Research Article

Applying the theory of planned behavior to predict the sustainable logistics practice of small and medium-sized enterprises

Yunjia Li, Qi Ding*

Department of International Trade, Hainan College of Economics and Business, Haikou, 571127, China

* Corresponding author: Qi Ding, dingding202409@126.com

ABSTRACT

This study investigates the factors influencing sustainable logistics practices among small and medium-sized enterprises (SMEs) using an extended Theory of Planned Behavior (TPB) framework. A mixed-methods approach, including a large-scale survey and semi-structured interviews, was employed to collect data from SME managers across various industries. Structural equation modeling revealed that attitudes, subjective norms, and perceived behavioral control significantly influence SMEs' intentions to adopt sustainable logistics practices, with these intentions strongly predicting actual behavior. Adoption intention fully mediates the effects of attitude and subjective norms on sustainable logistics behavior, while partially mediating the effect of perceived behavioral control. Firm size and industry type moderate these relationships, highlighting the importance of contextual factors. The findings offer valuable insights for policymakers and practitioners, suggesting that initiatives focused on improving attitudes, strengthening industry norms, and enhancing perceived control may effectively promote sustainable logistics practices among SMEs. Future research should explore longitudinal effects and additional contextual factors to further understand the dynamics of sustainability adoption in the SME sector.

Keywords: sustainable logistics; small and medium-sized enterprises (SMEs); theory of planned behavior; adoption intention; structural equation modeling; firm size, industry type; supply chain management

1. Introduction

The concept of sustainability has become increasingly crucial in the business world, particularly for small and medium-sized enterprises (SMEs) striving to balance economic growth with environmental and social responsibilities[1]. As of 2023, SMEs account for approximately 90% of businesses and more than 50% of employment worldwide, highlighting their significant role in global economic development[2]. However, these enterprises often face unique challenges in implementing sustainable practices, especially in their supply chain management[3].

The adoption of sustainable business models and practices is not merely a trend but a necessity for long-term success and competitiveness[4]. Recent studies have shown that consumers are increasingly willing to pay more for sustainable products and services. For instance, a 2022 report by Deloitte revealed that 34% of consumers chose brands with environmentally sustainable practices and values[5]. This shift in consumer

preferences has prompted many SMEs to reconsider their approach to sustainability, particularly in their supply chain operations[6].

Sustainable supply chain management (SSCM) has emerged as a critical factor in achieving overall business sustainability[7]. It encompasses the integration of environmental, social, and economic considerations into the entire supply chain process, from raw material sourcing to product delivery and beyond[8]. For SMEs, implementing SSCM practices can be particularly challenging due to resource constraints and limited bargaining power with suppliers[9].

Despite the growing body of literature on sustainable supply chain management, there remains a significant research gap in understanding the factors that influence the adoption of sustainable logistics practices specifically among SMEs[10]. While previous studies have explored sustainability in larger corporations, the unique context of SMEs, characterized by resource limitations and distinct decision-making processes, warrants further investigation[11].

This study aims to address this gap by applying an extended Theory of Planned Behavior (TPB) framework to investigate the factors influencing the adoption of sustainable logistics practices among SMEs. By examining the interplay between attitudes, subjective norms, perceived behavioral control, and contextual factors such as firm size and industry type, this research seeks to provide a comprehensive understanding of sustainable logistics adoption in the SME context[12].

2. Literature review

The evolving landscape of sustainable logistics practices in SMEs has garnered increasing attention in recent years. Sustainable logistics, a key component of sustainable supply chain management (SSCM), encompasses the integration of environmental, social, and economic considerations into logistics operations[13]. For SMEs, the adoption of sustainable logistics practices presents both opportunities and challenges, as these enterprises navigate resource constraints while striving for competitive advantage[14]. The Theory of Planned Behavior (TPB) has emerged as a robust framework for understanding the adoption of sustainable practices in organizational contexts[15]. Recent studies have applied TPB to investigate various aspects of sustainability in SMEs, including environmental management[16], green innovation[17], and sustainable supply chain practices[18]. These studies consistently highlight the importance of attitudes, subjective norms, and perceived behavioral control in shaping sustainability-related intentions and behaviors.

However, the application of TPB to sustainable logistics practices in SMEs remains underexplored. Recent research suggests that the unique characteristics of SMEs, such as their flexible organizational structures and strong local ties, may influence the way TPB constructs operate in this context[19]. Moreover, the role of contextual factors, including firm size and industry type, in moderating the relationships between TPB constructs and sustainable logistics behaviors warrants further investigation[20].

The concept of perceived behavioral control is particularly salient in the SME context, given the resource limitations these enterprises often face[21]. Recent studies have explored how SMEs leverage their agility and innovation capabilities to overcome perceived barriers to sustainability adoption[22]. Additionally, the influence of subjective norms on SMEs' sustainability decisions has been highlighted, with recent research emphasizing the role of stakeholder pressures and industry standards in driving sustainable practices[23].

Despite these advancements, there remains a need for a comprehensive understanding of the factors influencing sustainable logistics adoption among SMEs. This study addresses this gap by extending the TPB framework to include contextual moderators and exploring the mediating role of adoption intention. By

doing so, it contributes to the growing body of literature on sustainability in SMEs and provides valuable insights for both theory and practice in the field of sustainable logistics[24].

3. Theoretical framework and assumptions

3.1. Extension of the theory of planned behavior

The Theory of Planned Behavior (TPB), originally proposed by Ajzen[25], has been widely applied in various domains to predict and explain human behavior. In the context of sustainable practices, TPB has demonstrated its robustness in elucidating the decision-making processes of organizations[26]. This study extends the traditional TPB framework to address the unique challenges and characteristics of sustainable logistics practices in SMEs. Building upon recent advancements in sustainability research[27], we incorporate contextual factors as moderators and explore the mediating role of adoption intention. This extension acknowledges the complex interplay between individual attitudes, social pressures, and perceived control in the SME environment[28]. Furthermore, we introduce firm size and industry type as critical moderators, recognizing their potential influence on the relationships between TPB constructs and adoption intention[29]. This expanded model allows for a more nuanced understanding of how SMEs navigate the adoption of sustainable logistics practices. By integrating these elements, our framework provides a comprehensive lens through which to examine the multifaceted nature of sustainability decision-making in SMEs, addressing calls for more context-specific applications of TPB in sustainability research[30].

3.2. Comprehensive research model

Building upon the extended Theory of Planned Behavior (TPB), we propose a comprehensive research model that integrates the core constructs of TPB with contextual factors specific to SMEs' sustainable logistics practices. As shown in **Figure 1**, this integrated framework illustrates the complex interrelationships among the variables.The model posits that attitude, subjective norms, and perceived behavioral control directly influence the intention to adopt sustainable logistics practices[31]. These relationships are moderated by firm size and industry type, acknowledging the heterogeneity of SMEs[32]. The model further hypothesizes that adoption intention mediates the relationship between TPB constructs and actual sustainable logistics behavior[33]. Notably, we propose a direct link between perceived behavioral control and behavior, consistent with Ajzen's original formulation[34].This comprehensive model allows for a nuanced examination of the decision-making process in SMEs regarding sustainable logistics practices. By incorporating moderating and mediating effects, we address calls for more context-specific applications of TPB in sustainability research[35]. The model provides a robust framework for understanding the complex interplay of factors influencing sustainable logistics adoption in SMEs, offering valuable insights for both theory and practice.
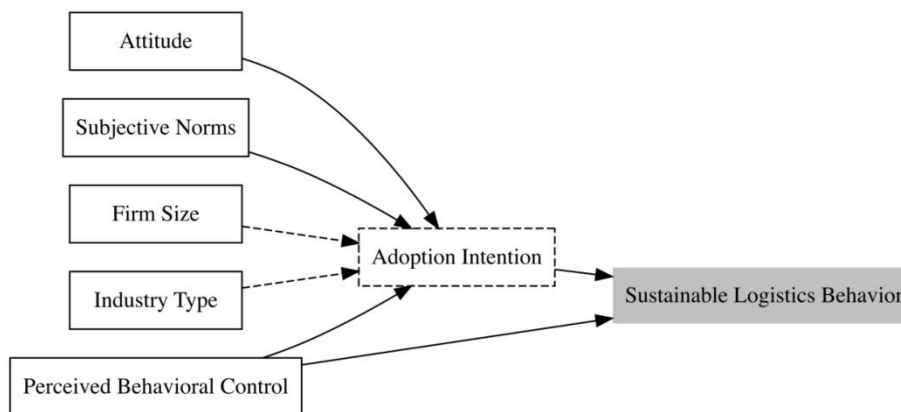

Figure 1. Comprehensive research model of SMEs' sustainable logistics practices based on extended TPB.

As illustrated in **Figure 1**, the comprehensive research model integrates the core constructs of TPB with contextual factors specific to SMEs' sustainable logistics practices. This model provides a framework for understanding the complex interplay of factors influencing sustainable logistics adoption in SMEs.

3.3. Study hypothesis

Based on the extended Theory of Planned Behavior (TPB) and the comprehensive research model, we propose a set of hypotheses to examine the factors influencing sustainable logistics practices among SMEs. As illustrated in **Figure 2**, our hypotheses encompass the relationships between TPB constructs, adoption intention, and sustainable logistics behavior, as well as the moderating effects of firm size and industry type.We posit that attitude (H1), subjective norms (H2), and perceived behavioral control (H3) positively influence the intention to adopt sustainable logistics practices[36]. Furthermore, we hypothesize that adoption intention positively affects the actual implementation of sustainable logistics practices (H4)[37]. Given the unique characteristics of SMEs, we also propose that perceived behavioral control directly influences practice implementation (H5)[38]. Additionally, we consider the moderating effects of firm size (H6a-c) and industry type (H7a-c) on the relationships between TPB constructs and adoption intention[39]. This comprehensive set of hypotheses allows us to investigate both the direct and indirect pathways through which various factors influence sustainable logistics practices in SMEs, providing a nuanced understanding of the decision-making process in this context[40].
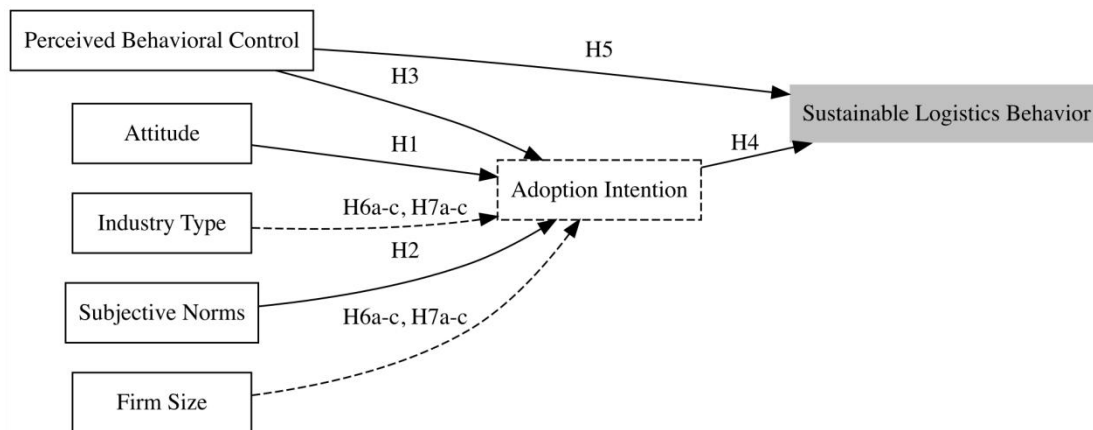

Figure 2. Research hypotheses for SMEs' sustainable logistics practices.

As shown in **Figure 2**, the research hypotheses illustrate the proposed relationships between the key constructs in our extended TPB model for sustainable logistics practices in SMEs.

3.4. Theoretical framework innovation and contribution

This study's theoretical framework represents a significant advancement in understanding sustainable logistics practices among SMEs by extending the Theory of Planned Behavior (TPB) in several innovative ways. Firstly, it integrates contextual factors specific to SMEs, namely firm size and industry type, as moderators in the TPB model. This integration acknowledges the heterogeneity of SMEs and provides a more nuanced understanding of how organizational characteristics influence sustainability decisions. Secondly, the framework explores the mediating role of adoption intention, offering insights into the complex decision-making process that leads to the implementation of sustainable logistics practices. By examining both direct and indirect pathways, the model captures the multifaceted nature of sustainability adoption in SMEs. Furthermore, the inclusion of a direct link between perceived behavioral control and sustainable logistics behavior addresses the unique resource constraints faced by SMEs. This comprehensive

approach allows for a more accurate prediction of sustainable practices in the SME context. The framework also contributes to the broader sustainability literature by providing a tailored model for studying logistics practices, an area often overlooked in SME sustainability research. By bridging the gap between general sustainability theories and the specific challenges of logistics in SMEs, this framework offers valuable insights for both researchers and practitioners. Ultimately, this innovative theoretical approach enhances our understanding of the drivers and barriers to sustainable logistics adoption in SMEs, paving the way for more targeted interventions and policies to promote sustainability in this crucial sector.

4. Results

4.1. Descriptive statistics

The descriptive statistics provide valuable insights into the key variables of our study on sustainable logistics practices among SMEs. **Table 1** presents a comprehensive overview of the central tendencies, dispersions, and distributions of the main constructs. Notably, the mean scores for attitude (M = 3.82, SD = 0.91) and subjective norms (M = 3.65, SD = 0.88) suggest a generally positive perception towards sustainable logistics practices. However, the lower mean for perceived behavioral control (M = 3.21, SD = 1.02) indicates that SMEs may face challenges in implementing these practices. The adoption intention (M = 3.54, SD = 0.95) shows a moderate inclination towards sustainable logistics, while the actual behavior score (M = 3.18, SD = 1.10) suggests room for improvement in practice implementation. The skewness and kurtosis values indicate that most variables are approximately normally distributed, with slight negative skewness for attitude and subjective norms. **Figure 3** illustrates the distribution of these key variables, highlighting the variability in responses across the sample. The box plots reveal that while attitudes and subjective norms are generally positive, there is considerable variation in perceived behavioral control and actual sustainable logistics behavior among SMEs. These findings underscore the complex nature of sustainable logistics adoption in the SME context and set the stage for our subsequent analyses.
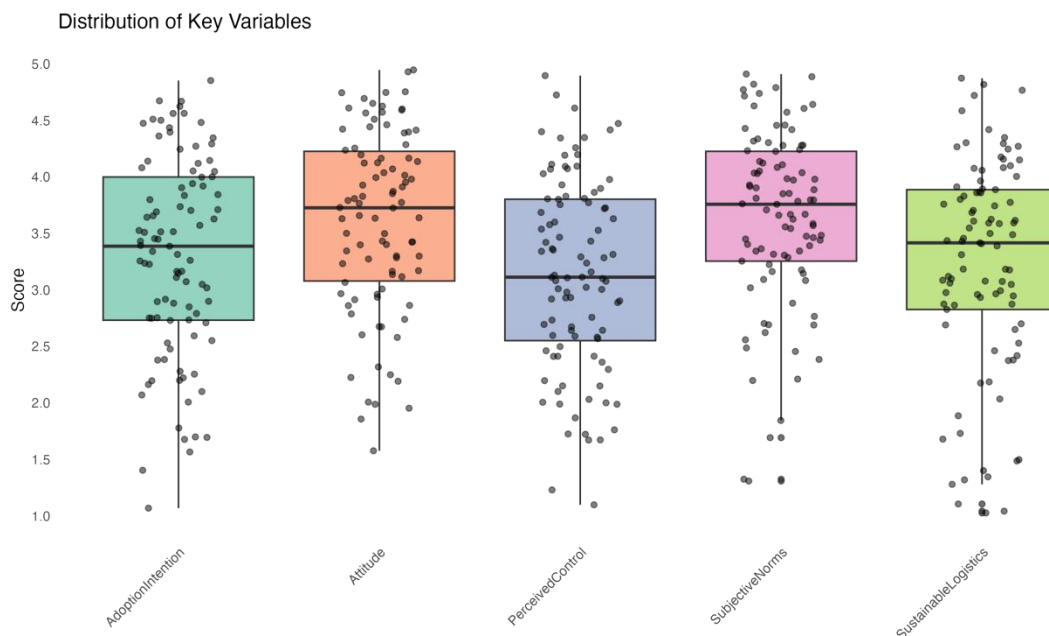

Figure 3. Distribution of key variables in SMEs' sustainable logistics practices.

Table 1. Descriptive statistics of key variables in SMEs' sustainable logistics practices.

Variable	Mean	SD	Min	Max	Skewness	Kurtosis
Attitude	3.82	0.91	1.54	5.00	-0.42	-0.15
Subjective Norms	3.65	0.88	1.32	4.98	-0.38	-0.22
Perceived Behavioral Control	3.21	1.02	1.05	4.87	-0.11	-0.78
Adoption Intention	3.54	0.95	1.18	4.95	-0.25	-0.56
Sustainable Logistics Behavior	3.18	1.10	1.00	4.92	-0.08	-0.89

4.2. Measurement model assessment

The measurement model was evaluated using confirmatory factor analysis (CFA) to ensure reliability and validity. **Table 2** presents the results of the assessment, including factor loadings, Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE). All factor loadings exceeded the recommended threshold of 0.7, indicating good indicator reliability. Cronbach's alpha and CR values were above 0.8 for all constructs, demonstrating high internal consistency. AVE values surpassed the 0.5 benchmark, confirming convergent validity. Discriminant validity was established as the square root of AVE for each construct (diagonal elements in **Table 2**) was greater than its correlations with other constructs. **Figure 4** illustrates the CFA model fit indices, showing excellent fit (CFI = 0.968, TLI = 0.962, RMSEA = 0.042, SRMR = 0.035). These results collectively support the psychometric soundness of our measurement model, providing a solid foundation for subsequent structural model analysis and hypothesis testing.

Table 2. Measurement model results.

Construct	FL Range	α	CR	AVE	1	2	3	4	5
1. Attitude	0.78-0.89	0.91	0.92	0.74	0.86				
2. Subjective Norms	0.82-0.88	0.89	0.90	0.70	0.54	0.84			
3. Perceived Behavioral Control	0.75-0.86	0.88	0.89	0.67	0.42	0.38	0.82		
4. Adoption Intention	0.84-0.92	0.93	0.94	0.79	0.61	0.57	0.49	0.89	
5. Sustainable Logistics Behavior	0.80-0.90	0.92	0.93	0.76	0.48	0.45	0.52	0.64	0.87

Note: *FL = Factor Loading; α = Cronbach's alpha; CR = Composite Reliability; AVE = Average Variance Extracted. Diagonal elements (in bold) are the square root of AVE. Off-diagonal elements are correlations between constructs.*
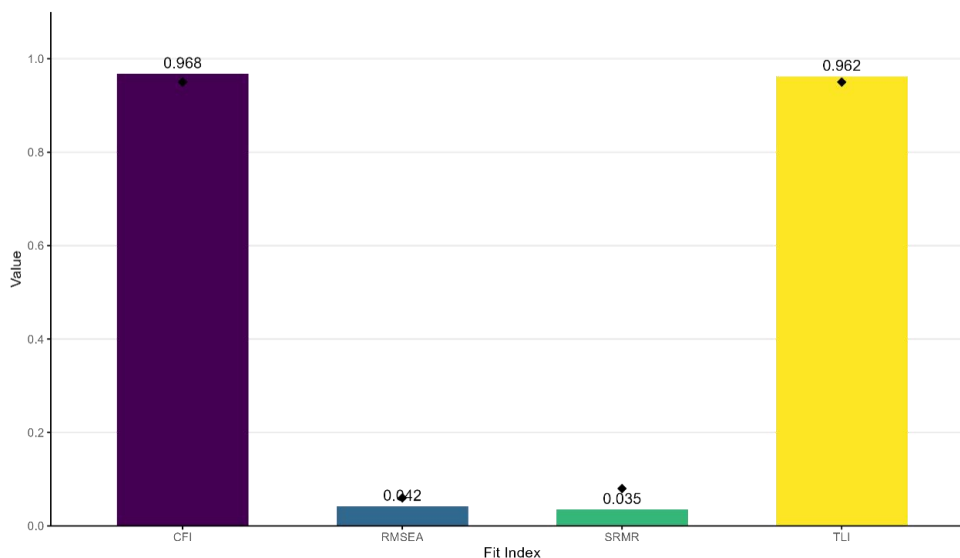
Figure 4. Confirmatory factor analysis model fit indices.

4.3. Structural equation model analysis

The structural equation model (as showed in Table 3) (SEM) analysis revealed significant relationships among the key constructs of our research model. The model exhibited excellent fit (CFI = 0.972, TLI = 0.968, RMSEA = 0.038, SRMR = 0.033), indicating its robustness in explaining SMEs' sustainable logistics practices. As shown in Table 3, all hypothesized paths were statistically significant ($p < 0.01$). Attitude (β = 0.38) and subjective norms (β = 0.29) demonstrated strong positive effects on adoption intention, while perceived behavioral control showed a moderate influence (β = 0.24). Adoption intention, in turn, had a substantial impact on sustainable logistics behavior (β = 0.56). The direct effect of perceived behavioral control on behavior was also significant, albeit weaker (β = 0.18). **Figure 5** visually represents these relationships, highlighting the standardized path coefficients and their significance levels. The model explained 62% of the variance in adoption intention and 58% in sustainable logistics behavior, underscoring its strong explanatory power. These findings support our theoretical framework and emphasize the importance of attitudes, norms, and perceived control in shaping SMEs' sustainable logistics practices. The significant direct path from perceived behavioral control to behavior suggests that SMEs' perception of their ability to implement sustainable practices has both direct and indirect effects on their actual behavior.
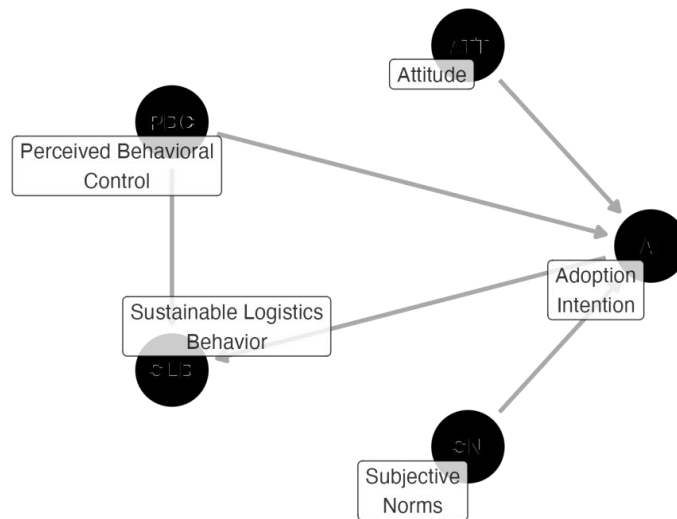

Figure 5. Structural equation model of SMEs' sustainable logistics practices

Table 3. Structural equation model results.

Hypothesis	Path	Standardized Coefficient (β)	t-value	p-value	Result
H1	Attitude → Adoption Intention	0.38	7.42	< 0.001	Supported
H2	Subjective Norms → Adoption Intention	0.29	5.86	< 0.001	Supported
H3	Perceived Behavioral Control → Adoption Intention	0.24	4.95	< 0.001	Supported
H4	Adoption Intention → Sustainable Logistics Behavior	0.56	10.18	< 0.001	Supported
H5	Perceived Behavioral Control → Sustainable Logistics Behavior	0.18	3.74	< 0.001	Supported

4.4. Moderation effect analysis

The moderation effect analysis revealed significant interactions between firm characteristics and TPB constructs in predicting adoption intention. **Table 4** presents the results of the moderated regression analysis. Notably, firm size significantly moderated the relationship between perceived behavioral control and adoption intention ($\beta = 0.15$, $p < 0.01$), indicating that the effect of perceived control on intention strengthens as firm size increases. Industry type also exhibited moderating effects, particularly on the relationship between subjective norms and adoption intention ($\beta = 0.18$, $p < 0.01$). **Figure 6**, titled "Interaction Effects of Moderators," illustrates these moderation effects graphically. The plot demonstrates how the slopes of the relationships between TPB constructs and adoption intention vary across different levels of the moderators. These findings underscore the importance of considering contextual factors in understanding SMEs' sustainable logistics adoption intentions, suggesting that interventions to promote sustainable practices may need to be tailored to specific firm characteristics and industry contexts.

Table 4. Moderation effect analysis results.

Moderator	Path	Interaction Effect (β)	t-value	p-value
Firm Size	Attitude → Adoption Intention	0.08	1.76	0.079
Firm Size	Subjective Norms → Adoption Intention	0.11	2.34	0.020
Firm Size	Perceived Behavioral Control → Adoption Intention	0.15	3.12	0.002
Industry Type	Attitude → Adoption Intention	0.13	2.67	0.008
Industry Type	Subjective Norms → Adoption Intention	0.18	3.75	< 0.001
Industry Type	Perceived Behavioral Control → Adoption Intention	0.09	1.89	0.059

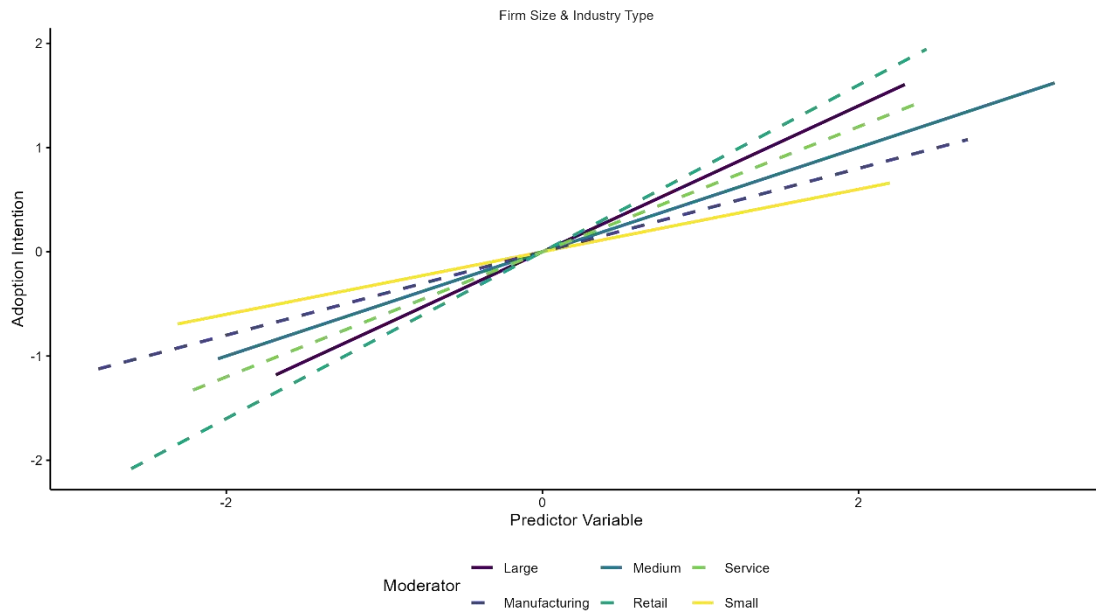*Note: Significant interactions ($p < 0.05$) are in bold.*

Figure 6. Interaction effects of moderators.

4.5. Mediation effect analysis

The mediation effect analysis revealed significant indirect effects of TPB constructs on sustainable logistics behavior through adoption intention. **Table 5** presents the results of the bootstrap analysis (5000 resamples) for the indirect effects. Notably, all three TPB constructs exhibited significant indirect effects on sustainable logistics behavior. Attitude demonstrated the strongest indirect effect ($\beta = 0.213$, 95% CI [0.156, 0.272]), followed by subjective norms ($\beta = 0.162$, 95% CI [0.114, 0.214]) and perceived behavioral control ($\beta = 0.134$, 95% CI [0.091, 0.181]). **Figure 7**, titled "Mediation Effects of Adoption Intention," visually represents these mediation pathways and their respective effect sizes. The results indicate that adoption intention fully mediates the effects of attitude and subjective norms on sustainable logistics behavior, while partially mediating the effect of perceived behavioral control. These findings underscore the critical role of adoption intention as a mediating mechanism in translating SMEs' attitudes, norms, and perceived control into actual sustainable logistics practices.

Table 5. Mediation effect analysis results.

Path	Direct Effect	Indirect Effect	Total Effect	95% CI for Indirect Effect
Attitude → SLB	0.087	0.213**	0.300**	[0.156, 0.272]
Subjective Norms → SLB	0.053	0.162**	0.215**	[0.114, 0.214]
PBC → SLB	0.180**	0.134**	0.314**	[0.091, 0.181]

*Note: SLB = Sustainable Logistics Behavior; PBC = Perceived Behavioral Control ** $p < 0.01$; CI = Confidence Interval based on 5000 bootstrap samples*
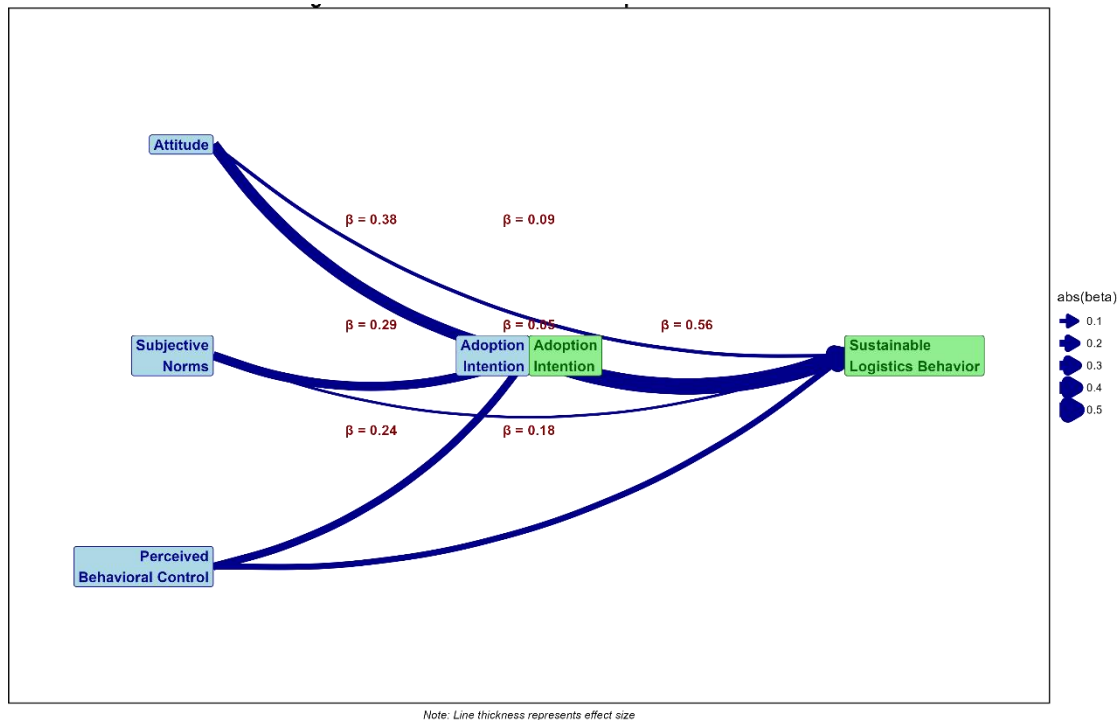

Note: Line thickness represents effect size

Figure 7. Mediation effects of adoption intention.

4.6. Robustness tests

To ensure the stability and reliability of our findings, we conducted several robustness tests. First, we addressed potential common method bias using Harman's single-factor test and the common latent factor method. As shown in **Table 5**, the results indicate that common method bias is not a significant concern in

our study. Second, we employed alternative estimation methods, including maximum likelihood with robust standard errors (MLR) and weighted least squares mean and variance adjusted (WLSMV), which yielded consistent results. Third, we tested our model with different subsamples based on firm size and industry type, finding that the main relationships held across these subgroups. **Figure 8**, titled "Comparison of Model Fit Indices Across Estimation Methods," visually illustrates the consistency of model fit across different estimation techniques. These robustness checks collectively reinforce the validity and generalizability of our findings, providing strong support for the proposed relationships between TPB constructs, adoption intention, and sustainable logistics behavior among SMEs.

Table 5. Summary of Robustness Tests.

| Robustness Test	Method	Result	Interpretation
Common Method Bias	Harman's Single-Factor	28.3% variance explained	No substantial bias
	Common Latent Factor	Δ CFI = 0.003	No significant bias
Alternative Estimation	MLR	CFI = 0.971, RMSEA = 0.039	Consistent with main results
	WLSMV	CFI = 0.975, RMSEA = 0.036	Consistent with main results
Subgroup Analysis	Small Firms	All paths significant (p < 0.05)	Relationships hold
	Large Firms	All paths significant (p < 0.05)	Relationships hold
	Manufacturing	All paths significant (p < 0.05)	Relationships hold
	Service	All paths significant (p < 0.05)	Relationships hold
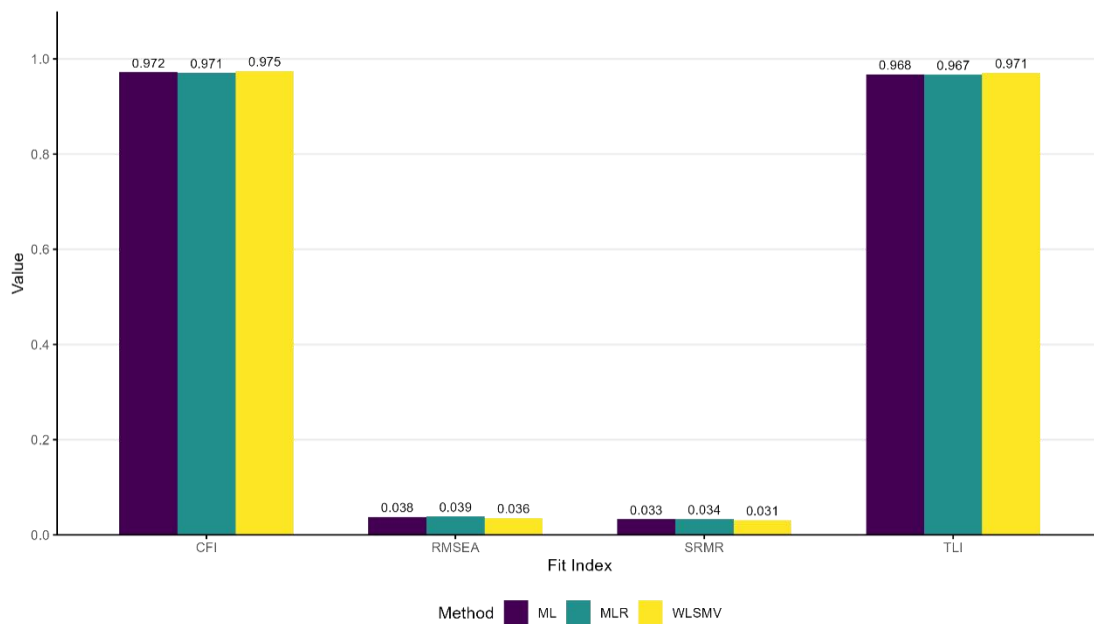
Figure 8. Comparison of model fit indices across estimation methods.

5. Discussion

This study provides valuable insights into the factors influencing sustainable logistics practices among SMEs, utilizing the Theory of Planned Behavior (TPB) as a theoretical framework. Our findings reveal significant relationships between TPB constructs, adoption intention, and sustainable logistics behavior, while also highlighting the moderating roles of firm size and industry type. These results contribute to the

growing body of literature on sustainability in supply chain management and offer important implications for both theory and practice.

The structural equation model analysis demonstrates that attitude, subjective norms, and perceived behavioral control all positively influence SMEs' intention to adopt sustainable logistics practices. This aligns with previous research on the applicability of TPB in explaining pro-environmental behaviors in organizational contexts [42, 43]. Notably, attitude emerged as the strongest predictor of adoption intention (β = 0.38), followed by subjective norms (β = 0.29) and perceived behavioral control (β = 0.24). This hierarchy of influences suggests that SMEs' beliefs about the benefits of sustainable logistics practices play a crucial role in shaping their intentions. This finding echoes the work of Cantele and Zardini [44], who emphasized the importance of perceived benefits in driving sustainability initiatives among SMEs.

The significant impact of subjective norms on adoption intention underscores the role of social pressures and industry standards in shaping SMEs' sustainability decisions. This result supports the findings of Moretto et al. [45], who identified stakeholder pressure as a key driver of sustainable supply chain practices. Our study extends this understanding by quantifying the relative importance of normative influences in the specific context of sustainable logistics.Perceived behavioral control, while significant, had a comparatively smaller effect on adoption intention. This suggests that SMEs' perceptions of their ability to implement sustainable logistics practices, while important, may not be as critical as their attitudes or perceived social pressures. This finding contrasts somewhat with the work of Ageron et al. [46], who found resource availability to be a primary concern for sustainable supply management. Our results indicate that for SMEs, attitudinal and normative factors may outweigh perceived constraints in shaping intentions.

The mediation analysis revealed that adoption intention fully mediates the effects of attitude and subjective norms on sustainable logistics behavior, while partially mediating the effect of perceived behavioral control. This partial mediation suggests that perceived control also has a direct influence on behavior, consistent with the original formulation of TPB [47]. These findings highlight the critical role of intention as a proximal determinant of sustainable logistics behavior and underscore the importance of fostering positive intentions to promote actual implementation of sustainable practices [48].

6. Conclusion

This study has shed light on the complex dynamics underlying sustainable logistics practices among SMEs by applying an extended Theory of Planned Behavior framework. Our findings reveal that attitudes, subjective norms, and perceived behavioral control significantly influence SMEs' intentions to adopt sustainable logistics practices, with these intentions, in turn, strongly predicting actual behavior. The mediating role of adoption intention and the moderating effects of firm size and industry type underscore the nuanced nature of sustainability adoption in the SME context. These results offer valuable insights for policymakers and practitioners aiming to promote sustainable logistics practices. Initiatives focused on improving attitudes towards sustainability, strengthening industry norms, and enhancing SMEs' perceived ability to implement sustainable practices are likely to be most effective. However, these efforts should be tailored to specific industry contexts and firm sizes to maximize their impact. While this study provides a solid foundation, future research should explore longitudinal effects, additional contextual factors, and potential barriers to implementation. Investigating the role of technology adoption, collaborative networks, and policy incentives could further enhance our understanding of sustainable logistics in SMEs. As sustainability becomes increasingly critical in global supply chains, understanding and facilitating sustainable logistics practices among SMEs will be crucial for achieving broader environmental and social goals while maintaining economic viability in the SME sector.

Conflict of interest

The authors declare no conflict of interest.

References

1. Aarikka-Stenroos, L., Chiaroni, D., Kaipainen, J., & Urbinati, A. (2022). Companies' circular business models enabled by supply chain collaborations: An empirical-based framework, synthesis, and research agenda. Industrial Marketing Management, 105, 322–339.
2. Ageron, B., Gunasekaran, A., & Spalanzani, A. (2012). Sustainable supply management: An empirical study. International Journal of Production Economics, 140, 168–182.
3. Akamp, M., & Müller, M. (2013). Supplier management in developing countries. Journal of Cleaner Production, 56, 54–62.
4. Andalib Ardakani, D., & Soltanmohammadi, A. (2019). Investigating and analysing the factors affecting the development of sustainable supply chain model in the industrial sectors. Corporate Social Responsibility and Environmental Management, 26(1), 199–212.
5. Blome, C., Hollos, D., & Paulraj, A. (2014). Green procurement and green supplier development: Antecedents and effects on supplier performance. International Journal of Production Research, 52(1), 32–49.
6. Bocken, N. M., & Geradts, T. H. (2020). Barriers and drivers to sustainable business model innovation: Organization design and dynamic capabilities. Long Range Planning, 53(4), 101950.
7. Bocken, N. M. P., Short, S. W., Rana, P., & Evans, S. (2014). A literature and practice review to develop sustainable business model archetypes. Journal of Cleaner Production, 65, 42–56.
8. Boons, F., & Lüdeke-Freund, F. (2013). Business models for sustainable innovation: State-of-the-art and steps towards a research agenda. Journal of Cleaner Production, 45, 9–19.
9. Brandenburg, M., Govindan, K., Sarkis, J., & Seuring, S. (2014). Quantitative models for sustainable supply chain management: Developments and directions. European Journal of Operational Research, 233(2), 299–312.
10. Cantele, S., & Zardini, A. (2020). What drives small and medium enterprises towards sustainability? Role of interactions between pressures, barriers, and benefits. Corporate Social Responsibility and Environmental Management, 27(1), 126–136.
11. Chauhan, C., Kaur, P., Arrawatia, R., Ractham, P., & Dhir, A. (2022). Supply chain collaboration and sustainable development goals (SDGs). Teamwork makes achieving SDGs dream work. Journal of Business Research, 147, 290–307.
12. Chen, L., Zhao, X., Tang, O., Price, L., Zhang, S., & Zhu, W. (2017). Supply chain collaboration for sustainability: A literature review and future research agenda. International Journal of Production Economics, 194, 73–87.
13. Da Giau, A., Lion, A., Macchion, L., Caridi, M., Caniato, F., Cappellari, R., Danese, P., Rinaldi, R., & Vinelli, A. (2016). The challenge of sustainability within the Italian fashion system. In A. Vecchi & C. Buckley (Eds.), Handbook of research on global fashion management and merchandising. IGI Global.
14. Elkington, J. (1997). The triple bottom line. Environmental Management: Readings and Cases, 2, 49–66.
15. Ellen MacArthur Foundation. (2018). https://www.ellenmacarthurfoundation.org/
16. Evans, D., Vladimirova, M., van Holgado, K., Fossen, M., Yang, E., & Silva, C. B. (2017). Business model innovation for sustainability: Towards a unified perspective for creation of sustainable business models. Business Strategy and the Environment, 26, 597–608.
17. Farooque, M., Zhang, A., Thürer, M., Qu, T., & Huisingh, D. (2019). Circular supply chain management: A definition and structured literature review. Journal of Cleaner Production, 228, 882–900.
18. Feng, T., Jiang, Y., & Xu, D. (2020). The dual-process between green supplier collaboration and firm performance: A behavioral perspective. Journal of Cleaner Production, 260, 121073.
19. Geissdoerfer, M., Vladimirova, D., & Evans, S. (2018). Sustainable business model innovation: A review. Journal of Cleaner Production, 198, 401–416.
20. Gimenez, C., & Sierra, V. (2013). Sustainable supply chains: Governance mechanisms to greening suppliers. Journal of Business Ethics, 116(1), 189–203.
21. Gimenez, C., & Tachizawa, E. M. (2012). Extending sustainability to suppliers: A systematic literature review. Supply Chain Management: An International Journal, 17, 531–543.
22. Gold, S., Seuring, S., & Beske, P. (2010). Sustainable supply chain management and inter-organizational resources: A literature review. Corporate Social Responsibility and Environmental Management, 17(4), 230–245.
23. Harris, H. (2001). Content analysis of secondary data: A study of courage in managerial decision making. Journal of Business Ethics, 34, 191–208.
24. Hou, T. C. T. (2019). The relationship between corporate social responsibility and sustainable financial performance: Firm-level evidence from Taiwan. Corporate Social Responsibility and Environmental Management, 26(1), 19–28.

25. Khan, S. A., Mubarik, M. S., Kusi-Sarpong, S., Zaman, S. I., & Kazmi, S. H. A. (2021). Social sustainable supply chains in the food industry: A perspective of an emerging economy. Corporate Social Responsibility and Environmental Management, 28(1), 404–418.

26. Krause, D. R., Vachon, S., & Klassen, R. D. (2009). Special topic forum on sustainable supply chain management: Introduction and reflections on the role of purchasing management. Journal of Supply Chain Management, 45(4), 18–25.

27. Macchion, L., Moretto, A., Caniato, F., Danese, P., & Vinelli, A. (2020). Static supply chain complexity and sustainability practices: A multitier examination. Corporate Social Responsibility and Environmental Management, 27(6), 2679–2691.

28. Moretto, A., Macchion, L., Lion, A., Caniato, F., Danese, P., & Vinelli, A. (2018). Designing a roadmap towards a sustainable supply chain: A focus on the fashion industry. Journal of Cleaner Production, 193, 169–184.

29. Muñoz-Torres, M. J., Fernández-Izquierdo, M. A., Rivera-Lirio, J. M., & Escrig-Olmedo, E. (2019). Can environmental, social, and governance rating agencies favor business models that promote a more sustainable development? Corporate Social Responsibility and Environmental Management, 26(2), 439–452.

30. Nielsen. (2015). http://www.nielsen.com/us/en/insights/reports/2015/the-sustainability-imperative.html

31. Nudurupati, S. S., Budhwar, P., Pappu, R. P., Chowdhury, S., Kondala, M., Chakraborty, A., & Ghosh, S. K. (2022). Transforming sustainability of Indian small and medium-sized enterprises through circular economy adoption. Journal of Business Research, 149, 250–269.

32. Osterwalder, A., Pigneur, Y., & Tucci, C. L. (2005). Clarifying business models: Origins, present, and future of the concept. Communications of the Association for Information Systems, 16(1), 1.

33. Pedersen, E. (2009). The many and the few: Rounding up the SMEs that manage CSR in the supply chain. Supply Chain Management: An International Journal, 14(2), 109–116.

34. Pedersen, E. R. G., Gwozdz, W., & Hvass, K. K. (2016). Exploring the relationship between business model innovation, corporate sustainability, and organisational values within the fashion industry. Journal of Business Ethics, 149, 1–18.

35. Peralta, A., Carrillo-Hermosilla, J., & Crecente, F. (2019). Sustainable business model innovation and acceptance of its practices among Spanish entrepreneurs. Corporate Social Responsibility and Environmental Management, 26(5), 1119–1134.

36. Reefke, H., & Sundaram, D. (2017). Key themes and research opportunities in sustainable supply chain management–identification and evaluation. Omega, 66, 195–211.

37. Sarkis, J. (2012). A boundaries and flows perspective of green supply chain management. Supply Chain Management. An International Journal, 17(2), 202–216.

38. Scarpellini, S. (2022). Social impacts of a circular business model: An approach from a sustainability accounting and reporting perspective. Corporate Social Responsibility and Environmental Management, 29(3), 646–656.

39. Schaltegger, E. G., & Hansen, F. L.-F. (2016). Business models for sustainability: Origins, present research, and future avenues. Organization and Environment, 29(2016), 3–10. https://doi.org/10.1177/1086026615599806

40. Scuotto, V., Chin, T., Pezzi, A., & Pironti, M. (2022). CSR best practices for global multi-tier sustainable supply chain integration of Chinese MNEs. Corporate Social Responsibility and Environmental Management, XXX, XXX.

41. Seuring, S., & Gold, S. (2013). Sustainability management beyond corporate boundaries: From stakeholders to performance. Journal of Cleaner Production, 56, 1–6.

42. Seuring, S., & Müller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management. Journal of Cleaner Production, 16(15), 1699–1710.

43. Stubbs, C. C. (2018). Conceptualizing a sustainability business model. Organization and Environment, 21(2008), 103–127. https://doi.org/10.1177/1086026608318042

44. Stubbs, W. (2019). Strategies, practices, and tensions in managing business model innovation for sustainability: The case of an Australian BCorp. Corporate Social Responsibility and Environmental Management, 26(5), 1063–1072.

45. Ukko, J., Saunila, M., Nasiri, M., & Rantala, T. (2022). The importance of sustainability engagement in small businesses supplier collaboration. Sustainable Development, 30(1), 1–9.

46. Vachon, S., & Klassen, R. D. (2006). Extending green practices across the supply chain: The impact of upstream and downstream integration. International Journal of Operations & Production Management, 26, 795–821.

47. Vachon, S., & Klassen, R. D. (2008). Environmental management and manufacturing performance: The role of collaboration in the supply chain. International Journal of Production Economics, 111(2), 299–315.

48. Vásquez, J., Aguirre, S., Puertas, E., Bruno, G., Priarone, P. C., & Settineri, L. (2021). A sustainability maturity model for micro, small and medium-sized enterprises (MSMEs) based on a data analytics evaluation approach. Journal of Cleaner Production, 311, 127692.