, the nudge intervenes gently within the decision-making environment. Nudges influence behavior through changes in the choice environment, rather than through coercion or financial inducements (Beshears & Kosowsky, 2020). The effectiveness of nudges relies on an understanding of human psychology, specifically "Dual Process system" idea, popularized by Kahneman (2011), (Kahneman & Tversky, 2019) that distinguishes between two modes of thinking coexisting within the individual: System 1 (Automatic) thinking which is uncontrolled, effortless, fast, associative, and operates unconsciously and System 2 (Reflective) is controlled, effortful, slow, deductive, and operates consciously (Stanovich, 1999). Nudges are often designed to target System 1 (Kahneman, 2011)(Beshears & Gino, 2015) leveraging automatic mechanisms to guide decisions without requiring complex deliberation from System 2. A nudge is a subtle intervention that makes a desired behavior easier and more attractive by appealing to the automatic, low-energy "autopilot" of System 1 thinking, without forbidding other options or significantly changing economic incentives (Thaler & Sunstein, 2008). Cialdini and Goldstein (2004) identify seven principles of persuasion that function as powerful heuristics within and System 1 processing. These principles can be operationalized as nudges to promote the adoption of Green IT:

- Authority (1): People are more likely to be persuaded by credible experts, so nudges can leverage this by having recognized leaders or technical experts endorse and explain the benefits of specific Green IT practices;

- Sympathy (2): We are more likely to be influenced by people we find sympathetic or attractive, so a nudge could feature relatable peers or colleagues advocating for Green IT, leveraging our natural tendency to agree with those we like;
- Social Proof (3): People often look to the behavior of others to guide their own actions, therefore a nudge based on this principle would make the adoption of Green IT visible, communicating that "many people exhibit sustainable behavior" and creating a powerful social norm;
- Reciprocity (4): Because we feel an obligation to give back to others what they have first given to us, a nudge could involve providing a small, upfront benefit (e.g., a useful sustainability tip), making users more receptive to a subsequent request to adopt a Green IT practice;
- Commitment and Consistency (5): Given that individuals have a deep-seated desire to be consistent with their past statements and actions, a nudge could involve asking users to make a small, public commitment to a sustainability goal, making them more likely to follow through with corresponding behaviors;
- Scarcity (6): The impression of scarcity makes a product or opportunity more attractive, this principle can be applied by offering limited-time access to a new Green IT tool or highlighting the unique benefits available only to early adopters;
- Unity (7): This principle relates to the need to belong to a group with a shared identity. Framing Green IT adoption as a collective effort of a specific department, team, or organization can foster a sense of shared purpose and increase participation.

2.2. Defining a Green nudge

Multiple studies have explored nudges in relation to environmental issues and pro-environmental behavior. More generally, nudging interventions have been applied across different domains (DellaVigna & Linos, 2022), (Mele, Russo Spina, Kaartemo, & Marzullo, 2021), (Hummel & Maedche, 2019), (Benartzi et al., 2017); revealing substantial heterogeneity in the effects of such interventions, including in the environmental domain (Stieglitz, Mirbabaie, Deubel, Braun, & Kissmer, 2023), (Carlsson, Gravert, Johansson-Stenman, & Kurz, 2021), (Lange, Brick, & Dewitte, 2020), (Jachimowicz, Hauser, O'Brien, Sherman, & Galinsky, 2018). A green nudge (also referred to as a pro-environmental nudge) is a behavioral policy tool designed to promote environmentally friendly choices by leveraging human psychology rather than using traditional economic incentives or mandates (d'Adda, Gao, Golman, & Tavoni, 2024). D'Adda and his co-authors present 3 common types of Green Nudges. *Social Norm Salience (1)* involves making desired behaviors more visible or providing information about the conduct of others to encourage conformity. *Observability (2)* increases the social pressure to act pro-environmentally by making an individual's actions observable to others, such as an environmental activist. *Information Provision (3)* provides data on the environmental consequences of specific actions—such as the CO2 emissions caused by air conditioning—to empower individuals to make sustainable choices. In our study, we implemented all three green nudging mechanisms to promote pro-environmental behavior through social influence and informational cues (Annexe B).

2.3. The scope of green IT in this research

The concept of Green IT originates from organizational initiatives aimed at ensuring the sustainable consumption and production of IT resources (Ojo & Fauzi, 2020a), (Ojo, Raman, & Vijayakumar, 2018). Green IT, also frequently referred to as green computing, is defined as the study and practice of designing, manufacturing, using, and disposing of computers, servers, and associated subsystems—such as monitors, printers, storage devices, and networking systems—efficiently and effectively (Dezdar, 2017), (Melville, 2010). While IT serves as both an enabler and a barrier to sustainable development—due to its first-order (direct) and second-order (indirect) negative environmental impacts (Deng, Ji, & Wang, 2017), (Gholami, Sulaiman, Ramayah, & Molla, 2013)—Green IT plays a crucial role in addressing these challenges. By promoting the sustainable consumption and production of IT equipment, Green IT helps mitigate the environmental footprint of IT and contributes to positive environmental outcomes (Nakandala et al., 2024), (Ojo & Fauzi, 2020b), (Asadi et al., 2019), (Sanita, Mohamed Udi, & Hasnan, 2017).

Murugesan (2010) suggests relooking into the entire IT lifecycle to make it greener by ensuring environmental sustainability along the four main cycles, namely, green use, green disposal, green design and green manufacturing of IT systems. In this study, we focus on green computer design which aims to minimize the environmental footprint of computers by integrating new technologies, techniques, and materials while ensuring a balance between environmental sustainability, economic viability, and performance (Murugesan, 2008).

3. Methodology

Our study employs a quasi-experimental, between-samples design comparing a non-nudged baseline survey and a nudged survey. Both datasets were collected at French University in Armenia (UFAR) and targeted Gen Z undergraduate students following comparable curricula and exposed to similar institutional, technological, and pedagogical environments, thereby ensuring a high degree of institutional and educational comparability between the non-nudged and nudged samples.

Given the exploratory and quasi-experimental nature of the study, the empirical strategy deliberately relies on simple statistical analyses in order to precisely identify perceptual and attitudinal mechanisms, rather than to estimate complex structural relationships.

The TAM was adapted to assess key constructs such as PU, PEU, Affective Attitude (AA), and Behavioral Intention (BI) for this study. The survey was globally designed to capture students' perceptions, attitudes, and intentions regarding the adoption of green computers for academic use. To measure the key constructs, we utilized four items for PU, four items for PEU, three items for AA, and three items for BI, as well as 4 questions on external variables (Venkatesh & Davis, 1996). The measurement items were adopted from validated scales in the existing literature, with their reliability and validity confirmed in multiple empirical studies (Yang & Yoo, 2004), (Szajna, 1996), (Straub, Limayem, & Karahanna-Evaristo, 1995), (Venkatesh & Davis, 2000), (Taylor & Todd, 1995).

Data were collected in two successive waves. The first wave (non-nudged baseline) was conducted in December 2024 over a period of three consecutive weeks, while the second wave

(nudged condition) was conducted throughout the entire month of December 2025. This timeframe was chosen to accommodate students' availability and ensure an adequate response rate while aligning with the university's academic schedule. In total, 207 completed and usable questionnaires were retained for the baseline survey, and 170 for the nudged survey (Table 1).

To collect data we have used an online structured questionnaire. The baseline instrument (Annexe A) assessed attitudes toward using green computers at university and was globally composed by 2 dimensions: General Behavior on IT Usage and Environmental Awareness (4 questions) and TAM components (17 questions). For the items designed to measure the TAM constructs, a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree) has been adapted. The nudged instrument presented a short persuasive message emphasizing resilience, resource constraints, and social-normality framing, and then measured the same Green IT attitude items, complemented by a perceived nudge / manipulation-check item and conflict-related contextual items (Annexe B).

The questionnaire was distributed and administered online using LimeSurvey. This simple, quick, and anonymous online survey platform was well-suited for our study due to its user-friendly interface and customizable features, which allowed for a tailored survey design. It provided efficient data collection and analysis tools, streamlining the entire research process. Its support for multiple languages enabled the contextual information to be presented in both English and Armenian. The questionnaire was translated into Armenian and distributed via students' academic email addresses, ensuring direct access to the target population and maintaining a secure mode of communication. Utilizing academic emails also helped verify respondents' affiliation with the university, enhancing the reliability of the data.

The target population for this study consisted of first-year students - individuals at the early stages of their academic journey, where attitudes and behaviors toward sustainability may still be forming. Students were enrolled in one of five faculties at the university: Management, Finance, Marketing, Law and Informatics & Applied Mathematics. These faculties were selected to ensure a diverse representation of academic disciplines, allowing for a comprehensive understanding of students' attitudes toward Green IT adoption. Focusing on 1st-year students for a survey on green computers usage is a strategic choice to understand how young individuals perceive and engage with Green IT concepts at the beginning of their academic journey, laying the groundwork for future sustainability efforts in the IT sector.

Wave	Condition	Academic Year	Data Collection Period	Institution	Level of Study	Usable Questionnaires
Wave 1	Non-nudged (baseline)	2024–2025	December 2024 (3 consecutive weeks)	UFAR	Undergraduate students	207
Wave 2	Nudged	2025–2026	December 2025 (entire month)	UFAR	Undergraduate students	170
Total						377

Table 1: Details on Data Collection

Our analytic sample included 377 usable questionnaires and the data analysis was conducted in four successive steps using the Excel Data Analysis toolkit and AI-assisted support (ChatGPT5.2 5.2) for result interpretation and improvement readability of non-native English writing. First, the internal consistency of the multi-item constructs was assessed separately for the baseline and nudged groups using Cronbach's alpha in order to evaluate scale reliability. Second, descriptive statistics were computed for all key constructs. Mean differences between the non-nudged baseline group and the nudged group were examined using Welch's independent-samples t-tests, which are robust to unequal variances and sample sizes. To assess the substantive magnitude of observed differences, Cohen's d effect sizes were also reported. Third, to examine the underlying mechanism through which nudging influences behavioral intention, we employed a mediation analysis framework using ordinary least squares (OLS) regression models. In the first model, ATT_ALL was regressed on the experimental condition (baseline = 0; nudged = 1) and control variables. ATT_ALL is an overall attitude index capturing students' global evaluative stance toward Green IT adoption. It was constructed by aggregating all attitude-related items common to both the baseline and nudged questionnaires, measured on 5-point Likert scales. In the second model, BI was regressed on the experimental condition and ATT_ALL, along with the same set of controls. This approach allowed us to test whether nudging primarily affects intention indirectly through changes in attitudes toward Green IT adoption. Finally, the significance of the indirect (mediated) effect of nudging on behavioral intention was assessed using a bootstrap procedure, estimating confidence intervals for the pathway from experimental condition to ATT_ALL and subsequently to BI. This procedure provides a robust test of mediation without relying on normality assumptions.

4. Results

Internal consistency analyses indicated acceptable reliability for most constructs in both the non-nudged and nudged groups. As expected with short scales, some attenuation was observed for PEU. In the non-nudged baseline group, Cronbach's alpha values were 0.74 for PU, 0.60 for PEU, 0.77 for AA, and 0.90 for BI. In the nudged group, alpha values were 0.59 for PU, 0.58 for PEU, 0.81 for AA, and 0.73 for BI. The exploratory conflict salience scale exhibited satisfactory internal consistency ($\alpha = 0.73$). Overall, reliability levels were considered acceptable given the exploratory nature of the study and the use of concise measurement instruments.

In the nudged condition, respondents generally perceived the message as encouraging one option over another ($M = 3.70$, $SD = 0.53$), indicating that the nudging intervention was salient to participants. Perceived conflict salience was moderate to high ($M = 3.60$, $SD = 0.81$), suggesting that broader socio-political context constituted a meaningful background condition during data collection.

Comparative analyses revealed systematically more favorable evaluations of Green IT adoption among students exposed to the nudging message relative to the non-nudged baseline. Welch's independent-samples t-tests showed significant differences in PU, BI, and ATT_ALL. Specifically, the nudged group reported higher PU ($M = 3.83$ vs. 3.48 , $p = 0.038$, $d = 0.55$) and

stronger BI to adopt green computers ($M = 3.99$ vs. 3.54 , $p = 0.014$, $d = 0.65$). The ATT_ALL was also significantly higher in the nudged condition ($M = 3.85$ vs. 3.52 , $p = 0.021$, $d = 0.61$).

Differences in AA approached conventional levels of statistical significance ($p = 0.073$, $d = 0.47$), while differences in PEU were not statistically significant ($p = 0.155$), although the effect size suggested a small-to-moderate increase ($d = 0.37$). Taken together, these results indicate that the nudging message primarily influenced instrumental and motivational dimensions of Green IT adoption rather than perceptions related to usability or effort.

Construct	Baseline (Non-nudged) Mean (SD)	Nudged Mean (SD)	Mean Difference	Welch's t-test p-value	Cohen's d
Perceived Usefulness (PU)	3.48 (0.64)	3.83 (0.61)	+0.35	0.038	0.55
Perceived Ease of Use (PEU)	3.32 (0.55)	3.54 (0.64)	+0.22	0.155	0.37
Affective Attitude (AA)	3.72 (0.77)	4.07 (0.69)	+0.35	0.073	0.47
Behavioral Intention (BI)	3.54 (0.70)	3.99 (0.66)	+0.45	0.014	0.65
Overall Attitude Index (ATT_ALL)	3.52 (0.58)	3.85 (0.52)	+0.33	0.021	0.61

Table 2: Details on results

While the previous analyses report results for the TAM attitude construct AA as a standalone measure, the mediation analysis relies on a distinct aggregated attitude index (ATT_ALL). This composite indicator was constructed by aggregating all attitude-related items that were strictly common to both the baseline and the nudged questionnaires (Annexe A, Annexe B). ATT_ALL is designed to capture students' overall evaluative stance toward Green IT adoption and provides a more global and robust attitudinal measure for testing the mediating role of attitudes between the experimental condition and behavioral intention.

To further examine how nudging influenced behavioral intention, we tested a mediation model in which overall attitude toward Green IT adoption served as the mediating variable. A bivariate analysis indicated a significant total effect of nudging on behavioral intention, with the nudged condition associated with an increase of 0.44 points on the 5-point intention scale ($p = 0.013$).

When ATT_ALL was introduced into the model, nudging remained a significant predictor of attitude ($\beta = 0.42$, $p = 0.007$), and attitude strongly predicted BI ($\beta = 1.05$, $p < 0.001$). Importantly, the direct effect of nudging on BI became non-significant once attitude was included ($p = 0.281$), consistent with a mediation pattern. A bootstrap analysis confirmed a significant indirect effect of nudging on BI through attitude (indirect effect ≈ 0.35 ; 95% CI [0.09,

0.62]), providing evidence that the nudging intervention increased intention primarily by shifting students' overall attitudes toward Green IT adoption.

5. Conclusion

Drawing on Nudge Theory and using TAM, this study examined the extent to which a light-touch behavioral intervention influences Gen Z university students' attitudes toward Green IT adoption in Armenia compared to a non-nudged baseline. By leveraging nudging as a choice-architecture mechanism rather than as a coercive or informational tool, the study provides strong **early** empirical evidence on how subtle contextual cues can shape technology-related attitudes in higher education settings.

Our study adopted an exploratory and quasi-experimental perspective, in which the primary objective is not the validation of a latent structural model, but the identification of attitudinal and perceptual mechanisms through which nudging influences Green IT adoption. In this respect, the core of the empirical contribution relies on inter-group comparisons between a non-nudged baseline and a nudged condition, combined with a mediation analysis focusing on an aggregated attitude index (ATT_ALL). This composite indicator, constructed from items common to both survey waves, provides a more robust and theoretically meaningful measure of students' overall evaluative stance toward Green IT adoption.

The findings indicate that, in the absence of nudging, students' attitudes toward Green IT adoption remain generally moderate and, in some cases, marked by limited awareness or indifference. However, exposure to a nudging message produced statistically significant and practically meaningful improvements in overall attitudes and behavioral intentions, with effect sizes in the medium range. This suggests that nudging can move students beyond passive neutrality by altering how Green IT is cognitively framed and evaluated.

Consistent with the theoretical premises of Nudge Theory, the intervention did not rely on mandates, incentives, or detailed technical explanations. Instead, it subtly reframed Green IT adoption by highlighting its practical relevance, normative dimension, and alignment with institutional resilience. The results show that nudging primarily strengthened perceived usefulness and motivational engagement, while exerting a weaker influence on perceived ease of use. This pattern aligns with the idea that nudges work by shifting salience and meaning.

This study makes a twofold theoretical contribution by articulating nudging theory and the TAM in a manner that enriches both frameworks.

First, nudging makes it possible to transform TAM from a static model into a contextual, dynamic, and behavioral framework. By introducing nudging mechanisms into the TAM structure, this research demonstrates that technology acceptance can be oriented through subtle modifications of the decision environment, without relying on explicit persuasion or changes in the technical characteristics of the technology itself.

Second, TAM contributes to the nudging literature by providing a structuring explanatory framework that is often absent from experimental studies. By mobilizing TAM, this study allows a shift from logic of assessing the nudge's raw effectiveness to a mechanistic understanding, by

precisely identifying the perceptual and attitudinal levers through which nudges influence the acceptance of sustainable technologies.

This study also makes a significant contextual contribution by exploiting the specific characteristics of the Armenian institutional environment and the Armenian Gen Z, positioning them as particularly relevant for the study of nudging mechanisms.

Beyond its theoretical and contextual contributions, this study offers several practical implications. For universities, the results highlight the value of complementing infrastructural investments in energy-efficient technologies with behaviorally informed communication strategies that frame Green IT in terms of practical benefits, institutional resilience, and shared responsibility.

Our findings are also relevant for international and supranational organizations actively engaged in sustainability and digital transformation initiatives in Armenia, such as the European Union, the United Nations, GIZ³ which support numerous projects related to environmental sustainability, digitalization, and institutional capacity building. By demonstrating that nudging can effectively enhance attitudes toward Green IT without relying on heavy investments or regulatory constraints, this study provides actionable insights that may help these organizations design, prioritize, and sequence their interventions more efficiently. In particular, integrating nudging principles into project communication and stakeholder engagement strategies may increase the impact and acceptance of sustainability-oriented initiatives within educational institutions.

6. Limitations and future research directions

This study has several limitations. First, it relies on a single-site field study conducted within one higher education institution in the Armenian context (UFAR-Université française en Arménie), which may limit the generalizability of the findings to other institutional or national settings. Second, the focus on a specific population—Gen Z university students—restricts the extent to which the results can be extrapolated to other age groups or stakeholder categories. Third, the analysis concentrates on attitudes and behavioral intentions rather than on actual usage behaviors, preventing direct observation of real adoption outcomes. Finally, the nudging intervention is based on a specific combination of mechanisms (social norms, observability, and environmental information), which limits the ability to isolate the effects of each individual nudge or to generalize the results to other nudging designs.

Future research could extend this study in several directions. First, it would be valuable to test the transferability of the identified mechanisms in more strongly institutionalized or resource-rich contexts in order to assess their robustness across different regulatory, organizational, and cultural environments. Second, further studies could move beyond pre-adoption attitudes and intentions by examining post-adoption behaviors and the persistence of nudging effects over time, thereby providing insights into the durability of behavioral interventions. Finally, future research could compare different types of nudges and systematically assess their differentiated effects on perceptual and attitudinal mechanisms, contributing to a more fine-grained understanding of how specific nudging designs influence sustainable technology acceptance.

³ <https://www.giz.de/en/regions/europe/armenia>

Bibliography

- Asadi, S., Nilashi, M., Safaei, M., Abdullah, R., Saeed, F., Yadegaridehkordi, E., & Samad, S. (2019). Investigating factors influencing decision-makers' intention to adopt Green IT in Malaysian manufacturing industry. *Resources, Conservation and Recycling*, 148. <https://doi.org/10.1016/j.resconrec.2019.04.028>
- Benartzi, S., Beshears, J., Milkman, K. L., Sunstein, C. R., Thaler, R. H., Shankar, M., ... Galing, S. (2017). Should Governments Invest More in Nudging? *Psychological Science*, 28(8). <https://doi.org/10.1177/0956797617702501>
- Beshears, J., & Gino, F. (2015). Leaders as decision architects. *Harvard Business Review*. <https://doi.org/10.1109/emr.2016.7559057>
- Beshears, J., & Kosowsky, H. (2020). Nudging: Progress to date and future directions. *Organizational Behavior and Human Decision Processes*, 161. <https://doi.org/10.1016/j.obhdp.2020.09.001>
- Bhat, A. A., Mir, A. A., Allie, A. H., Ahmad Lone, M., Al-Adwan, A. S., Jamali, D., & Riyaz, I. (2024). Unlocking corporate social responsibility and environmental performance: Mediating role of green strategy, innovation, and leadership. *Innovation and Green Development*, 3(2). <https://doi.org/10.1016/j.igd.2023.100112>
- Carlsson, F., Gravert, C., Johansson-Stenman, O., & Kurz, V. (2021). The use of green nudges as an environmental policy instrument. *Review of Environmental Economics and Policy*, 15(2). <https://doi.org/10.1086/715524>
- Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. *Annual Review of Psychology*, 55. <https://doi.org/10.1146/annurev.psych.55.090902.142015>
- d'Adda, G., Gao, Y., Golman, R., & Tavoni, M. (2024). Strategic information avoidance, belief manipulation and the effectiveness of green nudges. *Ecological Economics*, 222. <https://doi.org/10.1016/j.ecolecon.2024.108191>
- DellaVigna, S., & Linos, E. (2022). RCTs to Scale: Comprehensive Evidence From Two Nudge Units. *Econometrica*, 90(1). <https://doi.org/10.3982/ecta18709>
- Deng, Q., Ji, S., & Wang, Y. (2017). Green IT practice disclosure: An examination of corporate sustainability reporting in IT sector. *Journal of Information, Communication and Ethics in Society*, 15(2). <https://doi.org/10.1108/JICES-12-2016-0046>
- Denis-Rémis, C., Codou, O., & Lebraty, J.-F. (2011). Relation of Green IT and affective attitude within the Technology Acceptance Model : The cases of France and China. *Management & Avenir*, n° 39(9). <https://doi.org/10.3917/mav.039.0371>
- Dezdar, S. (2017). Green information technology adoption: Influencing factors and extension of theory of planned behavior. *Social Responsibility Journal*, 13(2). <https://doi.org/10.1108/SRJ-05-2016-0064>
- Di Pillo, F., Palombi, G., & Strazzullo, S. (2025). Does Greenwashing Wash Away Gen Z's Green Purchase Intention? *Business Strategy and the Environment*, 34(7). <https://doi.org/10.1002/bse.70064>
- Figiel, A., & Badar, A. (2025). Effect of Green Entrepreneurial Orientation and Absorptive Capacity on Green Innovation and Environmental Orientation Among Educated Gen Z's in Europe. *Sustainability (Switzerland)*, 17(2). <https://doi.org/10.3390/su17020593>

- Gholami, R., Sulaiman, A. B., Ramayah, T., & Molla, A. (2013). Senior managers' perception on green information systems (IS) adoption and environmental performance: Results from a field survey. *Information and Management*, 50(7). <https://doi.org/10.1016/j.im.2013.01.004>
- Hummel, D., & Maedche, A. (2019). How effective is nudging? A quantitative review on the effect sizes and limits of empirical nudging studies. *Journal of Behavioral and Experimental Economics*, 80. <https://doi.org/10.1016/j.socec.2019.03.005>
- Jachimowicz, J. M., Hauser, O. P., O'Brien, J. D., Sherman, E., & Galinsky, A. D. (2018). The critical role of second-order normative beliefs in predicting energy conservation. *Nature Human Behaviour*. <https://doi.org/10.1038/s41562-018-0434-0>
- Kahneman, D. (2011). Thinking, Fast and Slow Daniel. *Australasian Psychiatry*, 25(3).
- Kahneman, D., & Tversky, A. (2019). Prospect theory: An analysis of decision under risk. In *Choices, Values, and Frames*. <https://doi.org/10.1017/CBO9780511803475.003>
- Kamrath, C., Wensing, J., De Steur, H., & Bröring, S. (2025). Explaining the Intention to Consume 3D-Printed Food via the Food Technology Acceptance Model and Trust Dynamics. *International Journal of Consumer Studies*, 49(4). <https://doi.org/10.1111/ijcs.70081>
- Lange, F., Brick, C., & Dewitte, S. (2020). Green when seen? No support for an effect of observability on environmental conservation in the laboratory: A registered report. *Royal Society Open Science*, 7(4). <https://doi.org/10.1098/rsos.190189>
- Mele, C., Russo Spena, T., Kaartemo, V., & Marzullo, M. L. (2021). Smart nudging: How cognitive technologies enable choice architectures for value co-creation. *Journal of Business Research*, 129. <https://doi.org/10.1016/j.jbusres.2020.09.004>
- Melville, N. P. (2010). Information systems innovation for environmental sustainability. *MIS Quarterly: Management Information Systems*. University of Minnesota. <https://doi.org/10.2307/20721412>
- Murugesan, S. (2008). Harnessing green IT: Principles and practices. *IT Professional*, 10(1). <https://doi.org/10.1109/MITP.2008.10>
- Murugesan, S. (2010). Making IT Green. *IT Professional*, 12(2). <https://doi.org/10.1109/mitp.2010.60>
- Nakandala, D., Yang, R. (Chunhui), Elias, A., & Fanousse, R. (2024). Effects of managers' environmental consciousness and digital expertise on their technology adoption intentions. *Journal of Cleaner Production*, 474, 143558. <https://doi.org/https://doi.org/10.1016/j.jclepro.2024.143558>
- Ojo, A. O., & Fauzi, M. A. (2020a). Environmental awareness and leadership commitment as determinants of IT professionals engagement in Green IT practices for environmental performance. *Sustainable Production and Consumption*, 24, 298–307. <https://doi.org/10.1016/j.spc.2020.07.017>
- Ojo, A. O., & Fauzi, M. A. (2020b). Environmental awareness and leadership commitment as determinants of IT professionals engagement in Green IT practices for environmental performance. *Sustainable Production and Consumption*, 24. <https://doi.org/10.1016/j.spc.2020.07.017>
- Ojo, A. O., Raman, M., & Vijayakumar, R. (2018). Cognitive determinants of IT professional belief and attitude towards green IT. In *Advances in Intelligent Systems and Computing*

(Vol. 745). https://doi.org/10.1007/978-3-319-77703-0_98

- Pegan, G., Marzi, G., & Ranfagni, S. (2025). Pathways to Sustainable Consumption Apps Adoption: Extending UTAUT2 With Personal Values and Behaviors. *Business Strategy and the Environment*, 34(7). <https://doi.org/10.1002/bse.70005>
- Sanita, F., Mohamed Udi, Z., & Hasnan, N. (2017). Green IT/S Adoption Within GSCM In Indonesian Construction Industry: An Elucidation and Practice. *Journal of Information System and Technology Management*, 2(6).
- Savari, M., & Khaleghi, B. (2025). Promoting safe and pro-environmental behaviors for sustainable forest management: Integrating technology acceptance model and the norm activation model. *Socio-Economic Planning Sciences*, 98. <https://doi.org/10.1016/j.seps.2025.102158>
- Stieglitz, S., Mirbabaie, M., Deubel, A., Braun, L. M., & Kissmer, T. (2023). The potential of digital nudging to bridge the gap between environmental attitude and behavior in the usage of smart home applications. *International Journal of Information Management*, 72. <https://doi.org/10.1016/j.ijinfomgt.2023.102665>
- Straub, D., Limayem, M., & Karahanna-Evaristo, E. (1995). Measuring System Usage: Implications for IS Theory Testing. *Management Science*. <https://doi.org/10.1287/mnsc.41.8.1328>
- Sunstein, C. R., & Thaler, R. H. (2003). Libertarian Paternalism Is not an Oxymoron. *University of Chicago Law Review*. <https://doi.org/10.2307/1600573>
- Szajna, B. (1996). Empirical evaluation of the revised technology acceptance model. *Management Science*. <https://doi.org/10.1287/mnsc.42.1.85>
- Taylor, S., & Todd, P. A. (1995). Understanding information technology usage: A test of competing models. *Information Systems Research*, 6(2). <https://doi.org/10.1287/isre.6.2.144>
- Thaler, R. H., & Sunstein, C. R. (2008). *Nudge: Improving decisions about health, wealth, and happiness*. *Nudge: Improving Decisions about Health, Wealth, and Happiness*. [https://doi.org/10.1016/s1477-3880\(15\)30073-6](https://doi.org/10.1016/s1477-3880(15)30073-6)
- Venkatesh, V., & Davis, F. D. (1996). A model of the antecedents of perceived ease of use: Development and test. *Decision Sciences*. <https://doi.org/10.1111/j.1540-5915.1996.tb00860.x>
- Venkatesh, V., & Davis, F. D. (2000). Theoretical extension of the Technology Acceptance Model: Four longitudinal field studies. *Management Science*. <https://doi.org/10.1287/mnsc.46.2.186.11926>
- Yang, H. D., & Yoo, Y. (2004). It's all about attitude: Revisiting the technology acceptance model. *Decision Support Systems*, 38(1). [https://doi.org/10.1016/S0167-9236\(03\)00062-9](https://doi.org/10.1016/S0167-9236(03)00062-9)

Annexes

Annexe A. Questionnaire –Enquête 2024

Dear Student,

We invite you to take part in a study, which is conducted as part of a collaborative research project with French partner researchers on Green IT—practices and technologies that aim to reduce the environmental impact of information technology (IT) systems.

As you may know, green computers (energy-efficient, environmentally friendly computers) play a key role in this approach.

This questionnaire aims to explore your views on using green computers (energy-efficient, environmentally friendly computers) at your university. Your responses will help us understand your attitude toward Green IT and how it could support a more environmentally friendly university experience.

The estimated time to complete the questionnaire is approximately 4 minutes.

Thank you for your contribution!

Questionnaire

Age:

- Under 18
- 18-22
- 23-27
- 28+

Gender:

- Male
- Female
- Other

Faculty:

- Gestion
- Marketing
- Finance
- Droit
- IMA

Do you use your own (personal) computer at university or do you prefer using university's computers?

- I prefer using my own computer
- I prefer using university's computers
- If other response, please specify _____

Have you heard before about "green computers" or "Green IT"?

- Yes
- No
- I'm not sure

How important do you think it is for computers and IT practices to be environmentally friendly?

- Not important
- Slightly important
- Moderately important
- Very important
- Extremely important

Do you consider yourself an IT expert or at least a passionate geek?

- Yes
- No

Please indicate your level of agreement with the following statements about using green computers

(If green computers were available at UFAR...)

1. Using green computers could improve the productivity of overall learning experience.
 - Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree
2. Green computers would help reduce the environmental impact of academic work.

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

3. If Green computers were implemented at UFAR, it could enhance the sustainability efforts of university.

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

4. Using green computers aligns with my personal values regarding environmental responsibility.

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

5. Green computers would be easy to use for academic tasks.

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

6. Accessing and using green computers would be straightforward on campus (e.g., in computer labs or study areas).

Strongly Disagree

Disagree

- Neutral
- Agree
- Strongly Agree

7. The performance of green computers would likely match or exceed traditional computers.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

8. Using green computers would require a little extra effort or technical knowledge.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

9. I feel positive about the idea of using green computers to reduce environmental harm.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

10. I would feel proud to use green computers as part of sustainability efforts.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

11. I believe using green computers would align with my personal values about environmental responsibility.

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

12. I would be interested in using green computers for my academic tasks.

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

13. I would recommend using green computers to my classmates and peers.

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

14. If more green computers became available at my university, I would choose them over traditional computers.

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

Thank you for your valuable input.

Annexe B. Questionnaire –Enquête 2025

Dear Student,

We invite you to take part in a study, which is conducted as part of a collaborative research project with French partner researchers on Green IT—practices and technologies that aim to reduce the environmental impact of information technology (IT) systems.

This questionnaire aims to explore your views on using green computers (energy-efficient, environmentally friendly computers) at your university. Your responses will help us understand your attitude toward Green IT and how it could support a more environmentally friendly university experience.

****“In recent years, Armenia has experienced periods of instability — armed conflicts, the displacement of families, and economic pressures. In such a context, universities must remain functional and resilient, even when resources are limited.**

Green computers can help institutions better manage these constraints. They consume up to 40% less energy and use more easily recyclable materials, which reduces electricity costs and extends equipment lifespan — important factors for any institution operating with limited resources.

In many universities around the world, students tend to spontaneously choose energy-efficient computers when they are available, simply because they are reliable and easy to use.

By choosing to use green computers when you study on campus, you directly contribute to reducing the university’s energy consumption, lowering its environmental impact without changing your working habits, and strengthening the institution’s ability to remain accessible and reliable even during periods of national difficulty.

Small individual choices make institutions stronger. Your choice matters.”

The estimated time to complete the questionnaire is approximately 7 minutes.

Thank you for your contribution!

Questionnaire

“I felt that the message was encouraging me to choose one option over another.”

- Strongly disagree
- Disagree
- Neutral

- Agree
- Strongly agree

Please indicate your level of agreement with the following statements about using green computers

(If green computers were available at UFAR...)

1. Using green computers could improve the productivity of overall learning experience.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

2. Green computers would help reduce the environmental impact of academic work.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

3. If Green computers were implemented at UFAR, it could enhance the sustainability efforts of university.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

4. Using green computers aligns with my personal values regarding environmental responsibility.

- Strongly Disagree
- Disagree
- Neutral

- Agree
 - Strongly Agree
5. Green computers would be easy to use for academic tasks.
- Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree
6. Accessing and using green computers would be straightforward on campus (e.g., in computer labs or study areas).
- Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree
7. The performance of green computers would likely match or exceed traditional computers.
- Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree
8. Using green computers would require a little extra effort or technical knowledge.
- Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree
9. I feel positive about the idea of using green computers to reduce environmental harm.

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

10. I would feel proud to use green computers as part of sustainability efforts.

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

11. I would be interested in using green computers for my academic tasks.

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

12. I would recommend using green computers to my classmates and peers.

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

13. If more green computers became available at my university, I would choose them over traditional computers.

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

Please indicate your level of agreement with the following last statements

15. "In the last three years, conflicts in and around Armenia have significantly affected my life."

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

16. "At this moment, security and stability are more urgent priorities for me than environmental issues."

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

17. "Given the current situation of the country, I find it difficult to care about the environmental impact of computers."

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

Age:

Under 18

18-22

23-27

28+

Gender:

- Male
- Female
- Other

Faculty:

- Gestion
- Marketing
- Finance
- Droit
- IMA

Do you use your own (personal) computer at university or do you prefer using university's computers?

- I prefer using my own computer
- I prefer using university's computers
- If other response, please specify _____

Have you heard before about "green computers" or "Green IT"?

- Yes
- No
- I'm not sure

How important do you think it is for computers and IT practices to be environmentally friendly?

- Not important
- Slightly important
- Moderately important
- Very important
- Extremely important

Do you consider yourself an IT expert or at least a passionate geek?

- Yes
- No

Thank you for your valuable input.