The Impact of Major Customers on Corporate Sustainability Report Assurance

Abstract

This paper examines the impact of major customers on suppliers' sustainability reporting assurance, using a sample of U.S. listed companies from 2012 to 2022. The findings indicate that suppliers with significant customers are more likely to seek assurance for their sustainability reports to enhance supply chain stability and corporate image, ensuring the authenticity and reliability of the report content. Further analysis reveals that suppliers are more likely to obtain assurance when major customers are based in countries with stronger governance. Additionally, if primary customers emphasize environmental sustainability policies, suppliers are more inclined to increase the likelihood of report assurance. A series of robustness tests, including propensity score matching, endogeneity checks, alternative measurements of major customers, and subsample analyses consistently supported the main findings. Finally, this study finds that suppliers conducting sustainability report assurance can better meet major customers' ESG expectations, positively impacting the suppliers' corporate value.

Keywords: major customers; sustainability report assurance; supply chain

1. Introduction

The goal of this study is to examine the association between major customers and suppliers in terms of the assurance of sustainability reports. In light of the rapid advancement of the global economy, prominent brand corporations frequently strive to construct robust supply chains with their suppliers to maintain competitiveness and promptly fulfill market demands. Nevertheless, these suppliers may encounter limitations and demands while collaborating with their prominent brand firms, leading them to transfer their production lines to countries with lower costs. The relocation of manufacturing lines might result in issues such as infringement of local workers' rights or environmental contamination, which can subsequently impact the reputation and image of the company and generate public apprehension and censure. As a result, corporate clients may closely examine their suppliers' performance in relation to their own brand reputation or risk management in order to determine if they are genuinely carrying out sustainable practices. One example is Foxconn China, a branch of the Foxconn Technology Group that assembles iPads and iPhones for Apple. It has faced criticism from American human rights organizations and the media for its unfavorable working conditions and sweatshops. This has resulted in not only a consumer boycott but also a significant negative impact on its brand reputation. Apple has implemented effective measures to address the accusation of "sweatshop." These measures include conducting thorough inspections and evaluations of key supply chain vendors on a yearly basis to ensure that their suppliers are adhering to the principles and requirements outlined in the Code of Business Conduct for Suppliers, as well as complying with all relevant laws and regulations. Additionally, Apple has disclosed its evaluation of supplier performance in the "Annual Report on Supplier Responsibilities" and enforced penalties on suppliers that breach important obligations, such as terminating their partnership, halting work, or bringing them under scrutiny. However, the current challenge lies in the quality and credibility of environmental, social, and governance (ESG) disclosures. Stakeholders increasingly need to distinguish companies genuinely engaged in legitimate ESG practices from those merely paying lip service. To meet these stakeholder demands, more companies publishing ESG reports are considering third-party verification of the accuracy and transparency of various metrics in their reports. Consequently, the U.S. Securities and Exchange Commission (SEC) finalized mandatory climate risk disclosure rules in March 2024 to address these concerns. This further underscores the emphasis on the quality and accuracy of corporate ESG disclosures.

Previously, assessments of supplier sustainability have been conducted by examining whether suppliers participate in corporate social activities (e.g., Shi, Wu, Zhang, and Zhou 2020; Cornell and Shapiro 2021; Che, Chen, and Kuang 2023) or

evaluating the extent to which suppliers disclose CSR-related information, as explored by Zhu, Yeung, and Zhou (2021), Wen, Ke, and Liu (2021), Zheng, Zhang, and Zhang (2023), and Zhao and Wang (2024). Nevertheless, literature research has identified concerns about the credibility of ESG data provided by companies. Martínez-Ferrero, Suárez-Fernández, and García-Sánchez (2019) highlight that certain firms may manipulate their ESG disclosures to create a favorable "green" perception, either to enhance their public image or in response to external influences. This manipulation, however, leads to a misrepresentation of their true ESG performance. The occurrence of "greenwashing" complicates external parties' ability to accurately assess a company's genuine ESG performance, while simultaneously eroding the transparency and reliability of ESG information disclosure. Thus, to meet the demands of stakeholders seeking sustainability information, several companies will use the services of external entities to verify their sustainability reports, thereby enhancing the credibility and accuracy of the disclosed sustainability initiatives. For instance, both Larry Fink, the CEO of BlackRock, and Tim Cook, the CEO of Apple, highlighted the need to have independent third parties provide assurance for corporate sustainability reports. This guarantee is necessary to ensure the credibility and accuracy of the report's content and statistics. PwC's Global Investor Survey 2022[1] reveals that 78% of investors perceive a company's sustainability report as somewhat tainted by "greenwashing," implying that the company's sustainability performance does not align with its true organizational effectiveness. There is a discrepancy. Moreover, the survey reveals that about 75% of investors believe a company's sustainability report can boost investor trust when it provides fair assurance.

In contrast to financial accounting, independent sustainability reporting and verification by third parties are not mandatory in the majority of countries. With the growing emphasis on environmental, social, and governance (ESG) matters, firms are finding that voluntarily disclosing ESG information is a crucial way to increase their value and lower their cost of capital. Prior research conducted by Diamond and Verrecchia (1991), Kim and Verrecchia (1994), and Healy and Palepu (2001) have asserted that voluntary disclosure is crucial in delivering company-specific information and mitigating agency costs. These studies indicate that the act of willingly revealing information helps to connect financial performance, resolve issues related to adverse selection, and diminish information asymmetry. ESG reporting has the potential to enhance firm value. By revealing ESG information, firms can offer investors a more comprehensive insight into their internal management practices (Barth, Cahan, Chen, and Venter 2017). This, in turn, improves the informativeness of stock prices, particularly considering the focus on financial significance in ESG disclosures (Grewal,

[1] https://www.pwc.com/gx/en/issues/esg/global-investor-survey-2022.html

Hauptmann, and Serafeim 2021; Schiehll and Kolahgar 2021). ESG reports are typically prepared by corporate management, although their reliability may not be completely assured (Adams and Evans 2004; Cohen and Simnett 2015; Martínez-Ferrero and García-Sánchez 2017). In order to enhance the significance of these voluntary disclosures, it is necessary to implement further monitoring, control, and review processes to guarantee the precision, comprehensiveness, and dependability of ESG reports. ESG assurance offers a reliable and pragmatic method to achieve this objective (Adams and Evans 2004; Clarkson, Li, Richardson, and Tsang 2019; Cohen and Simnett 2015; Quick and Inwinkl 2020; Simnett, Vanstraelen, and Chua 2009; Wang, Zhou, and Wang 2020; Zhou, Simnett, and Hoang 2019). ESG assurance, like financial statement audits, results in a formal opinion on the accuracy of the different parts of the ESG report. This helps to decrease differences in information and enhance trust in the report's accuracy. Hence, in the same way that financial statement audits improve the dependability of financial reports, assurance on ESG reports should be able to achieve comparable outcomes (Abdel-Khalik 1993; Blackwell, Noland, and Winters 1998; Carey, Simnett, and Tanewski 2000).

Overall, in light of the growing focus on sustainability, corporations are adopting the practice of voluntarily disclosing environmental, social, and governance (ESG) information and seeking third-party assurance to bolster the credibility of their reports. This trend aims to enhance company value, reduce capital expenditures, and improve management processes. There has been limited research on the connection between corporate customers, who are significant stakeholders, and the assurance of suppliers' sustainability reports. As a result, this study aims to investigate the correlation between major customers and suppliers' sustainability report assurance in order to address this existing research gap.

This study investigates the association between major customers and the assurance of suppliers' sustainability reports, using yearly corporate observation data from American publicly traded businesses spanning from 2012 to 2022. The research reveals that suppliers willingly undergo third-party verification of their sustainability reports to guarantee the credibility and dependability of their corporate sustainability reports. Suppliers maintain stable supply chain relationships with key customers and uphold a favorable corporate image by doing this. Furthermore, independent third-party ESG verification has the capability to oversee suppliers' ESG activities. The study investigates whether clients have a significant impact on evaluating their suppliers' sustainability practices when their country has implemented sustainability criteria. The empirical findings demonstrate that significant clients are located in nations with robust law enforcement, and that the government exercises more stringent oversight over environmental, social, and governance matters. Suppliers are willing to furnish

comprehensive, precise, and open sustainability reports to guarantee compliance with legal regulations in their commercial operations. Furthermore, given the industry's unique characteristics, organizations have distinct operational sustainability goals. This study specifically investigates how the environmental sustainability practices of major customers affect the reliability of suppliers' sustainability reports. The findings of this study suggest that significant customers have implemented environmental sustainability policies, such as carbon emissions, as a criterion for sustainability. This compels suppliers to further develop their environmental policies. Suppliers will verify the accuracy and dependability of their corporate sustainability reports to uphold their environmental obligations and meet the expectations of their customers. In addition, this study employed various additional tests to address potential biases. In these tests, propensity score matching was used to account for sampling bias, COVID-19 data was added to deal with endogeneity caused by economic shocks, different customer measurement variables were used to make sure robustness, and differences in sample structure were taken into account. The validation results were consistent with the study's main findings. Furthermore, the study also investigates the impact of suppliers who have major customers and their assurance of sustainability reports on the value of the company. The empirical findings indicate that when suppliers' sustainability reporting to showcase their adherence to higher environmental, social, and governance (ESG) standards in order to meet the demands of their key clients, it leads to favorable economic outcomes for the company.

This study makes two primary contributions. By addressing a gap in the existing literature and expanding on earlier research, this study makes theoretical contributions. This study specifically investigates how significant clients influence the assurance of sustainability reports provided by their suppliers. Previous scholarly investigations have mostly examined the impact of the primary customer-supplier connection on firm decision-making. Specifically, relying heavily on big clients for the majority of sales leads to higher costs of equity and debt for the supplier, while also limiting their capacity to get further capital (Dhaliwal, Judd, Serfling, and Shaikh 2016). Hui, Klasa, and Yeung (2012) demonstrate that suppliers who have significant clients tend to be more conservative in their financial reporting. As the world focuses more on corporate sustainability, which includes environmental responsibility, social responsibility, and good governance, several studies have examined how ESG factors affect the relationship between suppliers and customers. These studies have found that supplier with high ESG risks can have a negative impact on customer (Hoejmose, Roehrich, and Grosvold 2014). Additionally, there is a positive correlation between the ESG performance of customer firms and the future ESG performance of supplier firms (Dai, Liang, and Ng 2021). Customers can influence the ESG activities of their suppliers

(Schiller 2018). However, there hasn't been a thorough examination of the relationship between significant customers and the reliability of supplier sustainability reports. As a result, the empirical findings of this study add to the existing body of literature on the influence of major customers on supplier sustainability.

Second, U.S. accreditation standards, which restrict accounting firms from providing such assurance, reduce the demand for sustainability report assurance (Simnett et al. 2009; Perego and Kolk 2012). Additionally, regulatory oversight and investor protection laws in specific U.S. industries may act as alternatives to external assurance (Casey and Grenier 2015). ESG assurance is gaining significant attention from US regulators, investors, and the financial media, such as Bloomberg (2021) and the Wall Street Journal (2021). Consequently, the results of this study could offer compelling evidence to support future efforts by US regulators to promote policies related to sustainability reporting assurance.

2. Literature Review and Hypotheses Development

2.1 The Relevant Literature of Major Customers

Corporate customers, as significant external stakeholders, have a crucial influence on a supplier's business decisions. In recent years, corporate customer characteristics and their effect on supplier behavior have gained more attention. SEC Regulation S-K requires firms to include in their annual financial statements details about a significant client who accounts for 10% or more of their revenues and whose loss would have a substantial negative impact on the business. A customer that accounts for at least 10% of a supplier's total revenues indicates a high level of dependence on that customer and constitutes the most crucial supplier-customer relationship. Nevertheless, the current body of research has not yet reached a definitive conclusion regarding the influence of significant clients on suppliers. The following section provides a comprehensive overview of the literature relating to significant consumers.

2.1.1 The positive effects of major customers on suppliers

The notion of resource dependence states that suppliers and buyers have a mutually dependent relationship. This interdependence is not only in business transactions but also in information sharing and technical assistance. Both sides can establish a long-term and stable relationship to achieve mutual advantages using this approach (Chen, Zhao, Lewis, and Squire 2016; Kim and Wemmerlov 2015; Terwiesch, Ren, Ho, and Cohen 2005). Similarly, from a traditional operations management perspective, establishing a strong connection between a supplier and a limited number of key customers can have several benefits. This includes stabilizing the supplier's supply chain, promoting the sharing of information between the two parties,

minimizing uncertainty in demand, and reducing discretionary costs like administrative and selling expenses. Ultimately, this can enhance the long-term performance of the supplier (e.g., Ak and Patatoukas 2016; Chen et al. 2016; Hoejmose, Grosvold, and Millington 2013). In addition, establishing enduring partnerships with major customers to foster a connection will incentivize suppliers to make tailored investments to the specific needs of the relationship, thereby ensuring the continuity of a reliable supply chain alliance. The relationship-specific investments mentioned consist of enhancements in technology, improvements in services, and the development of personalized products (Titman and Wessels 1988; Banerjee, Dasgupta, and Kim 2008; Raman and Shahrur 2008). These investments enhance trust and collaboration between suppliers and consumers while also providing both sides with an advantage in the marketplace.

Previous research has also noted the possible advantages of having major customers for suppliers. Several studies have indicated that firms with strong and stable relationships with major customers experience reduced operating expenses and improved operational efficiencies, which enhances the firm's competitive advantage and leads to better business outcomes (Irvine, Park, Yıldızhan 2016; Patatoukas 2012; Gosman, Kelly, Olsson, and Warfield 2004; Johnson, Kang and Yi 2010; Kim and Wemmerlöv 2015; Krolikowski and Yuan 2017). The findings of Patoukas (2012), there is a positive correlation between company performance and having fewer but larger clients. This suggests that suppliers might increase their efficiency by focusing on a small number of key customers. Previous research has demonstrated that suppliers who have significant customers tend to allocate more resources towards research and development (R&D) and exhibit a higher level of innovation (Krolikowski and Yuan 2017). Additionally, these suppliers are more likely to achieve success in introducing new products to the market (Gruner and Homburg 2000) and contribute to improved inventory management practices (Kalwani and Narayandas 1995; Ak and Patatoukas 2016). In general, significant consumers have numerous beneficial consequences on suppliers. Through the act of exchanging resources and information, suppliers are able to get technical help and enhance operational efficiency. Additionally, the establishment of a long-term partnership enables suppliers to make strategic investments, resulting in a mutually beneficial outcome for both parties involved.

2.1.2 The negative effects of major customers on suppliers

While significant clients can provide certain advantages to suppliers, they also pose numerous challenges. According to the bargaining power view, having a limited number of significant customers can be disadvantageous for suppliers. Specifically, a small number of major customers tend to create a dominant buyer's market, allowing

them to exert control over suppliers and compel them to make concessions in various aspects. Major customers often leverage their bargaining power to influence suppliers into reducing product prices, extending credit terms, or increasing their inventory of commodities. This directly impacts the profitability of suppliers' operations and investment choices (Bhattacharyya and Nain 2011; Casalin, Pang, Maioli, and Cao 2017; Dhaliwal et al. 2016).

Some literature suggests that having major customers can be detrimental to suppliers. This is because when major customers demand more unique products or services, suppliers are often required to invest in specialized assets that have limited alternative uses. As a result, suppliers become more reliant on these customers and face increased operational risk (Dhaliwal, Michas, Naiker, and Sharma 2020). Relying heavily on major customers greatly amplifies the risk associated with equity and debt financing, leading to higher costs (Dhaliwal et al. 2016; Pan, Yu, Liu, and Fan 2020). Additionally, it results in lower efficiency in managing inventory (Bhattacharyya and Nain 2011). Furthermore, suppliers face a disadvantage during transactions due to the substantial influence of important customers. This compels companies to make price concessions and grow their inventories, ultimately leading to a decrease in their profitability (Fabbri and Klapper 2016). Suppliers who have strong relationships with important customers may experience significant losses throughout the supply chain if the major customer faces financial difficulties, declares bankruptcy, or encounters other operational challenges. These potential losses can also lead to negative abnormal stock returns for suppliers.

Suppliers often make strategic adjustments to their behavior when they encounter operational risks and demand uncertainty resulting from significant customers. These strategies encompass increasing cash reserves to mitigate potential financial difficulties, decreasing investments in research and development to reduce costs, and effectively managing excess funds through engaging in tax avoidance practices (Huang, Lobo, Wang, and Xie 2016; Hui, Klasa, and Yeung 2012; Itzkowitz 2013; Kim and Zhu 2018; Raman and Shahrur 2008). In general, the bargaining power approach focuses on the potential risks associated with suppliers and customers, specifically examining the potential negative consequences for significant customers. In this situation, suppliers must implement business risk mitigation methods to maintain their relationship with major customers.

2.1.3 Major customers have no positive or negative effects on suppliers

Some studies consider the impact of major customers on suppliers to be dynamic and suggest that the advantages and disadvantages for suppliers will vary over time. According to Eggert, Ulaga, and Schultz (2006), suppliers may initially face higher

costs and risks in the early stages of a relationship. However, if both parties continue to invest and establish a strong foundation, it will eventually lead to long-term value and benefits. Important customer relationships tend to generate growing value over time, as observed by the authors. Consequently, both parties must allocate substantial dedication and resources during the first establishment phase in order to generate enduring value. In their study, Irvine et al. (2016) discovered that during the initial phases of a partnership, the supplier may be required to assume greater expenses and risks. Consequently, this results in a decline in profitability. However, as the partnership progresses and develops, the supplier's profitability gradually begins to improve.

2.2 The Relevant Literature of Sustainability Report Assurance

In recent decades, the growing recognition of environmental and social concerns, along with the occurrence of severe climate change and natural disasters, has led more and more companies to feel obligated to participate in ESG activities in order to enhance their social sustainability. Various studies, including Kolk and Van Tulder (2010), Seuring and Müller (2008), and Huang, Chang, Wang, and Li (2023), support this trend. Therefore, sustainability reporting becomes an important way for enterprises to openly interact with stakeholders. Companies view the creation of sustainability reports as a management tool to attain sustainability goals with environmental, social, and governance (ESG) objectives. Given that sustainability reports aim to communicate non-financial data, the subjects addressed in these reports are varied and intricate. It is worth noting that certain companies selectively disclose non-financial information that is advantageous to their own interests or demonstrates superior performance. Consequently, many stakeholders harbor reservations regarding the credibility and rationality of the information presented in sustainability reports (Laufer 2003; Moneva, Archel, and Correa 2006; Ramus and Montiel 2005). To meet stakeholder demand for ESG information, companies include third-party validated metrics in their ESG reports. Companies do this to ensure the accuracy, comprehensiveness, and reliability of their reports, thereby enhancing their corporate reputation (Cohen and Simnett 2015).

External assurance, similar to external audits of financial information (Lennox and Pittman 2011), refers to the process of obtaining a formal opinion on the accuracy of the different components of the ESG report. This helps to reduce information asymmetry and increase confidence in the report's accuracy. Simultaneously, it empowers managers to assume accountability for the accuracy of their ESG reports by scrutinizing the validated contents verified by third-party validators (Adams and Evans 2004; Clarkson et al. 2019; Cohen and Simnett 2015; Quick and Inwinkl, 2020; Simnett et al. 2009; Wang et al. 2020; Zhou et al. 2019). Managers utilize sustainability reports to enhance the company's sustainable image (Lyon and Maxwell 2011; Walker and

Wan 2012). The assurance of sustainability reports enhances consumers' confidence and impression of information authenticity (Boiral, Heras-Saizarbitoria, Brotherton, and Bernard 2019; Du and Wu 2019).

The assurance of sustainability reporting has become a major theme in empirical research as a result of the increasing reliance on independent assurance of sustainability reports in order to improve the credibility of sustainability information (Edgley, Jones, and Solomon 2010; Jones and Solomon 2010). Several investigations have shown that when companies release non-financial or sustainability reports that are verified by an unbiased third-party organization, it not only mitigates issues arising from unequal information, but also strengthens the trustworthiness of the reports and improves the reputation of the company (Simnett et al. 2009; Bagnoli and Watts 2017; Braam and Peeters 2018; Maroun 2019). Furthermore, assurance service providers make judgments based on their criteria regarding the data revealed in the report concerning ESG activities, therby enhances the sustainability report's overall credibility and authenticity (Maroun and Prinsloo 2020). According to Amiraslani, Lins, Servaes, and Tamayo (2023), companies that publish sustainability reports verified by an unbiased third-party organization are more actively involved in ESG activities. This indicates that third-party assurance not only increases the clarity and trustworthiness of the report but also encourages companies to prioritize environmental, social, and governance (ESG) matters in their actual operations. As a result, this drives additional investment and progress in these domains. Meanwhile, during their operations, firms are constantly subject to public scrutiny, necessitating their involvement in activities aligned with societal expectations. Braam and Peeters (2018) emphasized that when a sustainability report is validated by an unbiased third-party organization, it serves as a way to uphold the company's image, gaining recognition from society and enhancing the company's reputation. Furthermore, in order to benefit investors, Rupley, Brown, and Marshall (2012) support the creation of corporate social responsibility (CSR) assurance standards and procedures. They also corroborate the growing concern for environmental issues. In order to ensure adequate fulfillment of environmental information, data, and risks related to corporate activities, Sharma, Sharma, and Litt (2018) found that hiring independent environmental auditors, obtaining environmental certifications (e.g., ISO 14001), or pursuing more comprehensive sustainability disclosures (e.g., GRI) complement other efforts.

The legitimacy of environmental, social, and governance (ESG) practices is essential for the advancement of economic activities and the long-term viability of corporations, as society increasingly expects enterprises to demonstrate sustainable behavior. Li, Guan, and Li (2013) shown that corporations experiencing unfavorable social or environmental incidents opt not to have their corporate sustainability reports

verified. This suggests that corporations who excel in social responsibility are inclined to seek validation from an unbiased third-party body in order to differentiate themselves from companies that have lower performance in this area. This decision can be seen as a signal to stakeholders of a company's commitment to sustainability and a responsible attitude, thereby increasing market confidence in the company. In addition to its role in ensuring the reliability of ESG reporting and reducing information asymmetry, ESG assurance also serves as a crucial tool for monitoring and control. Previous studies have demonstrated that firm-level governance can compensate investor protection weaknesses, and ESG assurance can achieve the same effect. In other words, ESG assurance enhances the credibility of voluntary disclosures and promotes investor interests.

In summary, third-party assurance is crucial for increasing the credibility of a company's sustainability report, strengthening trust among market participants and stakeholders, and encouraging active engagement in the company's environmental, social, and governance (ESG) initiatives. A firm that opts for third-party assurance not only improves the clarity and trustworthiness of its reports, but also highlights its dedication to sustainability to the market and stakeholders, thereby improving its reputation and advancing its long-term sustainable growth.

2.3 Hypotheses Development

2.3.1 The relationship between major customers and suppliers' ESG assurance

The deepening of economic globalization and the advancement of production and information technologies have facilitated the rapid expansion of global supply chains, resulting in economic interdependence between customers and providers. This relationship establishes customers as significant stakeholders in the organization and significantly influences its production and development strategies (Freeman 1984). Nevertheless, the growing global emphasis on the environmental, social, and governance aspects of corporate sustainability has led to a growing number of corporate customers who are not only concerned about their own ESG standards but also those of their suppliers. For instance, a scandal involving a supplier's mistreatment of workers or environmental contamination can harm a customer's reputation, prompting customers to take action against the supplier. Apple is a prime example of a company that imposes extremely stringent requirements on its suppliers' ESG activities as a prerequisite for business engagement and contracting. Apple excludes suppliers who do not meet these requirements from its supplier network.

In order to enhance operational efficiency, significant clients frequently make specific demands for suppliers to allocate resources properly, ensuring sufficient supply (e.g., Williamson 1979, 1983; Chiu, Kim, and Wang 2019). The academic community

commonly acknowledges that the socially irresponsible actions of suppliers have a detrimental impact on the social responsibility performance of customers. Hence, it is important for major customers to actively look beyond their own boundaries (Kim and Davis 2016; Snider, Halpern, Rendon, and Kidalov 2013) and mobilize their suppliers to engage in ESG practice by using the content of the sustainability report to determine their current and future prospects. In addition, suppliers must maintain a positive image with external stakeholders, reflect good production and operation status, and view ESG activities as a positive signal (Shou, Shao, Wang, and Lai 2020; Zerbini 2017). According to signaling theory, companies choose to disclose their exceptional performance to the market as a strategic move to mitigate information asymmetry and lower their capital costs. The advantages of this signaling are contingent upon the verifiability and reliability of the information in the report (Bagnoli and Watts 2017). To mitigate the potential for distorted information in sustainability reports, such as greenwashing or selective reporting, it is necessary to verify the accuracy of the material through an external, independent third party. The validation process serves to strengthen the quality, credibility, and transparency of the sustainability report while also reducing information asymmetry. Thus, this study posits that customers will closely examine suppliers' ESG actions. Nevertheless, if corporate clients are incapable of conducting thorough monitoring and management of suppliers within their supply chains, independent third-party ESG assurance can play a crucial role in overseeing suppliers' ESG activities.

Based on the discussion of the above literature, in order to preserve a positive corporate image and a stable supply chain relationship with major customers, and based on the signaling theory, suppliers voluntarily conduct third-party verification of their sustainability reports to ensure the authenticity and reliability of their sustainability reports. Therefore, this study develops the following hypotheses:

Hypothesis 1a: There is a positive association between major customer and suppliers' sustainability report assurance.

Previous studies indicate that companies can enhance their social capital, such as reputation or social respect, by engaging in ESG activities that demonstrate credible signals. Thereby, it can attract a larger customer base (Zerbini 2017; Shou et al. 2020). Nevertheless, engaging in ESG activities incurs costs, and research indicates that companies that prioritize ESG activities may encounter issues related to excessive investment and agency problems (e.g., Cheng, Hong, and Shue 2023; Cornell and Shapiro 2021; Fama 2021). Under these circumstances, significant clients may exert influence on suppliers to decrease their ESG practices and allocate additional resources

to fulfill the demands of these major clients. Larcker, Tayan, and Watts (2022) provide evidence that well-managed suppliers enhance their long-term worth by prioritizing customer satisfaction and subsequently investing in their workforce and local communities. As a result, once a company has important customers, it is theoretically unnecessary to further improve its social capital through ESG practices in order to acquire them. Instead, the focus should be on satisfying and retaining these important customers. Furthermore, establishing robust and enduring relationships with crucial clients can boost a company's operational resilience, thereby diminishing the necessity for intensified ESG involvement as a strategy to mitigate overall corporate risk (e.g., Cheng et al. 2023; Cornell and Shapiro 2021; Fama 2021).

In a customer-supplier relationship, when the supplier primarily engages with key clients, with whom it is often sufficient for the supplier to maintain close business and personal relationships. In this situation, the primary customer companies are empowered to obtain information via exclusive communication channels. Previous studies indicate that suppliers are more inclined to meet these requirements when the customer has greater bargaining power (e.g., Ball, Kothari, and Robin 2000; Biddle and Hilary 2006). Prior studies have demonstrated that the value generated from significant customer-supplier relationships grows as time progresses. Ring and Van de Ven (1994) observed that as suppliers interact with customers for extended durations, a stronger sense of mutual identification develops. This identification contributes to the relationship's stability, reducing the likelihood of the customer terminating collaboration with the supplier or seeking alternative suppliers. In this case, the supplier's motivation to manage the customer will weaken, thereby reducing their willingness to participate in ESG activities. Based on the above analysis, this study determines that suppliers who have significant customers may not possess more resources or motivation to actively participate in ESG activities. Additionally, the extra expenses linked to the voluntary verification of sustainability reports can impact suppliers' inclination to voluntarily verify their sustainability reports.

Based on the discussion of the above literature, suppliers may encounter numerous risks and uncertainties as a result of their relationships with significant customers. This may result in a lack of incentives and resources for suppliers to engage in ESG activities, as they are considered a form of concealed investment that may not yield immediate benefits. Therefore, this study develops the following hypotheses:

Hypothesis 1b: There is a negative association between major customer and suppliers' sustainability report assurance.

2.3.2 The relationship between major customers by country characteristics and

suppliers' ESG assurance

In recent years, quantitative empirical research on sustainability has used cross-national investigations to validate their findings. Prior research has established that variables such as a country's economic growth (Cai, Pan, and Statman 2016), legislative framework (Liang and Renneboog 2017), and the level of corruption in a country (Baldini, Maso, Liberatore, Mazzi, and Terzani 2018) have an impact on ESG activities. For instance, within the context of the civil legal system, a country's orientation towards stakeholders or shareholders can influence the need for sustainability report assurance. Kolk and Perego (2010) investigated how institutional factors at the national level affect the voluntary adoption of sustainability report assurance. Their research indicates that companies in countries that prioritize the interests of stakeholders are more inclined to offer assurance on their sustainability reports compared to companies in countries that prioritize the interests of shareholders. This is due to the shareholder-oriented perspective in these countries, which primarily views firms as a means to generate profits for shareholders, disregarding the interests of other stakeholders. In addition, prior research has assessed the level of governance in countries by evaluating the effectiveness of law enforcement (De Beelde and Tuybens 2015; Kolk and Perego 2010; Perego 2009; Sethi, Martell, and Demir 2017; Simnett et al. 2009). The literature emphasizes that, when legal enforcement is in place, a greater willingness on the part of management to incorporate the information needs of key stakeholders leads to external independent assurance of the sustainability report and improved information quality for the sustainability report (Sethi et al. 2017). According to Simnett et al. (2009), stronger legal enforcement, such as investor protection, is believed to have a beneficial effect on CSR regulation. This is because it increases management's motivation to comply with stakeholders' CSR disclosure requirements. In addition, Choi and Wong (2007) discovered that firms' assurance of sustainability reporting is not effectively utilized, and the assurance of sustainability reports by information users is not significantly increased, in weak legal environments (e.g., weak public governance and administration, lack of public transparency, and insufficient environmental, safety, and labor standards). Kolk and Perego (2010) found that a country's litigation index does not influence the level of credibility in the acceptance of sustainability reports.

In response to the increasing growth of the global economy, businesses in different nations are expanding their operations to remain competitive and capitalize on market opportunities. Consequently, an increasing number of multinational corporations have relocated their production facilities to developing nations to optimize their financial gains. This has resulted in exploitation, characterized by inadequate pay and insufficient labor safeguards in these countries. In response to these issues, an increasing number of governments are integrating sustainability concerns into their policy formulation.

Countries with robust law enforcement have stricter rules for environmental, social, and governance matters. These policies are mandatory for companies, and failure to comply with them results in heavy fines. Hence, in such a setting, it is imperative for the supplier to furnish comprehensive, precise, and transparent sustainability reports to guarantee adherence to its business operations. When the public learns about a supplier's improper behavior, the client's reputation and finances suffer significant damage. While various local and international organizations provide frameworks and guidelines to support the adoption of corporate social responsibility practices and sustainability actions, not all companies choose to implement them. Consequently, experts in the field argue that the decision to adopt such practices is a matter of voluntary commitment as well as administrative and financial capability. Insufficient customer understanding of environmental, social, and governance (ESG) factors might hinder suppliers from effectively leveraging ESG to enhance customer loyalty and preserve a competitive edge. Consequently, suppliers may be hesitant to invest in sustainability initiatives. Drawing from the previously discussed, this study formulates the following hypothesis:

Hypothesis 2a: The positive impact on the association between major customers in countries with stronger legal environment and their suppliers' sustainability report assurance is more pronounced.

Hypothesis 2b: The negative impact on the association between major customers in countries with stronger legal environment and their suppliers' sustainability report assurance is more pronounced.

2.3.3 The relationship between major customers' environmental practices and suppliers' ESG assurance

The necessity for sustainability drives companies' ongoing endeavors to integrate ESG concerns into their business practices, with sustainability in the supply chain becoming a critical concern for numerous companies and investors (Corbett and Klassen 2006; Hardcopf, Shah, and Mukherjee 2019; Klassen and Whybark 1999; Liu, Dai, Liao, and Wei 2021; Touboulic, Chicksand, and Walker 2014). Consequently, in order to accomplish sustainability objectives, organizations may require the assistance of loyal partners. Nevertheless, the concept of ESG is multifaceted, encompassing three dimensions: environmental, social, and governance. Firms face a challenge in integrating these dimensions into their sustainability initiatives.

According to Villena and Dhanorkar (2020), environmental sustainability standards are currently more developed than social sustainability policies. Additionally, firms such as Wal-Mart, Nestle, and Nike are increasingly demanding that suppliers

adhere to environmental sustainability policies. Tang, Wang, and Liu (2023) discovered that the adoption of the "dual carbon" legislation in China enhanced the beneficial effects of customers on suppliers' environmental, social, and governance (ESG) activities. Notably, the impacts were mostly driven by environmental factors rather than social factors. Prior research has also discovered that customers are inclined to search for environmentally friendly suppliers or have greater motivation to encourage suppliers to reduce their carbon emissions in order to promote environmental sustainability (Dyllick and Hockerts 2002). Harrison, Bosse, and Phillips (2010) propose that suppliers can mitigate the negative environmental consequences of their operations by investing in sustainable practices and optimizing them. In addition to assisting clients in achieving improved sustainability, they can also increase their competitive advantage by generating higher profits. Conversely, Dai et al. (2021) contend that bargaining power is a critical factor that influences the sustainability activities of the supply chain. When suppliers encounter diminished competition (i.e., possess comparatively more bargaining power), their incentive to meet customers' demands for improved ESG practices diminishes. Consequently, clients have limited capacity to convey ESG information to suppliers. Thus, this study thinks that the inadequate environmental practices of suppliers can harm the company's reputation and have a detrimental impact on customers. Suppliers will verify the sustainability report in order to fulfill their environmental obligations and customer goals. However, the bargaining power of suppliers may influence their motivation to engage in sustainability practices. Given the considerations described above, this study develops the following hypothesis:

Hypothesis 3a: The positive impact on the association between major customers' environmental practices in business operation and their suppliers' sustainability report assurance is more pronounced.

Hypothesis 3b: The negative impact on the association between major customers' environmental practices in business operation and their suppliers' sustainability report assurance is more pronounced.

3. Research Design

3.1 Regression Models and Variable Definitions

3.1.1 Variable Measure-Major Customer

The Financial Accounting Standards Board (FASB) released Statement of Financial Accounting Standards No. 14 (SFAS 14), which FAS 131 later replaced. These standard mandates suppliers to provide details regarding all clients that contribute 10% or more to their overall sales. Nevertheless, while regulations mandate

the disclosure of these substantial proportions of clients, suppliers have the option to voluntarily reveal customers that contribute less than 10% of sales income. Voluntary disclosure reduces information imbalance by offering a more comprehensive understanding of customers, surpassing the legal requirements. Alternatively, it is plausible that a corporation may opt for voluntary disclosure after carefully considering the costs and potential hazards involved (Ellis, Fee, and Thomas 2012). As a result, this study excludes these clients from the calculation of customer concentration in order to reduce the risk of sample selection bias[2]. A large client is defined as a customer whose sales revenue constitutes 10% or more of the firm's total sales revenue, as stated by Banerjee, Dasgupta, and Kim (2008) and Dhaliwal et al. (2016). Customers, who are significant stakeholders, have a critical impact on the development and execution of corporate decisions. Customer concentration is a commonly used metric in empirical research to assess the connection between companies and their customers. This study follows the methodology of Patatoukas (2012), employing the Herfindahl-Hirschman Index (HHI) to determine *Customer_HHI*, the level of customer concentration. This index provides a comprehensive assessment of both the number of significant clients acknowledged by the provider and the significance of these customers in terms of the supplier's revenue. More specifically, this study uses the following formula to measure the supplier's level of client concentration:

$$Customer\_HHI_{i,t} = \sum_{j=1}^{J} \left(\frac{Sales_{ijt}}{Sales_{it}} \right)^2 \quad (1)$$

Where $Sales_{ijt}$ denotes firm *i*'s sales to customer *j* in year *t*, whereas $Sales_{i,t}$ denotes firm *i*'s total sales in year *t*. The proportion of the company's key customers' sales revenue to the overall sales revenue is known as *Customer_HHI*. This variable has a range of values from 0 to 1, where higher values indicate a greater level of provider concentration. This study uses Intel Corporation, a renowned semiconductor chip maker in the United States, as a case study to illustrate the process of assessing supplier concentration. According to Intel Corporation's 2021 10-K financial statements, the company's net revenue amounts to $79.024 billion. The report reveals that Dell Inc., Lenovo Group Limited, and HP Inc. are the major customers, each accounting for 21%, 12%, and 10% of the company's sales revenue. Therefore, this company calculates its

[2] According to Patatoukas (2012), firms choose to disclose important information about customers who contribute less than 10% of the firm's total sales revenues but are still considered major customers. This is because the sales generated by these customers have a significant impact on the company's operations. Thus, in order to conduct thorough testing for robustness, this study also incorporates customers that contribute less than 10% of the supplier's revenue in the significant customer concentration measure. The empirical findings remain consistent even when using this alternative definition.

customer concentration as 0.21*0.21+0.12*0.12+0.1*0.1=0.0685[3].

Furthermore, Hui, Liang, and Yeung (2019) observe that the customer concentration distribution might be extremely asymmetrical and may display substantial differences between different sections. Therefore, this study's primary analysis sorts and groups the customer concentration values into decile levels (*Rank_Customer_HHI*) based on each firm's yearly observations, yielding a measure ranging from 0 to 1. Similarly, larger numbers suggest a higher concentration of significant consumers, whereas smaller values indicate the opposite. Patatoukas (2012) demonstrates that using this transformation, it is feasible to minimize potential measurement error and alleviate concerns regarding inference[4].

3.1.2 Empirical Models

The first hypothesis of this study is to examine how suppliers with major customers influence firms' inclination to provide sustainability reports to a third party for assurance. Referring to previous studies (e.g., Cormier and Gordon 2001; Casey and Girenier 2015; Ballout, Chen, Grenier, and Heitger 2018), I create a Logit regression model to examine the impact of the supplier's concentration of key customers on the assurance of sustainability reporting. As follows:

$$\begin{aligned} Supplier\_ESGASS_{i,t+1} =& \alpha_0 + \alpha_1 Rank\_Customer\_HHI_{i,t} + \alpha_2 SIZE_{i,t} \\ &+ \alpha_3 LEVERAGE_{i,t} + \alpha_4 ROA_{i,t} + \alpha_5 MB_{i,t} + \alpha_6 LOSS_{i,t} \\ &+ \alpha_7 ESG\_SCORE_{i,t} + \alpha_8 ESI_{i,t} + \alpha_9 FINANCE_{i,t} \\ &+ \sum YEARFE_{i,t} + \sum INDUSTRYFE_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (2)$$

The definition of each variable in model (2) is as follows:

In model (2), the dependent variable is $Supplier\_ESGASS_{i,t+1}$, which represents whether the supplier has provided the sustainability report to a third party for verification. If company *i* has submitted its sustainability report for verification to a third party in period *t+1*, the variable *Supplier_ESGASS* receives a value of 1 and 0 Otherwise. A positive estimated coefficient of *Rank_Customer_HHI* (α_1) indicates that providers with a higher concentration of big customers are more likely to provide their sustainability report to a third party for assurance. In contrast, a negative coefficient (α_1) for *Rank_Customer_HHI* suggests that providers with a greater proportion of significant customers are less inclined to verify their sustainability reports with an

[3] https://www.sec.gov/ix?doc=/Archives/edgar/data/0000050863/000050863220000007/intc-20211225.htm

[4] In the robustness test, the study substitutes the sorted major customer concentration with the original value of major customer concentration from Patatoukas (2012) as a proxy measure. Using this proxy measure to assess major customer concentration does not alter the empirical results.

external entity.

Building upon previous research on the reliability of sustainability report delivery (Simnett et al. 2009; Casey and Grenier 2015), this study incorporated additional firm-related control factors into the model. I quantify firm size (*SIZE*) as the logarithm of sales revenue at the end of a specific period, expecting a positive correlation with the inclination to provide firm assurance in the sustainability report. Larger firms are more susceptible to public scrutiny compared to smaller firms. In order to enhance their corporate reputation, they are more inclined to submit their sustainability report to a third party for verification. They do this to establish the report's credibility and win over stakeholders' trust (Simnett et al. 2009; Casey and Grenier 2015). I calculate a corporation's leverage, *LEVERAGE*, by dividing its total liabilities by its total assets. Highly leveraged companies, perceived as having a heavier debt burden, require more assurance in sustainability reports to mitigate business risk and lower their loan costs. However, research reveals that enterprises with high debt levels face bank oversight, leading to financial constraints that impede their ability to finance the production of a sustainability report for assurance. Thus, this study does not predict the relationship between the level of leverage and the extent to which the sustainability report provides confirmation (Simnett et al. 2009; Casey and Grenier 2015). Companies that have more profitability are more likely to attract greater attention and scrutiny from the general public. They are also more inclined to provide their sustainability reports for trust purposes in order to meet the community's expectations. Hence, this research employed return on total assets (*ROA*) as a metric for gauging a company's profitability and anticipates a favorable correlation with the assurance of sustainability reports (Ballout et al. 2018; Casey and Grenier 2015). Furthermore, Dhaliwal, Li, Tsang, and Yang (2011) contended that expanding companies face increased information asymmetry. To entice potential investors, these enterprises are more inclined to disclose their corporate social responsibility performance in a transparent manner to attract the necessary investment. However, financial constraints sometimes limit companies in the growth phase, leaving them with limited resources to fully dedicate to corporate social responsibility operations. Therefore, this study employs the market-to-book ratio (*MB*) as an alternative variable to gauge the organization's growth potential, and it does not predict a correlation with the sustainability report's assurance.

Companies that experience negative net income might negatively impact investors' perceptions of them owing to financial losses. To mitigate this effect, companies that are incurring losses may deliberately offer supplementary or verified non-financial information to enhance investors' overall perception of the company. Thus, this research categorizes a company as "loss-making" (*LOSS*) when its net income after tax is below zero. Additionally, it anticipates a positive relationship between this

categorization and the company's inclination to provide assurance in a sustainability report (Gipper, Ross, and Shi 2023). Clarkson et al. (2019) discovered that organizations with superior CSR performance want to publish their CSR reports. This finding aligns with signaling theory, which suggests that companies use these reports to show their commitment to CSR to external parties, hence bolstering the report's credibility. Hence, this study anticipates a direct correlation between the *ESG_SCORE* and the inclination to produce a trustworthy sustainability report. Simnett et al. (2009) highlighted those industries such as mining, manufacturing, utilities, and finance encounter heightened environmental and social hazards. As a result, these businesses typically place a high value on establishing credibility in their sustainability reports in order to earn trust and acknowledgement from the general public. This study is based on the Global Industry Classification Standard (GICS), which states that if a company's industry is utilities, energy, materials, or industrial sectors, it is defined as an environmentally sensitive industry (*ESI*) (Simnett et al. 2009). It assigns a value of 1 to a company if it belongs to an environmentally sensitive industry (*ESI*), and 0 otherwise. Similarly, if the company belongs to the financial sector (*FINANCE*) based on GICS classification, its dummy variable is assigned a value of 1 and 0 otherwise. Positive coefficients are expected for both *ESI* and *FINANCE*. This analysis incorporates year (*YEARFE*) and industry (*INDUSTRYFE*) fixed effects to account for the impact of delivering sustainability reports to a third party for verification, which may vary over time or across industry traits.

The study's hypotheses 2 and 3 delve deeper into the impact of legal enforcement levels and environmental policies related to ESG activities on suppliers' willingness to submit sustainability reports to a third party for confirmation. Consequently, this study extends model (2) to construct the subsequent logit regression model:

$$\begin{aligned} Supplier\_ESGASS_{i,t+1} &= \beta_0 + \beta_1 Rank\_Customer\_HHI_{i,t} + \beta_2 LEGAL_{i,t} \\ &+ \beta_3 Rank\_Customer\_HHI_{i,t} \times LEGAL_{i,t} + \beta_4 SIZE_{i,t} \\ &+ \beta_5 LEVERAGE_{i,t} + \beta_6 ROA_{i,t} + \beta_7 MB_{i,t} + \beta_8 LOSS_{i,t} \\ &+ \beta_9 ESG\_SCORE_{i,t} + \beta_{10} ESI_{i,t} + \beta_{11} FINANCE_{i,t} \\ &+ \sum YEARFE_{i,t} + \sum INDUSTRYFE_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (3)$$

$$\begin{aligned} Supplier\_ESGASS_{i,t+1} &= \gamma_0 + \gamma_1 Rank\_Customer\_HHI_{i,t} + \gamma_2 Environment_{i,t} \\ &+ \gamma_3 Rank\_Customer\_HHI_{i,t} \times Environment_{i,t} + \gamma_4 SIZE_{i,t} \\ &+ \gamma_5 LEVERAGE_{i,t} + \gamma_6 ROA_{i,t} + \gamma_7 MB_{i,t} + \gamma_8 LOSS_{i,t} \\ &+ \gamma_9 ESG\_SCORE_{i,t} + \gamma_{10} ESI_{i,t} + \gamma_{11} FINANCE_{i,t} \\ &+ \sum YEARFE_{i,t} + \sum INDUSTRYFE_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (4)$$

In model (3) and model (4), the dependent variable (*Supplier_ESGASS*), the independent variable (*Rank_Customer_HHI)*, control variables (*SIZE*, *LEVERAGE*, *ROA*, *MB*, *LOSS*, *ESG_SCORE*, *ESI*, and *FINANCE*), year-and industry-specific dummy variables (*YEARFE* and *INDUSTRFE*), are defined in the same manner as in the previous model (2). *LEGAL* represents the quality of the legal environment and is measured using the “rule of law” measure developed by the World Bank. The World Bank assigns a score between -2.5 and 2.5 to this dimension, where higher values signify improved governance performance in a country and lower values indicate the opposite. This paper includes the interaction term, " *Rank_Customer_HHI * LEGAL*", to illustrate the relationship between the degree of legal enforceability in the country where the supplier's significant customer is located and the sustainability report's validation. The sustainability report's assurance to a third party is positively influenced by the fact that the supplier's significant customer is situated in a country with robust legal enforcement, as indicated by a positive estimated coefficient (β_3). Conversely, a negative coefficient (β_3) suggests that the supplier's substantial customers in countries with robust legal enforcement have a detrimental effect on the assurance that the sustainability report will be delivered to a third party.

In model (4), *Environment* represents the importance of large customers incorporating "environmental" sustainability into their operations within the business. In this study, the variable "*Environment*" is assigned a value of 1 if a significant client prioritizes environmental sustainability operations in its industry, as determined by SASB's Materiality Map. Otherwise, it is assigned a value of 0. Additionally, to examine the correlation between a prominent customer's environmental policy and the reliability of its supplier's sustainability report, this study included the interaction term "*Rank_Customer_HHI * Environment*". A positive coefficient of estimate (γ_3) indicates that major customers prioritize environmental sustainability policies, such as carbon emissions, when selecting suppliers. This compels suppliers to enhance their environmental policies. Suppliers will use sustainability report confirmation to verify the accuracy and dependability of their corporate sustainability reports in order to meet customers' environmental commitments and targets. Conversely, if the estimated coefficient (γ_3) is negative, the supplier will decline to validate the sustainability report. The definitions of these variables are summarized in Appendix A.

3.2 Data and Sample

3.2.1 Data Sources

This study uses 2012–2022 as the research period and U.S. companies as the sample. In order to establish relevant information on the relationship between suppliers and their major customers, I use data from the Supply Chain Relationship dataset,

compiled from the Compustat Segment Customer Files (e.g., Cen, Maydew, Zhang and Zuo 2017). This information on major buyers is publicly available, as SFAS No. 14 (before 1997) and SFAS No. 131 (after 1997) require firms to disclose the existence of and sales to major buyers representing more than 10% of total firm revenues, regardless of the number of segments operated. The governance indicators are collected from the World Bank Worldwide Governance Indicators. The company's sustainability information regarding its operations is obtained from the SASB's Materiality Map.

The sustainability reporting assurance and corporate social responsibility score information is sourced from the Thomson Reuters Refinitiv ESG Database. This database as one of the most comprehensive sources of environmental, social, and governance (ESG) information, providing a wide range of ESG information and indicators. For instance, whether a company provides a sustainability report, information on the sustainability report assurance and ESG performance that must be used in this study can all be collected from this database, and the Thomson Reuters Refinitiv ESG Database serves as a valuable resource for practitioners, investors, and scholars (e.g., Baboukardos 2018; Mervelskemper and Streit 2017; Serafeim 2015; Orazalin and Mahmood 2021). Current research on the assurance of sustainability reporting also relies on information extracted from this database, such as the studies conducted by Dyck, Lins, Roth, and Wagner (2019), Simoni, Bini, and Bellucci (2020), Disli, Yilmaz, and Mohamed (2022), and Habermann and Fischer (2023). Despite the U.S. Securities and Exchange Commission's 2002 requirement that companies disclose corporate social responsibility-related information in their annual reports, there is a lack of uniformity in the standards for disclosure. As a result, the content reported by different companies varies, making it challenging to evaluate and compare. The GRI standards promulgated by the United Nations in 2006 became the global sustainability reporting guidelines, and the Sustainability Accounting Standards Board established in the United States in 2011 also provided a unified framework, making sustainability reports more extensive in terms of reporting scope, structure, influence, and depth. Hence, the study's sample period commences in 2012 and concludes in 2022[5]. The financial variable data for the empirical model is sourced from the Compustat database.

3.2.2 Sample Selection

Table 1, Panel A illustrates the procedure for selecting the sample. A total of 22,677

[5] According to the data from the Thomson Reuters Refinitiv ESG Database, the first year of available sustainability report data is 2002. This study discovered that the number of validated sustainability reports between 2002 and 2011 was relatively low. It is important to note that there were no validated sustainability reports between 2002 and 2004.Furthermore, the sustainability reporting system in the United States has seen significant expansion since 2011. As a result, this analysis encompasses the time span from 2012 to 2022.

observations were collected from the Thomson Reuters Refinitiv ESG Database for the period of 2002-2022. I removed 2,948 observations from the sustainability report due to missing data. The merger with the Supply Chain Relationship dataset omits 15,193[6] sales records from the database that consists of two or more customers. This is because it is not feasible to determine the proportion of each customer's sales revenue in relation to the total company's sales revenue. To address the issue of sample selection bias, certain companies choose to disclose information about customers that contribute less than 10% of their total sales revenue. This study excludes 917 firm-year observations with such customers. I also exclude 130 firm-year observations that contain missing empirical model variables. As a result, the final sample for empirical analysis of Hypothesis 1 is 3,489.

The samples for Hypotheses 2 and 3 specifically examined the attributes of the firm's customers. Given that some suppliers may have more than one significant customer, the study conducted a manual survey to collect data on the geographic distribution of a company's customers and the sustainability of its operations. More specifically, if a company has two or more significant customers located in different countries, the study presents detailed information on the enforcement of the law in the country or region where the company's significant customers are located. Similarly, if a company's significant customers have different sustainability dimensions, the study presents separate information on the sustainability dimensions of the company's significant customers. If two or more of the organization's major customers are located in the same country or have the same sustainability orientation, the study combines the observations of the level of legal compliance and the persistence of activities in that particular country or region. Therefore, this study added 253 observations to the sample size for the empirical analysis of Hypothesis 2, bringing the total number of observations to 3,742, and 184 observations for the empirical analysis of Hypothesis 3, bringing the total number of observations to 3,673. To reduce the impact of extreme values, all continuous variables are winsorized at the top and bottom one percentiles.

As this study focuses on the firm's choice to have its sustainability report verified by an external third party, it utilizes a binary logit regression model. However, for a company to make this kind of decision, it must first determine if it has produced a sustainability report, then decide whether to certify the report or not, and finally select

[6] Previous studies have constructed supplier-customer data using Compustat Segment Customer Files, which provide necessary information on suppliers and customers (e.g., Fee and Thomas 2004; Dhaliwal et al. 2016). Firms, however, collectively refer to "X customers" when they are unable to accurately identify the names of their major customers or the amount of revenue they generate. In contrast, the Supply Chain Relationship dataset provides complete information about all the firm's explicit major customers, such as customer names and their sales to the firm. Therefore, in order to avoid bias in the calculation of customer concentration, this study uses the Supply Chain Relationship dataset, which in turn leads to a larger number of exclusions in the sample size.

which professional associations to certify the report from. Figure 1 shows the number of company-year observations in this empirical sample during the decision-making process. Approximately 37.58% of the companies in the entire sample have compiled a sustainability report. Out of the companies that have a sustainability report, 434 (33.10%) choose to have it assured. The majority of these companies opt for assurance services from profession organization that provide assurance services and certify the information in their sustainability reports (e.g., Apex Companies (Apex), Trucost, Bureau Veritas, DNV GL Business Assurance (DNV), Lloyds Register Quality Assurance Ltd. (LRQA), and ERM Certification and Verification Services (ERM CVS))[7]. In this study's example, NVIDIA Corporation chose Trucost to verify their sustainability report, while Advanced Micro Devices Inc. chose Bureau Veritas to ensure its sustainability report.

Table 1, Panel B displays the distribution of the sample observations by year that have and have not completed a sustainability report and obtained assurance. While Panel B column (C) indicates a relatively low proportion of companies that have prepared sustainability reports, there is a consistent upward trend in the number of companies preparing such reports and having them verified by an independent third party throughout the observed period. Out of a total of 1,311 sustainability reports, 434 of them, which account for 33.10% (434/1,311), underwent external verification. Panel C of Table 1 shows the distribution of industries in the sample. There are significant variations in sustainability practices across different industries. Column (C) in Panel C of Table 1 reports that the manufacturing industry has the biggest number of sustainability reports, with 904 observations, accounting for 68.95% of all sustainability reports[8]. Neither the construction nor retail sectors have chosen to undergo voluntary assurance for their sustainability reports, according to the entire sample.

[7] The majority of the organizations in the study's sample selected Apex Companies for assurance of sustainability reports, with ERM Certification and Verification Services coming in second.

[8] For robustness checks, this study conducts additional tests by re-analyzing the data using a subset of the sample, specifically focusing on the comparison between the manufacturing and non-manufacturing sectors. These tests show no significant changes and are consistent with the primary findings.

Table 1 Sample Description

Panel A: Sample Selection	
Observations available in the Refinitiv ESG Database from 2002-through 2022	22,677
Less: observations without ESG report assurance data	(2,948)
Less: observations with report segments that comprise two or more customers	(15,193)
Less: Observations that voluntarily report data on customers comprise less than 10% of total sales	(917)
Less: Observations with missing financial data	(130)
Final sample for testing H1	3,489
Add: Observations whose major customers in different countries	253
Final sample for testing H2	3,742
Sample for testing H1	3,489
Add: Observations whose major customers in different sustainability dimension	184
Final sample for testing H3	3,673

Panel B: Sample by Year

Year	Full Sample (A)	Sample without ESG Report (B)	Sample with ESG Report (C)	ESG Report Sample with Assurance (D)
2012	132	81	51	27
2013	134	77	57	32
2014	131	75	56	27
2015	205	146	59	33
2016	320	244	76	36
2017	408	324	84	41
2018	404	308	96	39
2019	445	289	156	46
2020	453	245	208	52
2021	457	215	242	53
2022	400	174	226	48
Total	3,489	2,178	1,311	434

Panel C: Sample by Industry				
Industry (two-digit SIC codes)	Number (A)	Sample without ESG Report (B)	Sample with ESG Report (C)	ESG Report Sample with Assurance (D)
Mining (10-14)	319	175	144(10.98%)	55
Construction (15-17)	28	15	13(0.99%)	**0**
Manufacturing (20-39)	2,385	1,481	**904(68.95%)**	309
Transportation & Public Utilities (40-49)	139	111	28(2.14%)	6
Wholesale Trade (50-51)	113	42	71(5.42%)	31
Retail Trade (52-59)	11	6	5(0.38%)	**0**
Finance**,** Insurance, & Real Estate (60-67)	180	131	49(3.74%)	3
Services (70-89)	314	217	97(7.40%)	30
Total	3,489	2,178	1,311(100%)	434

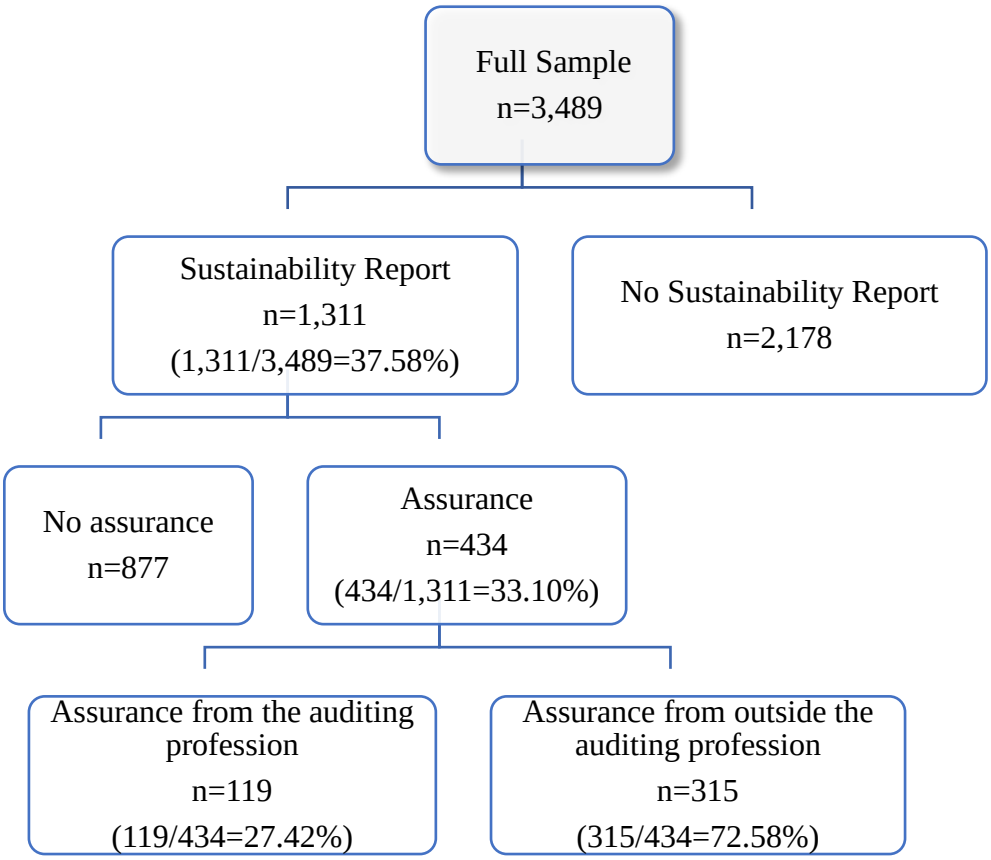

Figure 1 Number of Observations for Logit Analysis

4. Empirical Results

4.1 Descriptive Statistics

Table 2 displays the descriptive statistics for each variable. From this table, it is evident that the average value for the sustainability report optional delivery of third-party verification (*Supplier_ESGASS*) is approximately 12%. The mean (median) of *Customer_HHI* is 0.1446 (0.0481), which is similar to Patoukas' (2012) finding. The mean (median) is 1.5078 (1.5628), which represents the quality of the legal environment (*LEGAL*). Around 44% of major clients in the industry place a high value on environmental sustainability initiatives. The average (median) of sales (*SALES*) is $5098.5821 ($1,076.6540) million. The sample enterprises, on average, obtain over half of their funds through borrowing, as indicated by the average (median) *LEV* of 53.89% (51.74%). Table 2 indicates that, on average, the sample firms experience negative earnings, as evidenced by a mean Return on Assets (*ROA*) of -0.0178. This finding is consistent with the results reported by Irvien et al. (2016). The average value of the Market-to-Book (*MB*) ratio is 3.9420. The average loss is 33.82%, indicating that 34% of the enterprises in the sample are operating at a loss. The average (mean) Environmental, Social, and Governance Performance (*ESG_SCORE*) is 0.4038 (median: 0.3636). 29% of the enterprises are from the Environmentally Sensitive Sector (*ESI*), whereas 2% belong to the Financial Sector (*FINANCE*).

Table 3 shows the Pearson and Spearman correlation coefficients among the variables. Table 3 demonstrates a notable and positive correlation between *Supplier_ESGASS* and *Rank_Customer_HHI*. This finding aligns with the primary hypothesis of the study, suggesting that as the concentration of customers increases, suppliers are more inclined to voluntarily submit their reports to a third party for verification. The majority of the correlation coefficients between the remaining variables were less than 0.6 (or -0.6), suggesting that the multicollinearity problem in the model is not substantial. However, to reduce uncertainty, this study used the VIF test on the covariates of the independent variables. In the following empirical analyses, the variance inflation factors (VIF) of the independent variables are all below 10. Generally, there should not be any significant correlation among the independent variables.

Table 2 Descriptive Statistics

Variables	N	Mean	Std. Dev.	Q1	Median	Q3
Supplier_ESGASS	3,489	0.1244	0.3301	0.0000	0.0000	0.0000
Customer_HHI	3,489	0.1446	0.2395	0.0224	0.0481	0.1267
LEGAL	3,742	1.5078	0.1467	1.4240	1.5628	1.6069
Environment	3,673	0.4390	0.4964	0.000	0.000	1.000
Sales (million)	3,489	$5,098.8521	$13,613.3347	$272.2520	$1,076.6540	$3,763.9710
SIZE	3,489	6.8151	2.0665	5.6067	6.9816	8.2332
LEV	3,489	0.5389	0.2738	0.3434	0.5174	0.7043
ROA	3,489	-0.0178	0.1886	-0.0416	0.0328	0.0779
MB	3,489	3.9420	12.2780	1.5556	2.7847	4.9463
LOSS	3,489	0.3382	0.4732	0.0000	0.0000	1.0000
ESG_SCORE	3,489	0.4038	0.1927	0.2534	0.3636	0.5426
ESI	3,489	0.2863	0.4521	0.0000	0.0000	1.0000
FINANCE	3,489	0.0163	0.1268	0.0000	0.0000	0.0000

Notes: All variables are defined in Appendix A.

Table 3 Correlation Matrix

Variables (N=3,498)	1	2	3.	4	5	6	7	8	9	10
1.Supplier_ESGASS	1.000	0.040**	0.466***	0.191***	0.202***	0.149***	-0.167***	0.418***	-0.031***	-0.049
2.Rank_Customer_HHI	0.040**	1.000	-0.322***	-0.151***	-0.189***	0.057***	0.199***	-0.182***	-0.155***	-0.026**
3.SIZE	0.447***	-0.353***	1.000	0.403***	0.474***	0.041***	-0.488***	0.583***	0.086*	-0.027***
4.LEV	0.161***	-0.116***	0.326***	1.000	-0.048***	0.076***	-0.017	0.199***	0.103***	0.039***
5.ROA	0.162***	-0.247***	0.563***	-0.079***	1.000	0.171***	-0.814***	0.226***	0.004**	0.060***
6.MB	0.134***	0.013	0.032	0.107***	0.004	1.000	-0.072***	0.178***	-0.282***	-0.019
7.LOSS	-0.167***	0.199***	-0.507***	0.021**	-0.698***	-0.012	1.000	-0.220***	-0.055**	-0.044***
8.ESG_SCORE	0.474***	-0.180***	0.570***	0.177***	0.208***	0.126***	-0.227***	1.000	-0.124***	-0.031***
9.ESI	-0.031*	-0.155***	0.096***	0.079***	0.070***	-0.110***	-0.055**	-0.129***	1.000	-0.082***
10.FINANCE	-0.049	-0.026	-0.014	0.042***	0.065***	-0.038	-0.044***	-0.032***	-0.082***	1.000

Notes: 1. All variables are defined in Appendix A. 2. ***, **, and * indicate statistical significance at the 1, 5 and 10 percent levels, respectively.

4.2 Logistic Regress Results

Table 4 presents the outcomes of the logit regression analysis comparing suppliers that have significant customers with suppliers who willingly provide their sustainability reports to a third party for verification. The analysis reveals a strong positive relationship between *Rank_Customer_HHI* and *Supplier_EGSASS* (coefficient = 1.097; $p<0.01$). This indicates that suppliers with a greater concentration of customers are more inclined to voluntarily provide sustainability reports to an external party for verification, thus supporting Hypothesis 1a. That is, maintaining a strong relationship between suppliers and their main customers can help to ensure the stability of the supply chain. Suppliers with more resources are more likely to engage in ESG activities and verify their sustainability reports, which enhances their credibility and transparency and reduces information asymmetry. Therefore, when suppliers align with their primary customers' interests, supplier feel compelled to curb unethical behavior to allay customers' concerns about potential involvement. As a result, sustainability report assurance serves as an effective monitoring tool.

Column (A) of Table 5 displays the results of a logit regression analysis examining whether the level of legal enforceability in the country where the supplier's main customers are located affects the supplier's ability to provide a sustainability report to a third party for verification. The analysis reveals a significant positive correlation between *Rank_Customer_HHI*LEGAL* and *Supplier_EGSASS* (coefficient = 4.092; $p<0.05$). This suggests that suppliers with major customers in countries with stronger legal enforceability are more likely to deliver sustainability reports to third parties for verification. This finding supports Hypothesis 2a. In countries with strong legal enforcement, the government exercises more stringent oversight over the environment, society, and governance, and mandates that firms adhere to relevant rules and regulations. Any infractions shall be subject to strict punishment. Hence, in such a setting, providers must furnish comprehensive, precise, and open sustainability reports to guarantee that their business operations adhere to the regulations.

Column (B) of Table 5 illustrates the results of a logit regression analysis that examines the impact of a supplier's major customers' environmental policy on the supplier's delivery of sustainability reports to a third party for verification. The analysis reveals a significant positive correlation between *Rank_Customer_HHI*Environment* and *Supplier_EGSASS* (coefficient = 3.393; $p<0.05$). This suggests that important customers consider environmental sustainability policy to be a crucial objective for their operations, thus compelling suppliers to enhance their environmental policy. To meet their environmental commitments and targets for customers, suppliers will verify the authenticity and reliability of their corporate sustainability reports by submitting them for verification. This finding supports Hypothesis 3a. Suppliers can prevent

engaging in detrimental practices that could harm the company's reputation and adversely affect customers. Suppliers will verify the sustainability report in order to fulfill the environmental obligations and meet the environmental benchmarks set by customers.

Tables 4 and 5 present control variables that indicate larger organizations (*SIZE*), those with higher debt ratios (*LEV*), a higher market value (*MB*), and higher ESG performance (*ESG_SCORE*), are more likely to seek third-party verification for their sustainability reports. In other words, organizations that are larger and have a stronger track record in corporate social responsibility and environmental issues are more likely to seek out certification services. Companies with high levels of financial leverage are more inclined to seek third-party assurance for their sustainability reports. They do this to improve the accuracy and reliability of the information they provide, build trust with investors and creditors, and reduce agency expenses. Companies that have greater potential for growth demand more cash and must be more open about their corporate social responsibility performance. As a result, they are more inclined to provide assurance in their sustainability reports.

Table 4 Logistic Regression Analysis-H1

Variable	Predict Sign	Dependent Variable: *Supplier_ESGASS*		
		Coeff.	z-statistics	VIF
Intercept		-14.939***	-21.348	
Rank_Customer_HHI	+/-	**1.097***	4.244	1.266
SIZE	+	1.120***	13.494	3.734
LEV	+/-	1.016***	3.271	1.344
ROA	+	1.620	1.489	2.532
MB	+/-	0.011***	2.927	1.020
LOSS	+	0.342	1.438	2.162
ESG_SCORE	+	4.880***	10.543	1.911
ESI	+	0.069	0.372	1.631
FINANCE	+	-12.183	-0.045	1.249
YEARFE		YES		
INDUSTRYFE		YES		
Cluster by Firm		YES		
N		3,489		
Pseudo R^2(%)		50.05%		
LR-statistic		700.79***		

Notes: 1. All variables are defined in Appendix A. 2. ***, **, and * indicate statistical significance at the 1, 5 and 10 percent levels, respectively.

Table 5 Logistic Regression Analysis-H2 and H3

Variable	Predict Sign	Dependent Variable: *Supplier_ESGASS*			
		(A)		(B)	
		Coeff.	z-statistics	Coeff.	z-statistics
Intercept		-18.273***	-10.885	-16.155***	-20.936
Rank_Customer_HHI	+/-	6.332**	2.416	3.141**	2.105
LEGAL	+/-	2.491**	2.314		
Rank_Customer_HHI*LEGAL	+/-	**4.092****	2.505		
Environment	+/-			0.272	0.522
Rank_Customer_HHI*Environment	+/-			**3.393****	2.015
SIZE	+	1.223***	15.348	1.241***	15.115
LEV	+/-	-0.088	-0.259	-0.056	-0.167
ROA	+	1.330	1.156	1.457	1.256
MB	+/-	0.024***	4.035	0.025***	4.217
LOSS	+	0.548**	2.577	0.572**	2.558
ESG_SCORE	+	4.426***	10.334	4.441***	10.435
ESI	+	0.160	0.932	0.141	0.808
FINANCE	+	-10.652	-0.018	-10.606	-0.014
YEARFE		YES		YES	
INDUSTRYFE		YES		YES	
Cluster by Firm		YES		YES	
N		3,742		3,673	
Pseudo R^2(%)		47.890%		48.37%	
LR-statistic		823.89***		814.47***	

Notes: 1. All variables are defined in Appendix A. 2. ***, **, and * indicate statistical significance at the 1, 5 and 10 percent levels, respectively.

4.3 Additional Tests

4.3.1 Propensity Score Matching (PSM)

To mitigate the issue of skewed empirical findings due to the non-random selection of organizations, this study used propensity score matching to address potential self-selection bias. Following Chen, Su, Tian, and Xu (2022) construct a matched sample through a two-step process. First, various factors, such as the company's characteristics and its research and development skills, can influence the presence of major customers in a firm. Therefore, the first phase creating a logistic model (5) to facilitate matching:

$$MJ\_D_{i,t} = \delta_0 + \delta_1 SIZE_{i,t} + \delta_2 ROA_{i,t} + \delta_3 Tobin's\ Q_{i,t} + \delta_4 LEV_{i,t} + \delta_5 AGE_{i,t} + \delta_6 RDIND_{i,t} + \varepsilon_{i,t} \quad (5)$$

In the second phase, the samples were matched using the Nearest Neighbor Matching method with a caliper of 0.01, based on the propensity scores generated from the logit model in the first phase. I matched the observations of firms with significant clients (treatment group) 1:1 with those of firms with non-significant clients (control

group) that shared the closest propensity score. I used the draw without replacement method to match the observations in the treatment group and the control group, ensuring no differences existed between them. Initially, the sample size was 2,512 before performing propensity score matching. After matching, the logistic regression analysis sample size was 1,012 observations.

Panel A of Table 6 shows the findings of the logistic regression model for PSM matching in firms with and without large clients. The empirical findings indicate that firms with a larger firm's size (*SIZE*), higher *Tobin's Q*, longer *AGE*, and higher *RDINT* have a greater likelihood of having significant customers. Furthermore, companies that have lower levels of debt (*LEV*) and lower levels of profitability (*ROA*) are less inclined to have significant customers. Panel B of Table 6 presents the empirical findings of logit regression modeling with matched samples. The variable *Rank_Customer_HHI* exhibits a strong positive correlation with *Supplier_ESGASS*, which aligns with the primary findings and suggests the absence of any sample selection bias.

4.3.2 Addressing Potential Endogeneity

Since the study period includes the period when COVID-19 occurred, the global expansion of the COVID-19 epidemic has presented unparalleled problems to the world. COVID-19 has not only posed risks to human life and health, but it has also resulted in industry closures, supply chain disruptions, increased poverty, and social transformation, among other consequences. Ernst & Young LLP conducted a survey with 200 supply chain executives at the end of 2020 and 2022, revealing that the COVID-19 outbreak forced firms to temporarily suspend their sustainability objectives. Hence, this study used the COVID-19 pandemic as an economic disruption to investigate the connection between suppliers with important customers and the assurance of sustainability reports to address any potential endogenous problems. Table 7 displays the empirical findings. The empirical findings indicated that the influence of important clients on supplier sustainability report assurance remained steady both prior to and beyond the COVID-19 pandemic, aligning with the primary results. This addresses the potential endogeneity issue that corporate customers may have regarding the influence of suppliers' sustainability reports.

Table 6 Logistic Regression Analysis-Propensity Score Matching

Panel A: A Firm with or without major customers

Variable	Predict Sign	Coeff.	z-statistics
Intercept		-0.449***	-1.667
SIZE	?	0.175***	4.506
ROA	?	-0.988***	-2.943
Tobin's Q	?	0.196***	5.332
LEV	?	-0.619***	-3.714
AGE	?	0.184***	3.362
RDINT	?	0.315***	3.831
YEAR		YES	
INDUSTRY		YES	
Pseudo R^2(%)		5.16	
N		2,512	

Panel B: Logistic Regression Analysis-PSM Samples

		Dependent Variable: *Supplier_ESGASS*	
Variable	Predict Sign	Coeff.	z-statistics
Intercept		-14.245***	-9.274
Rank_Customer_HHI	+/-	**1.436***	1.759
SIZE	+	0.591***	3.892
LEV	+/-	0.031	0.056
ROA	+	6.669**	2.532
MB	+/-	0.051***	2.832
LOSS	+	1.185***	2.668
ESG_SCORE	+	11.176***	8.457
ESI	+	1.507*	1.758
FINANCE	+	-3.822	-0.052
YEARFE		YES	
INDUSTRYFE		YES	
Cluster by Firm		YES	
N		1,012	
Pseudo R^2(%)		51.13%	
LR-statistic		169.62***	

Notes: 1. All variables are defined in Appendix A. 2. ***, **, and * indicate statistical significance at the 1, 5 and 10 percent levels, respectively.

Table 7 Logistic Regression Analysis-Endogeneity

Variable	Predict Sign	Dependent Variable: *Supplier_ESGASS* Before the COVID-19 (A)		After the COVID-19 (B)	
		Coeff.	z-statistics	Coeff.	z-statistics
Intercept		-13.944***	-17.153	-16.571***	-11.857
Rank_Customer_HHI	+/-	**0.976*** **	3.281	**1.402** **	2.521
SIZE	+	1.131***	10.907	1.096***	7.576
LEV	+/-	0.797**	2.207	1.480**	2.464
ROA	+	2.429*	1.887	0.612	0.304
MB	+/-	0.010**	2.770	0.013*	1.664
LOSS	+	0.532*	1.817	0.048	0.122
ESG_SCORE	+	4.377***	8.174	6.819***	7.155
ESI	+	-0.156	-0.704	0.674*	1.922
FINANCE	+	-12.500	-0.012	-10.390	-0.045
YEARFE		YES		YES	
INDUSTRYFE		YES		YES	
Cluster by Firm		YES		YES	
N		2,179		1,310	
Test the coefficient difference of *Rank_Customer_HHI* between Before and After the COVID-19					
		χ^2=*0.11* *p-value*=0.7353			
Pseudo R^2(%)		47.55%		55.69%	
LR-statistic		475.65***		227.67***	

Notes: 1. All variables are defined in Appendix A. 2. ***, **, and * indicate statistical significance at the 1, 5 and 10 percent levels, respectively.

4.3.3 Alternative Measures of Customer Concentration

This study uses two distinct metrics of client concentration to mitigate any variations in the empirical findings of this study. Initially, I recalculate equation (2) by substituting the *Rank_Customer_HHI* of the primary empirical model with the original value of customer concentration (*Customer_HHI*). Column (A) of Table 8 displays the resulting empirical outcomes. Additionally, Patatoukas (2012) stated that the company willingly revealed that less than 10% of its total sales revenue comes from its major customers, indicating the significance of these customers' sales for the company's operations. Therefore, this study considers clients who contribute less than 10% of the supplier's revenue as the primary measure of customer concentration and reexamines the results accordingly. Column (B) of Table 8 displays the empirical findings. The empirical results from Table 8's columns (A) and (B) show that using different other indicators of customer concentration is still consistent with the empirical results.

Table 8 Logistic Regression Analysis-Alternative measures of customer concentration

Variable	Predict Sign	Dependent Variable: *Supplier_ESGASS* (A) Coeff.	(A) z-statistics	(B) Coeff.	(B) z-statistics
Intercept		-14.909***	-21.191	-12.753***	-24.174
Customer_HHI	+/-	**2.643*** **	5.089	**0.943** **	2.009
SIZE	+	1.149***	14.191	0.906***	13.635
LEV	+/-	1.025	1.250	0.424	1.466
ROA	+	1.449	1.621	1.112	1.314
MB	+/-	0.011**	2.499	0.018***	3.178
LOSS	+	0.302	1.288	0.413**	2.267
ESG_SCORE	+	4.854***	10.270	5.302***	13.695
ESI	+	-0.012	-0.069	-0.175	-1.077
FINANCE	+	-12.546	-0.084	-16.817	-0.0341
YEARFE		YES		YES	
INDUSTRYFE		YES		YES	
Cluster by Firm		YES		YES	
N		3,489		4,337	
Pseudo R^2(%)		50.10%		43.61%	
LR-statistic		1,542.22***		893.87***	

Notes: 1. All variables are defined in Appendix A. 2. ***, **, and * indicate statistical significance at the 1, 5 and 10 percent levels, respectively.

4.3.4 Sub-sample analysis

Given that the majority of the sample comes from the manufacturing industry, this study divided the sample into two categories: the manufacturing industry and the non-manufacturing industry. The study chose this division to avoid any potential variations in the sample structure. I then conducted the empirical analysis separately for each category. The results of this analysis are presented in Table 9. Table 9 presents the empirical findings from the subset analysis of the manufacturing industry in Column A and the non-manufacturing industry in Column B. The results indicate that both sectors exhibit a greater level of customer base concentration. The observation that both manufacturing and non-manufacturing sectors indicate that suppliers with a greater proportion of customers are more inclined to provide third-party assurance on sustainability reports aligns with the primary findings. The study also analyzed the *Rank_Customer_HHI* coefficients for the two sub-samples and determined that there was no significant disparity between the two coefficients. This suggests sample structure differences are fine.

Table 9 Subsample Analysis-Manufacturing and Non-Manufacturing Industry

Variable	Predict Sign	Dependent Variable: *Supplier_ESGASS* (A) Coeff.	(A) z-statistics	(B) Coeff.	(B) z-statistics
Intercept		-13.889***	-17.624	-18.313***	-11.742
Rank_Customer_HHI	+/-	**0.814*** **	2.904	**2.096*** **	4.085
SIZE	+	0.951***	10.242	1.607***	9.400
LEV	+/-	0.828**	2.239	1.261*	1.956
ROA	+	2.021	1.615	1.305	0.416
MB	+/-	0.014**	2.555	0.001	0.124
LOSS	+	0.276	0.894	0.709	1.595
ESG_SCORE	+	5.748***	9.452	3.416***	4.096
ESI	+	0.174	0.900	-0.650	-1.134
FINANCE	+	0.000	0.000	-11.122	-0.033
YEARFE		YES		YES	
INDUSTRYFE		No		YES	
Cluster by Firm		YES		YES	
N		2,385		1,104	
Test the coefficient difference of *Rank_Customer_HHI* between Manufacturing and Non-Manufacturing					
		χ^2=*1.34* *p-value*=0.2466			
Pseudo R^2(%)		50.22%		52.71%	
LR-statistic		1110.33***		456.07***	

Notes: 1. All variables are defined in Appendix A. 2. ***, **, and * indicate statistical significance at the 1, 5 and 10 percent levels, respectively.

4.3.5 Economic consequences of customer effects and Supply's Sustainability Report Assurance

Prior research has recorded varying viewpoints regarding companies' dedication to improving environmental, social, and governance (ESG) standards. Several studies indicate a direct correlation between ESG activities and corporate value, shareholder wealth, and company performance (Mackey, Mackey, and Barney 2007; Matsumura, Prakash, and Vera-Muñoz 2014). This correlation results in the creation of intangible value, which benefits firm value, shareholder wealth, and long-term company operations.

This study endeavors to explore the potential impact of suppliers' sustainability reports on the value of the firm, particularly those with significant customers. Within the supply chain, a third party verifies the supplier's sustainability report to confirm its legitimacy. This verification process enhances the reputation of both customers and suppliers. The reputational effect plays a crucial role in sustaining the enduring relationship between customers and suppliers, ultimately leading to enhanced profitability (Kalwani and Narayandas 1995). This study investigates the influence of sustainability report assurance from customers and suppliers on company performance,

using Tobin's Q as a measure of company performance. Table 10 displays the observed outcomes. The research findings suggest that suppliers are validating their sustainability reports to meet the requirements of their key clients by showcasing superior environmental, social, and governance (ESG) practices, ultimately leading to enhanced company performance. Overall, the findings of this study indicate that engaging in ESG activities by both customers and suppliers along the supply chain might result in positive economic consequences.

Table 10 Logistic Regression Analysis-Economic consequences of customer effects and supply's sustainability report assurance

		Dependent Variable: *Tobin's Q*
Variable	Predict Sign	Coeff. (*t*-Statistic)
Intercept		3.385*** (11.190)
Supplier_ESGASS	+/-	0.271* (1.850)
Rank_Customer_HHI	+/-	0.273** (2.267)
Supplier_ESGASS*Rank_Customer_HHI	+/-	**1.027*** (3.070)
SIZE	+/-	-0.296*** (-9.406)
LEV	-	0.967*** (5.700)
ROA	+	0.965*** (3.494)
AGE	-	-0.011 (-0.270)
YEARFE		YES
INDUSTRYFE		YES
Cluster by Firm		YES
Adjusted R^2		0.1678
N		2,512

Notes: 1. All variables are defined in Appendix A. 2. ***, **, and * indicate statistical significance at the 1, 5 and 10 percent levels, respectively.

5. Conclusion

As environmental, social, and governance (ESG) issues become increasingly important, companies need to consider not only their own ESG practices but also the ESG risks within their supply chains. Exposing suppliers' misconduct exposes customers to significant reputational and financial losses, prompting them to naturally worry about their suppliers' behavior. However, some companies engage in corporate social responsibility activities merely as a facade to placate various stakeholders and avoid negative publicity. Information quality's usefulness is a key indicator of a company's value. Third-party assurance not only safeguards the integrity of the information but also instills greater confidence in users.

This study analyzes data from U.S. publicly listed companies from 2012 to 2022 to examine the relationship between major customers and the assurance of suppliers' sustainability reports. The findings indicate that: (1) Suppliers, aiming to maintain stable supply chain relationships with major customers and uphold a positive corporate image, often voluntarily seek third-party assurance for their sustainability reports to ensure their authenticity and reliability. Additionally, independent third-party ESG verification has the potential to supervise the suppliers' ESG activities. (2) Major customers in countries with strong legal enforcement and strict government regulation of environmental, social, and governance issues, suppliers are more likely to provide detailed, accurate, and transparent sustainability reports. (3) When major customers emphasize environmental sustainability policies (such as carbon emissions), suppliers tend to enhance their environmental policies to meet the customers' environmental commitments and standards, and they seek assurance for their sustainability reports to ensure their authenticity and reliability.

In summary, this study shows that the demands of major customers regarding suppliers' sustainable development prompt suppliers to voluntarily seek third-party assurance for their sustainability reports, ensuring their authenticity and reliability, thereby enhancing corporate value.

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Appendix A Variable Definitions

Variable	Definition (Calculate)
Supplier_ESGASS	An indicator variable that equals 1 if supplier's Sustainability Reports/ ESG Reports was assured by an external assurance provider, and 0 otherwise.
Customer_HHI	$\sum_{j=1}^{J}\left(\frac{Sales_{ijt}}{Sales_{i,t}}\right)^2$, where $Sales_{ijt}$ represents firm *i*'s sales to customer *j* in year *t* and $Sales_{i,t}$ represents firm *i*'s total sales in year *t*.
Rank_Customer_HHI	Decile rank of the customer concentration variable *Customer_HHI* scaled to range from 0 to1.
LEGAL	The quality of the legal environment (score from -2.5 to 2.5).
Environment	An indicator variable that equals 1 if a major customer prioritizes environmental sustainability activities in its industry, as measured by SASB's Materiality Map, and 0 otherwise.
SIZE	Natural log of sales.
LEVERAGE	Total liabilities divided by total assets.
ROA	Income before extraordinary Items divided by total assets.
MB	The market value of equity divided by the book value of equity.
LOSS	An indicator variable that equals 1 if net income is negative, and 0 otherwise.
ESG_RATING	Score for environmental, social and governance (ESG) performance (values ranging from 0 to 1).
ESI	Dummy variable equal to 1 if the company is a member of an environmentally sensitive industry, 0 otherwise. Using the Global Industry Classification Standard (GICS), the utilities, energy, materials, and industrials sectors are designated the environmentally sensitive industries.
FINANCE	A Dummy variable equal to 1 if the company is a member of the financial industry, 0 otherwise. Industry membership is based on the Global Industry Classification Standard (GICS).