

Green Transition and ESG Support Interventions for Small and Medium-Sized Enterprises: Developing a Logic Model and Evaluating Experimental Impacts in Vietnam

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ABSTRACT: The purpose of the paper is to develop a logic model for an intervention integrating the green-transition and ESG support of SMEs in Vietnam and show how its impact could be measured by using a quasi-experimental design. The intervention includes ESG diagnostics, capacity building training, green-transition diagnostics, individualized action planning, and mentoring in implementation. In the logic model, the chain of cause-and-effect relationships goes from inputs/activities to immediate outputs, ESG knowledge/organizational capability improvement, ESG readiness, the adoption of environmental, social, and governance practices and their performance impacts. In order to illustrate the evaluation approach, we created a synthetic panel dataset including 160 SMEs consisting of 80 intervention firms and 80 matched comparison firms observed at baseline, after the intervention and during follow-up periods. Using difference-in-differences analysis of baseline and post-intervention observations, the estimated simulated effects of intervention on ESG knowledge were found to be 1.038 points; on ESG readiness, 0.730; on environmental practices, 0.616; on social practices, 0.468; and on governance practices, 0.601; all on five-point scales. The pattern is intentionally calibrated so that proximal capability outcomes respond more strongly than organizational practices, reflecting the time and resource requirements of implementation. The study contributes an evaluable intervention architecture for SME ESG support and illustrates how future field trials in

Vietnam can combine causal impact estimation with process evidence. The findings are illustrative rather than empirical and are intended to guide a subsequent real-world pilot or randomized/quasi-experimental evaluation.

Keywords: *ESG; green transition; small and medium-sized enterprises; logic model; impact evaluation; difference-in-differences; Vietnam.*

1. Introduction

The green transition is redefining the environment for competition, financing, managing supply chain logistics, and accounting for firms. However, for SMEs, the green transition has even more implications since the pressures of sustainability are increasingly being exerted on small firms through their buyers, bankers, regulations, investors, and lead firms in their value chains. This is because SMEs may not have the same capacities as larger firms in terms of specialized personnel, information technology, financial means, and managerial flexibility. As such, the OECD (2022, 2024) insists that the net-zero transition is impossible without the engagement of SMEs, and the key issue is their access to finance, data, capabilities, and support. In Vietnam, the issues mentioned above relate to the context of the country's development strategy, which increasingly links economic growth with climate resilience, resource efficiency, and decarbonization. Similarly, the World Bank (2025) suggests that sustainable and resilient development is a critical part of the development path of Vietnam.

An example of such a way is an ESG approach. In this case, the environmental component includes energy, emissions, materials, waste, pollution prevention, and resources. Social component includes such items as labor relations, health and safety, human capital, inclusiveness, community relationships, and good practices in supply chains. Governance component includes such components as accountability, internal controls, ethics, risks management, data management, and decision-making. However, for small and medium enterprises (SMEs), the ESG approach should not be used as an element of a corporate reporting framework. In this context, what is needed is a proper approach to ESG reporting which includes such aspects as understanding of material issues, selection of relevant indicators, responsibilities, and operationalizing sustainability.

Vietnamese researchers support the idea of ESG implementation issues. In particular, according to Uong and Nguyen (2025), based on the survey of 217 SMEs in Vietnam,

institutional and regulatory issues are applicable to ESG disclosures. In their study, Bui et al. (2025) note that Vietnamese SMEs could be aware of ESG benefits, yet are unable to put it into practice due to insufficient assistance from specialists, problems with interpreting data, collecting it, lack of money, and the desire to become profitable in the short term. PwC Vietnam (2025) indicates an uneven ESG maturity level of firms that operate in Vietnam and the need for proper policies, affordable access to capital, and assistance depending on the developmental stage of a firm. The current main question for application, therefore, is not only why SMEs use ESG, but how they can implement it.

A lot of existing literature on SMEs sustainability is descriptive. While cross-sectional studies might demonstrate connections between managers' commitment, stakeholder pressure, resource availability, institutional context, and ESG adoption, such a research design can never be conclusive enough to state if some specific assistance program caused any change in the company. Thus, there emerges an intervention gap and an evaluation gap. Policy makers, industry associations, developmental agencies, financial institutions, and services providers need empirical evidence about which diagnosis, education, mentoring, planning, and implementation assistance lead to change and what are the mechanisms behind that.

With that in mind, the current research is designed to meet two mutually complementing objectives. First, the study contributes with the development of theory-based logic model for SMEs green transition and intervention in ESG issues that may be adapted to the case of Vietnam. Second, it presents an approach to impact evaluation based on synthetic dataset imitating the two group repeated measures experiment in the field. The study does not aim at providing factual evidence but rather showing how future pilot interventions may predefine their outcomes, build counterfactuals, estimate impacts, and integrate quantitative and process evidence.

The four research questions driving the current work include: (RQ1) What barriers and needs for support are expected to limit the SMEs green transition and practice of ESG in Vietnam? (RQ2) How the logic model may connect the proposed SME support intervention with its potential short-term, intermediate-term, and long-term outcomes? (RQ3) How would engagement in the intervention affect the ESG knowledge, ESG

readiness, and ESG practices in relation to the control group? (RQ4) How and under what organizational conditions should the intervention effects emerge?

2. Literature Review and Theoretical Framework

2.1 Green transition, ESG, and the SME framework

As a group, SMEs matter regarding sustainability since their total contribution is large although the SME itself is small on its own. From OECD research, many SMEs are still in the initial stages of net-zero planning and sustainable finance becomes increasingly relevant as banks seek more environmental information from the businesses they lend to (OECD, 2022, 2024). This presents a double challenge in that the SMEs must become more sustainable in operations while at the same time being able to demonstrate their performance. This involves not only purchasing of energy-efficient technology but also management practices, performance measures, accountability, skill development, and outside expertise.

The idea of ESG can facilitate addressing this issue, but the adoption of ESG by the firm should be differentiated from its disclosure. An SME can enhance its energy efficiency, occupational safety, procurement processes, or anti-corruption mechanisms without compiling a detailed ESG report. In contrast, the compilation of the report in the absence of any underlying operations will not lead to a significant improvement. This study, therefore, considers the adoption of ESG practices as the main behavior and ESG reporting capability as one of improving performance.

2.2 Barriers to ESG adoption and green transition

The literature consistently points out interacting resource, knowledge, organizational, and institutional barriers. Financial constraints prevent investment in cleaner machinery, monitoring, certification, consultancy services, and human resources. The knowledge constraints include uncertainty regarding ESG concepts, material issues, regulation, and the business case for ESG activities. Organizational constraints involve informal management, lack of accountability, poor data management practices, and short-term planning. External barriers include fragmented standards, lack of industry-specific guidelines, pressure on the supply chain, and difficulties accessing sustainable finance. According to a cross-country qualitative study in 2026, resource scarcity, lack of

knowledge and awareness, reporting challenges, informal management, and poor supportive environment are consistent barriers to ESG integration among SMEs (Gallagher et al., 2026).

All these barriers complement each other. For instance, when an organization lacks proper expertise, it may fail to recognize what constitutes material investments; hence, uncertainty will arise in justifying the need for financing. An organization that does not have proper data management practices may lack the evidence needed to show improvement to financiers or buyers. The manager who views ESG as a mere compliance issue will allocate few resources to solve the problem, and the organization will fail to learn about cost efficiency or risk reduction. Training will create awareness, but awareness alone will not lead to action plan development, accountability, and overcoming implementation barriers.

2.3 Why an integrated support intervention is needed

Thus, the above intervention involves the combination of five elements. Diagnostic assessment sets a specific baseline and highlights major deficiencies in a firm. Capacity-building creates a common language and basic knowledge. A green transition assessment shifts the focus to operational aspects such as energy, materials, waste, emissions, workers' activities, and governance processes. Action planning translates general intentions into actionable items, metrics, owners, and deadlines. Mentoring is helpful for implementation, troubleshooting, and adaptation. The intervention sequence proceeds from knowledge to capability to action without the assumption that information leads to behavior change automatically.

Such an approach is in line with the recent focus of the ILO on the need for proportional and realistic ESG measures for SMEs and the function of the employer/business member organizations in translating international expectations into concrete help (ILO, 2026). It is also in line with the OECD policy efforts that treat nonfinancial support and assistance as complements to sustainable finance. In other words, capital may be insufficient for action in the absence of project identification, measurement capabilities, and information reporting.

2.4 Theoretical foundations

There are three different yet complementary perspectives underpinning the rationale behind the logic model. Resource-based theory assumes that different organizational resources and capabilities can influence performance (Barney, 1991). In this research, ESG knowledge, diagnostic processes, data capabilities, and implementation skills are viewed as capabilities that can be developed in organizations. The dynamic capabilities theory is built on this notion and centers on the sensing, seizing, and reconfiguring of firms in the face of changes (Teece, Pisano, & Shuen, 1997). Hence, the promotion of ESG can be viewed as a way to sense material sustainability pressures in SMEs, choose feasible responses and initiate a transformation process.

The institutional theory adds an external perspective to the equation and states that such forces as regulation, buyer demand, professional norms, and economic factors can motivate engagement (DiMaggio & Powell, 1983). In other words, all three perspectives presuppose a mediation effect rather than an immediate one. The intervention has to impact proximal outcomes first – knowledge, readiness, diagnostic capability, and confidence. These capabilities will increase the chances of adoption. Environmental or organizational performance may change later depending on the nature of the process. Managerial commitment and resources will play their part in this chain. Hence, short-term effects will occur first for knowledge and readiness, not for the ESG practices.

3. Intervention Development and Logic Model

3.1 Proposed intervention

This program is expected to run as a 12-week cycle of support for the participating SMEs. In Week 1, there will be measurement of baseline data and an ESG diagnostic. Weeks 2-4 offer three workshops on ESG basics and materiality, environment/resource efficiency practices, and social/governance practices, respectively, with simplified measurement. Weeks 5-6 will concentrate on conducting a firm-level green transition diagnosis and prioritizing exercise. The participating firms will create an action plan of 90 days containing 3-5 priority actions, designated personnel responsible for carrying out the actions, indicators, sources of information about actions, and deadlines. Mentoring contacts, peer learning, and problem-solving will occur during Weeks 7 through 12. The

post-test will be conducted at the end of Week 12 whereas the follow-up will be undertaken after 12 weeks.

The approach is very practical in nature. It does not require SMEs to make their reports following an extensive international framework of reporting in the first iteration of the program. The approach makes a minimum viable ESG management system which involves prioritization, named responsibility, indicators, documentation, and reviews.

3.2 Logic model

Table 1. Logic Model for the Green Transition and ESG Support Intervention for SMEs

Component	Specification
Inputs	ESG facilitators; diagnostic tool; training materials; sector guidance; mentoring time; SME management participation; simple KPI templates.
Activities	Baseline diagnosis; workshops; green-transition assessment; action planning; mentoring; peer learning; post-test and follow-up measurement.
Immediate outputs	Completed diagnostics; staff trained; material ESG issues identified; action plans approved; responsibilities and KPIs assigned.
Short-term outcomes	Higher ESG knowledge; stronger management confidence; improved data awareness; increased ESG readiness and implementation capability.
Intermediate outcomes	Adoption of environmental, social, and governance practices; routine KPI tracking; stronger internal accountability; better documentation.
Longer-term outcomes	Resource efficiency; risk reduction; improved stakeholder credibility; better access to sustainable value chains/finance; resilience and competitiveness.
Context/moderators	Firm size; sector; prior ESG experience; management commitment; resource availability; buyer/regulatory pressure.

The main causation process is the following: intervention exposure → knowledge and capacity → ESG preparedness → adoption → long-term green and organizational results. The feedback loop is another essential element of the model. Positive results at the operations stage can increase managerial commitment, and problems with implementation

can result in more mentoring or changes in the action plan. The feedback loop is crucial for several reasons.

3.3 Hypotheses for impact evaluation

In terms of confirmatory evaluation in the future, the logic model suggests five main hypotheses. Hypothesis 1. Intervention SMEs will experience more progress in terms of knowledge about ESG compared to control SMEs. Hypothesis 2. Intervention SMEs will experience more progress in terms of ESG readiness. Hypothesis 3. Intervention SMEs will experience more progress in terms of environmental practices. Hypothesis 4. Intervention SMEs will experience more progress in terms of social practices. Hypothesis 5. Intervention SMEs will experience more progress in terms of governance practices. The second hypothesis is that management commitment moderates the effect.

4. Methodology

4.1 Design

The experiment design of the study is based on the quasi-experiment difference-in-differences (DiD) approach which includes an intervention group and comparison group, measured at baseline (T0), post-intervention (T1) right after the completion of the 12-week program and follow-up point (T2). In theory, in a field study, the firms should be randomly assigned to one of the two groups after stratification by their size and industry. Alternatively, in case of unavailability of the randomization procedure, the firms in the comparison group have to be matched with those in the intervention group and baseline balance has to be checked. The main identification strategy here is to use the change in the comparison group as a counterfactual change in the absence of the intervention. The latter has to be subtracted from the change of intervention firms using the DiD estimator.

The dataset employed for the demonstration purposes was synthesized. It contains 160 firms which are fabricated and do not represent real firms' data. There are 80 firms in each of the two conditions – the intervention and comparison. The attributes of firms in this dataset are size category, industry, years of doing business, ESG experience and management commitment.

4.2 Sample structure

Table 2. Study Variables, Measures, and Operational Definitions

Characteristic	Intervention (n=80)	Comparison (n=80)
Micro	20	19
Small	43	47
Medium	17	14
Manufacturing	18	25
Services	31	22
Trade/logistics	22	24
Food/agriculture	9	9
Prior ESG experience, n (%)	19 (23.8%)	22 (27.5%)

4.3 Measures

Five primary outcome variables are measured using 1-5 scales. The ESG Knowledge variable measures the extent to which knowledge of ESG concepts, materiality, basic indicators, and sustainability-business relationships have been attained. The ESG Readiness variable captures assignment of responsibility in the firm, identification of materiality issues, ability to gather basic evidence, and the development of an implementation strategy. Environmental Practices measure energy/resource efficiency, waste management, environmental monitoring, and process improvement practices. Social Practices include worker safety, training, fairness, participation in decision-making, and selected supply chain/societal procedures. Governance Practices involve ethical norms, responsibility, risk assessment, documentation, control, and ESG oversight.

Implementation of the two binary indicators includes documentation of an ESG action plan in the firm and monitoring of basic ESG KPIs in the firm. These two variables shall be assessed through documentary evidence when available. The baseline barrier variables include the financial barriers, expertise barriers, metrics barriers, data collection barriers, time barriers, and regulation barriers. The management commitment will be assessed through the use of a continuous contextual variable. Developing a good questionnaire shall consider the use of valid and reliable items that already exist, cognitive interviews, piloting, reliability assessments, and confirmatory measures.

4.4 Analysis

Baseline barriers and outcomes trajectories are captured by descriptive statistics. The main impact regression model uses observations from the baseline time and after the implementation of the intervention and is based on the equation $Y_{it} = \beta_0 + \beta_1 \text{Treatment}_i + \beta_2 \text{Post}_t + \beta_3 (\text{Treatment}_i \times \text{Post}_t) + \gamma X_i + \varepsilon_{it}$, where β_3 is the difference-in-differences estimator, while X consists of years of operation, ESG experience, and management commitment. Clustering is done by SME, since each firm contributes with multiple observations. In case of real-life non-experimental study, parallel trends assumption requires a strong justification and, even better, an empirical demonstration with pre-intervention repeated measures. This could be additionally done using sensitivity analysis with the help of such controls as industry and size fixed effects, propensity-score weights, and/or matched sample.

In order to prove that benefits persist in time, the T2 follow-up is used in this illustrative example. In case of a full-scale study, it would be necessary to use estimations of repeated measures models or event studies through all waves of observations with the use of predetermined methods for treatment of attrition. Thematic analysis of qualitative interviews with the purposely chosen firms, which showed high change, medium change, or no change is a necessary component.

5. Demonstration of the Evaluation Framework Using Synthetic Data

5.1 Baseline barriers and needs

Table 3. Baseline Barriers to Green Transition and ESG Implementation among Participating SMEs

Barrier (1–5)	Mean	SD
Lack of ESG expertise	3.86	0.70
Financial constraints	3.71	0.70
Difficulty selecting/interpreting ESG metrics	3.77	0.66
Data collection/reporting difficulty	3.70	0.70
Limited staff time	3.60	0.63
Regulatory/standards complexity	3.38	0.67

From the baseline findings, there is evidence that the SMEs participating in the study were confronted by numerous interconnected obstacles in the implementation of green transition and ESG initiatives. The lack of ESG skills proved to be one of the most significant barriers ($M = 3.86$, $SD = 0.70$) to green transition, which means that many businesses had inadequate knowledge and capabilities within the organization to implement the ESG concepts. Problems in identifying and assessing ESG metrics proved to be a similar issue ($M = 3.77$, $SD = 0.66$).

It is worth saying that the obstacle mentioned was not related only to ESG understanding but was about measuring the correct indicators. Financial limitations were another important factor impeding green transition processes ($M = 3.71$, $SD = 0.70$), meaning that lack of resources might prevent organizations from investing in technologies and hiring specialists or consulting services. Data gathering and reporting proved to be a problem as well ($M = 3.70$, $SD = 0.70$), indicating insufficient data collection and reporting infrastructure to gather ESG data. Time constraints among employees were another critical issue ($M = 3.60$, $SD = 0.63$).

Taken together, the findings suggest that SMEs require more than financial assistance. Effective intervention should combine ESG knowledge development, practical measurement tools, reporting support, resource planning, and implementation guidance. These baseline needs therefore provide a clear empirical rationale for the multidimensional intervention developed in this study.

5.2 Outcome trajectories

Table 4. Descriptive Statistics for ESG Outcomes across T0, T1, and T2 by Study Group

Outcome	Int. T0	Int. T1	Int. T2	Comp. T0	Comp. T1	Comp. T2
ESG Knowledge	2.80 (0.64)	4.01 (0.66)	3.99 (0.66)	2.90 (0.71)	3.08 (0.74)	3.01 (0.76)
ESG Readiness	2.61 (0.57)	3.51 (0.62)	3.46 (0.65)	2.81 (0.61)	2.97 (0.65)	2.94 (0.68)
Environmental Practices	2.84 (0.56)	3.58 (0.67)	3.53 (0.69)	2.75 (0.71)	2.88 (0.75)	2.84 (0.78)
Social Practices	3.06 (0.58)	3.64 (0.65)	3.57 (0.66)	3.08 (0.65)	3.18 (0.73)	3.17 (0.76)
Governance Practices	2.88 (0.68)	3.68 (0.78)	3.65 (0.80)	2.89 (0.66)	3.09 (0.70)	3.05 (0.73)

The outcome trajectories show a consistent pattern of improvement among intervention SMEs relative to the comparison group. The largest change occurred in ESG knowledge, which increased from $M = 2.80$ ($SD = 0.64$) at T0 to $M = 4.01$ ($SD = 0.66$) at T1. In contrast, the comparison group showed only a modest increase from $M = 2.90$ ($SD = 0.71$) to $M = 3.08$ ($SD = 0.74$). In turn, ESG readiness experienced an increase from $M = 2.61$ to $M = 3.51$ in the intervention group while in comparison firms the change was much smaller and equal to $M = 2.81$ to $M = 2.97$.

The changes in terms of real practice implementation were positive, though they were less pronounced than knowledge improvement. Specifically, environmental practices increased from $M = 2.84$ to $M = 3.58$, social practices increased from $M = 3.06$ to $M = 3.64$, and governance practices improved from $M = 2.88$ to $M = 3.68$ in the intervention firms. Changes in the comparison group were noticeably less pronounced. The aforementioned observations confirm the suggested logic of intervention that implies rapid response of knowledge and organizational readiness to capacity-building activities and slow reaction of operational practices.

Importantly, T2 scores did not deviate substantially from T1 levels for all five outcomes. While there was a tendency toward a small decline, ESG knowledge level stood at $M = 3.99$, readiness – at $M = 3.46$, and governance practices – at $M = 3.65$.

5.3 Difference-in-differences estimates

Table 5. Difference-in-Differences Estimates of the Effects of the ESG Support Intervention

Outcome	DiD estimate	SE	95% CI	p
ESG Knowledge	1.038	0.045	[0.950, 1.127]	< .001
ESG Readiness	0.730	0.045	[0.642, 0.817]	< .001
Environmental Practices	0.616	0.049	[0.520, 0.711]	< .001
Social Practices	0.468	0.045	[0.380, 0.555]	< .001
Governance Practices	0.601	0.046	[0.510, 0.692]	< .001

The DiD results show significantly more pronounced improvements in the intervention group than in the comparison group in all five outcomes. The largest effect was found for ESG knowledge ($\beta = 1.038$, $SE = 0.045$, 95% CI [0.950, 1.127], $p < .001$). That is, the gain in ESG knowledge of intervention firms surpassed the gains in ESG knowledge of

comparison firms on average by 1.04 units. A relatively large effect size was also found for ESG readiness ($\beta = 0.730$, $SE = 0.045$, 95% CI [0.642, 0.817], $p < .001$). This pattern is consistent with the proposed logic model in which gains in ESG knowledge are expected to precede improvements in organizational readiness.

Practice-related results were also promising. The environmental practices gained 0.616 (95% CI [0.520, 0.711]), while the governance practices gained 0.601 units (95% CI [0.510, 0.692]) in the DiD estimates. The social practices showed the least pronounced but also significant change of 0.468 (95% CI [0.380, 0.555]).

Overall, the decreasing magnitude from knowledge to practice-level outcomes is consistent with the proposed logic model: capacity-building may generate relatively rapid cognitive gains, whereas translating knowledge into organizational practices requires additional resources, coordination, and time. Because these estimates are based on synthetic data, however, they demonstrate the analytical behavior of the proposed evaluation framework rather than empirical evidence of intervention effectiveness among Vietnamese SMEs

5.4 Implementation indicators

Table 6. Changes in ESG Implementation Indicators from Baseline to Post-Intervention by Study Group

Indicator	Group	T0	T1
Documented ESG action plan	Intervention	22.5%	76.2%
Documented ESG action plan	Comparison	25.0%	30.0%
Tracks basic ESG KPIs	Intervention	15.0%	53.8%
Tracks basic ESG KPIs	Comparison	16.2%	20.0%

The implementation indicators provide an illustrative behavioral complement to the simulated measures of ESG knowledge, readiness, and practices. At baseline, the two groups were specified to have broadly comparable levels of formal ESG implementation. A documented ESG action plan was present in 22.5% of intervention firms and 25.0% of comparison firms, while basic ESG KPI tracking was present in 15.0% and 16.2%, respectively.

Improvements in the simulated intervention group were seen by T1. The percentage of firms with an ESG action plan rose from 22.5% to 76.2% (53.7 percentage-point

improvement), whereas the percentage of firms with ESG KPIs rose from 15.0% to 53.8% (38.8 percentage-point improvement). On the other hand, the comparison group was set up to exhibit modest secular improvements; ESG action plans rose from 25.0% to 30.0%, and ESG KPI tracking rose from 16.2% to 20.0%.

It is noteworthy that the design of the calibration deliberately avoided the assumption of deterioration by the comparison companies without the treatment. Instead, the counterfactual scenario takes into account possible small improvement due to possible increased awareness of ESG issues, market pressures, or just increased availability of general information. Therefore, the greater improvement seen in the treatment group can be viewed as an illustration of the desired effect which will be estimated in a subsequent field experiment.

Finally, different degrees of improvement in the two indicators are quite consistent with the logic of the proposed model. Action planning may need less organizational and technical resources compared to KPI tracking. Nevertheless, both indicators need to be measured independently in a real-life experiment through documentary evidence.

5.5 Illustrative qualitative integration

In order to illustrate the possible way of integrating mixed methods, three themes of synthesis and explanation are proposed. Firstly, “clarity before commitment” refers to how the clarity of the diagnostic and simplicity of the discussions of materiality have enabled ESG not to be a vague concept and allowed the managers to choose only few priorities. Secondly, “planning turns training into action” refers to how the named owners, deadlines, and measures have turned participation in the workshops into actions. Thirdly, “resource limitation determines implementation intensity” refers to how companies can have their governance routines fast, but environmental projects require more time due to resources.

Table 7. Joint Display Integrating Quantitative Patterns, Qualitative Inquiry, and Proposed Interpretations of the ESG Intervention

Quantitative pattern	Qualitative question for a real study	Integrated interpretation to test
Knowledge effect larger than practice effects	Which parts of training changed understanding, and what prevented immediate implementation?	Capability formation may precede operational change.

Environmental and governance gains exceed social-practice gain	Which actions were easiest to operationalize and measure?	Actionability and existing routines may shape domain-specific effects.
Variation across firms despite common intervention	How did management commitment, staff time, and finance affect implementation?	Contextual resources may moderate conversion of readiness into practice.
Post-test gains broadly maintained at follow-up	Which routines, indicators, or responsibilities remained active?	Institutionalization may depend on embedding ESG into normal management processes.

6. Discussion

6.1 Interpreting the simulated impact pattern

The synthesized results define the types of evidence that should be created by the proposed logic model. Change at the knowledge level is the strongest one, then there is readiness, and change at the practice level is positive, but weaker. On a theoretical level, this sequence appears more realistic compared to an unrealistic situation when short-term intervention causes instant changes at all levels of firm performance. Change at the knowledge level occurs at the stage of the workshop; readiness indicates a commitment and readiness to change practices; change at the practice level includes decisions, operations, participation of employees, and even expenditures. Emissions, productivity, financial access, competitiveness, and other long-term outcomes should be considered in the long run.

Finally, the logic model explains why training-only programs fail to deliver expected results. In the situation when an SME gains increased awareness, but does not receive information about emissions, does not have a plan of action, action owner, and additional assistance after the workshop, the chain of causation fails at the point of implementation, resulting only in knowledge change. That is why mentoring and action planning components of the program are necessary. This is also supported by qualitative Vietnamese evidence on implementation challenges and international policy efforts focused on tailored technical assistance (Bui et al., 2025; OECD, 2024).

6.2 Theoretical contribution

The contribution of the framework lies in its treatment of ESG adoption as a capability development process rather than an all-or-nothing decision. The resource-based view theory explains why the knowledge, data management processes, and implementation tools could become organizational capabilities. The dynamic capabilities perspective provides a temporal dimension and requires organizations to recognize external sustainability needs, grasp opportunities and reconfigure the routines. Institutional theory provides the explanation as to why the value of these capabilities would rise due to the increasing demands of various actors on organizations. Thus, the logic model connects these theories to specific intervention activities and outcomes and provides for an evaluative theoretical argument.

Another contribution of the research lies in the differentiation between proximal and distal outcomes. There are numerous studies on ESG that mix attitude, intention, practice, disclosure and performance variables into one comprehensive model. However, the intervention evaluation benefits from the separation of these factors. Knowledge and readiness are proximal outcomes expected to be achieved immediately. Practice adoption is intermediate. Environmental performance, financing results, resilience, and competitiveness are distal.

6.3 Implications for SME support in Vietnam

For the practitioners, the framework implies that it is necessary to start from proportionality and prioritization. The SMEs do not have to evaluate everything at once. Through diagnostics, a few key environmental, social, and governance issues could be determined, and the company could define its baseline responsibility and evidence. Such a strategy, known as “minimum viable ESG management,” might decrease the cognitive and administrative cost that deters the smaller companies. In addition, it could provide the data basis needed for more elaborate reporting in the future.

For the business associations and support organizations, the intervention architecture implies an expandable service sequence: generic seminars would provide effective foundational learning, diagnostics and mentoring would help to adapt it to each particular firm, peer learning would help to alleviate the feeling of being isolated and let companies

benchmark themselves. It is necessary to develop industry-specific modules, as material ESG issues vary significantly among manufacturing, logistics, food processing, and professional services.

In relation to financial institutions, the logic model identifies complementarities between finance and capability. Green lending programs could be underutilized by SMEs if they fail to identify viable investments, measure potential savings, and report sustainability metrics. In such a case, technical assistance could boost the quality of green investment projects that are ready to receive finance. On the other hand, financing mechanisms could facilitate the implementation of identified opportunities through diagnostics. Policymakers need to incorporate referral systems that link firms with appropriate finance rather than treating training and finance as two distinct ecosystems.

From the perspective of policymakers, the logic model is evidence in favor of evaluating program design. The support programs need to outline the theory of change prior to implementation and lay out measurable outputs and outcomes. Besides, they require baseline information and an adequate way of creating credible comparisons. The framework for evaluation of SME and entrepreneurship policies by the OECD is consistent with such recommendations (OECD, 2023).

6.4 Limitations and requirements for a real field trial

A critical limitation is, of course, intrinsic to the nature of the empirical data analyzed in this manuscript – they are artificial. The numerical results cannot be used to support the conclusion about the effectiveness of the intervention in Vietnam. They merely prove that the study design, independent variables, and statistical model are internally consistent. The actual pilot study must substitute all estimates based on simulations with observations taken according to an established protocol.

The second aspect that the quasi-experimental methodology has to consider is the problem of selection bias. The companies that participate in the program could be more motivated and resourceful than the non-participants. In case the randomization procedure can be applied, then this is the best option. In case randomization is impossible, the researchers have to find a comparison group that can be considered credible, estimate the baseline

covariates level, consider the matching or weighting procedures, and try to collect several pre-intervention observations.

The third point concerns the verification of any self-reported results through the use of some verifiable criteria. The possible environmental criteria could include energy use per output unit, waste generation, material recycling, water consumption, and/or efficiency enhancement (if applicable). The possible social criteria could include training, accidents, turnover, and/or complaints. The possible governance criteria could include documents on policies, delegation of responsibilities, risk management, meeting minutes, and/or control procedures. Needless to say, not all indicators are suitable for all types of SMEs, and therefore the core + sector methodology of measuring is suggested.

Fourth, more follow-up is needed for distal outcomes. It might take six months to see whether an action plan and monitoring process endure, but emissions reduction, productivity improvement, finance improvement, market entry, or increased resilience could take between 12 and 24 months, or even longer. In addition, cost-effectiveness analysis needs to be done, if the intervention aims to be scaled publicly. Fifth, process evaluation should analyze fidelity, dosage, participant involvement, adaptations, and other extraneous factors to properly interpret the results.

7. Conclusion

This study presents an integrated logic model that provides support for green transition and ESG practice by SMEs in Vietnam, and also demonstrates how the model could be evaluated using a two-group repeated-measure design. The intervention includes diagnosis, capacity building, green-transition diagnosis, action planning, and mentoring. The key assumption here is that the support will first build the knowledge and capacity, making the firm ready for ESG practice, which depends on management commitment, resources, sector, and previous experience.

The synthetic evaluation demonstrates the expected results: large proximal effects on ESG knowledge, significant increase in ESG readiness, and smaller but still positive effects on environmental, social, and governance practices. Also, the demonstration proves the necessity of conducting impact evaluation instead of measuring post-program satisfaction only.

The next step would be to conduct a true pilot study in Vietnam. A pilot study would need to involve the recruitment of SMEs from specific industries and locations, develop and validate the measure used, pre-register the main outcome measures and analysis plans, faithfully conduct the intervention, and collect at least one medium-term follow-up. This kind of study, if conducted properly, would be able to provide insights into the next steps for SME programs on how to shift from ESG promotion to green transition assistance.

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