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By

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Abstract

Growing global environmental and social issues have imposed increased pressure on firms to address sustainability challenges in international markets, with a particular focus on improving their export performance. This is of significant importance for emerging market firms aiming to expand their presence in international markets, as they are compelled to bolster their environmental and social sustainability capacity to enhance their export intensity. This study delves into the relationship between corporate sustainability and export intensity through a longitudinal examination of 141 firms listed on Borsa Istanbul from 2014 to 2021. The results suggest that corporate sustainability positively influences export intensity, and this influence is further positively moderated by R&D intensity. Additionally, post-hoc analysis employing supplementary data pertaining to the environmental, social, and governance dimensions of corporate sustainability reveals that environmental performance plays a positive role in shaping export intensity, with R&D intensity positively moderating this relationship. In summary, our findings underscore that exporting firms that effectively integrate impactful R&D intensity into their international business operations are likely to harness their sustainability strategies, particularly those related to the natural environment, to achieve higher export intensity.

Keywords: Export intensity, R&D intensity, Resource-based view, Sustainability, Emerging markets.

Introduction

With growing competition worldwide, pressing climate change, and increasing attention to social responsibility, exporting firms are progressively more compelled to position their products in new and dynamic markets and simultaneously face several environmental and social challenges (Chabowski, Mena, and Gonzalez-Padron, 2011). Likewise, customers in the export markets of emerging market firms are increasingly concerned about environmental and social issues (Costa, Lages, and Hortinh, 2015; Teplova et al., 2022). Given this outlook, the relationship between corporate sustainability (CS) and export intensity has gained paramount importance since exporting represents a strategic option for the internationalization of firms, providing them with a high level of flexibility to penetrate new markets and helping them meet their financial objectives (Cavusgil and Zou, 1994; Sousa, Martínez-López, and Coelho, 2008; Zeriti et al., 2014). This is particularly important in emerging markets due to the intensive stakeholder and customer concerns about sustainability matters in developed countries. Therefore, besides cost leadership, a positive image, and a differentiated product range, sustainability strategies constitute a crucial success factor for emerging market firms while internationalizing via exports (Boehe and Cruz, 2010; Leonidou et al., 2017).

However, despite increasingly pressing sustainability imperatives, research has not sufficiently explored the linkage between CS and export intensity in foreign markets (Zeriti et al., 2014). This void is especially evident in relation to emerging market firms, which are becoming more visible on the world stage but face unique and profound sustainability challenges (Gölgeci, Makhmadshoev, and Demirbag, 2021). With widely varying social, economic, and environmental conditions across emerging markets, sustainability initiatives implemented by firms in these countries are expected to meet the environmental and social requirements of more advanced economies as foreign markets. In this vein, with exports often playing a significant role in their overall growth and profitability (Agnihotri and Bhattacharya, 2015; Dong, Kokko, and Zhou, 2022), emerging market firms have to accelerate sustainability activities to improve efficiency, save energy, and reduce waste to be compatible with foreign markets. Nonetheless, little is known about how exporting firms from emerging markets deploy and utilize their CS strategies in foreign markets and achieve export performance. These issues

are essential since CS practices help position firms as socially and environmentally responsible toward their customers, suppliers, and other stakeholders and enhance their competitiveness in international markets (Martos-Pedrero et al., 2023). Likewise, the boundary conditions of the link between CS and export intensity are yet to be explored. The question of "When does it pay to be sustainable?" becomes paramount in international markets, as the effect of CS may become more or less effective under different boundary conditions. Thus, examining the boundary conditions emerging market firms face in international markets can expand the power of sustainability strategies on export intensity.

Accordingly, the factors affecting the CS and export intensity relationship should also be considered. In this respect, as argued by the resource-based view (RBV), internal dynamics often have greater relevance than external ones. Research and development (R&D) intensity is among them. R&D embodies growth and productivity in firms' response deployment and outputs and allows firms to increase their product variety and quality in responding to customer needs (D'Angelo, 2012). The level of R&D strongly influences the export performance of firms due to the competitive advantages derived from decreasing costs, increasing efficiency, and managing environmental and social issues (Harris and Li, 2009), including in emerging markets (Singh, 2009).

The present study explores how CS is associated with export intensity and investigates the moderating role of R&D intensity in the nexus of sustainability and export intensity. In so doing, we draw on a sample of 141 non-financial firms listed on Borsa Istanbul (BIST) for the years 2014 to 2021 and analyze the hypothesized relationships using Tobit and Heckman's two-stage regression models. We choose non-financial firms as a sample since they contribute 25% of the gross domestic product and account for 94% of Türkiye's exports. The results show that exporting firms that integrate sustainability strategies into their international marketing are more likely to enhance export intensity, and the strength of the impact of CS on export intensity is contingent upon R&D intensity –operationalized in this study as the ratio of a firm's R&D expenditure to its total sales. The post-hoc findings from supplementary data also indicate that R&D intensity significantly moderates the relationship between environmental performance –an essential CS dimension– and export intensity.

This study makes a threefold contribution to the emergent literature on sustainability and export marketing. First, few studies have explored how CS influences export intensity in emerging markets. This paper provides novel evidence for a leading emerging market, Türkiye. Second, the present study highlights the moderating role of R&D intensity in the CS and export intensity relationship from the perspective of the RBV. Research on the relationship between CS, R&D intensity, and export intensity remains scant (Fonseca and Lima, 2015; Rhee, Park, and Lee, 2010). Our study shows that R&D intensity can play an instrumental role in conditioning CS and enhance its role in export intensity. Further, firms listed on BIST have accelerated their efforts in implementing sustainability strategies following the launching of the BIST Sustainability Index (BIST SI) in 2014. This study builds on this ground and offers insightful outcomes to Turkish firms regarding the significance of the CS and export intensity relationship for achieving further gains by raising their exports through enhanced environmental, social, and governance practices.

The remaining part of the paper is organized as follows. Section 2 reviews the literature and develops the hypotheses. Section 3 describes the data, variables, and methodology. Section 4 provides the empirical results, and section 5 concludes and discusses the theoretical and practical implications.

Theoretical Background and Hypothesis Development

Export Intensity, Corporate Sustainability, and International Business

The exploration of export intensity in the context of emerging market firms' international business (IB) activities has garnered significant attention due to its dynamic nature (Agnihotri and Bhattacharya, 2015; Charoenrat and Amornkitvikai, 2021; Teplova et al., 2022; Wu et al., 2022). This concept revolves around the extent to which emerging market enterprises engage in export activities relative to their overall business operations. Notably, the global business landscape has witnessed a marked upswing in export-focused strategies pursued by emerging market firms in recent years (Teplova et al., 2022; Wu et al., 2022). These firms have recognized and seized the abundant opportunities presented by international markets, spurred by technological advancements (Filipescu et al., 2013), decreasing trade barriers (Jongwanich and

Kohpaiboon, 2008), and evolving consumer preferences (Hultman, Katsikeas, and Robson, 2011). Consequently, export intensity has taken center stage as a crucial component of their growth trajectories.

The discourse surrounding export intensity examines the intricate dynamics influencing emerging market firms' participation in international trade. This exploration encompasses an array of factors spanning from firm-specific attributes such as size, resource endowments, capabilities, R&D investments, and innovation to external determinants like prevailing market conditions, regulatory frameworks, and geopolitical considerations (Haddoud et al., 2023; Majocchi, Bacchiocchi, and Mayrhofer, 2005). Unraveling these influences offers valuable insights into the motivations guiding firms' strategic allocation of resources toward their export ventures.

The notion of export intensity holds profound implications for the broader economic progress of emerging economies (Swinnen, 2007). Higher levels of export intensity often correlate with deeper integration into the global economic landscape, facilitating the transfer of technology and dissemination of knowledge (Wang and Ma, 2018). This, in turn, can contribute significantly to economic growth, employment generation, and overall improvements in living standards within these emerging market nations. However, the pursuit of heightened export intensity is not devoid of challenges. Emerging market firms often grapple with barriers related to market entry, competitive pressures, logistical complexities, and mounting demands for sustainability compliance from foreign clientele (Costa et al., 2015; Teplova et al., 2022). Hence, the discourse surrounding export intensity trends in the domain of emerging market firms' international business encapsulates a dynamic interplay of internal and external factors, including the pivotal role of corporate sustainability, that collectively shape and define their engagement in global trade.

CS is an increasingly profound phenomenon of interest in IB research (Eteokleous et al., 2016; Gölgeci et al., 2021; Li, Zhou, and Wu, 2017; Zeriti et al., 2014). As researchers have emphasized the vital role of exporting across the globe for firms to leverage their resources internationally and achieve continued growth (Azar and Ciabuschi, 2017; Beleska-Spasova, 2014; Cadogan et al., 2016), CS is gradually becoming an integral component of IB. As such,

with growing concerns for and the prevalence of environmental and social challenges worldwide (Eteokleous et al., 2016; Gölgeci et al., 2021), sustainability has grown into a critical factor for success in foreign markets, especially in relation to export intensity. Most sustainability challenges are complex, unresolved, and, at times, daunting problems related to the environment and society (Berrone et al., 2016). They represent an increasingly pressing and critical issue that exporting firms must tackle to better serve foreign customers. Environmental changes and deviations in customers' purchasing behavior have been shaping firms' export intensity at the international level (Varadarajan, 2014). Hence, firms are progressively working to succeed in target markets by combining their business strategies with environmental and socially responsible practices (Becker-Olsen et al., 2011).

This approach conforms to stakeholder theory and the RBV. Stakeholder theory argues that managing relationships with stakeholders is the key to achieving competitive advantages (Li et al., 2017). Public concerns about sustainability issues, different environmental regulations, and local standards in foreign markets affect the sustainability strategies of exporting firms. If inconsistent actions regarding sustainability are observed, consumer groups protest firms, and governments sanction them (Banerjee, Iyer, and Kashyap, 2003). This is especially true for exporting firms from emerging markets. They face increasingly challenging situations. They often find themselves in paradoxical situations, stuck between fierce competition and urgency to catch up with their competitors from the developed world on the one hand and growing environmental and social imperatives both at home and abroad, with major costs implications, on the other hand (Gölgeci et al., 2021).

In view of these arguments, firms that engage with their partners to manage environmental issues are better positioned to respond to social responsibility concerns (Yeniyurt, Cavusgil, and Hult, 2005). Therefore, exporting firms are often compelled to execute sustainability activities by considering the needs of customers and their sensitivity to environmental and social matters. In other words, they are required to convert the sustainability-related concerns of stakeholders into market opportunities by aligning their strategies with their concerns.

Prior studies have revealed that sustainability strategies are positively associated with the competitiveness of exporting firms (Katsikeas, Samiee, and Theodosiou, 2006; Leonidou et al.,

2015; Zeriti et al., 2014). Leonidou et al. (2015) asserted that foreign environmental public concern and top management sustainability sensitivity are vital in crafting a sustainability-friendly export strategy. This is more prevalent among firms producing industrial goods with high technological intensity and exporting to developed countries. Similarly, Zhu, Sarkis, and Lai (2008) showed that automotive firms in China made strategic environmental agreements with their customers to manage their sales to foreign customers. In a similar study on Chinese automotive firms by Imran et al. (2018), the findings confirmed that cleaner production significantly affects export performance. These studies allude to the notion that sustainability strategies are especially crucial in emerging markets and constitute a key lever for exporting firms, allowing them to develop an environmental and social orientation toward meeting stakeholders' expectations in foreign markets beyond cost leadership.

These findings are also underpinned by the RBV. According to the RBV, firms can enhance their performance by using unique resources and capabilities to differentiate themselves from their competitors (Barney, 1991). Hence, firms can sustain a competitive advantage when sustainability attributes are incorporated into their business strategy as intangible resources (Chen, Sousa, and He, 2016). Implementing CS strategies and practices strengthens a firm's ability to identify and give value to inimitable resources, stimulating the development of intangibles related to human capital, innovation, and knowledge. Porter and Kramer (2006) supported that argument by claiming that firms incorporate sustainability practices into their business strategies to obtain commercial success, improve reputation, and strengthen brand value. To this end, serious global sustainability challenges coupled with the insufficiency of sustainability-driven resources and activities in emerging markets (Gölgeci et al., 2021) elevate sustainability-driven resources as strategic resources. This argument is also grounded in the established notion that CS and sustainability practices embody resources that bring value to the firm, unique and not readily available, inimitable, especially in the context of emerging markets, and cannot be substituted by other strategically equivalent valuable resources (Hart and Dowell, 2011). Thus, valuable, rare, inimitable, and non-substitutable resources and capabilities underlying CS may lead to a more sustainable world and create value for shareholders and stakeholders (Hart and Milstein, 2004). The intangible resource pool

facilitates firms to gain insightful competencies, allowing them to allocate resources as per the scope and demand of international operations.

Furthermore, sustainability standards could enhance trade by reducing information asymmetries and transaction costs (Henson and Jaffee, 2008) and modernizing supply chains through upgrading (Swinnen, 2007). Papadopoulos and Martin (2010) asserted that international experience influences firms' dedication to sustainability, positively influencing export performance. International markets also favor sustainability due to the safety and quality of certified products and harmonization. Consequently, exporting firms that highlight their commitment to sustainability are expected to perform better.

Innovation and R&D in International Business

Innovation and R&D are among the crucial pillars of IB (Boso et al., 2013; Lages, Silva, and Styles, 2009; Nyuur, Brecic, and Debrah, 2018; Zhang, Di Benedetto, and Hoenig, 2009). Firm innovativeness is often found to be associated positively with export success, especially in competitive and dynamic export markets (Boso et al., 2013). Similarly, product innovation is found to enhance export performance (Lages et al., 2009), and breakthrough and incremental product development activities are found to reinforce and maintain relevant performance outcomes in foreign markets (Zhang et al., 2009).

Furthermore, Gourlay, Seaton, and Suakitjarak (2005) and Hwang, Hwang, and Dong (2015) both highlight the critical role of R&D intensity –the extent to which firms invest in innovation in relation to its revenue– in enhancing export intensity and export performance, respectively. In an earlier study, Singh (2009) noted that R&D expenditure –the expenses incurred by an organization in conducting R&D activities– is an essential antecedent of exporting activities for Indian firms, basing his argument on RBV. Building on the same theory and using the data from 306 Vietnamese firms, Vo et al. (2022) pointed out that increasing investment in R&D helps firms to promote international trade, and R&D intensity is positively associated with export intensity. Thus, mainstream IB research showcases the importance of innovation and R&D to compete in foreign markets and motivate firms to develop cutting-edge technologies and cost-effective advanced production processes.

Addressing environmental and societal challenges increasingly involves innovative approaches (Engelen et al., 2018; Martí, 2018). As sustainability challenges are multifaceted phenomena that cannot be addressed effectively through linear and monolithic approaches and involve dynamic interactions across multiple intrinsic and extrinsic factors (Doh, Tashman, and Benischke, 2019), they require innovative approaches and behaviors (Martí, 2018) as well as creative reconfiguration and the implementation of strategic resources and capabilities, especially in emerging markets (Gölgeci et al., 2019). As such, adopting innovative and market-oriented strategies across national differences can be instrumental in competing across foreign markets (Zeriti et al., 2014). Likewise, Boehe and Cruz (2010) investigated the relationship between corporate social responsibility (CSR) and export performance for a sample of 252 Brazilian firms. They suggested that CSR product differentiation by emerging market firms predicts export performance almost as well as product innovation differentiation. Teplova et al. (2022) examined 37 Asian and Eastern European countries and demonstrated that innovative activity and CSR facilitate entry to foreign markets for SMEs. They also reveal a significant positive effect of R&D intensity on export intensity. Hence, the CS and export intensity relationship can also be affected by R&D intensity. In general, R&D improves the competitiveness of products and services provided abroad (Flor and Oltra, 2005; Ganotakis and Love, 2011). In particular, it can help firms achieve high levels of competitiveness in international markets (Porter and van der Linde, 1995).

To this end, there has been extensive research on the link between R&D and export performance. Most earlier studies found a positive association between R&D expenditure and export performance (e.g., Charoenrat and Amornkitvikai, 2021; Filipescu et al., 2013; Flor and Oltra, 2005; Gourlay et al., 2005; Hwang et al., 2015). For example, Ganotakis and Love (2011) and Harris and Li (2009) pointed out that R&D affects exports positively but does not affect export intensity. Similarly, Lefebvre and Lefebvre (2002) suggested that R&D expenditure, which is a component of R&D intensity, is one of the determinants of export performance for SMEs. On the other hand, D'Angelo (2012) and Leung and Sharma (2021) reported that R&D expenditure does not affect export performance. Although there are mixed results, R&D

intensity helps firms meet international eco-criteria that create an opportunity to expand exports and enter new markets.

New sustainability standards and policies in target markets also induce R&D activities in emerging market firms. Da Rocha Vencato (2013) claimed that exporting firms engage in more R&D to integrate sustainable practices into producing eco-friendly products than non-exporting firms. This usually necessitates technological resources. Katsikeas et al. (2006) claimed that technological advancement and people's increasing environmental and social awareness compel firms to be more innovative. Meneto and Siedschlag (2020) investigated the relationship between green innovations and export performance for Irish firms from 2012 to 2014. They indicated that product innovations with environmental benefits for consumers were positively associated with the firms' export performance. Haddoud et al. (2021) reveal that firms' commitment to environmental issues positively affects export activities, claiming that environmental commitment facilitates compliance with international standards and stimulates green innovations. Similarly, Sdiri (2022) examined 521 Tunisian firms and found that environmental commitment and product innovation would drive export intensity. Thus, firms that differentiate their products, services, and supply chain by considering stakeholders' environmental and social expectations are likely to promote them better in target markets (Al-Ghwayeen and Abdallah, 2018; Katsikeas et al., 2006).

Table 1 summarizes the selected studies on innovation/CS and export performance/intensity links.

[Insert Table 1]

Hypothesis Development

Corporate sustainability and export intensity. In the context of IB, sustainable business strategies involve integrating environmental, social, and governance (ESG) issues across various aspects of global markets (Ferrell, 2021; Martin-Tapia, Aragon-Correa, and Senise-Barrio, 2008). Sustainability, a cornerstone of modern business discussions, entails adopting comprehensive CS practices that align well with diverse stakeholder interests, playing a pivotal role in shaping current business norms.

Particularly, in countries where public concerns about environmental and social matters are heightened, the connection between sustainability efforts and export performance becomes notably prominent. Stakeholders in these nations advocate for increased ESG commitment from exporting firms, responding to the need to meet sustainability goals and adhere to regulations (Hsu et al., 2013; Lourenço and Branco, 2013; Zeriti et al., 2014). This prompts exporting firms to adopt advanced strategies that align with stakeholder expectations. These strategies encompass varied initiatives, including refining processes, obtaining environmental certifications, and actively promoting eco-friendly products (Polonsky and Rosenberger, 2001). Consequently, the effective integration of sustainability practices relies heavily on considering ESG factors relevant to different target markets, consumer preferences, and future demands (Hultman et al. 2011).

Firms embracing environmental and social policies adeptly establish a competitive edge in international markets, leveraging the strong resonance of ESG values among both discerning investors and socially-aware consumers. The escalating demand for sustainable products enhances this competitive edge, serving as a dynamic catalyst driving business evolution. The embrace of CS not only fosters operational efficiency but also fosters innovation and resource management. CS-driven enterprises streamline processes, reduce waste, and strategically allocate resources to support export-oriented activities, effectively capitalizing on sustainability trends. This interplay between CS, efficiency, and adaptability becomes a cornerstone of intensified export efforts. The resulting products surpass mere economic value, garnering intrinsic reputation and appealing to environmentally and socially conscious consumers. Existing research, whether direct or indirect, supports this linkage by demonstrating the positive impact of sustainability initiatives on export performance (Leonidou et al., 2015; Martin-Tapia et al., 2008). Contributions like those from Villena-Manzanares and Souto-Pérez (2016) underline the positive interplay of sustainability practices and innovative orientations in export performance, as seen in a study involving 180 SMEs in Spain. Equally compelling is the research by Teplova et al. (2022), shedding light on how the alignment of customer demands for environmental compliance, certification, and the adoption of energy-efficient technologies collectively enhance export intensity.

Furthermore, a strong dedication to CS initiatives necessitates a forward-looking, proactive approach to business operations. Organizations ardently embracing CS practices inherently possess the foresight to anticipate and effectively respond to shifting market dynamics, evolving regulations, and changing consumer preferences. Within this dynamic environment, the urgency of ESG demands becomes a catalyst, compelling emerging market firms to undertake innovative CS-driven endeavors, resulting in an enhanced export intensity (Wu et al., 2022). The pursuit of green technology and product innovation emerges as a guide for reducing environmental impact and improving overall performance standards (Wu et al., 2022). In the realm of social responsibility, proactive engagement with stakeholders emerges as the linchpin for forging stronger relationships. Simultaneously, nurturing a robust CS narrative establishes a reputation for steadfast international operations, concurrently conveying a trustworthy image that energizes the export intensity scenario. With this comprehensive overview as our foundation, we propose the following hypothesis:

H_1: There is a positive relationship between CS and export intensity.

The moderating role of R&D intensity. Drawing upon the RBV, which posits that a firm's resources and capabilities, including R&D investments and CS initiatives, can serve as sources of competitive advantage, leading to superior performance outcomes (Hart and Dowell, 2011; Barney, 1991; Chen et al., 2016), we contend that R&D intensity assumes a pivotal position as an intrinsic wellspring of innovation within emerging market firms. This dynamic internal resource not only bolsters firm value by augmenting economic contributions within the production process but also exerts a positive influence on marketing dynamics, as highlighted by Singh (2009). Furthermore, R&D intensity augments the efficacy of CS initiatives in engendering export intensity, stemming from its capacity to empower emerging market entities to harness CS in innovative ways that differentiate their offerings within foreign markets. Notably, the augmentation of R&D intensity also fosters the cultivation of invaluable, scarce, non-imitable, and non-substitutable resources within the organizational fabric. This elevation of resource quality, in turn, uplifts the standard of exported products, thus positioning firms

advantageously to surpass their competitors and excel within the international arena (Gourlay et al., 2005).

Anticipating a catalytic role, we posit that R&D intensity functions as a fulcrum, propelling CS towards higher efficacy in foreign market application and thereby modulating the interconnection between CS and export intensity. This supposition rests on the premise that CS fundamentally encompasses innovation and R&D undertakings that deviate from conventional routines, as affirmed by Mariadoss, Tansuhaj, and Mouri (2011) and Villena-Manzanares and Souto-Pérez (2016). To illustrate, firms endeavoring to implement environmentally conscious and socially responsible practices, such as the adoption of clean energy solutions or restoration of biodiversity, can harness the amplifying potential of heightened R&D intensity to refine the impact of these initiatives and set their products and services apart within foreign markets. This strategic amalgamation of CS and intensified R&D intensity leads to an orchestration of synergies that fosters heightened export intensity. As such, firms that devote resources to R&D can ingeniously channel their endeavors towards augmenting environmental and social sustainability, culminating in elevated export intensity resultant from the judicious use of CS practices.

In the landscape of foreign markets, the need to align with customers' and stakeholders' heightened expectations concerning environmental and social facets necessitates innovative approaches (Costa et al., 2015). Consequently, a pronounced emphasis on R&D efforts accompanies CS-related innovative undertakings. Emerging market firms that systematically enhance R&D intensity and nurture innovation capabilities are strategically positioned to harness CS more adeptly, catering effectively to the environmentally and socially conscious demands of customers overseas, thereby boosting export intensity (Mariadoss et al., 2011; Martos-Pedrero et al., 2023). Thus, firms endowed with a substantial R&D intensity are poised to capitalize on their enhanced CS deployment, driving heightened levels of export intensity.

Furthermore, the advent of CS initiatives heralds a departure from established business norms, ushering in innovative paradigms (Gölgeci et al., 2019). The intersection of CS with heightened R&D intensity amplifies the impact of these initiatives on export intensity. This amalgamation begets a scenario where R&D intensity not only complements but also

accentuates CS's influence on export intensity. For instance, incorporating environmentally and socially responsible practices, such as developing eco-friendly products, sanitation initiatives, empowerment projects, and poverty reduction endeavors, acquires added impetus when coupled with heightened R&D intensity. The symbiosis between these factors enables the elevation of the initiatives' impact on export intensity, given the innovative methods that fortify the efficacy of environmental and social practices (Gölgeci et al., 2019). In essence, the concurrent adoption of CS practices and increased R&D intensity empowers firms to optimize their resources for environmental and social sustainability, consequently intensifying the influence of CS on export intensity. This perspective aligns seamlessly with the RBV, reinforcing the significance of strategic resource possession, particularly the fusion of R&D with CS, in bolstering firms' international market endeavors.

To summarize, our proposition contends that R&D intensity functions as an enabler, magnifying the nexus between CS and export intensity by facilitating innovative approaches that augment exports while fostering sustainable practices. Hence, we formulate our hypothesis:

H_2: R&D intensity positively moderates the CS and export intensity relationship.

Figure 1 outlines the research framework along with the hypothesized relationships.

[Insert Figure 1]

Data and Methodology

Research Context and Data Sample

The present study covers Türkiye as the survey setting, one of the top emerging markets in the world. The economic growth in Türkiye is highly dependent on exports. Türkiye's exports reached USD 256 billion in 2022 from USD 102 billion in 2009 (TEA, 2023). Its share in global exports surpassed 1% for the first time in its history in 2021, increasing from 0.44% in 2000 (Statista, 2022). Likewise, exports play a significant role in the Turkish economy, with a growth rate of 50% over the last decade. Türkiye ranked 29th out of 35 OECD countries in total exports in 2020 (OECD, 2021).

Moreover, sustainability activities showed a remarkable increase among listed firms in recent years, particularly with the launching of the BIST SI in 2014. Firms have deliberately raised their commitment to being a member of the BIST SI as well as meeting the expectations of institutional investors and other stakeholders. Consequently, as an important emerging market with a growing presence in the world economy and international trade and with growing attention to environmental and social sustainability (Gölgeci et al., 2019), Türkiye is deemed a proper research context for this study.

We used panel data from 141 non-financial firms listed on the BIST Industrials Index to conduct a longitudinal study. The sample comprises firms with more than three years of international experience. The time frame covers the years from 2014 to 2021, i.e., 1102 firm-year observations since the BIST SI was initially launched in 2014. We obtained the data from the following sources: (1) BIST, (2) Public Disclosure Platform, (3) Central Registry Agency, (4) Thomson Reuters Datastream, (5) corporate annual reports, and (6) corporate websites. Table 2 presents the distribution of firms across industries. Three industries, i.e., metal products, machinery, chemicals, petroleum, plastic, and food and beverages, represent a large portion of the total number of firms. However, the remaining industries are also populated.

[Insert Table 2]

Variable Measurement

We used dependent, independent, and control variables. The measurement of these variables is provided in the following subsections.

Dependent variable. Export intensity (*EI*) is measured as the export sales divided by the firm's total sales. Thus, it ranges from 0 to 1. We used EI as a proxy for export performance.

Independent variables. Corporate sustainability (*CS*) is measured using a binary variable that assumes "1" if the firm is a member of the BIST SI and "0" otherwise. Although there are several ways to measure CS, we prefer to use the membership of the BIST SI that includes firms scrutinized by an international rating agency, i.e., Vigio EIRIS, in terms of ESG performance. *R&D intensity* (*R&D*) is computed by dividing a firm's R&D expenditure by its total sales.

Control variables. We included a wide range of potentially relevant variables to the link between CS and export intensity to account for and delineate possible spurious effects and tease out the refined impact of CS on export intensity. We explain each of these variables and the justification for their inclusion below.

Marketing expenditure plays a vital role in the success of exporting firms. Firms may enhance their export performance through effective marketing strategies (Cavusgil and Zou, 1994). Marketing expenditure can help create a better image of firms' products (Griffith and Rubera, 2014; Polonsky and Rosenberger, 2001). Firms also advertise and promote their products and brands through sustainable distribution channels, including websites and social media, to ensure uniqueness and increase brand value (Singh, 2009). Likewise, Leonidou et al. (2013) and Martin-Tapia et al. (2008) revealed that social/environmental approaches in the marketing mix positively affect export performance. All these activities are expected to influence export sales positively. Based on past research illustrating the relevance of marketing expenditure to export performance, we controlled for *marketing intensity* (*MAR*) by dividing a firm's marketing and sales expenditure by its total sales.

Firm size affects a firm's export performance (Bonaccorsi, 1992). Firm size is vital for exports due to scale economies in production and a greater capacity to take risks due to internal diversification (Wagner, 1995). It also indirectly impacts internationalization by creating foreign relationships (Monteiro, Moreira, and Sousa, 2013). The findings for the relationship between export intensity and firm size are mixed. Some authors have reported a positive relationship (e.g., Bonaccorsi, 1992; Wagner, 1995), while others have supported the opposite view (e.g., Monteiro et al., 2013) or found no relationship (e.g., Hwang et al., 2015). As such, based on demonstrated relevance of firm size, we included *firm size* (*SIZE*) as a control variable and measured it as the natural logarithm of the firm's total assets.

Financial leverage is essential in explaining firms' export intensity and sustainability (Mojdeh et al., 2020). Exporting firms are less leveraged and more liquid than non-exporting ones (Bernini, Guillou, and Bellone, 2015). In line with the pecking-order theory, exporting firms are more likely to have less leverage since they depend more on internal than external financing (Pinto and Silva, 2021). However, the effect of leverage on export intensity differs

with firm types and country factors (Jõeveer, 2013). Amongst others, Chen and Yu (2011) and Pinto and Silva (2021) identified a negative relationship between leverage and export performance, while Maes et al. (2019) found a positive one. Thus, *leverage* (*LEV*) is included as a control variable and is computed by dividing the total liabilities by the total assets.

Firm age may discourage or encourage firms from entering foreign markets (Charoenrat and Amornkitvikai, 2021). Old firms are more likely to enter international markets due to their greater experience, broader business networks, and higher commercial reputation than young firms (Amornkitvikai, Harvie, and Charoenrat, 2012). Opposing this view, Aggrey, Eliab, and Joseph (2010) claimed that young firms are more likely to export since they are much more forward-looking. Amornkitvikai et al. (2012) and Jongwanich and Kohpaiboon (2008) identified a positive relationship between firm age and export performance, while Charoenrat and Amornkitvikai (2021) found a negative association. Thus, the results are mixed. *Firm age* (*AGE*) is calculated as the years elapsed since the firm's foundation.

Internationalization and international experience are vital for firms' survival and quick and easy access to foreign markets (Kuivalainen and Sundqvist, 2007). Firms accumulate experience, initiate organizational learning, and minimize uncertainty in target markets. Previous studies have shown that firms that follow this approach typically perform better than those that do not (Lu and Beamish, 2006; Meschi, Ricard, and Tapia Moore, 2017). Accordingly, we also include *international experience* (*INTAGE*) as a control variable and compute it by the year the firm started exporting.

MNC affiliation can also be an essential determinant of export intensity. MNC affiliates are more export-oriented than wholly domestically-owned firms (Jenkins, 1979). They are more outward-oriented and are associated with more competitive technology, better management techniques, and superior marketing skills (Aggarwal, 2002). They can also learn from the export activities of MNCs. Therefore, the presence of MNCs usually creates export spillovers and can positively affect overall export intensity (Johnwanich and Kohpaiboon, 2008). *MNC affiliation* (*MULT*) is measured by using a binary variable that assumes "1" if the firm is wholly or partly owned by an MNC and "0" otherwise.

Finally, firms' export intensity is highly dependent on the industry characteristics to which they belong (Beleska-Spasova, 2014; Cavusgil and Zou, 1994). For instance, in industries with a high level of producer concentration, the probability of a firm exporting is low since it may enjoy market power in the domestic market (Fu, Wu, and Tang, 2010; Jongwanich and Kohpaiboon, 2008). Therefore, we also control for *industry* and calculate it as a dummy variable based on the BIST industrial classification.

Data Analysis

We used the Tobit regression model, commonly employed in similar studies examining export intensity (Agnihotri and Bhattacharya, 2015; Rodríguez and Nieto, 2012). We included firms with at least three years of exporting to avoid selectivity bias. A small number of firms still have had no exports in some years. One way of dealing with this problem is to use the Tobit model, which is appropriate for censored data. The model incorporates the decision of whether to export and the level of exports relative to sales.

We estimated a random effects Tobit model to control the possibility of significant unobserved, time-invariant firm-specific effects correlated with the explanatory variables (see Barrios, Görg, and Strobl, 2003). The equations (1, 2) are given below. A dummy variable is included for each year to capture anything unique to the selected period, while another dummy variable is included for the industry. $CS_{i,t} * R\&D_{i,t}$ is the composite independent variable included in the model to check for possible moderation effects at time *t*.

$$EI_{i,t} = \alpha + X_1 CS_{i,t} + X_2 R\&D_{i,t} + X_3 MAR_{i,t} + X_4 SIZE_{i,t} + X_5 LEV_{i,t} + X_6 AGE_{i,t} + X_7 INTAGE_{i,t} + X_8 MULT_{i,t} + X_9 Industry_{i,t} + X_{10} \sum_{k=1}^{8} Time_{i,t} + e_{i,t} \quad (1)$$

$$EI_{i,t} = \alpha + X_1 CS_{i,t} + X_2 R\&D_{i,t} + X_3 CS_{i,t} * R\&D_{i,t} + X_4 MAR_{i,t} + X_5 SIZE_{i,t} + X_6 LEV_{i,t} + X_7 AGE_{i,t} + X_8 INTAGE_{i,t} + X_9 MULT_{i,t} + X_{10} Industry_{i,t} + X_{11} \sum_{k=1}^{8} Time_{i,t} + e_{i,t} \quad (2)$$

Empirical Results and Discussion

Descriptive Statistics

Table 3 provides a summary of the descriptive statistics and the correlation matrix. On average, the export intensity of the firms in the sample is 29%, while the R&D is 50%. The average firm age is 43.01 years, while the average international experience is 8.35 years. EI has a positive and significant correlation with CS, SIZE, INTAGE, and MULT and a negative and significant correlation with R&D intensity and MAR. The highest correlation, 0.58, is observed between SIZE and CS. When the independent variable (CS) and moderator (R&D intensity) correlate, the power of detecting the moderation effects is reduced. In our sample, the correlation between CS and R&D intensity is -0.00, indicating that we can model the moderation effect. All the other correlations are modest to low and pose no multicollinearity problem. To check for multicollinearity, we also calculated the variance inflation factor (VIF), which is reported in Appendix. The VIF values of the explanatory variables are below 10, indicating that multicollinearity is unlikely to influence our results.

[Insert Table 3]

Estimation Results

Table 4 shows the random effects of Tobit regression results. Model 1 focuses on the direct effects of the independent variables, while Model 2 includes the interaction of CS and R&D intensity. The moderation indicates that the CS-export intensity relationship differs by the level of R&D intensity. If the regression coefficient of the interaction term (CS*R&D intensity) is significant, it suggests that R&D intensity modifies the CS-export intensity relationship. The moderator does not elicit the CS effect but affects its size or direction.

The coefficient analysis of Model 1 reveals a pivotal and compelling finding supporting H_1. Our results illuminate a robust and statistically significant positive relationship between CS and EI. This connection serves as a cornerstone in understanding how firms' commitment to CS practices has a pronounced impact on their ability to engage and thrive in international markets. This alignment with H_1 underscores the strategic significance of integrating sustainability principles into the core fabric of a firm's operations and strategies.

CS, in this context, emerges as a dynamic and multifaceted resource that offers firms a tangible competitive advantage in the global marketplace. Our findings resonate with the assertions of Boehe and Cruz (2010), who suggest that CS functions as a valuable resource capable of bolstering corporate performance on multiple fronts. Beyond the confines of domestic operations, CS extends its influence to international forays, where it serves as a catalyst for enhanced reputation and brand image. The ability of firms to resonate with international stakeholders through their commitment to sustainable practices further cements their positioning as responsible and conscientious actors on the global stage. This positive perception fosters goodwill and trust among foreign consumers, partners, and investors, thus catalyzing EI.

Transitioning to Model 2, we unveil an intricate layer of our investigation, one that underscores the nuanced interplay between CS and R&D intensity. Our analysis corroborates H_2, revealing a significant and positive coefficient for the interaction between CS and R&D intensity. This outcome heralds the moderating role of R&D intensity in amplifying the influence of CS on EI, enriching our understanding of how these two factors synergistically contribute to a firm's international expansion endeavors.

Our findings align harmoniously with the extant literature, echoing the insights of Meneto and Siedschlag (2020) as well as Villena-Manzanares and Souto-Pérez (2016). This synchrony is particularly salient when considering the landscape of increasingly complex global business dynamics, where innovation and adaptability are quintessential. R&D intensity, as a conduit of innovation and a harbinger of competitive differentiation, serves as a key driver that augments the relationship between CS and EI. The partnership between sustainability-focused practices and strategic R&D investments becomes a compelling narrative for firms aspiring to not only navigate the challenges of international markets but to truly thrive within them.

Intriguingly, the results of Model 2 do more than merely affirm the relationship between CS and EI. They unveil the dynamic transformation that unfolds when R&D intensity enters the equation. The positive coefficient elucidates that R&D intensity enhances the amplitude of CS's influence on EI, suggesting that the innovative endeavors bolstered by R&D investments fortify the export-oriented outcomes of firms committed to sustainability. This synergy

manifests as a pathway through which firms optimize their sustainable practices, utilizing the strategic impetus of R&D to amplify the traction of these practices in foreign markets.

[Insert Table 4]

In light of the intricate interplay between CS and EI and the moderating role of R&D intensity, a crucial juncture emerges in our analysis — calculating marginal effects and predictions. This analytical step provides us with a dynamic lens through which to fathom the nuanced landscape of the R&D intensity's moderating effect on the CS-EI relationship.

Tobit models, acknowledged for their nonlinear nature, beckon the exploration of marginal effects and predictions to unravel the intricate nature of our findings. Through these calculated metrics, we unearth the mechanisms that underpin the influence of R&D intensity on the CS-EI nexus. Figure 2, a visual representation of our derived insights, sheds light on the profound implications of R&D intensity's involvement in shaping the interrelationship between CS and EI.

The insights unveiled in Figure 2 reverberate with strategic significance. It becomes abundantly clear that the positive correlation between CS and EI gains enhanced momentum as R&D intensity escalates. In essence, the positive trajectory of the CS-EI relationship assumes a fortified stance with increased R&D investment. This dynamic underscores the pivotal role of R&D intensity as a potent catalyst, amplifying the potency of sustainable practices in steering export-oriented outcomes. The intuitive narrative that unfolds is one of strategic alignment – firms that channel resources into research and innovation not only enhance their competitive standing through the augmentation of sustainability efforts but also harness the intensified influence of these efforts on their export intensity.

This synthesis of CS and R&D intensity, as showcased in Figure 2, converges with the conceptual views put forth by Hultman et al. (2011). As exporting firms traverse the complex terrains of international markets, their integration of sustainability practices morphs into a comprehensive strategy. This strategy, intricately woven with considerations of environmental and social factors of target markets, aligns with evolving consumer needs and anticipates future market requirements. The strategic synergy between sustainability considerations and R&D

investments enhances firms' navigational prowess, allowing them to chart courses that resonate with the evolving preferences and exigencies of diverse international stakeholders.

Finally, a glance at the control variables in our analysis unveils an interesting facet. Within the realm of our investigation, none of these variables emerges as significant contributors. While this outcome does not dominate the spotlight, it serves as a reminder of the nuanced nature of the variables at play in the context of CS, R&D intensity, and EI. It accentuates the importance of the prominent factors in our study – CS and R&D intensity – as primary drivers shaping the export-oriented aspirations of firms.

[Insert Figure 2]

Robustness Checks

Sample selection bias and endogeneity. To check the robustness of the Tobit regression results, we estimated the EI equation using Heckman's (1979) two-stage selection model, which is mainly developed to address endogeneity caused by the sample selection (Jean et al., 2016). Heckman (1979) stated that sample selectivity occurs when the selection into the observed sample is not random. Thus, excluding non-exporters and estimating export intensity only with exporters may induce selectivity bias. Heckman (1979) proposed the sample selection model to correct the sample selection bias. To perform Heckman's two-stage selection model, we specified both a selection equation to estimate export propensity and a full equation to estimate export intensity for each model. A dummy variable indicating whether the firm was an exporter (0=not exporter and 1=exporter) was created before starting the analysis.

Table 5 displays the estimation results. We accepted the null hypothesis of lambda=0, indicating that the sample selection bias did not exist. This result shows that the decision to export and the export intensity can be estimated separately. In our robustness analysis, we found support for H_1 (Model 1, main equation). The result for our second hypothesis (H_2) is also consistent (Model 2, main equation), indicating the positive and significant moderating impact of R&D on the CS-EI relationship.

The direct effect of R&D intensity on EI is negative and insignificant in the main equations (Model 1 and Model 2). This negative but insignificant finding tends to emphasize further the mixed nature of the direct relationship between R&D intensity and EI. Of the control

variables, MAR is negative and significant only in the main equation (Model 2). This is in line with the findings of the prior studies (Lee and Griffith, 2004; Singh, 2009). This may be because marketing efforts usually focus on domestic markets (Benvignati, 1990) and may not always be relevant to foreign markets, considering the difficulty of directly reaching out to a diverse set of foreign customers across many countries. Due to the limited resources, emerging market firms may not target overseas customers in their marketing campaigns. The SIZE and INTAGE are positive and significant in selection equations (Model 1 and Model 2), indicating that the performance of a firm that internationalizes early is superior to that of one that internationalizes late. This finding is in line with the previous studies (e.g., Prashantham and Young, 2011; Puig, González-Loureiro, and Ghauri, 2014). Furthermore, firm size is important for export due to scale economies in production and a greater capacity to take risks due to internal diversification. Finally, the AGE is negative and significant only in the main equation (Model 2). It is consistent with recent research (e.g., Dixon, Guariglia, and Vijayakumaran, 2017). With the decentralization of foreign trade rights, young firms probably engage more in foreign sales markets.

[Insert Table 5]

Reverse causality and endogeneity. The reverse causality between independent and dependent variables may be led by endogeneity. To address simultaneity, many researchers choose explanatory variables with one or more years lagged (Jean et al., 2016). We make further attempts to reduce the effects of endogeneity on our regression estimates. Dong et al. (2022) recommend using lag values for all explanatory variables in dealing with various forms of endogeneity, including simultaneity, omitted variable bias, and a correlated error term. Reverse causality problems are associated with the possibility that EI may influence some firm-specific characteristics, causing estimation biases. Therefore, all the explanatory variables were lagged by one year. Table 6 displays the estimation results. We obtain similar results. The predicted value for the CS in Model 1 (main equation) shows a positive and statistically significant relationship with EI, supporting H_1. The coefficient value of the interaction between CS and R&D intensity in Model 2 (main equation) is also positive and statistically significant, supporting H_2. This indicates that our results are robust to endogeneity. Of the control variables,

MAR is negative and significant in the main equations (Model 1 and Model 2). The SIZE and INTAGE are positive and significant in selection equations (Model 1 and Model 2). Finally, the AGE is negative and significant only in the main equation (Model 2).

[Insert Table 6]

Post-hoc Analysis Using Additional Data

To check the robustness of our results, we tested whether our findings were sensitive to an alternative measure of CS. In so doing, we obtained the data from Thomson Reuters DataStream. Thomson Reuters provides ESG scores for three main pillars of CS: environment, social, and governance. Environmental performance was measured by the environmental pillar score (EPS), social performance was measured by the social pillar score (SPS), and corporate governance performance was measured by the governance pillar score (GPS). The inclusion of ESG scores as an alternative measure of CS is also in line with recently growing yet quite nascent research on ESG issues in IB (e.g., Ferrell, 2021; Paolone et al., 2022) that underscores ESG pillars as important and complementary pillars of CS across different contexts and marketing domains.

The sub-sample that has ESG scores covers 110 observations from 23 firms. It should be, however, noted that this sub-sample represents 67% of the total market capitalization of the firms listed on the BIST Industrials Index and thus provides a highly satisfactory level of representation. By using this sub-sample, we conducted an unbalanced panel data analysis. Since all values of our dependent variable, i.e., EI, are non-zero, we relied on linear regression techniques (OLS) to model the relationship between CS and EI. Table 7 provides a summary of the descriptive statistics and the correlation matrix.

[Insert Table 7]

We first conducted a fixed effects model and an F-test to estimate the regression model and see if any firm-specific attributes exist. The results showed that the pooled OLS model could not be used. Next, we employed Hausman (1978) test. The result indicated that the fixed effects model is better than the random effects model. Before the analysis, we first tested whether the assumptions of the regression model were violated. Breusch-Pagan's (1980) test was utilized for heteroscedasticity, and the Durbin-Watson test was used for autocorrelation.

The test results show that the panel exhibits autocorrelation and heteroscedasticity. Therefore, we estimated a model with Driscoll and Kraay's (1998) standard errors.

In all models, all the explanatory variables are lagged by one year to control for possible simultaneity bias and potential endogeneity (Aitken and Harrison, 1999; Dong et al., 2022). The R&D intensity is lagged by two years as R&D projects may require more time before they lead to innovative results (Filipescu et al., 2013; Hall et al., 2016). It may take longer for firms to realize efficiency gains derived from R&D intensity. Thus, it is reasonable to expect some lagged relationship between R&D intensity and EI (Dong et al., 2022; Sandu and Ciocanel, 2014).

The regression results are reported in Table 8. Model 1 shows that the EPS dimension of CS has a positive and significant effect on EI, lending additional support to H_1. In addition, R&D intensity has a positive and significant moderating impact on the CS–EI relationship, further supporting H_2. These findings indicate that our results are similar to the environmental pillar of CS, providing strong evidence for the role of environmental performance in countries' efforts to improve global competitiveness in international trade-related activities. Therefore, emerging market firms firmly committed to climate change mitigation activities with clear carbon reduction targets are more likely to succeed in their export endeavors. This result aligns with the findings of previous studies (e.g., Blyde and Ramirez, 2021; Doganay, Sayek, and Taskın, 2014). Models 2 and 3 in Table 8 indicate that SPS and GPS dimensions of CS have a positive but insignificant effect on EI, failing to provide further support for H_1. The coefficient values for the interaction between CS and R&D intensity for SPS (Model 2) and GPS (Model 3) are also positive but insignificant, again failing to provide additional support for H_2. Of the control variables, MAR is negative and significant, while LEV is positive and significant. Thus, the results of the post-hoc analysis using additional data show that the environmental dimension of CS is the most important pillar for improving export intensity for emerging market firms expanding into foreign markets. This is probably due to the more tangible nature of environmental outcomes and their immediate relevance to customers and stakeholders abroad (Gölgeci et al., 2021) rather than social and governance dimensions, which are likely to be relatively more localized and intangible.

[Insert Table 8]

Conclusions and Implications

The global escalation of environmental and social issues has led to the imperative of developing sustainability strategies for firms entering international markets. Sustainability and R&D intensity have become necessary due to changes in consumers' perceptions of environmental matters, recyclability, and social responsibility. Therefore, firms that promote sustainability and innovativeness and leverage them jointly can improve their export intensity. However, this is easier said than done. This study examined the effect of CS on export intensity for a sample of 141 non-financial Turkish firms listed on BIST from 2014 to 2021. It also explored the moderating role of R&D intensity in the CS and export intensity relationship.

The findings show that CS positively and significantly affects the export intensity of firms in Türkiye. Turkish firms that adopt sustainability strategies with the use of R&D benefit from higher levels of export intensity. The implementation and integration of sustainability practices have also facilitated a better place in international markets. Therefore, Turkish firms are expected to enhance their performance in the forthcoming years by implementing better environmental and social policies to satisfy stakeholders' expectations in the target markets. Apart from this result, the present study has provided evidence of the moderating role of R&D intensity. R&D efforts are the key contributor to an enhanced relationship between CS and export intensity. Finally, through additional analysis, the study indicates the pivotal role of environmental performance in export intensity and that of R&D intensity in moderating that particular link. It highlights that the role of R&D intensity in moderating environmental performance, rather than social and governance performance, is especially pronounced for emerging market firms. Hence, the findings in this paper are expected to encourage firms to further implement policies considering the R&D investments to better leverage their CS, especially its environmental dimension, and increase their export intensity.

Theoretical Implications

This study offers important implications for theory and adds to the growing research on CS in the IB field (Becker-Olsen et al., 2011; Bıçakcıoğlu, Theoharakis, and Tanyeri, 2020; Leonidou

et al., 2015; Zeriti et al., 2014). Based on the longitudinal analysis of the panel data of 141 Turkish exporting firms listed on the BIST Industrials Index, our findings indicate that export intensity increasingly depends on the successful development and implementation of CS at home and abroad. Thus, especially in the context of emerging markets, the CS imperative is an increasingly visible and profound factor for operating successfully in foreign markets. This impact is prominent even after accounting for the relevant factors of marketing intensity, international experience, leverage, and MNC affiliation, highlighting that CS has a distinct and significant impact on export intensity. Our study bridges and advances sustainability and IB research by establishing a positive link between CS and export intensity grounded in an objective and longitudinal analysis. The intersection of CS and IB is an intricate tapestry, weaving together strategic management, environmental consciousness, and global expansion. Our study brings the RBV and stakeholder theory to life, offering a canvas where these theoretical perspectives converge and flourish. The fundamental tenets of RBV (Barney, 1991) and its offshoot, natural-RBV (Hart and Dowell, 2011), regarding the importance of the resource-based and sustainability-conscious perspective of the firm for export intensity in international markets find resonance in our findings. The positive link between CS and export intensity echoes RBV's core assertion that when harnessed effectively, resources lead to competitive advantage. CS, in our context, emerges as a unique and valuable resource that not only improves firms' international competitiveness but also highlights the dynamic nature of competitive advantage. Firms that channel resources into sustainable practices not only address societal and environmental concerns but also carve out a niche in the international market, bolstered by the goodwill and trust they foster among diverse stakeholders.

Stakeholder theory, which emphasizes the multifaceted interplay between a firm and its stakeholders, finds empirical validation in our study. As stakeholders' expectations evolve to include sustainability considerations, firms are compelled to align their strategies with these expectations to thrive in the global marketplace. The link between environmental performance and export intensity underscores that firms aligning with sustainability principles transcend traditional borders, resonating with an increasingly conscientious consumer base and attracting ethically oriented investors. Our findings underscore that firms that adopt a holistic perspective,

recognizing stakeholders as critical enablers of success, are poised to excel in international expansion efforts.

Furthermore, the moderating role of R&D intensity shows that the effect of CS on export intensity is contingent on R&D and ensuing innovation that R&D intensity generates and that R&D intensity is critical for effectively leveraging CS to succeed in foreign markets. Indeed, R&D can be an instrumental means of tackling customers' and stakeholders' demands for sustainability abroad and help realize the potential of CS to tackle sustainability challenges and achieve greater export intensity. As such, our research incorporates innovation-related insights into environmental and social sustainability in IB (Bıçakcıoğlu et al., 2020; Leonidou et al., 2015; Zeriti et al., 2014) and highlights the critical role of the marketing–innovation interface (Azar and Ciabuschi, 2017; Filipescu et al., 2013; Mariadoss et al., 2011) in the better implementation of CS in foreign markets. It also shows the boundary conditions of CS in relation to IB and indicates that firms need higher levels of R&D not only to develop better products and services but also to optimize their leverage of CS, especially its environmental dimension, abroad. As such, our research highlights the imperative for the simultaneous integration of CS and R&D intensity to better serve foreign customers' broadening needs that increasingly comprise environmental and social concerns and enhance export intensity. In particular, the significant link between environmental performance and export intensity and the significant moderating role of R&D intensity in that link highlight that the environmental performance of emerging market firms matters more in foreign markets than their social and governance performance. This finding contributes to nascent research on ESG issues in IB (Ferrell, 2021; Paolone et al., 2022) and stresses the particular relevance of the environmental dimension in emerging markets.

Practical Implications

This study also yields valuable insights for practitioners. The results encourage Turkish firms to engage in more sustainability activities and consider R&D efforts as a potential source of improvement in their export intensity. Therefore, Turkish firms should expend more effort on implementing these practices in a rapidly changing environment and must understand the

conditions under which different kinds of product differentiation may influence export intensity in different countries. Hence, they should focus on specific market segments and countries and tailor their CS and R&D resources to produce fruitful outcomes. Furthermore, the results imply that since consumers in developed countries have higher valuations for environmental matters than consumers in emerging markets, exporters targeting developed markets should particularly improve environmental performance to enhance their export intensity.

The findings also have implications for the sustainability and IB literature. Firstly, sustainability and R&D are essential drivers of export intensity. The significant positive effect of sustainability and the moderating effect of R&D intensity on export intensity constitute a new finding, particularly in an emerging market. Secondly, sustainability activities and R&D intensity help build reputation, trust, and awareness in the eyes of customers in international markets, which may eventually take several years to become effective due to the time lag between product ideas, development, and product launch. Hence, fostering environmental and social practices and the corresponding R&D efforts could build trust in the relationship with the target market stakeholders and improve export intensity.

Limitations and Future Research

We acknowledge several limitations in our study that offer avenues for improvement and future exploration. First, our study's focus on a single country, albeit valuable for in-depth analysis, limits the generalizability of our findings. Extending this research to encompass a broader array of emerging markets, each with distinct socio-cultural, economic, environmental, and legal dynamics, would enhance the external validity of our results.

Second, our investigation centered on the connection between sustainability and export intensity while considering only one moderating antecedent, R&D intensity. Future research endeavors could enrich our understanding by incorporating additional intangible antecedents, thereby delving deeper into the intricate relationship between sustainability practices and various aspects of international trade, such as global partnerships and management within global value chains.

Moreover, the diversity of industries represented in our study, although providing a comprehensive perspective, prevents us from capturing potential industry-specific attributes that could yield valuable insights into the relationship between CS and export intensity. Future research endeavors could focus on specific industries, acknowledging the unique environmental and social attributes that might influence the export intensity dynamics within each sector.

Finally, in our study, as noted earlier, we adopted a binary variable to gauge CS. We acknowledge that this simplified approach may not encompass the full spectrum of CS practices and could potentially overlook nuances within firms' sustainability initiatives. We concur that the choice of a binary variable does present a limitation in terms of the depth and granularity of CS measurement. While we opted for this approach due to the inclusion of firms scrutinized by Vigio EIRIS, an international rating agency, it is important to recognize that this may not capture the entire landscape of sustainability efforts undertaken by firms. Future research could explore more comprehensive measures for assessing CS to provide a more nuanced understanding of its impact on export intensity.

References

Aggrey, N., Eliab, L., & Joseph, S. (2010). Determinants of export participation in East African manufacturing firms. *Current Research Journal of Economic Theory 2*(2), 55-61.

Agnihotri, A., & Bhattacharya, S. (2015). Determinants of export intensity in emerging markets: An upper echelon perspective. *Journal of World Business, 50*(4), 687-695.

Aitken, B.J., & Harrison, A.E. (1999). Do domestic firms benefit from direct foreign investment? Evidence from Venezuela. *American Economic Review*, *89*, 605–618.

Al-Ghwayeen, W.S., & Abdallah, A.B. (2018). Green supply chain management and export performance: The mediating role of environmental performance. *Journal of Manufacturing Technology Management, 29*(7), 1233- 1252.

Amornkitvikai, Y., Harvie, C., & Charoenrat, T. (2012). Factors affecting the export participation and performance of Thai manufacturing small and medium-sized enterprises (SMEs). University of Wollongong, Research Papers, 1-35.

Azar, G. & Ciabuschi, F. (2017). Organizational innovation, technological innovation, and export performance: The effects of innovation radicalness and extensiveness. *International Business Review 26*(2), 324-336.

Banerjee, S.B., Iyer, E.S., & Kashyap, R.K. (2003). Corporate environmentalism: Antecedents and influence of industry type. *Journal of Marketing 67*(2), 106-122.

Barney, J.B. (1991). Firm resources and sustained competitive advantage. *Journal of Management 17*(1), 99-120.

Barrios, S., Görg, H., & Strobl, E. (2003). Explaining firms' export behaviour: R&D, spillovers and the destination market. *Oxford Bulletin of Economics and Statistics, 65*(4), 475-496.

Becker-Olsen, K.L., Taylor, C.R., Hill, R.P., & Yalcinkaya, G. (2011). A cross-cultural examination of corporate social responsibility marketing communications in Mexico and the United States: Strategies for global brands. *Journal of International Marketing 19*(2), 30–44.

Beleska-Spasova, E. (2014). Determinants and measures of export performance: Comprehensive literature review. *Journal of Contemporary Economic and Business Issues 1*(1), 63-74.

Bernini, M., Guillou, S., & Bellone, F. (2015). Financial leverage and export quality: Evidence from France. *Journal of Banking and Finance*, *59,* 280-296.

Berrone, P., Gelabert, L., Massa-Saluzzo, F., & Rousseau, H.E. (2016). Understanding community dynamics in the study of grand challenges: How nonprofits, institutional actors, and the community fabric interact to influence income inequality. *Academy of Management Journal, 59*(6), 1940-1964.

Bıçakcıoğlu, N., Theoharakis, V., & Tanyeri, M. (2020). Green business strategy and export performance: an examination of boundary conditions from an emerging economy. *International Marketing Review*, *37*(1), 56-75.

Blyde, J.S., & Ramirez, M.A. (2021). Exporting and environmental performance: Where you export matters. *The Journal of International Trade and Development, 31*(5), 672-691.

Boehe, D.M., & Cruz, L.B. (2010). Corporate social responsibility, product differentiation strategy and export performance. *Journal of Business Ethics*, *91*, 325-346.

Bonaccorsi, A. (1992). On the relationship between firm size and export intensity. *Journal of International Business Studies*, *23*(4), 605-635.

Boso, N., Story, V.M., Cadogan, J.W., Micevski, M., & Kadić-Maglajlić, S. (2013). Firm innovativeness and export performance: Environmental, networking, and structural contingencies. *Journal of International Marketing, 21*(4), 62-87.

Cadogan, J.W., Boso, N., Story, V.M. & Adeola, O. (2016). Export strategic orientation–performance relationship: Examination of its enabling and disenabling boundary conditions. *Journal of Business Research*, *69*(11), 5046-5052.

Cavusgil, S.T., & Zou, S. (1994). Marketing strategy-performance relationship: An investigation of the empirical link in export market ventures. *Journal of Marketing*, *58,* 1-21.

Chabowski, B.R., Mena, J.A., & Gonzalez-Padron, T.L. (2011). The structure of sustainability research in marketing, 1958–2008: A basis for future research opportunities. *Journal of the Academy of Marketing Science*, *39*(1), 55–70.

Charoenrat, T. & Amornkitvikai, Y. (2021). Factors affecting the export intensity of Chinese manufacturing firms. *Global Business Review,* in press, https://doi.org/10.1177/09721509211000207.

Chen, J., Sousa, C.M., & He, X. (2016). The determinants of export performance: a review of the literature 2006-2014. *International Marketing Review 33*(5), 626-670.

Chen, C.J. & Yu, C.M.J. (2011). FDI, export, and capital structure an agency theory perspective. *Management International Review*, *51*(3), 295–320.

Costa, C., Lages, L.F., & Hortinha, P. (2015). The bright and dark side of CSR in export markets: Its impact on innovation and performance. *International Business Review*, *24*(5), 749-757.

D'Angelo, A. (2012). Innovation and export performance: A study of Italian high-tech SMEs. *Journal of Management and Governance*, *16*(3), 393-423.

da Rocha Vencato, C.H., Gomes, C.M., Scherer, F.L., Kneipp, J.M., & Bichueti, R.S. (2014). Strategic sustainability management and export performance. *Management of Environmental Quality: An International Journal*, *25*(4), 431-445.

Dixon, R., Guariglia, A., & Vijayakumaran, R. (2017). Managerial ownership, corporate governance and firms' exporting decisions: Evidence from Chinese listed companies. *European Journal of Finance, 23*(7–9), 802–840.

Doganay, S.M., Sayek, S., & Taskın, F. (2014). Is environmental efficiency trade inducing or trade hindering? *Energy Economics*, *44,* 340-349.

Doh, J.P., Tashman, P., & Benischke, M.H. (2019). Adapting to grand environmental challenges through collective entrepreneurship. *Academy of Management Perspectives*, *33*(4), 450-468.

Dong, G., Kokko, A., & Zhou, H. (2022). Innovation and export performance of emerging market enterprises: The roles of state and foreign ownership in China. *International Business Review,* 102025.

Engelen, A., Weinekötter, L., Saeed, S. and Enke, S. (2018). The effect of corporate support programs on employees' innovative behavior: a cross-cultural study. *Journal of Product Innovation Management*, *35*(2), 230-253.

Eteokleous, P.P., Leonidou, L., Katsikeas, C., Cadogan, J., & Park, B.I. (2016). Corporate social responsibility in international marketing: review, assessment, and future research. *International Marketing Review, 33*(4), 580-624.

Ferrell, O. (2021). Addressing socio-ecological issues in marketing: environmental, social and governance (ESG). *AMS Review, 11*(1), 140-144.

Filipescu, D., Prashantham, S., Criado, A., & Josep, R. (2013). Technological innovation and exports: Unpacking their reciprocal causality. *Journal of International Marketing*, *21*, 23-38.

Flor, M. & Oltra, M.J. (2005). The influence of firms' technological capabilities on export performance in supplier-dominated industries: the case of ceramic tiles firms. *R&D Management*, *35*(3), 333-347.

Fonseca, L.M., & Lima, V.M. (2015). Sustainability, innovation, and competitiveness. *Journal of Industrial Engineering and Management*, *8*(4), 1288-1302.

Fu, D., Wu, Y., & Tang, Y. (2010). *The effects of ownership structure and industry characteristics on export performance*. The University of Western Australia. Discussion Paper 10.09.

Ganotakis, P. & Love, J.H. (2011). R&D, product innovation, and exporting: evidence from UK new technology based firms. *Oxford Economic Papers, 63*(2), 279-306.

Gourlay, A., Seaton, J., & Suakitjarak, J. (2005). The determinants of export behavior in UK service firms. *The Service Industries Journal*, *25*(7), 879-889.

Griffith, D.A., & Rubera, G. (2014). A cross-cultural investigation of new product strategies for technological and design innovations. *Journal of International Marketing*, *22*(1), 5–20.

Gölgeci, I., Gligor, D.M., Tatoglu, E., & Arda, O.A. (2019). A relational view of environmental performance: What role do environmental collaboration and cross-functional alignment play? *Journal of Business Research*, *96*, 35-46.

Gölgeci, I., Makhmadshoev, D., & Demirbag, M. (2021). Global value chains and the environmental sustainability of emerging market firms: A systematic review of literature and research agenda. *International Business Review, 30*(5), 101857.

Haddoud, M.Y., Kock, N., Onjewu, A.-K. E., Jafari-Sadeghi, V., & Jones, P. (2023). Technology, innovation and SMEs' export intensity: Evidence from Morocco. *Technological Forecasting and Social Change, 191*, 122475.

Haddoud, M.Y., Onjewu, A.K.E., Nowinski, W., & Jones, P. (2021). The determinants of SMEs' export entry: A systematic review of the literature. *Journal of Business Research, 125,* 262–278.

Hall, B.H., Moncada-Paternò-Castello, P., Montresor, S., & Vezzani, A. (2016). Financing constraints, R&D investments and innovative performances: New empirical evidence at the firm level for Europe. *Economics of Innovation and New Technology*, *25*(3), 183-196.

Harris, R., & Li, Q.C. (2009). Exporting, R&D, and absorptive capacity in UK establishments. *Oxford Economic Papers*, *61*(1), 74–103.

Hart, S.L., & Dowell, G. (2011). Invited editorial: A natural-resource-based view of the firm: Fifteen years after. *Journal of Management*, *37*(5), 1464-1479.

Hart, S.L., & Milstein, M.B. (2004). Criando valor sustentavel. *RAE Executive 3*(2), 65-79.

Heckman, J.J. (1979). Sample selection bias as a specification error. *Econometrica*, *47*(1), 153-161.

Henson, S., & Jaffee, S. (2008). Understanding developing country strategic responses to the enhancement of food safety standards. *World Economy*, *31*(4), 548-568.

Hsu, C.C., Tan, K.C., Mohamad Zailani, S.H., & Jayaraman, V. (2013). Supply chain drivers that foster the development of green initiatives in an emerging economy. *International Journal of Operations & Production Management*, *33*(6), 656-688.

Hultman, M., Katsikeas, C.S., & Robson, M.J. (2011). Export promotion strategy and performance: The role of international experience. *Journal of International Marketing*, *19*(4), 17–39.

Hwang, Y.S., Hwang, M.N., & Dong, X. (2015). The relationships among firm size, innovation type, and export performance with regard to time spans. *Emerging Markets Finance and Trade*, *51*(5), 947-962.

Imran, M., Jian, Z., Haque, A., Urbanski, M., & Nair, S.L.S. (2018). Determinants of firm's export performance in China's automobile industry. *Sustainability*, 10, 4078.

Jenkins, R. (1979). The export performance of multinational corporations in Mexican industry. *The Journal of Development Studies 15*(3), 89-107.

Jean, R.B., Deng, Z., Kim, D., & Yuan, X. (2016). Assessing endogeneity issues in international marketing research. *International Marketing Review*, *33*(3), 483-512.

Jongwanich, J., & Kohpaiboon, A. (2008). *Export performance, foreign ownership, and trade policy regime: Evidence from Thai manufacturing*, No. 140, Asian Development Bank. http://hdl.handle.net/11540/1515.

Jõeveer, K. (2013). Firm, country and macroeconomic determinants of capital structure: Evidence from transition economies. *Journal of Comparative Economics*, *41*(1), 294-308.

Katsikeas, C.S., Samiee, S., & Theodosiou, M. (2006). Strategy fit and performance consequences of international marketing standardization. *Strategic Management Journal 27*(9), 867-890.

Kuivalainen, O., & Sundqvist, S. (2007). Profitability of rapid internationalization: The relationship between internationalization intensity and firms' export performance. *Journal of Euromarketing*, *16*(1-2), 59-69.

Lages, L.F., Silva, G., & Styles, C. (2009). Relationship capabilities, quality, and innovation as determinants of export performance. *Journal of International Marketing, 17*(4), 47-70.

Lee, C., & Griffith, D.A. (2004). The marketing strategy-performance relationship in an export-driven developing economy: A Korean illustration. *International Marketing Review*, *21*(3), 321-334.

Lefebvre, É., & Lefebvre, L.A. (2002). Innovative capabilities as determinants of export performance and behaviour: A longitudinal study of manufacturing SMEs. In: Kleinknecht A., Mohnen P. (eds) *Innovation and Firm Performance*. Palgrave Macmillan, 281-309, London.

Leonidou, L.C., Fotiadis, T.A., Christodoulides, P., Spyropoulou, S., & Katsikeas, C.S. (2015). Environmentally friendly export business strategy: Its determinants and effects on competitive advantage and performance. *International Business Review*, *24*(5), 798–811.

Leonidou, L.C., Christodoulides, P., Kyrgidou, L.P. & Palihawadana, D. (2017). Internal drivers and performance consequences of small firm green business strategy: the moderating role of external forces. *Journal of Business Ethics*, *140*(3), 585-606.

Leonidou, L.C., Katsikeas, C.S., Fotiadis, T.A., & Christodoulide, P. (2013). Antecedents and consequences of an eco-friendly export marketing strategy: The moderating role of foreign public concern and competitive intensity. *Journal of International Marketing*, *21*(3), 22–46.

Leung, T.Y., & Sharma, P. (2021). Differences in the impact of R&D intensity and R&D internationalization on firm performance – Mediating role of innovation performance. *Journal of Business Research*, *131,* 81-91.

Li, E.L., Zhou, L., & Wu, A. (2017). The supply-side of environmental sustainability and export performance: The role of knowledge integration and international buyer involvement. *International Business Review*, *26,* 724-735.

Lourenço, I., & Branco, M.C. (2013). Determinants of corporate sustainability performance in emerging markets: The Brazilian case. *Journal of Cleaner Production*, *57,* 134-141.

Lu, J.W., & Beamish, P.W. (2006). SME internationalization and performance: Growth vs. profitability. *Journal of International Entrepreneurship*, *4*(1), 27–48.

Maes, E., Dewaelheyns, N., Fuss, C. & Hulle, C.V. (2019). The impact of exporting on financial debt choices of SMEs. *Journal of Business Research*, *102,* 56-73.

Majocchi, A., Bacchiocchi, E., & Mayrhofer, U. (2005). Firm size, business experience and export intensity in SMEs: A longitudinal approach to complex relationships. *International Business Review, 14*(6), 719-738.

Mariadoss, B.J., Tansuhaj, P.S., & Mouri, N. (2011). Marketing capabilities and innovation-based strategies for environmental sustainability: An exploratory investigation of B2B firms. *Industrial Marketing Management, 40*(8), 1305-1318.

Martí, I. (2018). Transformational business models, grand challenges, and social impact. *Journal of Business Ethics*, *152*(4), 965-976.

Martin-Tapia, I., Aragon-Correa, J.A., & Senise-Barrio, M.E. (2008). Being green and export intensity of SMEs: The moderating influence of perceived uncertainty. *Ecological Economics*, *68*(1), 56–67.

Martos-Pedrero, A., Jiménez-Castillo, D., Ferron-Vilchez, V, & Cortes-Garcia, F.J. (2022). Corporate social responsibility and export performance under stakeholder view: The mediation of innovation and the moderation of the legal form. *Corporate Social Responsibility and Environmental Management, 30*(1), 248-266.

Meneto, S., & Siedschlag, I. (2020). Green innovations and export performance. *ESRI,* Working Paper No. 674.

Meschi, P.-X., Ricard, A., & Tapia Moore, E. (2017). Fast and furious or slow and cautious? The joint impact of age at internationalization, speed, and risk diversity on the survival of exporting firms. *Journal of International Management*, *23*(3), 279–291.

Mojdeh, Z., Samimi, A.J., Tehranchian, A.M. & Rasekhi, S. (2020). Analyzing the impact of leverage rate on export survival: The case of Iranian firms. *Journal of Money and Economy*, *15*(1), 25-34.

Monteiro, T.M.C., Moreira, M.R.A., & Sousa, P.S.A. (2013). Relationship between firm size and export performance: An exploratory analysis. *Economics and Management Research Projects: An International Journal*, *3*(1), 9-23.

Nyuur, R.B., Brecic, R., & Debrah, Y.A. (2018). SME international innovation and strategic adaptiveness. *International Marketing Review, 35*(2), 280-300.

OECD (2021). *OECD Economic Surveys: Turkey 2021*, OECD Publishing, Paris, https://doi.org/10.1787/2cd09ab1-en (accessed on 02 May 2023).

Paolone, F., Cucari, N., Wu, J., & Tiscini, R. (2022). How do ESG pillars impact firms' marketing performance? A configurational analysis in the pharmaceutical sector. *Journal of Business & Industrial Marketing, 37*(8), 1594-1606.

Papadopoulos, N., & Martín, O.M. (2010). Toward a model of the relationship between internationalization and export performance. *International Business Review*, *19,* 388-406.

Pinto, J.M. & Silva, C.S. (2021). Does export intensity affect corporate leverage? Evidence from Portuguese SMEs. *Finance Research Letters*, *38,* 101418.

Polonsky, M.J., & Rosenberger, P.J. (2001). Reevaluating green marketing: A strategic approach. *Business Horizons*, *44*(5), 21–30.

Porter, M.E., & Kramer, M.R. (2006). Strategy & society: the link between competitive advantage and corporate social responsibility. *Harvard Business Review*, *84,* 78–92.

Porter, M.E., & van der Linde, C. (1995). Toward a new conception of environment-competitiveness relationship. *The Journal of Economic Perspectives*, *9*(4), 97-118.

Prashantham, S., & Young, S. (2011). Post-entry speed of international new ventures. *Entrepreneurship: Theory and Practice*, *35*(2), 275–292.

Puig, F., González-Loureiro, M. & Ghauri, P.N. (2014). Internationalisation for survival: The case of new ventures. *Management International Review*, *54*(5), 653–673.

Rhee, J., Park, T., & Lee, D.H. (2010). Drivers of innovativeness and performance for innovative SMEs in South Korea: Mediation of learning orientation. *Technovation*, *30*, 65-75.

Rodríguez, A., & Nieto, M.J. (2012). The internationalization of knowledge-intensive business services: the effect of collaboration and the mediating role of innovation. *The Service Industries Journal*, *32*(7), 1057-1075.

Sandu, S., & Ciocanel, B. (2014). Impact of R&D and innovation on high-tech export. *Procedia Economics and Finance, 15*, 80-90.

Sdiri, H. (2022). *The influence of environmental commitment and innovation on export intensity: Firm-level evidence from Tunisia.* MPRA Paper No. 113793. https://mpra.ub.uni-muenchen.de/113793/ (accessed on 26 April 2023).

Singh, D.A. (2009). Export performance of emerging market firms. *International Business Review*, *18,* 321–330.

Sousa C.M., Martínez-López, F.J., & Coelho, F. (2008). The determinants of export performance: A review of the research in the literature between 1998 and 2005. *International Journal of Management Reviews*, *10*(4), 343-374.

Statista (2022). *Share of Turkey in total exports worldwide 2013-2020*. Available at: https://www.statista.com/statistics/1306315/turkey-share-in-exports-worldwide/ (accessed on 12 November 2022).

Swinnen, J.F.M. (2007). *Global supply chains, standards, and the poor: How the globalization of food systems and standards affects rural development and poverty*. CAB eBooks. https://doi.org/10.1079/9781845931858.0000

TEA (Turkish Exporters Assembly) (2023). *Turkish Annual Export Figures January 2023*. Available at: https://tim.org.tr/en/export-export-figures (accessed on 01 May 2023).

Teplova, T., Sokolova, T., Gubareva, M., & Sokhich, V. (2022). The multifaceted sustainable development and export intensity of emerging market firms under financial constraints: The role of ESG and innovative activity. *Complexity, 2022*, Article ID 3295364, 1-20.

Varadarajan, R. (2014). Toward sustainability: Public policy, global social innovations for base-of-the pyramid markets, and demarketing for a better world. *Journal of International Marketing*, *22*(2), 1-20.

Villena-Manzanares, F., & Souto-Pérez, J.E. (2016). Sustainability, innovative orientation, and export performance of manufacturing SMEs: An empirical analysis of the mediating role of corporate image. *Journal of Industrial Engineering and Management*, *9*(1), 35-58.

Vo, D.V., Binh, T.V., & Trang, T.L.N. (2022). Intensity of enterprises in transition economy: The case of Vietnam. *Asian Journal of Business and Accounting*, *15*(1), 281-309.

Yeniyurt, S.S., Cavusgil, T.G., & Hult, M.T. (2005). A global market advantage framework: The role of global market knowledge competencies. *International Business Review*, *14*(1), 1–19.

Wagner, J. (1995). Exports, firm size, and firm dynamics. *Small Business Economics*, *7*(1), 29-39.

Wang, W., & Ma, H. (2018). Export strategy, export intensity and learning: Integrating the resource perspective and institutional perspective. *Journal of World Business, 53*(4), 581-592.

Wu, Q., Chen, G., Han, J., & Wu, L. (2022). Does corporate ESG performance improve export intensity? Evidence from Chinese listed firms. *Sustainability*, *14*, 12981.

Zeriti, A., Robson, M.J., Spyropoulou, S., & Leonidou, C.N. (2014). Sustainable export marketing strategy fit and performance. *Journal of International Marketing*, *22*(4), 44-66.

Zhang, J., Di Benedetto, C.A., & Hoenig, S. (2009). Product development strategy, product innovation performance, and the mediating role of knowledge utilization: evidence from subsidiaries in China. *Journal of International Marketing, 17*(2), 42-58.

Zhu, Q., Sarkis, J., & Lai, K.H. (2008). Confirmation of a measurement model for green supply chain management practices implementation. *International Journal of Production Economics*, *111*(2), 261-273.

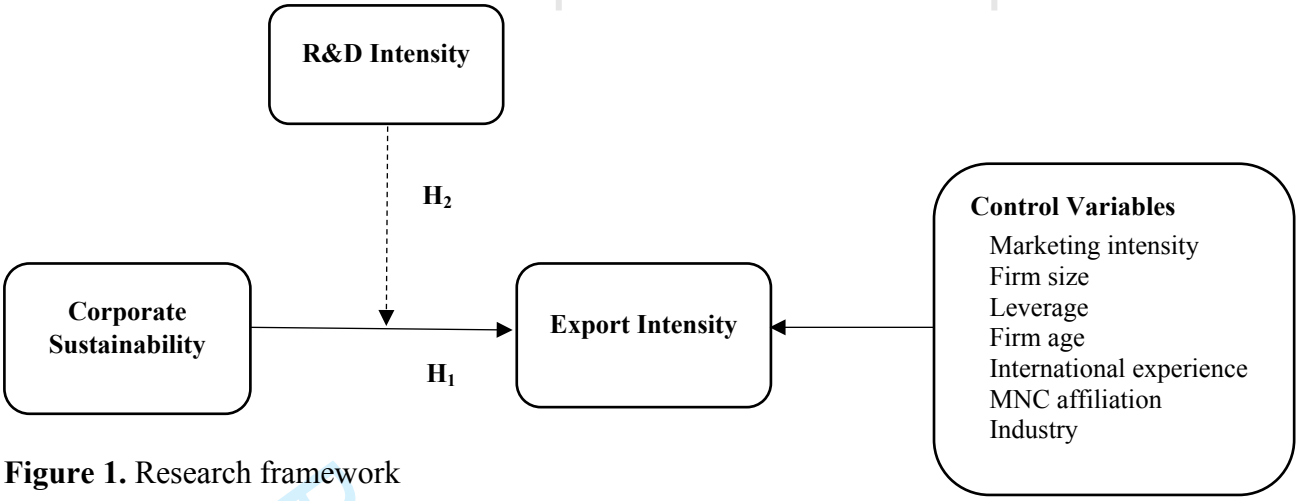

Figure 1. Research framework

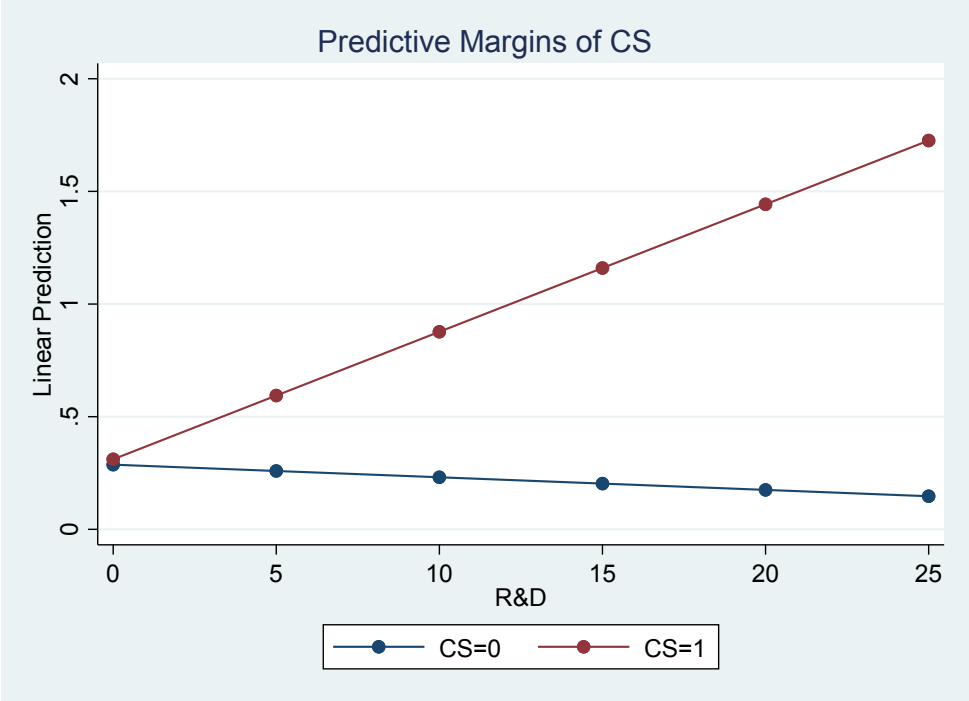

Figure 2. Marginal effects

Table 1. A summary of selected studies on innovation/CS and export performance/intensity link

Author(s)	Variables	Innovation/CS coverage	Theoretical perspective(s)	Sample/method	Key finding(s)
Boehe and Cruz (2010)	Product quality, product innovation, CSR differentiation, and export performance	Both	Institutional theory, RBV	252 Brazilian firms, structural equation model	CSR product differentiation and product innovation positively influence export performance.
Costa et al. (2015)	Exploratory innovation and export performance	Both	Stakeholder theory	170 firms in Portugal, partial least squares (PLS) structural equation modeling (SEM)	CSR principles enhance the impact of exploratory innovation on export performance and decrease the impact of exploitative innovation on export performance.
Filipescu et al. (2013)	Export breadth, export depth, R&D intensity, product, and process innovation	Innovation	RBV	696 Spanish firms 1994-2005, Tobit and logit regression, Granger causality test	R&D intensity is positively associated with export breadth and depth.
Gourlay et al. (2005)	Export activities, R&D expenditure, capital intensity, firm size, and product diversification	Innovation	RBV	UK firms 1988-2001, Tobit and probit regression	R&D intensity is positively related to export intensity.
Harris and Li (2009)	Export intensity, R&D expenditure, and firm size	Innovation	RBV	UK firms 1998-2000, Heckman's approach, probit regression	R&D does not increase export intensity.
Hwang et al. (2015)	Export intensity, innovation, and R&D	Innovation	Life-cycle theory	Korean firms 2005-2008-2010, Tobit model	R&D positively influences export performance.
Lefebvre and Lefebvre (2002)	Export performance, R&D, knowledge intensity, and diversification	Innovation	RBV	3.032 firms in the US, Canada, EU 1994-1997, Tobit and probit models	R&D is one of the determinants of export performance.
Leonidou et al. (2015)	Foreign competitive intensity, environmentally friendly export business strategy, and export performance	CS	N/A	233 Greece firms, elliptical re-weighted least-squares estimation	Green export strategy positively affects differentiation but not cost advantage in export ventures.
Leung and Sharma (2021)	R&D intensity, export intensity, innovation performance, firm value, and board size	Innovation	N/A	385 firms in Shanghai and Shenzhen 2010-2013, panel data	R&D does not affect export performance. Innovation performance mediates the impact of R&D intensity and R&D internationalization on firm performance.
Martin-Tapia et al. (2008)	Proactive environmental strategy, export intensity, and perceived uncertainty	CS	RBV	145 Spanish firms, moderated hierarchical regression analysis	A proactive environmental strategy is positively related to export performance.
Martos-Pedero et al. (2022)	Innovation, export performance, and corporate social responsibility	Both	Stakeholder view	107 Spanish firms, PLS-SEM	CSR has no direct effect on export performance, but innovation serves as a mediator in this link

Table 1. (continued)

Author(s)	Variables	Innovation/CS coverage	Theoretical perspective(s)	Sample/method	Key finding(s)
Meneto and Siedschlag (2020)	R&D intensity, export intensity, and productivity	Both	Porter hypothesis	3036 Irish firms, 2012-2014 Heckman's approach	Green innovations are positively associated with firms' export participation, but they do not impact export intensity.
Singh (2009)	Business group affiliation, R&D expenditure, advertising expenditure, and firm size	Innovation	RBV	3542 Indian firms 1990-2005, two-stage least square estimation	R&D expenditure positively affects exports, while advertising expenditure negatively affects it.
Teplova et al. (2022)	CSR, R&D investment, financial constraints, export intensity	Both	RBV	18,676 SMEs from 37 Asian and Eastern European emerging countries, Heckman model	Innovative activity and CSR facilitate entry to foreign markets, while equity concentration is a major deterrent. R&D investment has a positive effect on export intensity.
Villena-Manzanares and Souto-Pérez (2016)	Sustainability, corporate image, innovative orientation, and export performance	Both	Dynamic capabilities view	180 SMEs in Spain, PLS-SEM	Sustainability and innovative approaches have positive effects on export performance.
Vo et al. (2022)	R&D intensity and export intensity	Innovation	RBV	306 exporting Vietnamese firms, robust standard errors, and Tobit regression models	R&D intensity is positively associated with export intensity.
This study	CS, R&D intensity, and export intensity	Both	RBV Stakeholder theory	141 firms listed on Borsa Istanbul from 2014 to 2021, Tobit regression	CS positively influences export intensity. R&D intensity strengthens the relationship between CS and export intensity.

Table 2. Distribution of firms across industries

Name of industry	Number of firms	Percentage
Metal products and machinery	29	21
Chemical, petroleum, and plastic	28	20
Food and beverage	23	16
Basic metal	17	12
Textile, apparel, and leather	15	11
Wood, paper, and printing	13	9
Non-metal mineral products	12	9
Other industries	4	3
Total	***141***	***100***

Table 3. Descriptive statistics and correlation matrix

Variables	Variable names	Mean	S.D.	1	2	3	4	5	6	7	8	9
1. EI	Export intensity	0.29	0.25	1								
2. CS	Corporate sustainability	0.12	0.32	0.15*	1							
3. R&D	R&D intensity	0.50	1.43	-0.06*	-0.00	1						
4. MAR	Marketing intensity	7.38	7.57	-0.10*	-0.00	0.09*	1					
5. SIZE	Firm size	20.10	1.84	0.10*	0.58*	-0.05	-0.13*	1				
6. LEV	Leverage	0.56	0.32	0.03	0.08*	-0.04	0.16*	0.07*	1			
7. AGE	Firm age	43.01	16.24	0.00	0.12*	-0.03	-0.01	0.38*	-0.02	1		
8. INTAGE	International experience	8.35	3.23	0.19*	0.20*	0.03	0.00	0.40*	0.12*	0.38*	1	
9. MULT	MNC affiliation	0.22	0.41	0.07*	0.24*	-0.06*	-0.00	0.21*	0.00	0.08*	0.15*	1

Notes: *p<0.05 *N*=141

Table 4. Tobit regression results

Variables	Random effects Tobit	
	Model 1	Model 2
CS	0.055(0.02)*	0.034(0.022)
R&D	-0.005(0.003)	-0.005(0.003)
MAR	0.002(0.001)	0.002(0.001)
SIZE	0.01(0.009)	0.01(0.009)
LEV	0.018(0.019)	0.019(0.019)
AGE	-0.002(0.001)	-0.002(0.001)
INTAGE	0.014(0.008)	0.013(0.008)
MULT	0.01(0.048)	0.014(0.048)
CS * R&D		0.057(0.03)*
Constant	0.049(0.165)	0.062(0.164)
Industry dummies	Included	Included
Time dummies	Included	Included
Log likelihood	624.08	625.94
Number of observations	1102	1102
LR test	1386.08**	1346.95**

Notes: *p<0.05, **p<0.01, Standard errors in parenthesis

Table 5. Heckman's two-stage regression results

Variables	Model 1		Model 2	
	Main equation	Selection equation	Main equation	Selection equation
CS	0.131(0.066)*	-0.364(0.364)	0.02(0.07)	-0.369(0.425)
R&D	-0.013(0.011)	0.011(0.049)	-0.018(0.01)	0.011(0.049)
MAR	-0.004(0.002)	0.008(0.011)	-0.004(0.002)*	0.008(0.011)
SIZE	-0.015(0.016)	0.164(0.063)*	-0.013(0.015)	0.164(0.063)*
LEV	0.04(0.059)	-0.285(0.196)	0.028(0.054)	-0.285(0.196)
AGE	-0.002(0.001)	0.001(0.006)	-0.002(0.001)*	0.001(0.006)
INTAGE	0.002(0.018)	0.112(0.028)**	0.002(0.017)	0.112(0.028)**
MULT	0.001(0.04)	0.039(0.235)	0.018(0.037)	0.039(0.236)
CS*R&D			0.216(0.066)**	0.011(0.43)
Constant	0.679(0.374)	-1.465(1.198)	0.656(0.345)	-1.464(1.198)
Industry dummies	Included	Included	Included	Included
Time dummies	Included	Included	Included	Included
Wald chi2	17.64		31.62*	
Number of observations	1102		1102	
Lambda	-0.526(0.605)		-0.485(0.558)	

Notes: *p<0.05, **p<0.01, Standard errors in parenthesis

Table 6. Regression results for endogeneity

Variables	Heckman's two-stage			
	Model 1		Model 2	
	Main equation	Selection equation	Main equation	Selection equation
CS_{t-1}	0.165(0.073)*	-0.323(0.443)	0.044(0.063)	-0.272(0.538)
$R\&D_{t-1}$	-0.005(0.013)	-0.016(0.036)	-0.011(0.01)	-0.015(0.036)
MAR_{t-1}	-0.005(0.003)*	0.019(0.013)	-0.005(0.002)**	0.019(0.013)
$SIZE_{t-1}$	-0.025(0.02)	0.238(0.07)**	-0.02(0.015)	0.238(0.07)**
LEV_{t-1}	0.042(0.061)	-0.275(0.193)	0.024(0.046)	-0.274(0.193)
AGE_{t-1}	-0.002(0.001)	0.001(0.006)	-0.002(0.001)**	0.001(0.006)
$INTAGE_{t-1}$	0.005(0.014)	0.08(0.031)**	0.007(0.01)	0.08(0.031)**
$MULT_{t-1}$	0.005(0.044)	0.004(0.244)	0.021(0.033)	0(0.244)
$CS_{t-1} * R\&D_{t-1}$			0.215(0.058)**	-0.087(0.492)
Constant	0.851(0.43)*	-2.822(1.297)	0.755(0.322)*	-2.829(1.299)*
Industry dummies	Included	Included	Included	Included
Time dummies	Included	Included	Included	Included
Number of observations	962	962	962	962
Wald chi2	16.58		42.90**	
Lambda	-0.54(0.518)	-0.54(0.518)	-0.403(0.387)	-0.403(0.387)

Notes: *p<0.05, **p<0.01, Standard errors in parenthesis

Table 7. Descriptive statistics and correlation matrix for the sub-sample

Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11
1. EI	0.37	0.23	1										
2. EPS	58.31	24.97	0.48*	1									
3. SPS	62.62	23.37	0.36*	0.81*	1								
4. GPS	53.55	21.00	0.37*	0.53*	0.33*	1							
5. R&D	0.59	1.07	0.10	-0.21*	-0.29*	-0.26*	1						
6. MAR	7.16	7.52	0.29*	0.42*	0.41*	0.20*	-0.02	1					
7. SIZE	23.21	0.98	0.03	0.36*	0.32*	0.19*	-0.22*	0.05	1				
8. LEV	0.62	0.16	0.46*	0.34*	0.40*	0.10	-0.14	0.23*	-0.08	1			
9. AGE	49.92	15.67	-0.00	0.09	0.04	0.10	0.07	-0.01	-0.19*	0.18	1		
10. INTAGE	10.07	2.11	-0.01	0.04	0.17	-0.04	0.16	-0.13	0.07	0.08	0.06	1	
11. MULT	0.47	0.50	0.25*	0.01	-0.08	0.13	-0.23*	0.05	0.11	-0.17	-0.10	-0.22*	1

Notes: *p<0.05 *N*=23

Table 8. Regression results for the sub-sample

Variables	Model 1 Environmental pillar score (CS=EPS)	Model 2 Social pillar score (CS=SPS)	Model 3 Governance pillar score (CS=GPS)
CS_{t-1}	0.001(0.000)**	0.000(0.000)	0.000(0.000)
$R\&D_{t-2}$	-0.006(0.006)	0.016(0.008)	-0.019(0.011)
MAR_{t-1}	-0.017(0.004)**	-0.018(0.006)*	-0.022(0.006)*
$SIZE_{t-1}$	0.069(0.037)	0.073(0.033)	0.104(0.06)
LEV_{t-1}	0.534(0.051)**	0.498(0.035)**	0.507(0.034)**
AGE_{t-1}	-0.035(0.02)	-0.035(0.018)	-0.051(0.032)
$INTAGE_{t-1}$	0.019(0.012)	0.022(0.009)	0.034(0.019)
$MULT_{t-1}$	Omitted	Omitted	Omitted
$CS_{t-1} * R\&D_{t-2}$	0.001(0.0002)*	0.000(0.001)	0.001(0.001)
Constant	Omitted	Omitted	Omitted
Industry dummies	Included	Included	Included
Time dummies	Included	Included	Included
Number of observations	67	64	64
R-squared	0.51	0.46	0.48
F(11,5)	156.94	313.53	2827.02

Notes: *p<0.05, **p<0.01, Standard errors in parenthesis

Appendix 1. Variance inflation factors

Variable names	VIF	1/VIF
SIZE	2.00	0.50
CS	1.60	0.63
INTAGE	1.29	0.78
AGE	1.27	0.79
MULT	1.08	0.92
MAR	1.08	0.93
LEV	1.06	0.94
R&D	1.02	0.98
Mean VIF	1.30	