Colegio de Estudios Superiores de Administración

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May 2025

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Abstract

This study aims to examine the influence of Corporate Strategy and Green Knowledge in developing the Triple Bottom Line in Colombian companies. Considering the surge of a developing demand for sustainable products from consumers and the creation of a regulatory framework that emphasizes the protection of the environment, social responsibility and economic welfare, the study investigates how the integration of Green Knowledge in the Corporate Strategies can enhance the global performance on sustainability. Utilizing a quantitative approach and Structural Equation Modeling (SEM) applied to primary data from different economic sectors in Colombia, the study attempts to evaluate three different hypotheses: Corporate Strategy has a positive impact on Green Knowledge, Corporate Strategy has a positive impact on the Triple Bottom Line and Green Knowledge has a positive impact on the Triple Bottom Line. The findings are anticipated to show valuable information for organizations that are looking to equilibrate the rentability with sustainable practices, creating a competitive and resilient landscape for companies.

Keywords: *Triple Bottom Line; Corporate Strategy; Green Knowledge; Sustainability; Structural Equation Modeling; Colombia.*

Introduction

Sustainability has now become a central concern for consumers. Jaca et al. (2018) states that consumers are driven to embrace sustainable behavior. This is why all sustainability issues are important for companies, as it has been shown that consumers are increasingly opting for products that are environmentally and socially sustainable. Today's companies are incorporating new practices, one of these is the Triple Bottom Line (Profit, People and Planet). This study will analyze the implementation of the triple bottom line based on green growth and the construction of the company's strategy to contribute not only monetary value but also social and environmental value to society.

Although in Colombia sustainable development is determined by Law 99 of 1993 (Congreso de Colombia, 1993) which establishes that social, environmental, and economic well-being can be improved without affecting natural resources through good sustainable practices, Rodríguez (2021) states in her essay that companies in Colombia do not implement the triple bottom line in terms of competitiveness. According to the Cardenas & Pinilla (2022) report of the Center for Sustainable Development Goals (SDGs) for Latin America and the Caribbean, Colombia has a 2022 SDGs performance index of 60,56 out of 100, while other countries in the region such as Brazil and Uruguay have a performance index above 66%, which shows insufficient progress in Colombia in the implementation of the Sustainable Development Goals after 7 years of their adoption. In the same report, it can be seen how Colombia has a lag in the fulfillment of the 17 Sustainable Development Goals (SDGs). It is for these reasons that Colombia lacks sustainability implementation compared to countries in the region. Therefore, there are many challenges to implement this triple bottom line practice from the strategies of businesses.

Historically the main driver for companies has been profitability and we have advanced to a new economic area in which this is not the only factor available. Sustainability is now becoming one that carries more value for the company if done properly (Du et al, 2018). One of the main instruments to measure sustainability in the workplace is the Triple Bottom Line (TBL), which analyzes 3 important factors in companies: people, planet, and profit. This holistic way of measuring sustainable progress equates with the progress made by companies in these 3 main areas, allowing companies to fulfill what is expected from them. The main issue reported with this method is the timing of the progress issued, as what we globally understand as urgent is usually not what the companies center their efforts on (Milne & Gray, 2013). Although the TPL allows companies to compare in value, the framework does not give an exact way to calculate it, this is seen as a strength as companies in different areas can easily change it to be more accurate in their context (Slaper & Hall, 2011).

Green Knowledge (GK) allows companies, countries, and people to adapt to a more sustainable coexisting, Saumyaranjan et al. (2022) note that both researchers and industry professionals have increasingly focused on examining how activities aimed at acquiring knowledge can enhance organizational performance. The fact that knowledge is changing and evolving is what gives GK relevance and importance and circles back to the urge for companies to generate profit but also create value for their different stakeholders. Although Colombia as a country signed and approved the participation in the OECD Initiative of Green Growth in 2012, and has regularized the 5 pillars of the policy, the efforts in the private sector are still starting in most of the economic sectors and mostly in big companies (Pardo & Cotte, 2021), creating more value for some of the clients but not all see a benefit in sustainable practices, as said by IBM consumer report where states that only 50% of consumers will pay a premium for a sustainable product (Miller, 2020). The European Union leads the way with many initiatives and laws that

include factors that have to do with sustainability, such as Global Reporting, UE 2022/2464 directive, law 7/2021, and many more (Pacto Mundial Red Española, 2023); These create an advancement and bigger expectations for commercial allies of companies that act in these geo-political areas.

The importance of these initiatives in commercial global terms, for Colombia is of keen importance to participate and lead the way for companies in the area and create new and bigger efforts to participate in the new tendencies. For the companies that export goods and services from Colombia to the UE, it has been a difficult stance, as legislation in the incoming countries is way stricter than that in Colombia, so they must invest vast amounts of resources to capacitate their stakeholders and other actors in the chain of custody to follow these regulations. The path to a more sustainable economy translates to a higher price for the final customer, who has said before, is not always prepared to make that concession.

This study explores how Green Knowledge (GK) and Corporate Strategy (CS) influence TBL performance. By examining these relationships, we aim to provide insights into how Colombian firms can enhance sustainability-driven value creation while maintaining competitiveness.

Therefore, the research question states: “How can the green knowledge and the strategy affect the performance of the triple bottom line?”

The thesis begins with the Introduction, followed by the General and Specific Objectives, and then explores the Theoretical Background, where the conceptual foundations of the Triple Bottom Line, green knowledge, and corporate strategy are examined in depth. Next, the Conceptual Model and research hypotheses are presented, illustrated by a relationship diagram. The Methodology chapter details the study design, data collection instruments, and the

application of Structural Equation Modeling (SEM). In the Results section, the findings from the confirmatory factor analysis and the structural model are reported along with fit indices. The Discussion chapter then interprets these results considering the existing literature. Finally, the thesis concludes with the Conclusions, Recommendations, and Limitations, followed by the References that support the research.

Objectives

Main Objective

To analyze how corporate strategy and green knowledge influence the performance of the Triple Bottom Line (economic, social, and environmental) in Colombian companies, thereby identifying strategic approaches that integrate these variables to contribute to sustainable development.

Secondary Objectives

1. Evaluate the Relationship Between Corporate Strategy and the Triple Bottom Line: To determine if and how strategic practices within companies positively and directly affect the creation of economic, social, and environmental value, in line with the first hypothesis.
2. Analyze the Impact of Green Knowledge on Triple Bottom Line Performance: To investigate whether a deeper understanding and application of sustainability- oriented knowledge (green knowledge) enhances performance across the three pillars of the Triple Bottom Line, as proposed in the second hypothesis.
3. Explore the Interrelation Between Corporate Strategy and Green Knowledge: To examine how corporate strategies can foster the acquisition, dissemination, and application of green knowledge, thereby strengthening competitive advantage and innovative capacity in organizations, in accordance with the third hypothesis.

Theoretical background

Triple bottom line (3P)

The Triple Bottom Line (TBL) is a sustainability framework that expands traditional business performance metrics beyond financial profitability to include social responsibility and environmental stewardship (Elkington, 1997). This approach evaluates organizational success through three interconnected dimensions: economic sustainability (profit), social impact (people), and environmental responsibility (planet) (Slaper & Hall, 2011). The TBL framework underscores the need for businesses to generate long-term value that benefits not only shareholders but also a broader range of stakeholders, including employees, communities, and the natural environment (Norman & MacDonald, 2004).

From a theoretical perspective, the TBL aligns with the stakeholder theory, which posits that corporate success is contingent upon balancing the interests of multiple stakeholders rather than focusing solely on shareholder value (Freeman, 1984). Furthermore, it integrates elements of corporate social responsibility (CSR) and sustainable development, positioning businesses as key actors in achieving global sustainability goals, such as those outlined in the United Nations' Sustainable Development Goals (SDGs) (United Nations, 2022).

Despite its widespread adoption, the practical implementation of the TBL presents challenges, particularly in the standardization and measurement of social and environmental performance. Unlike financial metrics, which are well-established and quantifiable, social and environmental outcomes often require qualitative assessments and are subject to varying interpretations across industries and regions (Milne & Gray, 2013). To address this issue, organizations frequently rely on sustainability reporting frameworks, such as the Global Reporting Initiative (GRI) and ISO 26000, to guide their evaluation and disclosure of TBL-

related initiatives (López, 2015). In recent years, scholars have debated the efficacy of TBL in driving meaningful corporate change. Elkington (2018) revisited the concept, emphasizing that the original intent was not merely an accounting tool but rather a transformative framework for businesses to rethink value creation. Critics argue that some firms engage in "greenwashing", using the TBL as a marketing strategy rather than implementing substantive sustainability initiatives (Shahzad et al., 2021). Nonetheless, research continues to demonstrate that businesses that effectively integrate TBL principles tend to achieve enhanced brand reputation, stakeholder trust, and long-term resilience in increasingly sustainability-conscious markets (Schulz & Flanigan, 2016).

The People (social) component of the TBL refers to an organization's impact on society, including its employees, customers, suppliers, and local communities. Social sustainability encompasses ethical labor practices, human rights, workplace safety, and contributions to community well- being (Norman & MacDonald, 2004).

According to Dillard et al. (2009), social sustainability refers to a societies or organization's capacity to sustain and enhance people's well-being over time by ensuring fair access to resources, fostering social inclusion, and enabling participatory decision-making. Kleine & Von Hauff (2009) characterize social sustainability as addressing societal challenges in a way that fosters fairness and equity, while also maintaining enduring stakeholder relationships and upholding ethical governance practices.

There are several Key Indicators of Social Sustainability, the first example is Employee well-being and fair wages according to Foran et al. in 2005. Also, Diversity, equity, and inclusion (DEI) initiatives (López, 2015), Ethical supply chain practices (Milne & Gray, 2013) and one of the more popular in the present, The Corporate social Responsibility (CSR) programs by Schulz & Flanigan (2016).

The Planet (environmental) component measures a company's environmental impact, including resource consumption, waste generation, and ecological footprint. Sustainable businesses aim to minimize harm to the environment and, where possible, contribute to ecological restoration (Slaper & Hall, 2011).

According to Searcy (2012), environmental sustainability involves a commitment to minimize ecological harm by managing resources responsibly, controlling pollution, and implementing eco-friendly technologies. Giddings et al. (2002) portray environmental sustainability as a condition where human activities remain within the Earth's ecological boundaries, thereby safeguarding essential resources for future generations.

The Key Indicators of Environmental Sustainability are Carbon footprint and greenhouse emissions (Schaltegger et al., 2012), sustainable resource management and circular economy practices by Linnenluecke & Griffiths (2010). Also, renewable energy usage and energy efficiency by Shahazad et al. (2021) and pollution prevention and waste reduction (Pope et al., 2004).

The Profit (economic) dimension of the TBL framework refers to the long-term financial viability of an organization while ensuring that economic success does not come at the expense of social or environmental sustainability (Elkington, 1997). Unlike traditional profit metrics that focus solely on shareholder returns, TBL-based economic sustainability includes ethical financial practices, equitable wealth distribution, and reinvestment in sustainable initiatives (Slaper & Hall, 2011).

Bansal & DesJardine (2014) define economic sustainability as the capacity of an organization to produce and share economic value in a way that has long term economic strength and sustains social or environmental issues.

Porter & Kramer (2011) argue that sustainable profit generation involves creating shared value, wherein businesses generate economic returns while simultaneously addressing societal challenges.

For the Economic Sustainability the Key Indicators are long term financial performance and stability written by Mowat (2002), sustainable supply chain management and ethical sourcing (Schulz & Flanigan, 2016), innovation in sustainable products and services by Shahzad et al. (2021) and Investment in corporate social responsibility (Pasmar et al., 2023).

Green knowledge

Green Knowledge (GK) is a critical component of corporate sustainability, referring to the acquisition, dissemination, and application of knowledge aimed at enhancing environmental performance and sustainability practices within organizations (Chen, 2008). It encompasses a broad range of information, including eco-innovation, sustainable production methods, regulatory compliance, and corporate environmental responsibility (Du Plessis, 2007). From a knowledge management perspective, GK represents an organization's ability to integrate environmental concerns into its decision-making processes, fostering a culture of sustainability that enhances long-term competitiveness (Shahzad et al., 2021).

GK enables firms to develop and implement sustainable business strategies by promoting resource efficiency, waste reduction, and eco-friendly innovation (Sahoo et al., 2023). According to the resource-based view (RBV) of the firm, knowledge is a strategic asset that provides competitive advantage; in this context, GK allows companies to develop capabilities that differentiate them in sustainability-driven markets (Barney, 1991). Furthermore, firms with a strong knowledge base in environmental sustainability are better positioned to comply with evolving green regulations and sustainability reporting frameworks, such as the Global Reporting Initiative (GRI) and ISO 14001 (Parker et al., 2009).

The integration of GK into corporate strategies fosters green innovation, defined as the development of products, services, and processes that reduce environmental impact while maintaining economic viability (Chen, 2008). Research indicates that knowledge-driven eco-innovation leads to significant improvements in environmental performance, allowing companies to align with global sustainability initiatives such as the European Green Deal and the United Nations Sustainable Development Goals (SDGs) (Shahzad et al., 2021). Additionally, firms investing in GK often experience enhanced brand reputation, consumer trust, and regulatory compliance, further reinforcing the economic benefits of sustainability- oriented knowledge management (Searcy, 2012).

GK is closely linked to organizational learning, where companies integrate environmental awareness into their corporate culture through continuous education, training programs, and stakeholder engagement (Du Plessis, 2007). Effective green knowledge management (GKM) involves knowledge creation, storage, transfer, and application within the organization, ensuring that environmental insights translate into actionable strategies (Nonaka & Takeuchi, 1995). Companies that institutionalize GK through environmental training programs and sustainability leadership initiatives are more likely to achieve long-term ecological and financial success (Sahoo et al., 2023).

Green Knowledge serves as a fundamental pillar of sustainability-oriented corporate strategies, driving eco-innovation, regulatory compliance, and competitive advantage in an era of heightened environmental awareness. By effectively managing and leveraging GK, organizations can navigate the complexities of the sustainability landscape while ensuring economic resilience and stakeholder value creation. Future research should explore how emerging technologies, such as artificial intelligence and blockchain, can further enhance GK dissemination and utilization in corporate sustainability frameworks.

Green knowledge, which encompasses green entrepreneurial orientation, green learning orientation, and green absorptive capacity, plays a crucial role in enhancing a firm's TBL performance. These green capabilities enable firms to integrate sustainable practices into their operations, thereby improving their economic, social, and environmental outcomes. For instance, green learning orientation and green absorptive capacity can mediate the relationship between green entrepreneurial orientation and TBL performance, leading to more sustainable business practices. Consequently, our first hypothesis states that:

H1: Green knowledge has a positive impact on the Triple Bottom line.

Corporate Strategy

Corporate strategy is the overarching framework that defines an organization's long-term direction, competitive positioning, and resource allocation to achieve sustainable growth and value creation (Johnson et al., 2008). It encompasses the strategic decisions that shape a company’s business model, market presence, and operational efficiency while ensuring alignment with internal capabilities and external market conditions (Porter, 1996). Corporate strategy is distinguished from business-level strategy in that it focuses on the entire organization rather than individual business units, ensuring that different divisions and subsidiaries work toward common strategic objectives (Chandler, 1962).

According to Ansoff (1965), corporate strategy involves four key dimensions: market penetration, product development, market development, and diversification. These dimensions guide firms in expanding their operations, innovating new products, entering new markets, and managing risk through diversified business portfolios. Mintzberg et al. (1998) further argue that corporate strategy is not solely a top-down process but also involves emergent strategies that evolve in response to dynamic business environments a fundamental element of corporate

strategy is strategic fit, which refers to the alignment between an organization's internal resources and capabilities with external opportunities and threats (Grant, 1996). This concept is central to the resource-based view (RBV), which suggests that firms can achieve a competitive advantage by leveraging unique, inimitable resources and capabilities (Barney, 1991). Additionally, corporate strategy involves strategic trade-offs, where firms must balance cost leadership, differentiation, and focus strategies to maximize profitability and long-term sustainability (Porter, 1985).

In recent years, corporate strategy has increasingly incorporated sustainability and corporate social responsibility (CSR) as essential components (Hart & Dowell, 2011). The Triple Bottom Line (TBL) framework highlights the need for organizations to balance economic performance with environmental and social responsibilities (Elkington, 1997). This shift reflects a broader trend toward stakeholder-oriented corporate strategies, where firms prioritize the interests of employees, customers, communities, and the environment alongside shareholder value (Freeman, 1984).

Overall, corporate strategy is a multifaceted discipline that integrates financial objectives, competitive positioning, innovation, and sustainability. It serves as the foundation for long- term organizational success by ensuring that businesses adapt to changing environments while maintaining strategic coherence and sustainable competitive advantage.

Incorporating the TBL framework into corporate strategy involves aligning business goals with sustainability objectives. A green strategy for TBL corporate sustainability can include elements such as green transformational leadership, a green organizational culture, and dedicated corporate social responsibility (CSR) initiatives. These components help firms meet stakeholder demands for sustainable practices while ensuring economic prosperity, social responsibility, and environmental stewardship. Additionally, strategic decision-making tools like data envelopment

analysis (DEA) can help managers understand the trade-offs between efficiency, costs, and pollution reduction, facilitating the integration of TBL into competitive strategies. Therefore, our second hypothesis proposes that

H2: Corporate strategy has a positive impact on Triple Bottom line.

Corporate strategy and green knowledge are deeply interconnected, as businesses increasingly recognize sustainability as a core component of long-term competitive advantage. Corporate strategy defines the overarching vision, resource allocation, and competitive positioning of a firm, while green knowledge provides the expertise necessary to integrate environmental sustainability into strategic decision-making (Chen, 2008). When firms align their corporate strategies with green knowledge management, they are better equipped to achieve sustainable innovation, regulatory compliance, and market differentiation (Shahzad et al., 2021).

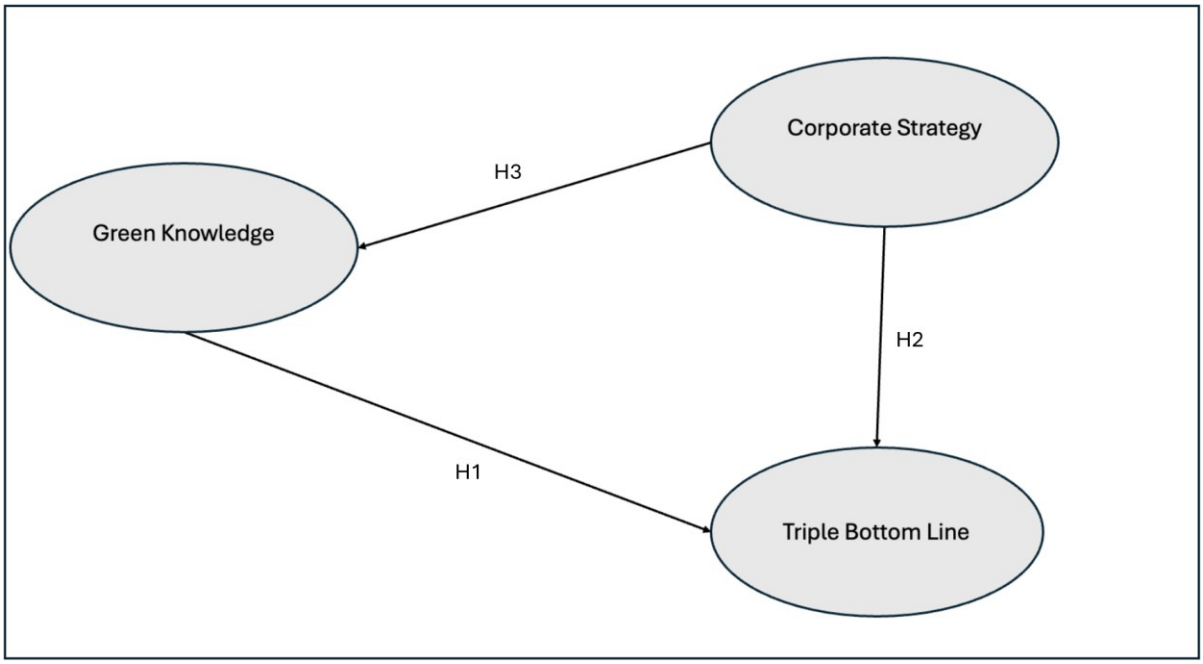
The resource-based view (RBV) of the firm suggests that organizations gain competitive advantage by leveraging unique internal resources and capabilities (Barney, 1991). Green knowledge, as a strategic intangible asset, enhances an organization's ability to implement sustainable practices, develop eco-friendly products, and improve operational efficiency (Sahoo et al., 2023). Companies that embed green knowledge into their corporate strategies can anticipate regulatory changes, minimize environmental risks, and respond effectively to the growing consumer demand for sustainable products (Porter & Kramer, 2011).

One key mechanism linking corporate strategy and green knowledge is corporate sustainability strategy, which integrates environmental, social, and governance (ESG) factors into strategic planning (Hart & Dowell, 2011). Firms with sustainability-oriented corporate strategies invest in research and development (R&D) to foster green innovation, allowing them to develop environmentally friendly technologies, optimize resource efficiency, and reduce carbon footprints

(Chen, 2008). Such firms often implement green knowledge management systems (GKMS) to facilitate the collection, dissemination, and application of environmental knowledge throughout the organization (Du Plessis, 2007). Therefore, the third hypothesis proposes that:

H3: Corporate strategy has a positive impact on green knowledge

Figure 1. *Theoretical Model*



Methodology

This research will adopt a quantitative approach, collecting data through surveys directed to employees of several Colombian companies across different economic sectors using a convenience sampling method. This research will adopt a quantitative approach, collecting data through surveys directed to employees of several Colombian companies across different economic sectors Detailed demographic information of the respondents can be found in the appendix for a more comprehensive understanding. The main aim is to evaluate how organizational strategy and green knowledge influence the triple bottom line, a framework that integrates economic, social, and environmental performance.

The data obtained from the surveys will be analyzed using Structural Equation Modeling (SEM)**,** an advanced statistical technique that combines elements of factor analysis and multiple regression to examine complex structural relationships among variables and constructs. As noted by Bagozzi & Yi (1988), this approach requires reconciling both objective and subjective standards to ensure adequate model fit and validity.

By employing SEM, the study will not only identify correlations between the key variables but also validate the hypotheses outlined in the previous sections, specifically regarding the impact of green knowledge management and organizational strategy on the triple bottom line. This comprehensive analysis will thus offer insights into how sustainability initiatives can be more effectively integrated into Colombian companies' core operations.

Through the online survey, we collected 113 responses. Participants represented a diverse array of companies across multiple economic sectors, ranging from entry-level employees such as interns to managing directors and founders. This breadth allowed us to gauge and develop a more comprehensive perspective on Colombian businesses.

Through confirmatory factor analysis (CFA), both the predictive relationships among Corporate Strategy, Green Knowledge, and Triple Bottom Line performance and the overall model fit were assessed (Bagozzi & Yi, 1988; Hair et al., 2010). Internal consistency of the questionnaire was verified using reliability metrics—Cronbach's alpha, composite reliability, and average variance extracted—which demonstrated that corporate strategy and green knowledge exert a significant and positive influence on the economic, social, and environmental performance of Colombian companies.

Cronbach's alpha values above 0.7 are generally considered acceptable, while values above 0.8 are considered good. As shown in table 1, Triple Bottom Line (Profit, People and Planet) have an Alpha of 0.930 meaning that these variables are connected to corporate Strategy and Green Knowledge with alphas of 0,917 and 0,958 respectively.

Table 1. *Cronbah Alphas*

Variable	**Number of items**	**Cronbah Alphas**
TBL	14	0.930
Corporate Strategy	5	0.917
Green Knowledge	5	0.958

Source by the Authors

Moreover, the baseline comparison in Table 2 presents indicators for evaluating model fit, which measures how well the proposed model explains the data. Main indicators include the Number of Parameter (NPAR) indication the model complexity (51 for the default model), and the CMIN (Chi-square Minimum), which measures the discrepancy between observed and expected data (335.676) for the default model, indicating a good fit. The degrees of Freedom (DF), at 185 for the default model, provides the context for interpreting the chi-square statistic. The p-value of

0.000 and together with the CMIN/FIT (1,865 for the default model) indicates that the fit is significant, the CMIN/DF ratio is the CMIN divided by the degrees of freedom.

Table 2. *CMIN INDEX*

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	51	335,676	180	,000	1,865
Saturated model	231	,000	0		
Independence model	21	2389,829	210	,000	11,380

Source by the Authors

The baseline comparison shown in Table 3 includes several fit statistics that gauge how well the proposed model performs compared to a reference model. The NFI (Normed Fit Index), RFI (Relative Fit Index), IFI (Incremental Fit Index), TLI (Tucker–Lewis Index), and CFI (Comparative Fit Index) all measure model fit, with values closer to 1 indicating stronger alignment. In our default model, each of these indices exceeds 0.80, illustrating that it outperforms the baseline and effectively captures the underlying data structure.

Table 3.*Baseline Comparison*

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	,860	,836	,930	,917	,929
Saturated model	1,000		1,000		1,000
Independence model	,000	,000	,000	,000	,000

Source by the Authors

The RMSEA (Root Mean Square Error of Approximation), reported in Table 4, serves as a key measure of model fit. In the default model, the RMSEA is 0.88—well above the ideal threshold of 0.08—yet its P-close value of 0.000 (below 0.05) still indicates an acceptable fit. By contrast,

the independence model's RMSEA of 0.304 highlights its poor alignment with the data, underscoring that the default model more faithfully captures the relationships among variables.

Table 4. *RMSEA Indice*

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	,088	,073	,102	,000
Independence model	,304	,294	,315	,000

Source by the Authors

Table 5 presents the unstandardized regression coefficient estimates along with their standard errors (S.E.), critical ratios (C.R.), and significance levels (p-values) for each structural path: SRAT → Green Knowledge (Estimate = 0.725, S.E. = 0.093, C.R. = 7.767, $p < .001$), Green Knowledge → 3BL (Estimate = 0.848, S.E. = 0.127, C.R. = 6.674, $p < .001$), and SRAT → 3BL (Estimate = 0.356, S.E. = 0.105, C.R. = 3.372, $p = .001$). Standard errors range from 0.093 to 0.127, critical ratios from 3.372 to 7.767, and all p-values indicate statistical significance, reflecting the precision of the obtained estimates.

Table 5. *Regression weights*

		Estimate	S.E.	C.R.	
Green Knowledge	**STRAT**	,726	,093	7,767	H1 not rejected
Triple Bottom Line	**Green Knowledge**	,848	,127	6,674	H2 not rejected
Triple Bottom Line	**STRAT**	,356	,105	3,372	H3 not rejected

Source by the Authors.

Results and discussion

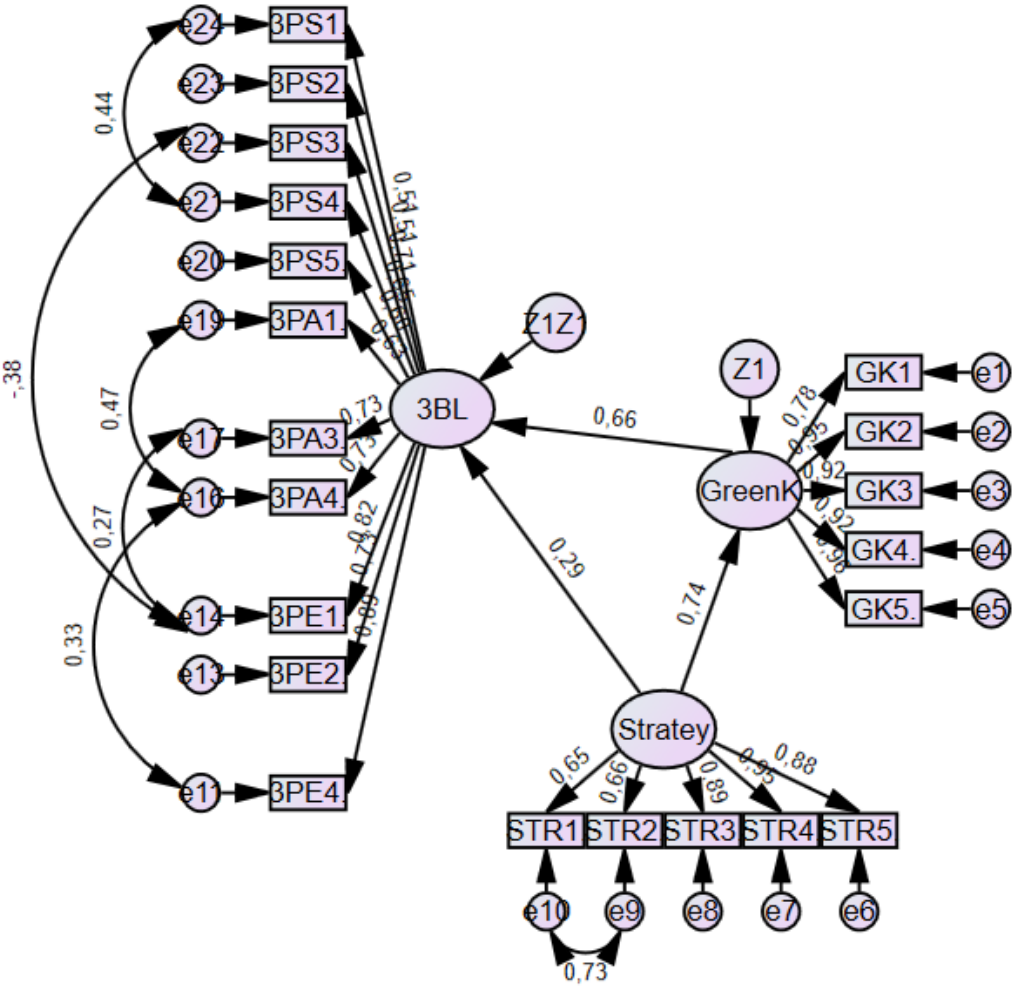
The SEM results (table 5 and figure 2) confirm H1, showing that green knowledge (GK) exerts a strong and highly significant positive effect on triple bottom line (3BL) practices ($b = 0.848$, $p < .001$). GK is defined as "the acquisition, dissemination, and application of knowledge aimed at enhancing environmental performance and sustainability practices within organizations," encompassing eco-innovation, sustainable production methods, regulatory compliance, and corporate environmental responsibility. The TBL framework evaluates organizational success across economic, social, and environmental dimensions (Elkington, 1997; Slaper & Hall, 2011) chat.

For H2, the low direct effect of corporate strategy on Triple Bottom Line practices ($b = 0.356$, $p = .001$) can be understood in the Colombian context. As explained above, although Law 99 of 1993 mandates that social, environmental, and economic well-being be pursued without depleting natural resources, Rodríguez (2021) observes that Colombian companies do not embed the TBL as a competitive imperative. Furthermore, the Cárdenas & Pinilla (2022) report ranks Colombia at 60.56 out of a 100 on the SDG Performance Index—well below Brazil and Uruguay (> 66 %)—highlighting seven years of lag in meeting the 17 SDGs. Consequently, corporate strategies remain primarily finance and market driven, while the operationalization of social and environmental initiatives depends on intermediate steps such as regulation compliance, training programs, and knowledge-management systems. Thus, the direct strategy→3BL path is attenuated by these institutional and cultural barriers, requiring firms to translate high-level strategic plans into actionable sustainability practices often via green knowledge management before TBL outcomes fully materialize.

Finally, H3 is confirmed, as corporate strategy exhibits a strong and significant influence on Green Knowledge ($b = 0.725$, $p < .001$) (table 5 and figure2). This indicates that a robust

strategic orientation facilitates the management and dissemination of environmental knowledge within the firm. From a resource-based view, GK serves as a strategic asset that translates corporate directives into actionable sustainability practices, underscoring the importance of integrating knowledge-management mechanisms—such as training programs and Green Knowledge management systems—to maximize TBL outcomes.

Figure 2. *Structural Model Results*



Source by the Authors

Comparing our findings with extant literature, we observe that the strong effect of Green Knowledge on Triple Bottom Line performance ($b = 0.848$, $p < .001$) aligns with studies emphasizing the strategic importance of environmental knowledge for enhancing organizational sustainability (Chen, 2008; Du Plessis, 2007). Moreover, the positive impact of Corporate Strategy on TBL performance ($b = 0.356$, $p = .001$) corroborates Porter and Kramer's (2011) assertion that aligning strategy with social and environmental objectives can yield competitive advantages but requires specific mechanisms to amplify its reach. Finally, the robust relationship between Corporate Strategy and Green Knowledge ($b = 0.725$, $p < .001$) supports Hart and Dowell's (2011) proposition that firms should design their strategic processes to foster the creation and diffusion of sustainable practices, thereby closing the gap between strategic intent and operational execution.

Conclusions

The analysis of this research confirms the importance for companies in Colombia to integrate GK and CS in the enhancement of their sustainable efforts as both instruments are an asset in the creation of value in the three fronts stipulated on the TBL: profit, people and planet.

The findings prove that the GK has a very positive impact on the development of the TBL. The companies in Colombia that participate actively on the application of Green Knowledge have an advantage in creating value, not only in the economic factors but all those included on the TBL. These findings are addressed and documented in the Resource-Based View, a perspective that analyses GK as a strategic asset which creates a competitive advantage, enhances ecological innovation and creates better relationships with the stakeholders.

Furthermore, the documents confirm CS antecedes GK as a well-designed strategy involving green practices and encompassed to sustainability can create the proper area for GK to thrive and develop real and clear actions. This implies that companies must create adequate structures and processes within the company that favor internal learning, innovation and knowledge management regarding all areas including Profit, People and Planet.

Moreover, CS also had a positive impact but more limited on TBL. This can be interpreted, in Colombian context, where sustainable practices are not well stablished within companies' culture. Some companies have created blueprints on their sustainable efforts for the fore coming future, but this are not everywhere. This creates a grey area where they communicate where the efforts will be, but the practical area is yet to be seen. Also, regulatory criteria for sustainable practices in the company are being written but have not yet begun to a compulsory manner for companies in the jurisdiction.

On the other hand, Hypothesis 3 stipulates that CS has a positive impact on GK, and the study has found a direct and strong effect. This shows that well-structured companies who are

focused on sustainability have a greater capacity to create, manage and use GK. This implies that a sustainable-oriented corporate strategy has the ability to define the company's future and create internal faculties to create real change and value.

Although there are recommendations in this paper, it is important to note specifically that a CS must be developed specifically for micro, small and medium companies, as those represent 99.5% of the country's corporate network, generate 79% of labor and 40% of the GDP (González & Llanes, 2024). Creating this would allow companies to make significant efforts from the beginning and the core of their company fomenting bigger possibilities in legislation and real, practical efforts in sustainable practices. Following this path also raises the importance of several sectors in Colombia, some of them have a bigger impact, not only in the economy but also in the two main factors of this paper: people and planet. Commerce, manufacturing, services, mining and agriculture, are some of the main economic sectors in Colombia and must have a better understanding on the creation of a focused strategy. If a general strategy, for each of these sectors, is created a clear path would be drawn up and concrete advancements would be made.

In this study evidence shows that GK acts as a bridge between strategy and sustainable impact, and the companies achieving an effective transformation between legal, regulatory, social and market challenges, in an evolving global economy, where sustainability is more important as time passes.

Recommendations

Based on this research, several recommendations can be made for Colombian companies that are looking to strengthen their sustainable development through well-articulated corporate strategy and GK. Given the actual status of sustainability as a competitive factor for companies in Colombia, companies should improve the GK as a pilar of strategic management. For this, companies should train their people in sustainable and environmental practices and create formal structures that allow the management of knowledge throughout the company. This management of GK with systematized instruments would allow companies to innovate and comply with sustainable practices.

Also, it is compulsory that companies include sustainability as a main factor inside planification processes. This must be aligned with the Sustainable Development Goals (SDGs), establishing objectives and indicators that must be well structured and defined to be measurable and traceable. These efforts must be well documented by the TBL and following the GRI standards, addressed within the company and external auditors.

TBL, being a very broad range, can be easily disguised, for this reason a recommendation is to create a plan or roadmap including each area of the company and translate it to daily or periodic actions measured constantly by dedicated committees. This must be addressed to create differentiation between real efforts and greenwashing. It is very important for these issues to be elevated to governmental areas, but the development of new areas and ways to measure should be investigated with the participation and help of different stakeholder groups. As sustainable practices become more popular and heavily regulated globally, Colombian companies should be accountable of creating new value generating practices specifically directed for the local companies.

Finally, by implementing these recommendations, Colombian companies can create a robust environment for sustainable practices flourishing and creating value on the three main perspectives treated above, people, profit and planet. In this way, companies have the ability to improve the main economical doctrine of a company by also advocating for a more sustainable and perduring in time environment. This will allow companies to adapt to future changes in a more parsimonious way and create slower changes withing the sectors. When practices and efforts are well communicated within the lines of the company changes must appear in a more natural manner when the core of the company is involved and preoccupied with real changes inside.

Limitations

Although this research gives significant evidence of the relationships between GK, CS and TBL, it has certain limitations that must be considered when interpreting the results. One of the main issues is the accountability in the sample size as this study uses a convenience sample method. Although it was managed to have 113 people from different economic sectors, most of the participants work in medium to large companies. This could limit the generalizability of the results with small and micro companies, that are affected by specific issues regarding sustainability. Also, the distribution of sectors and regions was not equilibrated, and this can create bias in the results.

The risk of auto selection is present, and it is usual that people who have participated for their own free will are more informed in issues regarding the main theme of the study. Moreover, the time of execution can mean that the study is not affected by time, longitudinal studies create more reliable results.

Finally, a pure numerical study in a qualitative background can superficially affect the results of the study. A more open questioned study can be made to elevate the results in a more reliable way. This would create a more reliable and open spectrum of results giving more context and possibilities for the results obtained. Giving, also more ways to improve the experiment and possibly ways to manage GK, CS and TBL.

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Exhibit

Exhibit 1. *Area of responsibility of the responders*

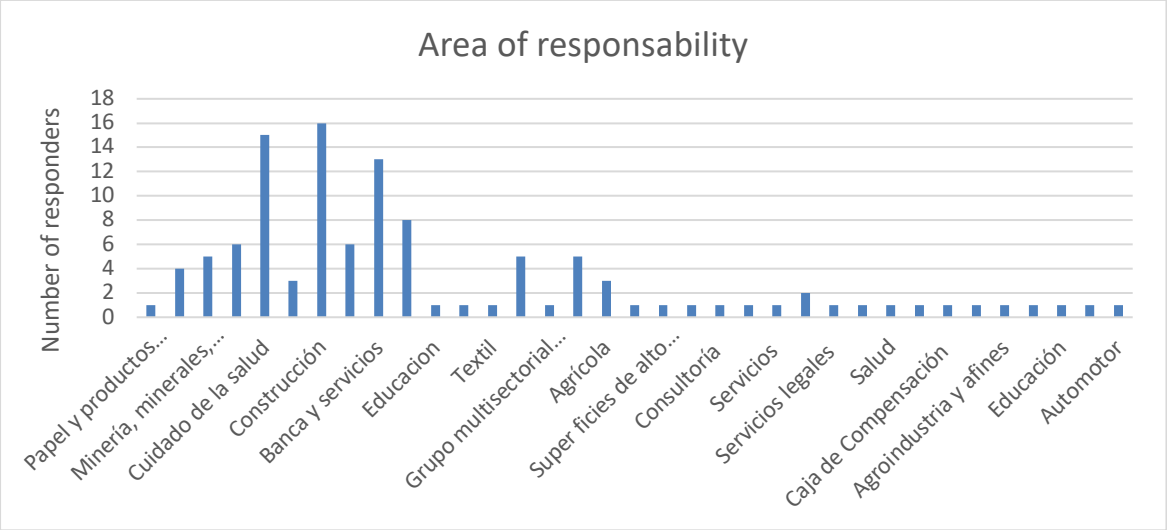

Exhibit 2. *Company classification of the survey responders*

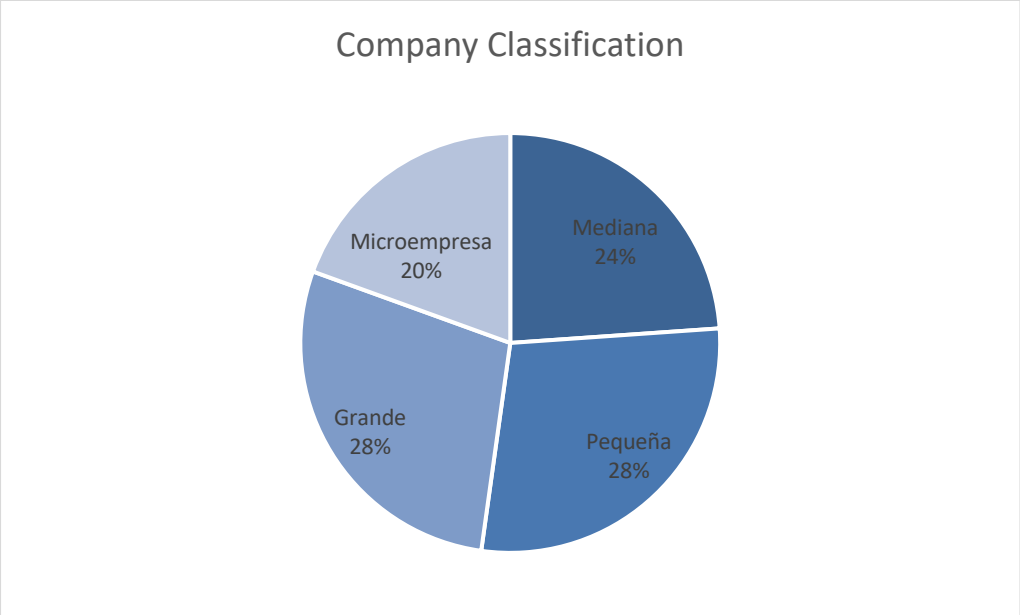

Exhibit 3. *Question and variable of measure in the survey*

Question	Variable	Average
1.Nos preocupamos por el bienestar y la seguridad de sus empleados.	TBL	4,61
2.Tenemos programas para promover la diversidad, la igualdad, equidad e inclusión.	TBL	3,93
3. Trabajamos con las comunidades locales y apoya su desarrollo.	TBL	4,04
4. Ofrecemos entrenamiento y oportunidades de desarrollo para ampliar los conocimientos y crecimiento profesional.	TBL	4,26
5. Aseguramos tener una cadena de suministros ética y responsable, basándose en las condiciones laborales y los derechos humanos.	TBL	4,58
1. Contamos con iniciativas para reducir la huella de carbono y la emisión de gases.	TBL	3,88
2. Tenemos un buen manejo de residuos, promueve el reciclaje y la conservación de los recursos en sus operaciones.	TBL	4,31
3. Tenemos programa para el manejo sostenible del agua.	TBL	3,90
4. Nos esforzamos por contar con proveedores que trabajen con procesos sostenibles en la materia prima.	TBL	3,92
5. Evaluamos y tratamos de mitigar el impacto ambiental de los productos y servicios que ofrece.	TBL	4,13
1. Integramos la sostenibilidad en sus estrategias de negocios y procesos de marketing.	TBL	3,99
2. Contamos con iniciativas financieras o ahorros de costos para sus operaciones sostenibles.	TBL	4,05
3. Medimos y reportamos los beneficios financieros obtenidos por sus actividades sostenibles.	TBL	3,88
4. Constantemente impulsamos iniciativas de modelos de negociosos o alianzas que se alinean con las prácticas sostenibles.	TBL	3,92
1. Contamos con procesos que ayudan a gerenciar el desarrollo de nuevos productos eficazmente desde la idea hasta el lanzamiento.	CS	4,06
2. Nuestros proyectos de innovación por lo general son completados a tiempo y dentro del presupuesto.	CS	4,09
3. Contamos con mecanismos efectivos para asegurar que todos (no solo mercadeo) entiende las necesidades del cliente.	CS	4,27
4. Contamos con mecanismos efectivos para gerenciar los cambios desde la idea hasta la exitosa implementación.	CS	4,19
5. Contamos con procesos que ayudan a gerenciar el desarrollo de nuevos productos eficazmente desde la idea hasta el lanzamiento.	CS	4,17
1. Creemos que la gestión del conocimiento verde es importante para los esfuerzos de sostenibilidad de mi organización.	GK	4,10
2. Tenemos un proceso bien definido para recopilar y almacenar conocimientos ecológicos.	GK	3,66
3. Brindamos oportunidades para que los empleados compartan y aprendan unos de otros sobre conocimientos ecológicos.	GK	3,77
4. Utilizamos conocimientos ecológicos para mejorar sus productos, procesos y servicios.	GK	3,80
5. Confiamos en que la organización esté avanzando en sus esfuerzos de gestión del conocimiento ecológico.	GK	3,79
1. Para nosotros es importante que las personas tengan una idea clara de cómo la innovación nos ayuda a competir.	CS	4,49
2. Para nosotros es importantes que las personas sepan cuál es la competencia diferenciadora que nos da la ventaja competitiva.	CS	4,49
3. Miramos hacia el futuro de manera estructurada (usando herramientas de pronósticos y técnicas) para intentar pronosticar las posibles amenazas y oportunidades.	CS	4,19
4. Tenemos una visión compartida de cómo la empresa se desarrollará con la innovación.	CS	4,19
5. Contamos con procesos para revisar nuevas tecnologías o desarrollo en los mercados y qué significan para la estrategia de la empresa.	CS	4,12
1. Buscamos ofrecer productos o servicios de una mejor calidad.	CS	4,62
2. Estamos buscando un flujo constante de productos y servicios que satisfagan a los clientes.	CS	4,52
3. Ofrecemos y garantizamos servicios / productos a tiempo.	CS	4,55
4. Tenemos la capacidad de adaptarse a nuevos requerimientos con el fin de responder a las demandas del cliente / usuario.	CS	4,37
5. En productos / servicios cumplimos con los requisitos del cliente.	CS	4,50