Volume: 10 Issues: 79 Special Issue [December, 2025] pp. 484 - 491
Journal of Islamic, Social, Economics and Development (JISED)
eISSN: 0128-1755
Journal website: www.academicinspired.com/jised
DOI: 10.55573/JISED.107939

PERCEIVED BEHAVIOURAL CONTROL AS A KEY ENABLER OF SUSTAINABLE BEHAVIOUR AMONG UNIVERSITY STUDENTS: EVIDENCE FROM MALAYSIAN PUBLIC UNIVERSITIES

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Article history
Received date : 27-11-2025
Revised date : 28-11-2025
Accepted date : 28-12-2025
Published date : 30-12-2025

To cite this document:
Hassan, N. (2025). Perceived behavioural control as a key enabler of sustainable behaviour among university students: Evidence from Malaysian public universities. *Journal of Islamic, Social, Economics and Development (JISED),* 484 – 491.

Abstract: *Despite increasing sustainability awareness and extensive educational initiatives, university students' engagement in sustainable behaviour remains inconsistent. Prior studies grounded in the Theory of Planned Behaviour (TPB) have largely focused on attitudinal and normative determinants of behaviour, with limited emphasis on individuals' perceived capacity to act sustainably. Addressing this gap, the present study examines perceived behavioural control (PBC) as a key enabler of sustainable behaviour among students of Malaysian public universities. Using a quantitative cross-sectional design, data were collected from 956 students and analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM). The findings reveal that perceived behavioural control has a significant and strong positive effect on sustainable behaviour, suggesting that students are more likely to engage in sustainable practices when they perceive sufficient capability and institutional support. The study extends the application of TPB by foregrounding capacity-based explanations of sustainable behaviour and provides practical insights for higher education sustainability initiatives.*

Keywords: *Perceived Behaviour Control, Sustainable Behaviour, Theory of Planned Behaviour, Higher Education, Malaysia*

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Introduction

Higher education institutions are increasingly recognised as pivotal actors in advancing sustainable development by shaping students' knowledge, values, and behavioural orientations (Leal Filho et al., 2021; UNESCO, 2020). Universities worldwide have implemented sustainability-related initiatives ranging from curriculum integration and campus greening programmes to student-led environmental campaigns aimed at fostering environmentally responsible behaviour (Lozano et al., 2023). Despite these efforts, evidence consistently suggests that students' engagement in sustainable practices such as recycling, energy conservation, and waste reduction remains uneven and inconsistent (Moser & Kleinhückelkotten, 2021; Bamberg & Möser, 2021).

This persistent gap between sustainability awareness and actual behaviour indicates that motivation alone may be insufficient to explain sustainable behaviour (Klöckner, 2021). Students may express positive attitudes towards environmental protection yet feel constrained by limited facilities, unclear institutional policies, or perceived inconvenience associated with sustainable practices (Nielsen et al., 2021). Such conditions highlight the relevance of perceived behavioural control (PBC), which reflects individuals' beliefs about their ability to perform a given behaviour within existing situational constraints (Ajzen, 2020; Steg & Vlek, 2022).

Within the Theory of Planned Behaviour, perceived behavioural control represents the perceived ease or difficulty of performing a behaviour based on access to resources, opportunities, and self-efficacy (Ajzen, 2020). While PBC is theoretically central to TPB, it has often been treated as a secondary predictor in sustainability research, particularly within higher education contexts (Bamberg & Möser, 2021; Klöckner, 2021). This study addresses this limitation by positioning perceived behavioural control as a primary enabler of sustainable behaviour among university students in Malaysia.

Problem Statement

Despite growing sustainability initiatives in higher education institutions, university students' engagement in sustainable behaviour remains inconsistent. Existing studies grounded in the Theory of Planned Behaviour have predominantly focused on attitudinal and normative determinants, implicitly assuming that positive motivation will translate into sustainable action. However, empirical evidence indicates that students frequently encounter practical and contextual constraints that limit their ability to act sustainably, even when awareness and intention are present (Moser & Kleinhückelkotten, 2021).

Although perceived behavioural control is a core component of TPB, it has often been treated as a supplementary predictor rather than a central explanatory construct in sustainability research (Ajzen, 2020; Bamberg & Möser, 2021). In higher education contexts, limited attention has been given to how institutional environments—such as availability of facilities, supportive infrastructure, and clear sustainability policies—shape students' perceived capacity to engage in sustainable behaviour (Lozano et al., 2023).

This study addresses this gap by explicitly positioning perceived behavioural control as a key enabler of sustainable behaviour among university students in Malaysia. By focusing on students' perceived ability to act within their institutional context, the study offers a more capacity-oriented explanation of sustainable behaviour and avoids conceptual overlap between background discussion and the literature review.

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Literature Review

This literature review critically examines sustainable behaviour in higher education, the application of the Theory of Planned Behaviour, and the role of perceived behavioural control, with particular attention to mixed and contradictory findings in prior studies.

Sustainable Behaviour in Higher Education

Sustainable behaviour encompasses actions that minimise environmental harm while supporting long-term ecological and social well-being (Stern, 2020). In higher education settings, such behaviour includes recycling, energy conservation, waste reduction, and responsible consumption (Tapia-Fonllem et al., 2020). Universities are recognised as strategic platforms for promoting sustainable lifestyles, as behavioural habits formed during this period often persist into adulthood (Leal Filho et al., 2021).

Despite generally high levels of sustainability awareness, many studies report a persistent intention–behaviour gap among university students (Moser & Kleinhückelkotten, 2021; Lozano et al., 2023). This gap suggests that cognitive understanding and favourable attitudes do not automatically translate into consistent sustainable practices, particularly when students perceive institutional or situational barriers (Klöckner, 2021).

Theory of Planned Behaviour and Mixed Empirical Findings

The Theory of Planned Behaviour has been widely applied to explain sustainable behaviour through its emphasis on attitude, subjective norm, and perceived behavioural control (Ajzen, 1991, 2020). Numerous studies confirm TPB's predictive capacity across sustainability contexts (Han et al., 2020; de Leeuw et al., 2020). However, empirical findings regarding the relative importance of TPB components remain mixed.

While some studies report that perceived behavioural control strongly predicts sustainable behaviour, others find weaker or context-dependent effects, particularly in environments characterised by limited institutional support (Moser & Kleinhückelkotten, 2021; Klöckner, 2021). These inconsistencies suggest that PBC may function not only as an individual psychological factor but also as a reflection of broader contextual and institutional conditions.

Perceived Behavioural Control as an Enabling Factor

Perceived behavioural control reflects individuals' beliefs about their ability to perform a behaviour given available resources, opportunities, and constraints (Ajzen, 2020). In sustainability research, PBC captures whether individuals feel capable of translating intention into action within their everyday environments (Zhang et al., 2020).

Within higher education contexts, PBC is closely linked to institutional conditions such as access to recycling facilities, supportive policies, and campus infrastructure (Leal Filho et al., 2021). The presence of mixed findings in the literature highlights the need to examine PBC more explicitly as an enabling factor rather than treating it as a peripheral determinant of sustainable behaviour.

Research Gap and Hypothesis Development

The reviewed literature reveals two important gaps in sustainability behaviour research. First, although the Theory of Planned Behaviour (TPB) has been extensively applied to explain pro-environmental and sustainable behaviour, perceived behavioural control (PBC) is frequently treated as a supplementary predictor rather than a central explanatory construct (Ajzen, 2020;

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Bamberg & Möser, 2021). Many studies continue to prioritise attitudinal and normative factors, implicitly assuming that positive motivation will naturally translate into sustainable action.

Second, empirical investigations that explicitly examine the role of PBC within higher education contexts remain limited, particularly in emerging economies such as Malaysia (Lozano et al., 2023). Existing studies often overlook how institutional environments—such as campus infrastructure, policy clarity, and organisational support—shape students' perceived capacity to act sustainably. This omission is notable given that university settings differ substantially in the availability of enabling conditions that may facilitate or constrain sustainable behaviour.

Addressing these gaps, the present study positions perceived behavioural control as a key enabler of sustainable behaviour among Malaysian university students. By foregrounding students' perceived ability to act within their institutional environment, this study provides a more capacity-oriented explanation of sustainable behaviour and responds directly to calls for more context-sensitive applications of TPB in sustainability research (Klöckner, 2021).

H1: Perceived behavioural control has a significant positive effect on sustainable behaviour among university students.

Research Methodology

This study employed a quantitative cross-sectional research design to examine the relationship between perceived behavioural control and sustainable behaviour among university students. A structured questionnaire was administered to students enrolled in Malaysian public universities. This design is appropriate for testing theoretically grounded relationships and has been widely used in sustainability and behavioural research within higher education contexts (Hair et al., 2021).

Sampling Procedure

A convenience sampling approach was adopted due to accessibility considerations and the large, heterogeneous student population across Malaysian public universities. Data collection was conducted by distributing the questionnaire to undergraduate students who were willing to participate during the study period. This approach is commonly used in large-scale survey-based studies in higher education and is considered appropriate for theory-testing and theory-extension research using Partial Least Squares Structural Equation Modelling (PLS-SEM) (Hair et al., 2021).

A total of 956 valid responses were obtained, exceeding the minimum sample size required for PLS-SEM analysis and providing sufficient statistical power for reliable model estimation (Hair et al., 2021). The respondents represented diverse academic disciplines, which helped capture variation in sustainability exposure and campus experiences, thereby enhancing the robustness of the findings.

Measurement and Data Analysis

Measurement items for perceived behavioural control and sustainable behaviour were adapted from established TPB-based instruments and sustainability behaviour literature (Ajzen, 2020; Tapia-Fonllem et al., 2020). All items were measured using a five-point Likert scale. Data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) via SmartPLS,

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following a two-stage procedure involving assessment of the measurement model and the structural model (Hair et al., 2021).

Ethical Considerations

Ethical considerations were observed throughout the research process. Participation was voluntary, informed consent was obtained prior to data collection, and anonymity and confidentiality were assured. No personally identifiable information was collected, and all data were used solely for academic research purposes.

Results

The measurement model assessment indicated satisfactory internal consistency, with composite reliability values exceeding the recommended thresholds. Convergent validity was confirmed through average variance extracted (AVE) values above 0.50, while discriminant validity was established using the heterotrait–monotrait (HTMT) ratio criterion, consistent with recommended guidelines (Hair et al., 2021).

Structural model analysis revealed that perceived behavioural control has a significant and positive effect on sustainable behaviour. The estimated path coefficient indicates that students who perceive higher levels of control over their actions are more likely to engage in sustainable practices. This finding supports the proposed hypothesis and aligns with previous TPB-based sustainability studies (Ajzen, 2020; de Leeuw et al., 2020).

Additional model diagnostics indicated acceptable predictive relevance and effect size, suggesting that perceived behavioural control is not only statistically significant but also practically meaningful in explaining sustainable behaviour. Collectively, these results provide strong empirical support for the central role of PBC in shaping sustainability-related actions among university students.

Discussion

The findings of this study provide robust empirical evidence that perceived behavioural control is a key enabler of sustainable behaviour among university students. Consistent with the Theory of Planned Behaviour, students who perceive greater control over their actions are more likely to engage in sustainable practices (Ajzen, 2020). Importantly, the strength of the observed relationship suggests that PBC plays a more central role than is often acknowledged in sustainability behaviour research.

The results indicate that even when students possess positive attitudes and receive social support, sustainable behaviour may not occur if they perceive practical barriers or lack confidence in their ability to act. This finding is consistent with prior research emphasising the importance of feasibility, self-efficacy, and enabling conditions in shaping pro-environmental behaviour (de Leeuw et al., 2020; Klöckner, 2021).

Within the context of Malaysian public universities, perceived behavioural control may be shaped by variations in campus infrastructure, institutional commitment, and policy implementation. When sustainable options are accessible and visibly supported by the institution, students are more likely to perceive higher control and translate intention into action. These findings extend TPB by highlighting the importance of capacity-based explanations alongside motivational factors.

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Implications

Theoretical Implication

This study contributes to the sustainability behaviour literature by strengthening the application of the Theory of Planned Behaviour in higher education contexts. By positioning perceived behavioural control as a central determinant rather than a peripheral predictor, the study extends TPB towards a more capacity-oriented behavioural framework (Ajzen, 2020; Klöckner, 2021).

Furthermore, the findings suggest that sustainable behaviour should be understood as an outcome of both motivation and perceived capacity. This integrated perspective advances theoretical understanding by emphasising the role of enabling conditions alongside attitudinal and normative factors in shaping behaviour.

Practical and Policy Implications

From a practical perspective, the findings indicate that universities should move beyond awareness-based sustainability initiatives. While education and attitude formation remain important, they are unlikely to produce consistent behavioural change if students perceive significant barriers to action (Moser & Kleinhückelkotten, 2021).

At the policy level, sustainability strategies in higher education should incorporate capacity-building as a core component. Improving infrastructure, clarifying sustainability guidelines, and strengthening institutional support may enhance students' perceived behavioural control, thereby fostering more consistent and long-term sustainable behaviour (Lozano et al., 2023).

Conclusion

This study demonstrates that perceived behavioural control plays a pivotal role in shaping sustainable behaviour among university students. By foregrounding capacity-based explanations, the study extends the Theory of Planned Behaviour and offers a more actionable framework for promoting sustainability in higher education contexts (Ajzen, 2020). Sustainable behaviour is most likely to occur when students feel empowered, supported, and capable of acting within their institutional environments.

Limitations and Future Research

Despite its contributions, this study has several limitations. First, the cross-sectional design limits causal inference, and future research may adopt longitudinal approaches to examine changes in perceived behavioural control and sustainable behaviour over time (Hair et al., 2021). Second, reliance on self-reported data may introduce social desirability bias.

Future studies may explore additional contextual or institutional variables that influence perceived behavioural control, such as organisational culture, leadership support, or sustainability governance structures. Comparative research across countries or institutional types may also enhance generalisability and deepen understanding of capacity-based sustainability behaviour (Klöckner, 2021; Lozano et al., 2023).

Acknowledgements

The author would like to express sincere appreciation to Universiti Utara Malaysia for providing the academic environment, facilities, and administrative support that made this research possible. The institutional support and resources offered throughout the research process were instrumental in facilitating data collection and analysis. The author also gratefully

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acknowledges all university students who voluntarily participated in this study. Their willingness to share their time and perspectives contributed significantly to the quality and relevance of the findings. Without their cooperation, this research would not have been possible.

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DOI: 10.55573/JISED.107939

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