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Enhancing project-based organization performance through ESG practices: the role of organizational agility

Costanza Mariani
Department of Management, Economics and Industrial Engineering, Politecnico di Milano, Milan, Italy
Andrea Caccialanza
Department of Management, University of Bologna, Bologna, Italy
Marijana Bugarčić and Marko Slavkovic
Faculty of Economics, University of Kragujevac, Kragujevac, Serbia, and
Mauro Mancini
Department of Management, Economics and Industrial Engineering, Politecnico di Milano, Milan, Italy

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Abstract

Purpose – This study investigates the influence of environmental, social, and governance (ESG) practices on the performance of project-based organizations (PBOs). It explores how ESG practices contribute to organizational agility and overall performance, using the balanced scorecard (BSCs) framework to assess financial, customer, internal, and learning performance dimensions.

Design/methodology/approach – The paper employs partial least squares structural equation modeling (PLS-SEM), to test hypotheses grounded in the resource-based view (RBV) and dynamic capabilities view (DCV). We surveyed 212 valid responses from PBO managers, reflecting a response rate of 48.73%. The model examines the direct impacts of ESG practices on PBO performance and the intervening role of organizational agility.

Findings – The results demonstrate that ESG practices are positively associated with PBO performance across all measured dimensions. Notably, organizational agility mediates the relationship between ESG practices and learning outcomes, emphasizing agility's critical role in facilitating the effective integration of ESG principles. The study finds also that organizational agility positively moderates the relationship between ESG practices and financial, internal and customer-related PBOs outcomes.

Originality/value – This research contributes to the literature by showcasing how ESG practices serve as strategic resources that are positively related to competitive advantages and performance in PBOs. It also underscores the importance of organizational agility in leveraging ESG practices. By integrating ESG practices, PBOs are positively associated with significant performance improvements across multiple dimensions.

Keywords Project management, ESG, Project performance, Organizational agility, Project based organizations

Paper type Research paper

1. Introduction

Environmental, social and governance (later ESG) practices, which encompass strategies and actions performed by a company to achieve sustainable and ethical impacts on society and the environment, are increasingly becoming a focal point for businesses aiming to align profitability with sustainability (Velte, 2017; Broadstock *et al*., 2021). This growing interest in ESG practices is reported not only in firm-level literature but also in studies focusing on

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project-based organizations (PBOs)— organizations that operate primarily through projects as their main mode of value creation and delivery—and individual project management. The literature on PBOs outlines unique challenges and opportunities in effectively integrating ESG practices (Silvius and Schipper, 2014; Gilbert Silvius *et al.*, 2017). This body of project management literature explores how these ESG practices are associated to superior project outcomes (Carvalho and Rabechini, 2017; Silvius and Schipper, 2014), improved risk management capabilities (Silvius, 2017), and increased stakeholder satisfaction (Eskerod and Huemann, 2013).

The existing literature presents varied findings regarding the impact of implementing ESG practices on organizational performance (Li *et al.*, 2022; Silvius and Schipper, 2014, 2020; Turner and Keegan, 2001). Some scholars contend that ESG practices merely add expenses to projects without delivering tangible benefits, potentially detracting from performance (Kim and Lyon, 2015). Conversely, other researchers, emphasize the beneficial impacts of sustainable practices on the performance of individual projects (Martens and Carvalho, 2017; Silvius, 2017).

The lack of consensus regarding the outcomes of implementing ESG practices underscores a significant gap in current research, highlighting the need for further empirical examination (Gilbert Silvius *et al.*, 2017; Silvius and Schipper, 2020). Additionally, existing studies on the impact of ESG practices on PBOs performance exhibit two other gaps. First, (1) the literature on "sustainability of the project," which involves integrating sustainable practices into project management and observing the expected outcomes, employs individual projects as the unit of analysis for evaluating potential benefits (Huemann and Silvius, 2017). This approach limits the analysis to the single project, thus restricting the assessment to a short-term and project-specific strategic horizon that does not encompass the broader organizational context. Second (2), as previously mentioned, these studies often evaluate performance strictly from a financial standpoint. However, the literature highlights the need, especially for PBOs, to also consider other performance measures such as stakeholder relationships (Sabini and Alderman, 2021), social impact (Di Maddaloni and Derakhshan, 2019), and employee satisfaction (Lee, 2022). To fill this gap, we employ BSC, as originally defined by Kaplan and Norton (1992), as a measure for PBOs success. The use of the BSC, is widely recognized in project management literature, as a tool for aligning the objectives of individual projects with those of the PBOs (Devine *et al.*, 2010; Kutsch *et al.*, 2015) or for evaluating the potential performance of new incoming projects (Asosheh *et al.*, 2010; Eilat *et al.*, 2008). Further, since PBOs have multiple objectives, such as community impact besides operational efficiency, BSC are considered a well-suited strategic tool for these types of organizations (Vukomanovic and Radujkovic, 2013). Given this context, the primary question our paper seeks to address, with PBOs as the unit of analysis and adopting a broad definition of performance as outlined by the Balanced Scorecards, is:

Q1. To what extent do ESG practices affect the performance of PBOs?

PBOs engage primarily in project-oriented work, like civil engineering and IT, or include projects as a significant part of their operations (Turner and Keegan, 2001). These organizations are defined as fast and flexible mode of organizing knowledge, processes, and resources (Miterev *et al.*, 2017; Sydow *et al.*, 2004). They can circumvent traditional barriers to organizational change and innovation, as each project is presented as a temporary, relatively short-lived phenomenon. This grants them notable flexibility and organizational agility, setting them apart from traditional organizational structures (Miterev *et al.*, 2017; Turner and Keegan, 2001). Organizational agility can be defined as the ability of an organization to rapidly adapt to market changes and environmental conditions, encompassing the ability to respond quickly to opportunities and threats, manage risk effectively, and frequently align strategic direction with operational execution (Harraf *et al.*, 2015). Scholars have proposed that organizational agility could improve the integration of ESG practices, suggesting that the adaptability and responsiveness inherent in agile organizations may facilitate the effective implementation of these practices (Obradović *et al.*, 2019). The implementation of ESG

practices encourages PBOs to enhance their agility by adopting flexible strategies and engaging with diverse stakeholders, which in turn positively influences their performance across various metrics, including compliance, competitiveness, and stakeholder satisfaction (Ashrafi *et al*., 2019; Gerald *et al*., 2020). However, to the best of the authors' knowledge, the empirical relationship between ESG practices, organizational agility, and PBOs performance has not been thoroughly examined. Therefore, our paper introduces a secondary research question to explore this dynamic further:

Q2. To what extent does PBOs organizational agility intervene in the relationship between ESG practices and PBOs performance?

Based on these research questions, this study pursues two main objectives: first, to examine the impact of ESG practices on the performance of PBOs as assessed through the Balanced Scorecard (BSC) framework; and second, to investigate how organizational agility influences the relationship between ESG implementation and PBO performance outcomes. This research positions ESG practices as fundamental organizational resources that can enhance competitive advantage, aligning with the Resource-Based View (RBV) (Almarri and Gardiner, 2014; Mahoney and Pandian, 1992). It also considers organizational agility as a key dynamic capability of PBOs (Carvalho *et al.*, 2019; Harraf *et al.*, 2015), consistent with the Dynamic Capability View (DCV) (Teece *et al.*, 2016). To operationalize the research constructs, we administered our survey instrument to a sample of PBOs in Serbia within various project fields, mainly engineering and construction and information systems and technologies, dominantly managing projects with budgets under one million euro. The research model utilizes Partial Least Squares Structural Equation Modeling (PLS-SEM) to identify the degree of influence and the critical pathways among the factors under examination. This paper has both theoretical and practical implications. On the theoretical side, it advances Resource-Based View (RBV) theory by demonstrating that ESG practices are strategic resources, and that the competencies of PBOs are positively associated with higher market share, profitability, and social equity. On the practical side, we argue that PBOs should prioritize implementing comprehensive ESG practices as part of their core operations, as this is linked to improved performance. The remainder of the paper is as follows: section 2 outlines the construct of the study; Section 3 outlines the background, hypothesis development and the description of the research model. Section 4 describes the research method, followed in Section 5 by the presentation of PLS-SEM results. Section 6 provides a discussion of the findings along with implications for both theory and practice. The paper concludes with Section 7, which examines the study's limitations and summarizes the overall conclusions.

2. Definition of the study construct

This study incorporates three main constructs: ESG practices, organizational agility, and PBOs' performance, measured through the Balanced Scorecard (BSC). In literature, ESG practices are defined as a construct consisting of three interrelated dimensions: Environmental, Social, and Governance (Li *et al*., 2021; Nirino *et al*., 2021; Müller *et al*., 2025). These components collectively fulfill corporate objectives relevant to sustainability concerns and stakeholder needs (Carvalho and Rabechini, 2017; Silvius and Schipper, 2014). Both in firm and project level literature, environmental practices involve developing and implementing policies that reduce a company's environmental impact through sustainable resource use and effective management of pollution and waste. Social practices focus on enhancing relationships with stakeholders - employees, suppliers, customers, and communities - fostering a positive company culture and actively engaging in societal well-being. Governance practices include establishing robust frameworks for leadership accountability, fair executive compensation, comprehensive audits, and strong internal controls to ensure compliance with regulations and alignment with stakeholder interests (Annex 1) (Ferrón Vilchez *et al.*, 2017; Tarmuji *et al.*, 2016; Wang *et al.*, 2023).

The existing literature indicates that there is a need for empirical research to verify the impact of ESG practices on the performance of PBOs (Gilbert Silvius *et al.*, 2017; Gilbert Silvius *et al.*, 2017). In this study, the performance of PBOs is measured using the Balanced Scorecard (BSC) as theorized by Kaplan and Norton (1992). This methodological choice is based on the BSC's ability to provide a comprehensive framework that extends beyond traditional financial metrics. It integrates four key perspectives: financial, customer, internal business processes, and learning and growth, thus ensuring a broad spectrum of operational and strategic performances is considered. BSCs are particularly valuable for bridging the gap between a firm's long-term strategy and its short-term actions, a significant flaw in many strategic tools (Chow *et al.*, 1997; Hasan and Chyi, 2017). For these reasons, the BSC's application is widely recognized in project management literature as a tool for measuring the performance of individual projects and align it to the PBOs strategy (Devine *et al.*, 2010; Kutsch *et al.*, 2015), or for evaluating the potential performance of new incoming projects (Asosheh *et al.*, 2010). Given that PBOs often pursue multiple objectives, such as community impact in addition to operational efficiency, the BSC is considered an ideally suited strategic tool for measuring the performance of these types of organizations (Vukomanovic and Radujkovic, 2013). The third construct examined in this study is organizational agility, which we aim to explore as an intervening variable in the relationship between ESG practices and PBOs' performance. Organizational agility is fundamentally divided into two key components: flexibility and adaptability. Flexibility is the capacity to foresee and plan for changes, while adaptability refers to the ability to make informed decisions in response to environmental shifts (Harraf *et al.*, 2015). These characteristics are crucial for PBOs, which are described as dynamic and flexible organizations that operates by developing projects, intended as temporary, goal-oriented endeavors undertaken to create unique products, services, or results (Müller and Turner, 2007). The inherent agility of PBOs, marked by their sensing, anticipating, entrepreneurial alertness, and proactive behaviors, is associated with greater performance capabilities (Miterev *et al.*, 2017; Turner and Miterev, 2019). This agile nature enables PBOs to overcome traditional barriers to organizational change and innovation, treating each project as a temporary and relatively short-lived endeavor, which distinguishes them from more traditionally structured organizations (Miterev *et al.*, 2017; Sydow *et al.*, 2004). Therefore, we aim to determine whether PBOs' organizational agility is positively related to the effectiveness of ESG practices in improving organizational performance.

3. Background

In recent years, there has been an increasing focus within both the business and academic communities on the effects of ESG practices on firm performance. Research, such as that conducted by Velte (2017) and Broadstock *et al.* (2021), has examined how these factors affect firm performance, risk management, and relationships with customers. As our focus is on PBOs, we have compiled literature that highlights the positive impact of ESG practices in sectors where PBOs are prevalent, such as for example construction, engineering, Oil and Gas and IT. To provide a comprehensive overview of the current state we have included a table (Table 1) that organizes recent literature according to the success dimensions defined by the BSC.

Given the extensive literature and the empirical evidence presented, we can put forward the following hypothesis:

H1. ESG practices positively affect the performance of PBOs.

This main hypothesis is further detailed in the subsequent sub-hypotheses.

3.1 ESG practices impact on PBOs learning performance

According to the literature at the firm level, ESG practices are suggested to potentially improve organizational learning, possibly fostering a culture of continual improvement and

Table 1. Overview of the ESG impacts on PBOs performance according to the balanced scorecard dimensions

BSC dimension	ESG contribution pattern	Dominant project based sectors	Key mechanisms	References
Learning	Drives innovation, capability development, and employee engagement	Construction, multi-sector, IT	R&D alignment, learning culture, psychological safety, governance support	Chang *et al*. (2018), Alkaraan *et al.* (2023), Xu *et al.* (2021), Bamgbade *et al.* (2019), Lee, (2022)
Internal	Enhances operational efficiency and cost control	Construction, Oil and Gas, IT	Green building design, risk mitigation systems, agile processes	Dwaikat and Ali (2018), Kashwani and Nielsen (2017), Kats (2003), Guldner *et al*. (2018), Kula *et al*. (2022)
Financial	Strengthens financial performance, resilience, and investor confidence	Construction, Energy, IT	Non-financial disclosure, ESG-driven strategic positioning, compliance efficiency	Kostrikin and Andreeva (2023), Siew *et al.* (2013), Zhao *et al.* (2018), Chen *et al.* (2023), Egorova *et al.* (2022), Alkaraan *et al.* (2022), Liu *et al*. (2022)
Customer	Builds brand trust, improves client retention, and enhances market positioning	Construction, EPC, Infrastructure	Sustainability reputation, stakeholder dialogue, trust-based partnerships	Olawale *et al*. (2020), Pitt *et al*. (2009), Yin *et al*. (2018), Fracarolli Nunes and Lee Park (2017), Jiang and Zhao (2021)

Source(s): Authors' elaboration

strategic adaptation within organizations (Li *et al.*, 2023). According to Xia (2022) this is achieved through the structured application of single-loop and double-loop learning processes, which are essential for integrating people and processes in enhancing learning performances. This in turn enhances overall performance by aligning the organization's developmental and learning capabilities with its strategic objectives. This perspective is also corroborated by literature focusing on sectors dominated by PBOs. For example, it is proposed that incorporating ESG practices in the construction industry may be positively associated with organizational learning by engaging with established criteria for social sustainability, allowing employee to acquire new skills that facilitate organizational operations (Chen *et al*., 2023; Kostrikin and Andreeva, 2023; Siew *et al*., 2013). Further, adopting ESG practices in construction and infrastructure industries can drive innovation, time to market and improve organizational learning (Alkaraan *et al.*, 2023; Xu *et al.*, 2021). By adopting ESG standards construction firm are facilitated in their learning processes to more effectively understand and comply with complex regulations (Bamgbade *et al.*, 2019; Ferrari *et al.*, 2022) and meet the diverse needs and expectations of stakeholders (Li *et al.*, 2022; Shen *et al.*, 2010).

However, it's not only organizational learning that is positively impacted by ESG practices but also employee learning and satisfaction. According to a recent study by Lee (2022), employees with high corporate ESG ratings experienced less psychological stress during the COVID-19 crisis, leading to increased efforts in workplace innovation and learning, especially among those perceiving strong team cohesion, suggesting that ESG-focused companies enhance employee well-being and innovation, improving crisis resilience. The literature supports the positive correlation between ESG practices and employee satisfaction across PBOs, with evidence of this relationship in sectors such as oil and gas (Ramírez-Orellana *et al*.,

2023); construction (Darko *et al.*, 2017) and the IT (Woźniak, 2021). Based on the above analysis, the research hypotheses put forward in this study is:

H1a. ESG practices have a positive effect on PBOs learning performance.

3.2 ESG practices impact on PBOs internal performance

According to current literature ESG practices can contribute to enhancing internal firm performance across various dimensions. ESG practices support firms in improving quality and reducing costs by incorporating robust Environmental Management Systems (EMSs) and Quality Management Systems (QMSs). Moreover, the integration of ESG practices with Total Quality Management (TQM) offers a comprehensive approach that significantly boosts labor efficiency (Lim *et al.*, 2022; Ronalter *et al.*, 2023). This is highlighted by studies showing that firms with strong ESG frameworks are more likely to engage effectively in Industry 4.0 disclosures, leading to better financial outcomes due to enhanced operational efficiencies (Alkaraan *et al.*, 2022; Asif *et al.*, 2023).

The improvement of process operations linked to better outcomes and reduced cost has evidence also in PBOs firms. In construction, ESG practices have led to the adoption of more sustainable materials and advanced construction techniques, improving the structural quality and reduce waste and associated costs. For example, green building certifications incentivize firms to implement high-quality, energy-efficient solutions that lower long-term operational costs (Dwaikat and Ali, 2018; Kats, 2003). Also in the IT sector, integrating ESG standards helps companies optimize data center operations and enhance hardware efficiency, which lowers power consumption and reduces operational costs. This also leads to higher-quality software development processes through improved governance (Guldner *et al.*, 2018; Michelino *et al.*, 2019). Regarding labor efficiency current literature has shown that ESG practices in the oil and gas sector promote safer and more efficient work environments minimizing disruptions and enhancing productivity (Kashwani and Nielsen, 2017; Naji *et al.*, 2022). Similarly, in the construction industry, ESG initiatives such as worker safety programs and fair labor practices boost morale and efficiency. Well-being programs and ethical labor standards motivate the workforce and reduce turnover, maintaining steady productivity (Darko *et al.*, 2017). In the IT industry, ESG practices streamline operations and promote the use of agile methodologies, reducing development and delivery times through efficient resource management and waste reduction (Hayat *et al.*, 2019; Kula *et al.*, 2022).

These measures speed up project cycles and expedite product market entry. These findings collectively support the hypothesis that ESG practices are associated with improved internal performance of PBOs, particularly in areas such as quality enhancement, cost reduction, labor efficiency, and manufacturing timeliness. Based on these considerations, we formulate the following hypothesis:

H1b. ESG practices have a positive effect on PBOs internal performance.

3.3 ESG practices impact on PBOs financial performance

Research on the impact of ESG practices on financial performance at the firm level has yielded varied outcomes, including positive, negative, or mixed results (Nirino *et al.*, 2021). While some scholars contend that ESG practices may merely add costs without benefiting the company, potentially leading to decreased performance (Kim and Lyon, 2015), others, such as Lee (2022), emphasize the beneficial effects of sustainable practices on a company's financial outcomes. This stream of literature indicates that integrating ESG practices into business operations can improve operational efficiency and expands market opportunities, attracting long-term investors, thus boosting overall financial value (Kotsantonis *et al.*, 2016; Li *et al.*, 2023). Evidence of this positive impact can also be traced in PBOs literature. In the real estate and construction industry, for instance, the

adoption of comprehensive ESG practices can boosts investment appeal and financial outcomes (Kostrikin and Andreeva, 2023). Such enhancements are achieved through better risk management and compliance with global sustainability standards, which often lead to lower operating costs and enhanced competitive advantage (Siew *et al*., 2013). Chen *et al.* (2023) employ a large dataset – for the 12% consisting of construction companies - to confirm that ESG performance influences corporate financial performance, particularly in large-scale businesses and high-risk scenarios where it shows substantial positive effects. It also highlights how ESG impact varies across industries, with the highest ESG ratios observed in real estate and development, energy, and pharmaceutical sectors, illustrating the broader relevance and benefits of ESG integration in enhancing financial outcomes. Similarly, research from the power generation (Zhao *et al.*, 2018) and energy sector (Liu *et al.*, 2022) in China reveals that robust ESG practices correlate with improved financial performance, particularly through enhanced regulatory compliance and operational efficiencies that reduce costs and increase profitability.

While the impacts of ESG practices on financial indicators in the IT sector may not appear as direct currently, literature still highlights the potential for ESG to significantly influence financial outcomes in the future. According to Egorova *et al*. (2022), IT firms possess considerable potential to enhance their market value through the development of ESG practices. On the other hand, Liu *et al.* (2022) research shows that better ESG performance in IT companies correlates with more effective engagement in Industry 4.0 disclosures, which in turn boosts financial performance. This relationship suggests that IT firms with robust ESG frameworks manage to comply more successfully with Industry 4.0 requirements and to achieve superior financial results, highlighting the dual benefits of ESG commitment in fostering both sustainability and profitability in the tech sector. Based on the above analysis, the research hypotheses put forward in this study is:

H1c. ESG practices have a positive effect on PBOs financial performance.

3.4 ESG practices impact on customer-related metrics of performance

According to the extant literature, ESG practices can improve customer-related performance metrics within firms, such as increasing the number of new clients, improving client response times, and enhancing retention rates (Lee, 2022). Studies demonstrate that ESG initiatives are associated with higher brand trust and customer engagement in PBOs, which are relevant in attracting new clients and retaining existing ones. In the construction sector, ESG practices like sustainable building techniques and adherence to safety standards attract environmentally conscious clients and enhance the company's reputation, leading to an increase in the number of new prospect clients (Pitt *et al.*, 2009; Olawale *et al*., 2020). Even though literature indicates that further efforts are still needed to fully implement sustainable construction approaches, with regulatory compliance significantly driving its adoption more than changes in attitudes and perceptions alone, there is evidence that these practices streamline project management and customer interaction processes, improving client response times (Yin *et al.*, 2018). Fracarolli Nunes and Lee Park (2017) distinguishes between "true" and "false" reputations in construction sustainability, noting that companies with a "true" reputation not only meet regulatory standards but also appeal to a broader market segment that values genuine sustainable practices. In the oil and gas industry, companies that demonstrate commitment to ESG standards, such as reducing environmental impact and ensuring fair labor practices, tend to secure long-term partnerships due to increased trust and reliability; such practices also expedite permit approvals and enhance stakeholder engagement, leading to faster response times (Ramírez-Orellana *et al*., 2023).

Lastly, the literature shows that in the Engineering, Procurement and Construction (EPC), ESG factors like competence, integrity, communication, reciprocity, and contractual terms significantly build both calculative and relational trust, which in turn positively influences the intention to cooperate among energy performance contracting companies and their clients

(Jiang and Zhao, 2021). Given the analysis presented, the research hypothesis proposed in this study is:

H1d. ESG practices have a positive effect on PBOs customer-related metrics of performance.

3.5 ESG practices, organizational agility and PBOs learning performance

Literature highlights that implementing ESG practices compels PBOs to adopt flexible and adaptive strategies to meet evolving environmental, social, and governance standards, thereby enhancing their agility (Saragih *et al.*, 2024). This process typically involves reevaluating operational processes, adapting to regulatory changes, and engaging with diverse stakeholder groups, which collectively foster a more dynamic and responsive organizational structure (Corazza *et al.*, 2017; Truant *et al.*, 2017).

On the other hand, organizational agility positively affects the relationship between ESG practices and the performance of PBOs. As organizations become more agile, they are better equipped to capitalize on the opportunities and manage the risks associated with ESG initiatives. This agility enables PBOs to quickly align their resources and operations with ESG principles, leading to improved performance outcomes across various dimensions, including enhanced compliance, market competitiveness, and stakeholder satisfaction (Ashrafi *et al.*, 2019; Gerald *et al.*, 2020). Recent literature confirms that agility practices are essential for developing learning facilitators and supporting organizational survival and success (Hamad and Yozgat, 2017). This aspect is particularly confirmed in several sectors in which are typically operating PBOs. For example, the necessity to conform to sustainable requirements drives construction companies to adapt rapidly to implement the necessary changes to fulfill the requirements, to integrate innovative practices and comply with new environmental regulations (Gan *et al.*, 2015; Chen *et al.*, 2016). Moreover, organizational agility ensures that ESG practices are adopted and optimized, leading to enhanced learning and development within the organization. This principle of learning is equally applicable in the IT sector where thanks to agility in project development organizations can quickly respond to changing needs regarding ethical user requirements, security threats and data protection (Dick *et al.*, 2010; Naumann *et al.*, 2011). By implementing a culture of agility, PBOs can better manage project risks, improve employee satisfaction, and accelerate the acquisition of new skills, all of which contribute to superior learning performance (Conforto *et al.*, 2016; Obradović *et al.*, 2019). Given the above we formulate the following hypothesis:

H2. ESG practices foster the development of organizational agility in PBOs.

H3. Organizational agility affects the relationship between ESG practices and performance of PBOs.

H3a. Organizational Agility positively mediates the relationship between ESG practices and PBOs learning performance.

3.6 ESG practices, organizational agility and PBOs internal, financial and customer-related performance

Organizational agility can act as a moderating factor that accelerates the integration and benefits of ESG practices within the critical dimensions of PBOs performance. Organizational agility allows PBOs to rapidly realign operational strategies and processes in response to ESG demands (El-Khalil and Mezher, 2020). This capability ensures that ESG initiatives are embedded into core business operations effectively, leading as previously analyzed to enhanced productivity, output quality and cost reduction (Lim *et al.*, 2022; Ronalter *et al.*, 2023). Further, agility enables PBOs to leverage ESG practices to not only meet compliance

standards but to also drive innovative operational improvements (Carvalho *et al.*, 2019). In terms of financial performance, organizational agility enables PBOs to capitalize on ESG-driven market opportunities and manage related risks. This evidence has been empirically validated, for example, in specific sectors such as the construction and engineering ones, where agile PBOs can quickly adjust their financial strategies to exploit new funding opportunities, such as green financing, or to implement cost-saving measures through sustainable resource management (Akomea-Frimpong *et al.*, 2022; Shan *et al.*, 2017).

This adaptability guarantees that ESG practices have a direct positive effect on financial results. Regarding customer-related performance, organizational agility equips PBOs to effectively respond to evolving consumer expectations related to sustainability. For example, in PBOs operating in construction and engineering agility allows to innovate and refine their customer engagement and service tactics, ensuring alignment with the increasing consumer demand for environmentally and socially responsible business operations (Jafari-Sadeghi *et al.*, 2022; Rabal Conesa *et al.*, 2024). Such flexibility aids in maintaining a loyal customer base and in attracting new customers. Given the analysis presented, the research hypothesis proposed in this study are:

H3b. Organizational Agility positively moderates the relationship between ESG practices and PBOs internal performance.

H3c. Organizational Agility positively moderates the relationship between ESG practices and PBOs financial performance.

H3d. Organizational Agility positively moderates the relationship between ESG practices and PBOs customer-related performance.

3.7 Theoretical framework and research model

The Resource-Based View (RBV) and Dynamic Capabilities View (DCV) offer an appropriate theoretical basis for this study, highlighting the significance of internal resources and capabilities in influencing the performance of PBOs (Almarri and Gardiner, 2014). RBV asserts that firms can attain a competitive advantage and superior performance by utilizing their unique resources and capabilities (Mahoney and Pandian, 1992).

Conversely, the DCV emphasizes the necessity for firms to adapt, integrate, and reconfigure their resources and capabilities in response to external environmental changes (Eisenhardt and Martin, 2000). In this paper we employ both perspectives to understand how ESG practices can impact PBOs performance with an intervening role of organizational agility. The existing literature has demonstrated how implementing ESG practices align with the principles of *enviropreneurial* orientation, a concept that involves an entrepreneurial approach focused on accommodating environmental and societal needs while achieving economic objectives (Menon and Menon, 1997).

Due to the complex and unique nature of this orientation, which cannot be easily acquired in external markets, organizations are compelled to invest considerable time and resources to cultivate such ESG-oriented culture (Hunt and Morgan, 1996). Once established, this culture becomes deeply embedded within organizational routines and is tacitly shared among its members, marking it as a valuable, intangible, and socially complex capability (Hunt and Morgan, 1996; Paulraj, 2011). Thus, in the context of this paper, aligning with both resource-based and resource advantage views, we frame ESG practices as PBOs organizational capabilities. On the other hand, organizational agility can be seen as a dynamic capability that allows PBOs to consistently adapt and innovate in response to changing market and ESG demands (Conforto *et al.*, 2016; Obradović *et al.*, 2019; Teece *et al.*, 2016). The research model of this study, drawn on RBV and DCV, is reported in Figure 1.

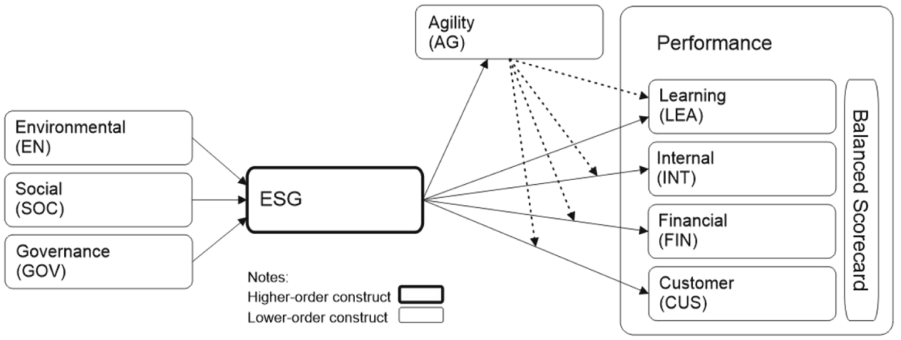

Figure 1. Research model. Source: Authors' elaboration

4. Research method

4.1 Sample and data collection protocol

The analysis focused on PBOs in Serbia operating within various project fields. The sampling procedure was designed to ensure that each PBO is represented by a single respondent acting as a key informant. To gain access to research participants, PBOs were approached using the Business Registry Agencies database [1]. Following the criteria by Keegan and Turner (2002, p. 370), we included in the sample two types of PBOs: (1) organizations whose operation is primarily based on the implementation of projects, such as civil engineering and IT firms (2) organizations that are mainly operationally oriented but implement projects as an important part of their overall activities, such as manufacturing firms. Through follow-up interviews by phone with key informants, such as CEO, founder, top and senior managers, the objectives, individual returns, and procedures of the study were exposed. Consequently, we obtained the permission to conduct the research in their organization. The sample structure is presented in Table 2.

Managers from these PBOs were tasked with distributing a specially designed questionnaire to gather insights on project management practices across the organization. We focused on managers at the middle managerial level or higher who have overseen multiple projects and, as a result, possess a comprehensive understanding of the organization's project management strategies (Mir, 2019; Raymond and Bergeron, 2008). Managers in PBOs often play a key role in making and implementing decisions about ESG practices. They are responsible for managing resources, sustainable practices, and aligning with ESG goals, while program and portfolio managers define strategic priorities and ensure that projects comply with the organization's ESG policies (Keegan and Turner, 2002; Miterev *et al.*, 2017). Thus, managers in PBOs are key informants as they combine both strategic and operational perspectives on ESG practices (Huemann and Silvius, 2017). This dual perspective allows them to have a vision that unites organizational and single project levels.

Overall, 435 PBO managers were approached via direct methods such as phone and email, as well as through LinkedIn connections, to participate in the survey. These efforts resulted in a higher validity rate for the responses received. After discarding 5 responses due to incomplete data, we gathered 212 valid responses from PBO managers, reflecting a response rate of 48.73%.

4.2 Measurements and descriptive results

This study used a survey method for data collection to test the research hypotheses. For the purpose of observing the latent variables, measurement instruments that had been used in prior studies and that had demonstrated good predictive ability and reliability were utilized (e.g. Bollen, 1989; Tosun and Tavşan, 2024; Wansbeek and Meijer, 2001). Exploratory factor

Table 2. Sample structure

Organizational characteristics		Absolute frequencies	Relative frequencies (%)
Number of permanent employees	under 50 employees	39	18.40
	51–250 employees	133	62.74
	over 250 employees	40	18.87
Sum		*212*	*100.00*
Company's age	Less than 10 years	26	12.26
	From 10 to 25 years	73	34.43
	More than 25 years	113	53.30
Sum		*212*	*100.00*
The majority ownership in the company	Domestic private capital	152	71.70
	Foreign capital	56	26.42
	State	4	1.89
Sum		*212*	*100.00*
PBOs managers characteristics			
Gender	Male	137	64.62
	Female	75	35.38
Sum		*212*	*100.00*
Age	Less than 40 years	130	61.32
	41–50 years	31	14.62
	More than 50 years	51	24.06
Sum		*212*	*100.00*
Level of education	Undergraduate	37	17.45
	Graduate	91	42.92
	Master's degree	57	26.89
Field of education	Technical-technological	101	47.64
	Law, business and economics	68	32.08
	Natural science	15	7.08
	Other	28	13.21
Sum		*212*	*100.00*
Working experience	Less than 10 years	109	51.41
	From 11 to 15 years	40	18.87
	More than 15 years	63	29.72
Sum		*212*	*100.00*
Project characteristics			
Project field	Organizational/Administrative Change	4	1.89
	Engineering and Construction	90	42.45
	Information Systems and Technologies	56	26.42
	Services	19	8.96
	System Maintenance/Installation	2	0.94
	Research and Development	15	7.08
	Other	26	12.26
Sum		*212*	*100.00*
Project value	Less than 1 million euro	169	79.72
	1–5 million euro	30	14.15
	5–10 million euro	6	2.83
	More than 10 million euro	7	3.30
Sum		*212*	*100.00*
Project duration	Less than 12 months	183	86.33
	More than 12 months	29	13.68
Sum		*212*	*100.00*

Source(s): Authors' elaboration

analysis (EFA) is a data-driven method used to identify the construct's structure and evaluate its internal reliability. Principal component analysis (PCA) was chosen as the extraction technique to uncover the underlying factor groupings. We employed Partial Least Squares Structural Equation Modeling (PLS-SEM), which is particularly suited for the early stages of theory development and testing (Hair *et al*., 2014). This method facilitates the exploration of constructs and their interrelationships within complex structural models. Our methodology incorporated a two-step procedure to enhance the reliability of our findings. Initially, we translated and culturally adapted the original English survey items to the Serbian context. Subsequently, we conducted a pilot test with a sample of 30 respondents to substantiate the statements. The results confirmed that the measurement scales are valid within the national context and that further sampling is justified. Respondents evaluated each statement using a 5-point Likert scale, ranging from "strongly disagree" (1) to "strongly agree" (5).

We used the ESG framework to investigate the sustainable business practice in PBOs, comprising 18-item scale. The items for measuring the first two factors (environmental and social) were used in accordance with previous research conducted by Di Simone *et al*. (2022), and Stanitsas and Kirytopoulos (2023), with necessary adjustments to the research context. Given the limited empirical research measuring the third dimension (governance), the statements for the assessment in PBOs were developed based on theoretical postulates and evidence provided in Turner (2020). EFA was conducted to identify the items that best represent the mentioned factors. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were employed to assess the suitability of the data. A minimum required KMO coefficient is 0.8 (Finch and West, 1997), while a large Bartlett's test sphericity and a small level of associated significance ($p < 0.05$) indicate that EFA is appropriate (Pallant, 2020). After conducting exploratory factor analysis (KMO = 0.872, Bartlett's test of sphericity = 3003.470; df = 153; $p < 0.001$), we have excluded the items with factor loadings below 0.60 (Howard, 2016). In accordance to results of previous analysis, three factors have been extracted, with a total variance of 70.700%: environmental (i.e. impact on local self-government, readiness for avoiding environmental risks, orientation towards building long-term relationships with stakeholders), social (i.e. public relations, employment, labour/management relations, relations with clients/investors, relations with consultants and professionals, relations with suppliers and subcontractors, stable and good relations with key project partners, employees commitment), governance (i.e. access to important data and information, usage of modern technologies that support business processes, access to necessary instructions and procedures, usage of specialized software for project management).

BSC dimensions were measured using 20-item scale. The instrument comprised items that incorporate Kaplan and Norton's (1992) four dimensions: the financial dimension, the customer dimension, the internal processes dimension, and the learning and development dimension. The BSC framework emphasizes a balance between financial and non-financial metrics, as well as leading and lagging indicators. While objective metrics (e.g. revenue, operational efficiency) are critical, subjective measures (e.g. employee morale, customer satisfaction) are equally vital to capture intangible assets and strategic drivers that quantitative data alone cannot fully reflect. Our study focuses on agility and performances, where subjective insights into key informants perceptions and behavioral factors are essential to understanding alignment with long-term sustainability.

The same procedure that was used previously was applied. After exploratory factor analysis (KMO = 0.782, Bartlett's test of sphericity = 2781.035; df = 210; $p < 0.001$), we have excluded the items with the lowest factor loadings. Some of the items are for the financial dimension (i.e. operating costs, income growth, opportunities for income growth in comparison to competitors, working capital, net profit, salary budget); the customer dimension (i.e. increasing number of new clients, client response time, retention rate); the learning and development dimension (i.e. employee satisfaction, time-to-market for new products, improving and acquiring new skills), and internal processes dimension (i.e. improving quality and reducing costs, labor efficiency, manufacturing time).

This performance appraisal approach is similar to previous approaches frequently used in the literature (Ali *et al.*, 2022; Christian *et al.*, 2022; Hourneaux *et al.*, 2018).

Agility was measured using the foundations of the Skandia navigator model, since this model enables monitoring and measurement of intellectual resources (Bontis *et al.*, 1999). According to (Roos *et al.*, 1997) the important dimensions of human capital are competence, attitude and agility. Previous evidence in project management proved that agility has an important role for sustainable project management (Obradović *et al.*, 2019). Therefore, the construct agility was built and adjusted in accordance with previous study in PBOs realized by (Milošević *et al.*, 2018), who investigated the impact of different components of intellectual capital on project performance. Several items were used for measuring agility in PBOs including readiness for change during project implementation, adaptability, workforce capability for solving problems that is proved in the study conducted by Gunsberg *et al.* (2018).

5. Results of PLS-SEM analysis

5.1 Measurement model assessment

In this work we tested the research model by assessing composite reliability and convergent validity, adhering to the parameters established by widely recognized literature (Hair *et al.*, 2019; Vinzi *et al.*, 2010). Table 3 reports the results of the higher-order formative measurement model assessment created through the PLS-SEM algorithm. To test the validity of the constructs and models, fit indices for the formative measurement model were used in accordance with the recommendations of Hair *et al.* (2021). This table provides the description of the items used for accurately estimating each construct. The reliability of the constructs, that can be assessed by evaluating both the composite reliability and Cronbach's alpha values, consistently exceeds the accepted threshold of 0.7, suggesting that the measurement items reliably reflect their respective constructs.

For convergent validity, the Average Variance Extracted (AVE) values for each construct exceed the minimum requirement of 0.5 (Hair *et al.*, 2019), indicating that a significant portion of the variance in the measurement items is accounted for by their respective constructs. This high level of convergent validity confirms that the constructs are well-defined and accurately measured by their indicators.

Collinearity statistics measured by VIF (Variance Inflation Factor) indicate that multi-collinearity is not a concern in the measurement model, since the values for all statements range from 1.230 to 4.699 and meet the criterion of being less than 5 (Hair *et al.*, 2021, p. 93).

To assess the risk of common method bias, we conducted Harman's single-factor test. All items were selected for an exploratory factor analysis with no rotation, using Principal component method. The results showed that the first factor accounted for 33.198% of the total variance, which is below the 50% threshold, indicating that common method variance is unlikely to be a concern in this research. In addition, several steps were taken during the development of the questionnaire and the collection of primary data to further address the potential issue of common method bias. The pilot study that was conducted helped reduce the likelihood of this problem, which was further supported by the anonymity of the respondents who participated in the research. During the structuring of the questionnaire, item blocks were created and used to assess the latent variables in the study.

5.2 Structural model test results

5.2.1 Direct effects. The structural model test results of direct effects are reported in Figure 2. The structural model was examined using the Bootstrap method in SmartPLS 3 software, following the recommendations by (Hair and Alamer, 2022; Hair *et al.*, 2022). In the study, a second-order model was used to treat ESG practices as a multidimensional but interrelated

Table 3. Measure model and constructs

Construct and item description	Convergent validity	Composite reliability	α	AVE	VIF
ESG		0.936	0.924	0.501	
EN: Environmental		0.915	0.913	0.852	
EN01: Impact on local self- government	0.918				3.069
EN02: Readiness for avoiding environmental risks	0.928				3.396
EN03: Orientation towards building long-term relationships with stakeholders	0.923				4.297
SOC: Social		0.938	0.935	0.689	
SOC01: Public relations	0.751				2.737
SOC02: Employment	0.804				3.654
SOC03: Labour/management relations	0.846				2.198
SOC04: Relations with clients/investors	0.825				3.607
SOC05: Relations with consultants and professionals	0.743				4.394
SOC06: Relations with suppliers and subcontractors	0.865				4.699
SOC07: Stable and good relations with key project partners	0.918				3.231
SOC08: Employees commitment	0.873				3.972
GOV: Governance		0.921	0.880	0.730	
GOV01: Access to important data and information	0.855				3.304
GOV02: Usage of modern technologies that support business processes	0.889				2.216
GOV03: Access to necessary instructions and procedures	0.826				3.093
GOV04: Usage of specialized software for project management	0.846				1.960
AG: Agility		0.770	0.761	0.677	
AG01: Readiness for change during project implementation	0.760				1.574
AG02: Adaptability	0.875				1.496
AG03: Workforce capability for solving problems	0.830				1.990
BSC					
LEA: Learning		0.727	0.716	0.636	
LEA01: Employee satisfaction	0.755				1.440
LEA02: Time-to-market for new products	0.816				1.230
LEA03: Improving and acquiring new skills	0.820				1.385
INT: Internal		0.831	0.817	0.733	
INT01: Improving quality and reducing costs	0.894				2.146
INT02: Labour efficiency	0.797				1.606
INT03: Manufacturing time	0.873				1.947
FIN: Financial		0.918	0.907	0.684	
FIN01: Operating costs	0.806				3.195
FIN02: Income growth	0.757				2.010
FIN03: Opportunities for income growth in comparison to competitors	0.817				2.309
FIN04: Working capital	0.885				4.297
FIN05: Net profit	0.818				2.948
FIN06: Salary budget	0.874				3.634
CUS: Customer		0.909	0.819	0.707	
CUS01: Increasing number of new clients	0.692				2.273
CUS02: Client response time	0.902				1.791
CUS03: Retention rate	0.911				1.745

Source(s): Authors' elaboration

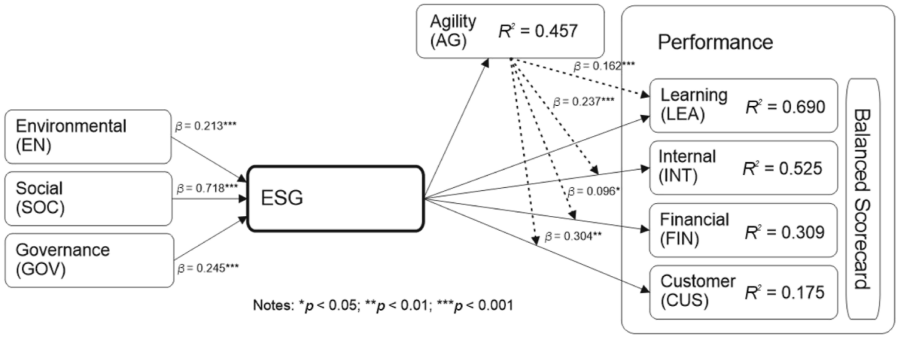

Figure 2. Structural model test results. Source: Authors' elaboration

construct. This approach allows for a better understanding of the interrelationships between the dimensions and their collective role in formatively shaping the organization's overall ESG practices and their impact on organizational performance. The PLS-SEM results shows that H1; H1.a; H1.b; H1.c; H1.d, and H2 were empirically supported.

The Path Coefficient represents the estimated strength and direction (ranging from −1 to 1) – positive or negative – of the relationship between two constructs (Hair *et al.*, 2019); while t-value is a test statistic used to determine if the path coefficient significantly differs from zero. A higher t-value indicates greater confidence that the relationship observed is not due to random chance. Common practice uses thresholds such as $t > 1.96$ for 95% confidence to determine significance (Hair *et al.*, 2019). In our research model, the Environmental, Social, and Governance measures are conceptualized as formative lower-order dimensions contributing to the construction of the ESG higher-order construct. Table 4 validates the research framework by confirming the significance and strength of the hypothesized relationships through the path coefficients. The Environmental dimension (EN → ESG) has a significant positive impact on ESG practices with a coefficient of 0.213, the Social dimension (SOC → ESG) exhibits a substantial positive influence with a coefficient of 0.718, and the Governance dimension (GOV → ESG) also positively contributes with a coefficient of 0.245.

Table 4. Results of testing the research model: directs effects

Relationship	Path coefficient	*t*-value	95% CIs (bias corrected)	Results
EN → ESG	0.213***	11.069	[0.174, 0.249]	Supported
SOC → ESG	0.718***	31.879	[0.675, 0.764]	Supported
GOV → ESG	0.245***	11.384	[0.201, 0.285]	Supported
ESG → LEA	0.652***	11.047	[0.529, 0.761]	Supported
ESG → INT	0.766***	11.142	[0.377, 0.673]	Supported
ESG → FIN	0.534***	7.109	[0.377, 0.673]	Supported
ESG → CUS	0.357***	3.601	[0.140, 0.535]	Supported
ESG → AG	0.675***	15.518	[0.587, 0.755]	Supported
AG → LEA	0.239***	3.851	[0.116, 0.361]	Supported
AG → INT	0.096	1.291	[-0.063, 0.233]	Not supported
AG → FIN	0.122	1.538	[-0.030, 0.278]	Not supported
AG → CUS	0.152	1.652	[-0.029, 0.332]	Not supported

Note(s): *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$
Source(s): Authors' elaboration

ESG's influence on Learning (LEA) is underscored by a path coefficient of 0.652 and a t-value of 11.047, affirming a strong positive effect. Similarly, Internal PBOs performance (INT) benefit significantly from ESG practices, evidenced by a path coefficient of 0.766 and a t-value of 11.142. Financial performance (FIN) also shows a considerable positive impact from ESG, with a path coefficient of 0.534 and a t-value of 7.109, suggesting that ESG factors contribute to PBOs financial performance. The effect on Customer-related performance (CUS) is noted with a path coefficient of 0.357 and a t-value of 3.601, indicating that ESG initiatives are positively related to customer engagement and satisfaction. Additionally, ESG practices contribution to Agility is marked by a path coefficient of 0.239 and a t-value of 3.851, demonstrating that ESG practices are significantly positively related to Agility.

5.2.2 Indirect effects. Table 5 shows the structural model test results for indirect effects. In this study, we utilized SmartPLS 3, employing both the PLS Algorithm and Bootstrap techniques, to examine the indirect effects. The results shows that H3.a; H3.b; H3.c; H3.d were empirically supported.

The path coefficient of 0.162 with a t-value of 3.849 indicates a significant indirect effect of ESG on LEA through agility (ESG → AG → LEA). The confidence interval [0.083, 0.248] supports this significance, suggesting that agility plays an effective mediating role in enhancing learning performances driven by ESG practices. Additionally, organizational agility significantly moderates the impact of ESG on Internal (INT), Financial (FIN), and Customer-related (CUS) PBOs performance, with path coefficients of 0.237, 0.096, and 0.304 respectively. These coefficients reflect varying degrees of influence, all statistically significant, suggesting that agility's integration with ESG practices yields substantial benefits across these domains (Hair and Alamer, 2022; Hair *et al.*, 2022). Table 5 also includes metrics such as Stoner-Geisser Q^2, R^2, and Goodness of Fit (GOF), reflecting the formative model's predictive relevance, explanatory power, and overall fit respectively (Hair *et al.*, 2019). The Q^2 values for all constructs are positive, indicating good predictive relevance, while the R^2 values suggest that a significant portion of the variance in the dependent variables is explained by the model. For example, learning has an R^2 of 0.690, indicating that 69% of the variance in learning outcomes can be explained by the model.

Table 5. Results of testing the research model: indirect effects

Relationship	Path coefficient	*t*-value	95% CIs (bias corrected)	Results
ESG → AG → LEA	0.162***	3.849	[0.083, 0.248]	Supported
AG × ESG → INT	0.237***	3.773	[0.109, 0.355]	Supported
AG × ESG → FIN	0.096*	2.243	[0.006, 0.172]	Supported
AG × ESG → CUS	0.304**	3.239	[0.115, 0.475]	Supported

	Stoner-Geisser Q^2	R^2	GOF
Agility	0.450	0.457	0.453
Learning	0.658	0.690	0.673
Internal	0.458	0.525	0.490
Financial	0.279	0.309	0.220
Customer	0.048	0.175	0.091

Note(s): $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$
Source(s): Authors' elaboration

6. Discussion

This research provides valuable insights into the dynamics between ESG practices, PBOs performance, and organizational agility, aligning with the Resource-Based View and Dynamic Capabilities View theoretical frameworks. The implications drawn from our study offer insights that benefit both academic researchers and industry professionals. Previous research on the influence of ESG practices on the performance of PBOs has primarily focused on: (1) analyzing specific project-oriented sectors, such as construction and IT (Bamgbade *et al*., 2019; Xu *et al*., 2021), and (2) examining the impact of these practices predominantly on the financial performance of PBOs (Siew *et al*., 2013; Chen *et al*., 2023). To the best of the authors' knowledge, this paper is the first to systematically analyze the implications of ESG practices on organizational performance through the use of a BSC, which considers multiple performance dimensions such as Learning (LEA), Internal operations (INT), and Customer relations (CUS) (Kaplan, 2009; Asosheh *et al*., 2010).

This approach allows for a more holistic view of the impact of these practices on PBO performance. This research is also the first one in this context to treat these organizations as a specific unit of analysis. Consequently, our research enriches both the specific literature on the relationship between ESG practices and PBO performance (see Table 1) and the field of sustainable project management, specifically the conceptual area of "sustainability of the project" (Huemann and Silvius, 2017). The literature on individual project management has long examined the impact of sustainable project management practices on its final outcomes, often yielding positive results (Silvius and Schipper, 2014; Carvalho and Rabechini, 2017). However, it also highlights a reluctance to apply these principles due to the costs associated with their implementation and the related change management requirements (Gilbert Silvius *et al*., 2017; Silvius, 2017).

Our paper contributes to this discussion by demonstrating that at the PBO level, the implementation of these practices has a significant positive effect on the overall organization performance, fostering long-term sustainability and competitive advantage. In addition, our research analyzes deeper the relationships between ESG practices, PBOs' performance, and agility by examining the moderating role of organizational agility. This exploration contributes significantly to existing literature by linking ESG integration with enhanced organizational adaptability (Conforto *et al*., 2016; Obradović *et al*., 2019). Specifically, it builds on the dynamic capabilities framework by suggesting that agility is positively related to the ability of PBOs to leverage ESG practices for better performance outcomes. Through this, we offer a perspective regarding how agile practices intersect with sustainability efforts to drive organizational success, thereby filling a crucial gap in both the PBOs strategic management and sustainability literatures.

6.1 Implication for theory

The main theoretical implications of this study stem from the results obtained through the PLS-SEM analysis. Firstly, our research shows that comprehensive engagement in ESG practices correlates positively with multiple facets of PBOs performance. Learning (LEA) is markedly influenced by ESG practices (PathESG → LEA = 0.652, $p < 0.001$). Internal (INT) and financial performance (FIN) also show strong positive impacts (PathESG → INT = 0.766, $p < 0.001$; PathESG → FIN = 0.534, $p < 0.001$); Customer satisfaction (CUS), another critical dimension, exhibited a positive relationship (PathESG → CUS = 0.357, $p < 0.001$). Many PBOs have initiated comprehensive ESG practices as part of their strategic framework. By adopting sustainable practices, PBOs are able to enhance their overall performance, thus gaining the necessary momentum for more substantial involvement in ESG initiatives. This engagement in ESG practices is bolstered by improved organizational performance, which in turn leads to greater societal impact. This development is in line with RBV, as PBOs leverage their unique resources and capabilities to secure a competitive advantage, consequently improving both organizational performance and ESG outcomes (Mahoney and Pandian, 1992).

In essence we argue that ESG practices are not merely compliance or ethical obligations but are strategic resources, unique competencies that are difficult for competitors to replicate. The high-quality development of ESG practices in PBOs enables them to expand their market share and profitability, thus providing numerous jobs and playing a critical role in promoting social equity (Kashwani and Nielsen, 2017; Ramírez-Orellana *et al.*, 2023). In turn, enhanced organizational performance contributes to employees' satisfaction by encouraging investments in workforce development, material resources, and funds to improve the working environment both at the organization (Lee, 2022) and individual project level (Silvius and Schipper, 2020, 2024). Secondly, our study observes that organizational agility serves dual roles in the dynamics between ESG practices and PBOs' performances. On one hand, it acts as a positive mediator in the relationship between ESG practices and the learning performance of PBOs, enhancing the ability to innovate and adapt continuously (PathESG → AG → LEA = 0.162, $p < 0.001$). This mediation underscores how agility facilitates the absorption and integration of ESG principles into PBOs organizational learning processes. On the other hand, organizational agility positively moderates the relationship between ESG practices and the internal (0.766, $p < 0.001$), customer (0.357, $p < 0.001$), and financial performance of PBOs (0.534, $p < 0.001$). This pattern suggests that agility in isolation may not independently drive performance outcomes in PBOs. Rather, its value lies in its complementary role—enhancing the organization's ability to leverage ESG practices more effectively. In line with the DCV, as proposed by Teece *et al.* (2016), organizational agility acts as a capability that allows firms to better integrate and adapt ESG-related initiatives, particularly under changing stakeholder and regulatory conditions. Thus, in line with the dominant DCV literature (Teece *et al.*, 2016; Baškarada and Koronios, 2018), we confirm that organizational agility functions as an enabling capability that amplifies the impact of ESG practices by facilitating the rapid alignment of strategic objectives with operational execution—even if it does not directly generate performance outcomes on its own. Organizational agility embodies the ability to sense, seize, and respond to external environmental changes, including evolving public opinion and government policy around sustainability. When PBOs embed agility into their operations, they become better equipped to adopt and internalize ESG principles, leading to improved performance across ESG-related dimensions (Obradović *et al.*, 2019). In this sense, agility also plays a cultural and behavioral role, helping to overcome resistance and ideological barriers to sustainable change. By fostering internal consensus and creating conditions conducive to swift ESG integration, it becomes a vehicle for driving transformation. This has practical implications: PBOs should pair agility with targeted employee training and leadership initiatives to fully exploit ESG potential and manage change effectively (El-Khalil and Mezher, 2020; Silvius and Schipper, 2024).

6.2 Implication for practice

Our study, supported by findings from PLS-SEM analysis, provides actionable and practical suggestions for implementation in PBOs empirical context.

Firstly, our results suggest that PBOs should prioritize the implementation of comprehensive ESG practices as part of their core operations since they are associated with higher performance. For example, in the construction sector, companies could elevate their ESG integration by adopting green building practices, utilizing energy-efficient materials and technologies, and implementing rigorous safety protocols to improve worker welfare and community relations. Similarly, in the oil and gas industry, firms can reduce environmental impacts through innovative solutions like carbon capture technologies and enhance social responsibility by promoting local employment and community development initiatives. Both sectors can also strengthen their governance by committing to transparent reporting and adhering to international environmental standards. Across diverse sectors - ranging from Organizational/ Administrative Change and Engineering and Construction to Information Systems and Technologies, Services, System Maintenance/Installation, and Research and Development -

our findings have consistently shown that integrating ESG practices boosts the performance of PBOs, demonstrating the comprehensive benefits of sustainable business operations.

Secondly, by using PBOs as the unit of analysis, our study provides a better understanding of long-term outcomes rather than just the time-bound results typically seen in previous research on the impact of ESG practices on individual project performance (Silvius and Shipper, 2016; Carvalho and Rabechini, 2017; Caccialanza *et al.*, 2022). This approach highlights the enduring effects of ESG integration, showing how sustainable practices influence broader organizational metrics and contribute to sustained performance enhancements over time. Such insights suggest the need for PBOs to weave ESG practices into their long-term strategic frameworks, ensuring that these principles are not just project-specific but are ingrained across the organization's operations and strategic outlook.

Thirdly, our paper shows the dual functionality of organizational agility within PBOs, demonstrating its capacity as a positive mediator on learning performance and as a moderator on financial, customer-related, and internal performance. This means that organizational agility not only is positively related to the ability of PBOs to absorb and implement new knowledge, thereby improving learning outcomes but it also amplifies the positive effects of strategic initiatives on financial and operational results. In practical terms for organizations, this underlines the critical importance of developing agile structures and processes. Firms that cultivate an agile environment are better positioned to adapt to changing market conditions, innovate continuously, and respond proactively to customer needs and internal challenges (Obradović *et al.*, 2019). According to our results, this agility enables PBOs to integrate ESG practices and other strategic initiatives, ensuring that these adaptations directly contribute to enhanced performance metrics.

In this perspective, it is also necessary to consider industry-specific considerations for the implementation of organizational agility. Different sectors may face varying challenges and opportunities when integrating agile practices, largely influenced by their inherent operational and market dynamics. For instance, in industries like IT, where project scopes frequently change and innovation cycles are rapid, implementing organizational agility can be relatively natural (Conforto *et al.*, 2016). However, industries such as construction may find integrating agility more challenging. The construction sector typically deals with long project timelines, rigid regulatory requirements, and significant physical constraints, which can hinder the rapid iterative processes central to agility (Arefazar *et al.*, 2022). Thus, while our paper shows the benefits of organizational agility, its implementation must be tailored to fit the specific realities and requirements of each industry.

Lastly, aligning ESG practices with PBOs' culture is essential. Companies should ensure that their efforts to implement ESG practices are in sync with their business objectives and contribute to cultivating a corporate culture that supports sustainability (Paulraj, 2011). By doing so, PBOs can optimize the application of ESG practices to meet strategic goals. Integrating these recommendations enables companies to develop a unified strategy for adopting ESG practices, positioning themselves for competitive advantage and laying the foundation for lasting performances.

7. Limitation and conclusion

This study examines the effects of ESG practices on the performance of PBOs, focusing on a sample of Serbian companies. The findings reveal that ESG practices positively influence various PBOs performance dimensions, including learning, internal operations, financial outcomes, and customer relations. The PLS-SEM analysis indicates that organizational agility serves as a positive mediator for learning performance. Additionally, agility is indirectly associated with internal, financial, and customer-related dimensions. Drawing on our findings, we offer theoretical and practical guidance to aid PBOs in enhancing their long-term competitiveness. By integrating these insights, PBOs can more effectively utilize ESG practices to secure sustainable growth and enduring success.

However, our study presents also some limitations which can serve as avenue for future research.

The research sample primarily consists of cross-sectional data from firm respondents. Studying the effects of ESG practices before and after implementing organizational agility can offer relevant insights into the significance of this dynamic capability. Future research could benefit from conducting a phased follow-up study and a Panel Data Analysis to investigate variations in PBOs' performance across the two data sets (Hsiao, 2022). We adopt a cross-industry perspective when examining PBOs; however, future research should explore the conditions under which ESG practices results in diverse performance outcomes across specific industries like R&D, construction, or IT. In this sense, future studies could also explore the potential moderating effects of other industry-specific factors. The measurement of the selected variables is based on the subjective judgments of respondents, potentially introducing cognitive biases. To reduce the uncertainty associated with individual judgments in future research, techniques such as Delphi method and peer review can be employed (Hallowell and Gambatese, 2010). Contemporary PM literature distinguishes between project funding organizations and project performing organizations (Zwikael and Meredith, 2018).

In our study, we concentrated primarily on performing organizations, examining the impact of ESG practices implementation on their performance. However, as highlighted in current project management literature (Zwikael and Huemann, 2023; Zwikael and Smyrk, 2019), the role of PBOs can extend beyond mere performance, influencing broader societal and environmental outcomes. Therefore, we propose that future research should expand this perspective by exploring PBOs that function both as funding and performing organizations. This dual role exploration would enrich our understanding of how PBOs balance performance metrics with sustainability goals and long-term value creation, particularly in their capacity as funders. Finally, this study only includes samples from Serbia. This study draws on data from Serbian project-based organizations within a transition economy, where institutional conditions and stakeholder pressures may differ from those in developed contexts (Garcia *et al.*, 2017). ESG adoption here may be more compliance-driven, influenced by international funding and regulatory expectations, rather than strategic intent. Cultural traits, such as hierarchical structures or limited ESG awareness, may also shape implementation (Manolova *et al.*, 2010). As such, while the findings are insightful, they should be generalized with caution beyond similar transitional or emerging markets.

Notes

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Annex

Table A1. Overview of the ESG factors that contribute to establish ESG practices in PBOs

ESG factors considered	Title	Sector	Concept	Paper
Governance	Multiple paths to enhancing the resilience of project-based organizations from the perspective of CSR configuration: evidence from the Chinese construction industry	Construction	The role of corporate social responsibility (CSR) fulfilment is critical when building resilience of PBOs. However, fulfilling CSR to build a highly resilient PBO remains a black box problem. This study explores the different CSR combinations that enhance PBO resilience. It defines CSR in terms of shareholder, employee, and social CSR, and analyses corporate characteristics in terms of corporate scale and nature. They found six paths to build high and non-high resilience in PBOs, and the driving mechanisms of high and non-high resilience exhibit an asymmetric relationship. This study cracks the black box of CSR fulfilment and PBO resilience. It reveals the CSR configurations that enhance or inhibit the resilience of PBOs	Dwaikat and Ali (2018)
Governance	Investor response to financial news in the digital transformation era: the impact of accounting disclosures and herding behavior as indirect effect	Construction	This study examines investors' reactions to bad financial news (IRBFN) based on complex financial accounting disclosures (CFAD) as well as how investors' herding behavior influences investor reactions in United Arab Emirates (UAE) project-based organizations (PBOs). 310 completed questionnaires were analyzed using structural equation modelling (SEM), moderation analysis, multiple regression simulations and path analysis. The study shows that four out of the five complex financial accounting disclosures dimensions observed – investors' relations (IR), board and management structure, transparency disclosure and other disclosure channels – have a direct influence on investor's reactions to bad financial news, with the exception of "external auditing and audit service". In addition, investor herding has a moderation impact on the relationship between complex financial accounting disclosures and investors' reactions to bad financial news. The purpose of modelling stakeholders' decision-making process is to improve their decisions and to control their reactions that may negatively affect PBOs in the UAE performance	Hussain and Alaya (2024)

(*continued*)

Table A1. Continued

ESG factors considered	Title	Sector	Concept	Paper
Social and governance	The Effect of Servant Leadership on Work Engagement: The Role of Employee Resilience and Organizational Support	Multi-sector	Employees suffer from low resources in the workplace because of multiple work roles in project-based organization (PBO). Based on the conservation of resources theory (COR), this study identifies both employee resilience and organizational support as critical personal and job resources to enhance sustainable well-being at work and organizational productivity. This study used a questionnaire from 437 employees in PBO – mainly from Construction, Manufacturing and IT sectors - and data were analyzed by PLS-SEM technique. The research findings indicate that servant leadership positively affects work engagement. Additionally, the relationship between servant leadership and work engagement is mediated by employee resilience and organizational support	Cai *et al.* (2024)
Environmental and social	Investigating the significance of sustainability indicators for promoting sustainable construction project management	Construction	The study explores and ranks the significance of sustainability indicators in construction project management, highlighting the growing importance of sustainable practices. A structured questionnaire survey was used to gather perceptions from construction stakeholders about the use of these indicators. Based on previous research and expert interviews, 82 indicators were identified, with 37 social and 18 environmental indicators. These were analyzed using the relative importance index approach, revealing that environmental indicators are considered most important. The findings aim to guide practitioners in the construction sector to enhance sustainability by focusing on key indicators	Stanitsas and Kirytopoulos (2023)

(*continued*)

Table A1. Continued

ESG factors considered	Title	Sector	Concept	Paper
Environmental, social and governance	Project Management and Sustainability: Playing Trick or Treat with the Planet	Multi-sector	They analyze the application of sustainable project management practices, while identifying the key governance elements in the management of the processes, from approval to the assessment of the performances. For the assessment of the environmental resources, they employed indicators such as: reduced use of natural resources, waste management, reduced pollution of the environment, legal regulations. Furthermore, they test social aspects related to the HR management, such as: health and security at work, employment, benefits, career development, connection with business partners and customers, local government	Toljaga-Nikolić *et al.* (2020)

Source(s): Authors' elaboration

Corresponding author
Costanza Mariani can be contacted at: costanza.mariani@polimi.it