

# Human capital efficiency, corporate sustainability, and performance: Evidence from emerging economies

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## Abstract

This study examines how corporate sustainability (CS) influences the relationship between human capital (HC) effectiveness and corporate performance (CP) in the context of emerging economies. Drawing on HC theories and CS, we employ partial least squares structural equation modeling (PLS-SEM) to analyze data from 94 industrial and service firms listed on the Amman Stock Exchange (ASE) between June and October 2022. Our findings reveal the dual role of HC, which not only directly influences CP but also significantly reinforces CS efforts. This research contributes to strategic management literature by highlighting the mediating role of CS in the HC-performance nexus. The results underscore the strategic value of HC in enhancing sustainable practices, which positively affect CP. These insights are particularly relevant for emerging economies, where understanding the role of HC can guide corporate strategies toward sustainable growth. Theoretical and practical implications are discussed, with a focus on the importance of HC development to promote resilience and support sustainability goals in emerging markets. Future research could explore these dynamics across other industries and regions.

## KEYWORDS

corporate performance, emerging markets, human capital, sustainability

## 1 | INTRODUCTION

The global economic upheaval, notably marked by the Covid pandemic and ensuing variants, has spurred a pivotal shift in academic and corporate spheres, focusing on the synergy between HC, CS, and their broader societal impacts (Cuong Pham et al., 2021; Garrigos-Simon et al., 2018). Recent studies emphasize the redefinition of sustainability in corporate contexts to balance production costs and resource replenishment and foster competitive and innovative investments (Di Barbieri et al., 2009; Hui et al., 2024). Furthermore, the enactment of the EU nonfinancial reporting directive has accentuated the importance of transparent and sustainable corporate practices, with an increasing emphasis on environmental, social, and governance

(ESG) data (Markota Vukić et al., 2018). In response to these multifaceted financial, legal, and operational challenges, the role of HC in fostering organizational resilience and sustainability has gained unprecedented relevance (Amrutha & Geetha, 2020). Despite substantial research on human capital (HC) and corporate sustainability (CS), the specific mechanisms by which HC efficiency influences CS and performance in emerging economies remain underexplored. This study aims to bridge this gap by examining the mediating role of CS in the HC-performance nexus. This study aims to fill this gap by exploring the mediating role of sustainability in the HC-performance nexus.

While extensive literature has examined the direct relationship between HC and CS (Azzam et al., 2020; Dal Maso et al., 2023; Diebolt & Hippe, 2022; Rahi et al., 2023; Teixeira, 2014), fewer

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studies have explored the specific mechanisms through which HC efficiency influences CS and CP. Moreover, existing studies primarily focus on developed economies, leaving a gap in research on how HC development shapes corporate outcomes in emerging markets (Campos-García et al., 2023; Salehi et al., 2023). This research seeks to address this limitation, contributing new insights into the HC-CS-CP relationship in developing economies, specifically Jordan.

There is tension regarding the relationship between economic sustainability performance and nonfinancial ESG sustainability performance (Zabihollah, 2016). Sustainable development is not a brand-new idea. It first appeared in the 1960s as fears of resource scarcity and the emergence of ecological concerns increased (Carson, 1962; Hardin, 1968). It emerged as an economic and strategic imperative that can present both opportunities and risks for businesses (Zabihollah, 2016), improve financial performance in developing nations (Azzam et al., 2020), and enhance stakeholder confidence, including investors and consumers, underpinning the significance of sustainability accounting in contemporary business practice (Abdelkader et al., 2024; Alshbili & Elamer, 2020; Markota Vukić et al., 2018).

The idea of sustainable human resources as an institutional activity addresses an essential but frequently overlooked area. Businesses and people can actively build human resource policies and practices to satisfy social demands by creating, maintaining, or dismantling institutional frames (Ren et al., 2023). The importance of HC for achieving sustainable development has been highlighted in recent studies (Ibrahim, 2022; Ugnich et al., 2021). Therefore, HC is a fundamental strategic resource underpinning success and advancement because employee knowledge and skills are vital in the context of an ever-changing business environment (Subramaniam & Youndt, 2005, cited in Tran & Vo, 2020). Also, HC is the main driver of profitability (Nawaz & Ohlrogge, 2023). Thus, robust HC translates to increased productivity and creativity, fostering economic growth. Socially, it enhances well-being and collaboration, contributing to societal sustainability. Environmentally informed and conscious HC can lead to better environmental stewardship (Diaconu & Popescu, 2016). The resource dependency hypothesis states that an organization's HC is its most valued asset (Barney, 1991). This comprehensive view of HC, encompassing its various forms and effects, positions it centrally in the discourse on sustainable development and corporate strategy.

Furthermore, the global shift toward an unsustainable development paradigm has led to environmental challenges entangled with social issues, necessitating a reevaluation of HC utilization. Addressing this requires continuous training and improved education to enhance economic status and living standards, ultimately leading to a sustainable workforce benefiting the entire economy (Alawamleh et al., 2019). However, despite these opportunities, the uneven and optional nature of corporate reporting in Jordan, as noted by the IMF, indicates a gap in harnessing HC for sustainable development. This is compounded by a general lack of awareness in the Arab world, particularly in Jordan, about the strategic importance of HC in socio-economic growth and sustainability (Ugnich et al., 2021).

In the context of emerging economies, CS performance has recently gained significant attention in academic circles (Roberts et al., 2021; Selmey & Elamer, 2023; Ullah et al., 2024), particularly in the vibrant Jordanian business environment. Jordan, as an emerging economy, provides a unique context for examining the role of HC in driving CS and CP. Despite its challenges, Jordan has demonstrated resilience, making it an ideal case for exploring how businesses in developing markets can leverage HC to achieve sustainability goals. Jordan's second-largest capital market in the MENA region offers a strategic location for both regional and international investors (Albawwat, 2022). However, the country faces several socio-economic hurdles, including one of the lowest rates of female labor force participation globally, at less than 14% (Jordan's Economic Monitor, 2023). This lack of workforce diversity, combined with limited awareness about the strategic importance of HC for economic and social development, represents a significant barrier to sustainability (Qa'dan & Suwaidan, 2019). Additionally, corporate reporting in Jordan remains uneven and often optional, highlighting the need for better institutional frameworks to support HC development for sustainability purposes (Ugnich et al., 2021). In this context, Jordanian companies must invest in HC to not only enhance productivity and corporate performance (CP) but also to foster long-term sustainability.

The challenges in integrating ESG principles into Jordanian business practices are compounded by broader issues, such as data quality, lack of standards, and economic constraints (Leaders International, 2024). However, adopting ESG practices presents several advantages, including improved financial outcomes, enhanced brand recognition, and increased investor confidence. For Jordanian companies, overcoming these challenges requires collaborative efforts to advance knowledge sharing, human capacity building, and the development of stronger regulatory frameworks. By strengthening the bond between HC, CS, and CP, Jordanian firms can position themselves for long-term success, both domestically and in international markets (Al Frijat & Shbeilat, 2016).

To strengthen the bond between HC, CS, and CP, this study focuses on the role that firms play in developing HC. In light of these differing viewpoints, we think that a thorough literature analysis of the HC interface in CP might contribute to current conversations and further our knowledge of the ways in which it influences CP. Our research aims to close this gap in the literature and advance the fields of HC and CS in emerging economies. This study will answer the following research questions: (1) What is effective HC? (2) Does HC impact CS? (3) Does HC impact CP? and (4) Does CS play a mediating role in the connection between HC efficiency and CP improvement?

To address the first question, we measured HC using 12 dimensions, concentrating on the target parameters identified by HC theory and sustainability theory. To answer the second question, we considered sales growth, liquidity, company expansion, and return on investment as target parameters. To address the third question, we additionally considered 12 items of the institutional sustainability variable. To address the fourth question, we also looked at the significance of three sustainability-related contextual factors—economic, social, and environmental—through the lens of 12 dimensions; these

factors most likely operate as mediators in the relationship between HC and CP.

Finally, what are the main topics and areas of research to which future efforts should be directed in this area, particularly in developing nations? In the context of global value chains, the circular knowledge economy, and the circular economy, managers require more training to help them understand the significance of this expanding field. They are searching for innovative approaches to boost institutional sustainability through enhancing HC and creating competitive manufacturing capacities. Rosa et al.'s (2020) work on I4.0 and the circular economy has focused on the application of new technologies to increase production efficiency and enhance the product-service system. Furthermore, a circular knowledge economy may prove to be a beneficial substitute for a flourishing circular economy and a means of attaining sustainability in regional and international commercial activities (Ul-Durar et al., 2023). Therefore, considering vital global issues like Industry 4.0, global value chains, and the circular economy, firms should provide training opportunities that promote excellence in the development of practical, interpersonal, and technical abilities (Ul-Durar et al., 2023). Companies will have to hunt harder in the upcoming years for HC that possesses the knowledge, skills, and talents needed to promote sustainability and improve financial performance, especially in emerging economies. The realization of sustainability goals in contemporary businesses is fundamentally reliant on the engagement and capabilities of their workforce, as highlighted by Piwowar-Sulej (2021).

This research contributes to the academic discourse by exploring the intricate relationship between HC, CS, and CP, particularly in the context of developing economies grappling with current global economic challenges. First, it identifies the essential attributes of HC necessary for companies, especially in developing countries. Alawamleh et al. (2019) underscore that many firms fail to fully utilize their human potential, often focusing more on task-oriented strategies rather than leveraging HC for enhanced productivity. Second, the article addresses gaps in sustainability performance from a human resource management perspective. It examines how HC can positively impact the ESG facets of sustainable development, aligning with the sustainable development goals (SDGs) to bolster CP in emerging markets. Structural limitations still influence the results of the labor market. It also encourages companies to play a pivotal role in developing the competencies of managers and CEOs and enhancing CP and sustainability. Third, the study provides insights into the perception of sustainability in Jordanian firms, highlighting its role as a guiding principle in the nation's financial market development. To encourage companies that have not adopted the practice of preparing sustainability reports as comprehensive and dialogic reports to work toward providing sustainability reports that are dialogical and comprehensive and in accordance with disclosure standards so that they are accessible to all users. This helps companies achieve their SDGs and ensures that these goals are reflected in their financial performance. Finally, the research fills a critical gap in understanding the dynamics of sustainability and CP in developing markets, a topic less explored compared to developed financial markets.

## 2 | THEORY UNDERPINNING HC AND SUSTAINABILITY

The extensive and practical usage of HC for sustainability in organizations has emerged as a popular topic in the research domain (Rana, 2022). A study by Queiró (2022) indicates that HC is a major influence on corporate dynamics. Ibrahim (2022) asserts that HC is considered a vital part of sustainable development. According to Chaparro-Banegas et al. (2023), achieving sustainable development is more difficult in the absence of an educated and well-equipped society that supports research and initiatives based on sustainable development options.

### 2.1 | HC theory

HC is considered an intangible asset made up of multiple competencies that an individual has learned over his life, including knowledge, experience, training, and skills (Field & Mkrtchyan, 2017; Goldin, 2016). It is intellectual capital's most important component (Fincham and Roslender, 2003). According to Alvino et al. (2021), the company's most valuable resource is knowledge, which is why "people" are the driving force behind its success.

The amalgamation of HC and sustainability theories offers profound insights into addressing critical global challenges. HC, embodied by individuals possessing knowledge, experience, competence, and ability, plays a pivotal role in crafting solutions to climate change, societal well-being, moral and financial capital preservation, and economic development. These concepts converge to enhance CP, particularly in emerging economies. The capital approach, as articulated by Atkinson (2008), underscores the importance of wealth and its impact on sustainability and sustainable development. Wealth, defined as changes in actual asset values, holds the key to sustainability, as a loss in wealth directly impacts future well-being. Emerging markets, such as the Middle East and North Africa (MENA) region, face the imperative of achieving economic and environmental sustainability. Strategic approaches that simultaneously bolster HC and foster innovation are paramount in these contexts (Ibrahim, 2022).

HC theory, as pioneered by economists Theodore Schultz and Gary Becker in the 1960s, postulates that investments in education and training enhance productivity (Becker, 1975; Schultz, 1961, cited in Ross, 2023). This theory underscores the pivotal role of education in the workforce, subsequently extending to the broader concept of intellectual and HC. The concept of "human capital" signifies the innate productive talents of individuals and the potential for improvement through investments in education, on-the-job training, and health (Eide & Showalter, 2010). The quality of the workforce, encompassing knowledge, skills, motivation, and trust, emerges as a primary driver of HC's wide-reaching impact. It is essential to recognize that experiences translate into knowledge and skills (Frese & Rauch, 2001). Proper investments in HC are imperative for improved performance at the individual, group, organizational, and national levels (Tran & Vo, 2020).

Performance is a measurable outcome of managing operations, procedures, goods (including services), and organization systems (Jääskeläinen et al., 2022). It could pertain to qualitative or quantitative results (IWA 26:2017). According to Tangen (2005), performance is the general term for excellence that encompasses productivity and profitability in addition to other noncost elements like quality, speed, delivery, and adaptability, cited in Jääskeläinen et al. (2022). Abeysekera (2010) states that when a corporation has resources like HC and a learning environment, it can more effectively connect with the external world. Mitchell Williams (2001) backs up this claim, saying that an organization can improve performance by effectively using its human resources.

## 2.2 | Sustainable design theory

On the sustainability front, theories take diverse approaches to address environmental, social, and cultural issues (Elamer & Boulhaga, 2024; Elamer & Kato, 2024; Elamer & Utham, 2024; Mahran & Elamer, 2024). Ecological models emphasize biological diversity and ecological integrity, while political models focus on social structures that uphold human dignity. Economic models extend their scope to sustain natural and financial capital.

The concept of “Sustainable Design Theory” encompasses innovative strategies to rethink industrial products, processes, and organizational operations within a sustainable socio-economic framework (Baldassarre et al., 2020). Institutional theory highlights the role of social and environmental factors, often exerting greater influence than market forces, in shaping formal structures within organizations (Kauppi, 2013). Sustainability compels companies to operate in the interest of all stakeholders, including employees, shareholders, investors, customers, government, and society. A sustainable business strategy aligns with the core principles of economy, society, and environment. Its primary goals encompass enhancing worker justice, job satisfaction, societal well-being, reducing environmental pollution, and championing human rights, all of which contribute significantly to CP. Thus, the corporate sector is working to enhance its social and environmental performance to shift from short-term to long-term, sustainable profit maximization (Nazir et al., 2024). For businesses to accomplish their objectives in a way that aligns with fundamental economic, social, and environmental principles, they need capable human cadres who support enhancing sustainability and improving performance.

## 3 | LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

### 3.1 | HC efficiency and corporate sustainability

Since the 2008 financial crisis, there has been an expansion in the research on HC, highlighting the critical role that effective financial management plays in a firm's ability to survive, grow, and profitability

of firms (Kayani et al., 2019). Achieving CS requires the long-term creation of economic, social, and environmental value through investments, business strategies, and a focus on sustainability (Elamer et al., 2024; Hui et al., 2024; Marie et al., 2024; Mio et al., 2022; Moubarak & Elamer, 2024; Ullah, Jiang et al., 2024; Ullah, Owusu et al., 2024). Becker's theory of HC posits that individuals possessing higher-quality HC tend to generate more favorable outcomes (Al Shbail et al., 2022). Campos-García et al. (2023) indicate that HC emerges as a critical driver of business sustainability.

In the context of sustainability, it is imperative to consider all forms of capital, including natural, biological, social, technological, financial, and cultural, along with their intricate interactions (Šlaus & Jacobs, 2011). The growth of HC emerges as a key determinant of long-term sustainability. Ibrahim (2022) reinforces this perspective by highlighting that the improvement of HC is equally vital for sustainable growth as the advancement of innovation.

Grounded in the theories of Mincer (1958), Schultz (1961), and Becker (1975), as a fundamental driver of innovation and economic growth, the concept of HC resembles physical capital in its potential for enhancement through training, healthcare, and education (Diebolt & Hippe, 2022). These improvements translate into increased output and accelerate economic growth (Ibrahim, 2022). Seclen-Luna et al.'s (2020) research reinforces the direct impact of HC composition on the productivity of manufacturing firms in developing countries. Piwoswar-Sulej (2021) underscores the essential role of competent and ambitious HC in the implementation of sustainable development principles within firms and in advancing the fulfillment of the SDGs (Chaparro-Banegas et al., 2023). Corredor and Gomez (2019) concluded that HC with higher skill levels is more inclined to implement sustainability practices.

Building upon the insights gleaned from the literature review, the study posits the following hypothesis:

**H1.** HC efficiency positively influences CS.

### 3.2 | HC efficiency and CP

Tran and Vo (2020) investigated the impact of HC efficiency on business performance, finding a positive relationship between HC efficiency and business performance across various industries. Similarly, Amouzesh et al. (2011) conducted an extensive study examining the correlation between sustainable growth rates and business performance, revealing a strong association between return on assets (ROAs), price-to-book (P/B) ratios, and the deviation of actual growth rates from sustainable growth rates. Sisodia et al. (2021) also explored the relationship between HC and CP, reporting a favorable correlation between business performance and the presence of a robust HC pool.

HC represents a crucial component of intellectual capital, encompassing individuals' knowledge, experience, skills, and capacities within an organization (Roslender & Fincham, 2004). Lin et al. (2012) found that HC disclosure positively affects CP, whether measured by ROA or the market-to-book ratio. Aman-Ullah et al. (2022) identified

HC—defined as employees' productive talents, knowledge, and skills—as a significant driver of a firm's performance. Tjahjadi et al. (2022) confirmed that HC efficiency positively and directly influences CP. Similarly, Majumder et al. (2023) demonstrated that HC-employed efficiency positively impacts profitability, highlighting the clear relationship between HC and a company's financial performance.

Research by Wangwe et al. (2016) provides compelling evidence of the substantial impact of HC on corporate financial performance. Rahman and Akhter (2021) focused on factors related to HC investment that influence the performance of banks, including training, education, knowledge, and skills, and found a positive correlation between these factors and bank performance. Bhutta et al. (2021) emphasized that businesses can enhance productivity by strategically leveraging the capabilities of talented human resources to achieve competitive advantages and long-term market success. Hatch and Dyer (2004) underscored the significant impact of investing in a company's HC on its overall performance. Nawaz and Ohlrogge (2023) found that HC efficiency consistently drives financial performance, particularly during economic downturns, underscoring the pivotal role of HC in profitability.

Drawing from these profound insights derived from the literature review, the study formulates the following hypothesis:

**H2.** HC efficiency positively influences CP.

### 3.3 | The mediate role of CS on CP

The sustainable growth of businesses is receiving increasing attention, especially in light of the COVID-19 pandemic and recurrent financial crises (Zhou et al., 2022). Zhou et al. (2022) found that a company's market value can increase with improved ESG performance. Feldman (1997) confirmed that tightening environmental controls can boost operational effectiveness without raising environmental management costs, thereby enhancing financial performance. Similarly, Telle (2006) found that lower pollutant emissions correlate with better financial performance. Iwata and Okada (2011) demonstrated that greenhouse gas emission reduction leads to improved financial performance in clean industries.

On the social side, Al Frijat et al. (2023) concluded that corporate social responsibility (CSR) sustainability significantly impacts the financial performance of Jordanian companies. Inoue and Lee (2010) also found a positive relationship between CSR indicators and financial performance. Montabon et al. (2007) conducted an analysis linking sustainability management practices with key financial metrics, such as return on investment and sales growth. Their findings show a favorable impact of sustainability on financial performance, demonstrating positive associations between various environmental management practices and company performance measures. Similarly, Khan et al. (2022) examined the influence of sustainability initiatives on financial performance in both manufacturing and service industries, revealing significant positive effects of sustainability investments on financial performance. Yilmaz (2021) further

confirmed a positive relationship between CS performance and financial performance.

Human development, often characterized by improvements in HC, plays a pivotal role in driving economic growth. In emerging markets like the Middle East and North Africa, the potential for sustainable growth is substantial (Ibrahim, 2022). This underscores the importance of building HC for sustainability. CS, as defined by the Brundtland Report (1987), involves employing business strategies and activities that address current needs while safeguarding and enhancing human and natural resources for future generations (Rahi et al., 2023). Montabon et al. (2007) again highlighted the link between sustainability management practices and key financial metrics, such as return on investment and sales growth, demonstrating a favorable impact of sustainability on financial performance. Pham et al. (2021) examined the impact of sustainable policies on the financial performance of 116 publicly traded Swedish companies, finding a link between corporate business sustainability and financial success. Similarly, Khan et al. (2022) found significant positive effects of sustainability investments on the financial performance of companies in both manufacturing and service industries. Yilmaz (2021) confirmed this positive relationship between CS performance and financial performance. Azzam et al. (2020) explored the relationship between sustainability disclosures and financial performance in developing nations like Jordan, concluding that there are favorable correlations between social and financial performance.

Based on these insights, the study formulates the following hypotheses:

**H3.** CS positively influences CP.

**H4.** CS positively influences the relationship between HC efficiency and CP.

## 4 | METHODOLOGY

### 4.1 | The exploratory methodology and sample

Many studies use an exploratory methodology (Al Frijat et al., 2023). In our study, we investigate managers' and chief executives' responses to the role of HC in improving CS and CP at the ASE. Drawing from their experiences, we construct interpretations that define the realities of sustainability and performance (Schwandt, 1994). The selection of the ASE as the focal point of this study is underpinned by the critical observation of the absence or deficiency of knowledge and skills within the HC element, which plays a pivotal role in bolstering sustainability and enhancing performance. The ASE encompasses four distinct sectors: Industry, Insurance, Banks, and Services. By the end of 2023, 225 companies were listed on the market, with the majority being small to medium-sized businesses.

According to the Securities Depository Centre (SDC) website, the study population comprises 190 companies classified as nonfinancial sectors (Amman Stock Exchange, 2018). Purposive sampling was



**TABLE 1** Demographic characteristics of respondents.

Characteristics	No. of responses/(responses rate)
Gender	
Male	243 (84.66%)
Female	44 (15.33%)
Age	
30 or less	33 (11.49%)
30–<40	129 (44.94%)
40–<50	82 (28.57%)
>50	43 (14.98%)
Employees	
High management	91 (31.70%)
Mid management	163 (56.79%)
Low management	33 (11.50%)
Education	
Undergraduate degree	209 (72.82%)
Graduate degree	78 (27.17%)
Experience	
<5	31 (10.8%)
5–<10	77 (26.82%)
10–<15	113 (39.37%)
>15	66 (23%)

employed, and the sample included 94 industrial and service companies that have implemented sustainability regulations. Financial sector companies (Banks and Insurance sectors) were not included in this analysis due to their adherence to distinct rules of disclosure and corporate governance issued by Jordan's central bank and insurance commission (Alodat et al., 2022).

Al-Othman and Al-Zoubi (2019) indicate that the companies in Jordan have become more concerned than in previous years with the quality of their financial statements. In addition, new governance rules were issued, and Jordan's framework for sustainability is still in its infancy (Qa'dan and Suwaidan, 2019). This means that the financial periods before 2019 were not in which most companies were obligated to disclose sustainability indicators because no mandatory provisions were forcing them to disclose the importance of these indicators. Furthermore, these corporations were not issuing sustainability reports because they were not legally obligated to do so. Also, some corporates from the research sample were disqualified for various reasons: First, their financial data had gaps; second, companies suffered successive annual losses; and third, some enterprises were in the liquidation stage (Al Frijat et al., 2023).

## 4.2 | Data collection

This study uses an exploratory approach; data procurement for this research was executed by disseminating a comprehensive questionnaire to managers occupying various strategic roles across departments.

The Jordanian business environment has been expanding due to global investments. So, companies listed in ASE require the presence of managers with high levels of technical competence to manage their activities (Al Frijat et al., 2023). The data collection period spanned from June to October 2022. Several expert evaluators thoroughly reviewed the questionnaire's format and content to ensure its comprehensiveness and alignment with the study's objectives. Subsequently, the questionnaire items were subjected to a rigorous analysis employing partial least squares structural equation modeling (PLS-SEM). The findings shed light on the pivotal role of managers and executives within Jordanian companies in elucidating the CS vision and strategies. The sample pool selected for this study, comprising companies listed on the ASE, comprised 341 participants, of which 287 responses were deemed suitable for robust statistical analysis. As is often the case with multivariate analytical techniques, using large samples can be beneficial in meeting the analysis of the PLS-SEM approach's minimum sample size requirements (Ringle et al., 2023).

Table 1 shows the response rate of 84%, which underscores the participants' commitment to maintaining the confidentiality of their responses. The data analysis relied on a Likert scale ranging from 1 to 5, effectively capturing the nuances of the participants' perspectives. Notably, 63% of respondents occupied top and medium administrative roles. This demographic was chosen due to its pivotal contributions to CS endeavors. Regarding age distribution, 45% of respondents fell within the 30–40 age brackets, with an additional 33% comprising individuals below 30. Gender-wise, men constituted the majority, accounting for 85% of the participants. Educational backgrounds reflected a diverse range, with 72% holding bachelor's degrees and 28% graduate programs in business-related fields and others. Regarding practical experience, many respondents boasted an experience ranging from 5 to more than 15 years. This cohort's practical experience is a driving force in pursuing CS goals to enhance CP.

## 4.3 | Variables definition and measurement

This study aims to test the role of CS as a mediating variable in the relationship between HC efficiency and CP using Smart PLS. According to Ringle et al. (2023), both primary and secondary data can be utilized to analyze PLS-SEM.

### 4.3.1 | HC efficiency as an independent variable

The independent variable, HC, is a complex construct that includes various qualities that help firms create value and perform better both financially and nonfinancially. It encompasses the capacities that people possess (Becker, 2009), such as their knowledge, talents, and insights, which cannot be bought or sold. This includes elements like human awareness and creativity (Ibrahim, 2022; Šlaus & Jacobs, 2011), initiatives for training and development (Monica, 2018), and implicit knowledge (Carson et al., 2004). The RICARDIS research (2006) by the European Commission reaffirms

**TABLE 2** Measurement model analysis.

Items	Loading	VIF	Cronbach's alpha	AVE	Rho (a)	Rho (c)
<b>Human capital (HC)</b>						
HC-1: "Company managers are familiar with areas of the Code of Professional Conduct about bribery, embezzlement, and anti-corruption."	0.726	2.006	0.938	0.596	0.940	0.946
HC-2: "Company managers have Knowledge and skills in Managing climate-related physical and transition risks."	0.735	2.065				
HC-3: "Company managers have knowledge and skills in "management report discussion and analysis."	0.798	2.374				
HC-4: "Company managers are familiar with strategy—the approach the entity uses to manage sustainability-related risks and opportunities."	0.849	3.837				
HC-5: "Company managers are familiar with the guidelines for applying the CDSB framework."	0.801	2.750				
HC-6: "Company managers have the ability to contribute to raising and strengthening social and environmental consciousness."	0.856	3.599				
HC-7: "Company managers have the ability to evaluate weaknesses in sustainability areas and correct them."	0.726	2.001				
HC-8: "Company managers have sustainable communication skills with all internal and external parties to deal with all sustainability-related issues."	0.793	2.508				
HC-9: "Company managers have the ability to promote diversity in employment and create a work environment that encourages equality and respect for difference."	0.752	2.179				
HC-10: "Company managers have the ability to measure and evaluate the company's performance from an environmental and social standpoint."	0.711	1.963				
HC-11: "Company managers are familiar and knowledgeable with digital innovation and blockchain."	0.753	2.081				
HC-12: "Company managers have the skill of planning, making decisions, and developing recommendations for all sustainability-related issues."	0.746	2.061				
<b>Corporate sustainability (CS)</b>						
CS-1: "Company always supports safeguarding the environment and climate change mitigation."	0.744	1.983	0.926	0.553	0.927	0.937
CS-2: "Company supports Clean water access and health risk management."	0.743	1.970				
CS-3: "Company supports Efficient natural resource utilization and responsible waste management."	0.761	2.234				
CS-4: "Company supports Infrastructure development."	0.728	1.917				
CS-5: "Company promotes health, education, and technology transfer."	0.743	2.055				
CS-6: "Company supports gender equality and worker well-being."	0.804	2.422				
CS-7: "Company supports eradicating poverty."	0.724	2.007				
CS-8: "Company supports economic growth and promotes local investments."	0.700	1.765				
CS-9: "Firm supports industrialization, innovation and Blockchain."	0.741	1.900				
CS-10: "Company supports equal opportunities and social and economic inclusion."	0.735	2.101				
CS-11: "Company supports creating job opportunities instead of attracting foreign workers."	0.737	2.175				
CS-12: "Company supports human development through employment and training."	0.760	2.188				
<b>Corporate performance (CP)</b>						
CP-1: "We have improved our Sales or Revenue Growth."	0.882	2.157	0.820	0.650	0.851	0.881
CP-2: "We have improved our Liquidity."	0.712	1.414				
CP-3: "We have reached our Company's growth."	0.846	2.019				
CP-4: "We have increased our Return on investments."	0.773	1.675				

that HC is made up of talents, emphasizing its holistic nature and the importance of drive, experience, and ability (Mariz-Pérez et al., 2012). In the modern landscape, essential 21st-century skills, including

communication, cooperation, teamwork, critical thinking, and digital literacy, highlight the multifaceted nature of HC (Binkley et al., 2012). This variable was tested using 12 dimensions (see Table 2).

### 4.3.2 | CS as a mediating variable

Sustainability disclosures (SDs) are defined by Dienes et al. (2016) as the balance between financial (profit), social (people), and environmental (planet) elements. CS encompasses three vital dimensions: financial, social, and environmental. Diaconu and Popescu (2016) indicate that these measurement dimensions are drawn from insights provided by various studies and reports. As well as sustainable practices involve formulating a clear environmental policy and making additional investments to establish sustainability (Ortiz-Martínez et al., 2023). In our study, this variable was tested using 12 dimensions (see Table 2).

### 4.3.3 | CP as a dependent variable

Financial performance metrics have received nearly all the focus in certain business and management domains. These metrics serve as business performance indicators, providing quantitative information demonstrating a firm's performance (Badawy et al., 2016). Many studies have covered the topic of a firm's financial performance in various ways. According to Kaplan and Norton (1992), organizational performance is a collection of financial and nonfinancial measures used to evaluate how well a firm's goals and objectives have been achieved. These measures include financial indicators such as return on assets, liquidity, sales growth, and return on equity, as well as nonfinancial indicators like job satisfaction, competitive advantages, customer satisfaction, and service quality. So, researchers have shown a growing interest in financial and nonfinancial performance metrics (Dunk, 2005).

Moreover, Singh et al. (2015) indicated that financial performance indicators can be measured using information from stock exchanges or publicly available corporate statements. Additionally, financial performance can be measured by data obtained from managers, such as their market share and profitability, without relying on secondary data to test the company's performance. Managers can rate their company's overall success, which is useful given the difficulty of comparing various objective performance indicators in international settings or gathering objective data in developing nations (Hult et al., 2008, cited in Singh et al., 2015). Moreover, corporate annual reports highlighting performance may be intentionally misleading (Brown & Laverick, 1994), making the data collected from managers the most reliable for testing.

Although objective performance measures can reduce the potential for common method variance (Wall & Wood, 2005, cited in Singh et al., 2015), obtaining consistent and comparable data for the full sample of companies under study is often difficult. Hence, subjective performance metrics can be trustworthy in an emerging market, as Hult et al. (2008) demonstrated. Managers from companies in four countries, including Jordan, reported that data collected from managers to measure CP were reliable. Responses loaded well on one of the performance measures, indicating that managers correctly classified the underlying performance construct across different indicators

(Singh et al., 2015). In our study, this variable was tested using four dimensions (see Table 2).

## 4.4 | Descriptive statistics

The findings shed light on the pivotal role of managers within Jordanian companies in elucidating the CS vision and strategies. The respondents' insights were solicited on a range of variables encompassing HC, CS, and CP.

The descriptive statistics regarding the study variables represent HC efficiency, CS, and CP. In addition, the mean value of HC is 3.60, and the mean value and SD of sustainability are 3.62 (0.541); for CP, the mean value and SD are 3.55 (0.666). This interpretation represents that HC efficiency plays a vital role in achieving sustainability for corporates, which is positively reflected in the CP.

## 5 | ANALYSIS AND FINDINGS

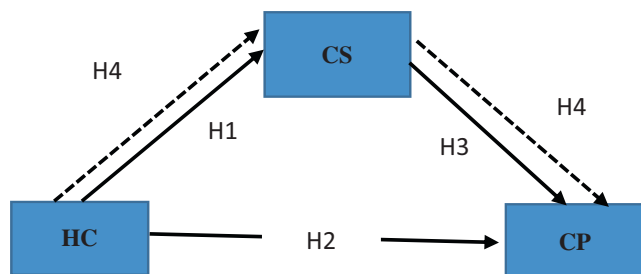
We investigate variables' direct and indirect effects on performance using the structural equation modeling (SEM) methodology. To verify the suggested association between HC, CS, and CP, we selected the PLS-SEM method utilizing Smart PLS. PLS-SEM is widely used across various business disciplines, including accounting, management sciences, and information systems, demonstrating a deep understanding of this approach (Aftab et al., 2023; Ringle et al., 2023). Researchers favor PLS-SEM over covariance-based SEM (CB-SEM) due to its higher statistical power. Moreover, PLS-SEM is superior to regression in evaluating mediation effects.

Many studies incorporating primary and secondary data extensively use SEM approaches (Rajesh, 2020). Accordingly, there is a greater likelihood of detecting correlations between variables with higher statistical power. Thus, PLS-SEM is an excellent choice for this study. Furthermore, Hair et al. (2019) and Ringle et al. (2023) highlight three primary reasons for using PLS-SEM: the use of formative indicators, sample size considerations, and data dispersion. Additionally, SEM has a significant advantage over most other analytical models. It is well-known for its ability to estimate causal impacts through path connection analysis, which evaluates additive and linear causal models with hypothetical support (Kaplan, 2008).

### 5.1 | Measurement model assessment

The measurement model's reliability and validity were rigorously assessed using established methodologies. Internal consistency reliability was evaluated using Cronbach's alpha, a widely accepted measure that examines the intercorrelations between different measurement indicators. It is based on the assumption that all indicators should have equal loadings on their respective constructs. In this study, Cronbach's alpha values for all variables were consistently high, indicating strong internal consistency reliability. None of the





**FIGURE 1** The study's model. Source: Created by authors. HC, human capital; CS, corporate sustainability; CP, corporate performance.

Cronbach's alpha values exceeded one or fell below 0.70, further affirming the robustness of internal consistency reliability, as recommended by Hair et al. (2019) (see Table 2).

In addition to AVE, the reliability of individual indicators was considered. This evaluation measures how strongly measurement indicators are associated with their respective constructs. High loading values indicate that a substantial portion of the indicator's variance is accounted for by the underlying construct. While a recommended outer loading value of 0.708 or higher is ideal, a value of 0.7 is generally acceptable in most cases because of its proximity to the recommended threshold. Loading values falling between 0.4 and 0.7 are also deemed acceptable as long as the removal of indicators within this range does not adversely affect the reliability or AVE of the composite constructs, as suggested by Hair et al. (2019) (see Table 2).

Convergent validity, another essential aspect of measurement validity, was assessed using the average variance extracted (AVE) methodology, originally introduced by Fornell and Larcker (1981). Convergent validity ensures that all indicators of a particular construct accurately reflect the underlying construct. As shown in Table 2, each construct in this study demonstrated an AVE exceeding 0.5 for the corresponding indices, affirming convergent validity.

Collinearity issues between independent latent variables are also investigated at this level (i.e., predictor constructs). It can be challenging to pinpoint the precise amount of change in the dependent latent variable brought on by a single predictor variable due to the high level of collinearity (Hair et al., 2019). A VIF measure should be used to look into any potential collinearity issues at the level of the predictor constructs, according to Hair et al. (2019). The VIF value should range from 0.2 to 5.00 to ensure that predictor constructs are not collinear. Therefore, the VIF results in our study ranged from 0.2 to 5.00, ensuring that the prediction structures are not parallel. As shown in Table 2, the study's results show no correlation problems related to the model used.

Table 2 further illustrates the outer loadings for the constructs employed in this study, confirming their contribution to the measurement model's reliability and validity. Therefore, the previous assessments enormously enhanced the measurement model's reliability and validity, ensuring the robustness of the data for subsequent predictive modeling and path analysis, as depicted in Figures 1 and 2.

## 5.2 | Discriminant validity

Discriminant validity, an important aspect of measurement model analysis, was rigorously assessed using Fornell and Larcker's (1981) criterion. This well-established method is a modern criterion for evaluating discriminant validity in partial least squares (PLSs) models. It provides a robust measure to ensure that constructs are distinct. The Fornell and Larcker ratio was calculated for the constructs in this study. Therefore, the test threshold value should be less than 0.90 for discriminant validity. The findings affirm that the constructs in this study met this threshold, providing evidence of their discriminant validity. Overall, the results of the measurement model analysis for discriminant validity, as detailed in Table 3, demonstrate that the constructs in this study exhibit discriminant validity. They are distinct and effectively measure different aspects of the underlying constructs. This reinforces the robustness of the measurement model and the quality of the data for subsequent analyses.

## 6 | HYPOTHESIS TESTING AND DISCUSSION

This study explores how HC can be leveraged to achieve sustainability and improve performance, focusing on evidence from emerging economies. The regression analysis findings for the hypothesized relationships are presented in Table 4 and Figure 2, revealing a favorable correlation between HC, CS, and CP. According to Table 4, the structural model test results show that H1 and H2 are supported with path coefficients of 0.841 and 0.467 and *t*-values of 39.167 and 5.398, respectively, all significant at the 0.05 level. This indicates a positive relationship between HC, CS, and CP, suggesting that familiarity with knowledge, experiences, capacities, and skills enhances firm performance and sustainability. Consequently, H1 and H2 are accepted.

The data gathered to test these hypotheses show a positive relationship between HC and both CS and CP, indicating that the competence of HC influences CS and CP. Enhancing sustainability and improving CP requires efficient HC equipped with knowledge and abilities. Managers who are well-versed in the code of professional conduct provisions related to bribery, embezzlement, managing physical and transition risks associated with climate change, and "management report discussion and analysis" contribute significantly to enhancing performance and sustainability. Moreover, familiarity with strategy, sustainability-related risks and opportunities management, and guidelines for applying the CDSB framework further support this enhancement.

Managers and executives play a critical role in boosting CP and sustainability by raising social and environmental awareness, assessing and correcting sustainability-related weaknesses, addressing sustainability issues through effective communication, supporting workplace diversity, and fostering an environment of equality and respect. Additionally, their knowledge of blockchain technology and digital innovation equips them to handle sustainability-related challenges efficiently, ultimately reflecting in the company's financial

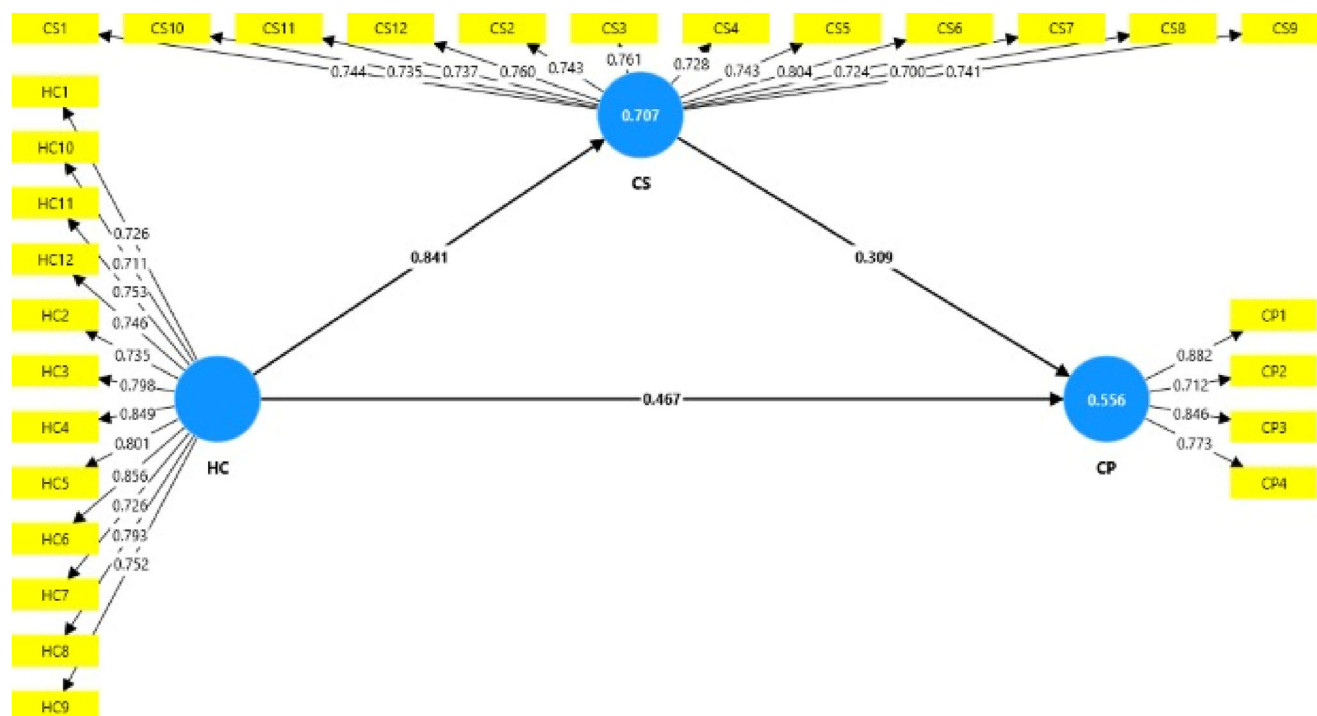


FIGURE 2 The Smart PLS model. Source: Created by authors.

TABLE 3 Discriminant validity.

Construct	HC	CS	CP
HC	0.806		
CS	0.702	0.744	
CP	0.727	0.741	0.772

Abbreviations: CP, corporate performance; CS, corporate sustainability; HC, human capital.

performance. Šlaus and Jacobs (2011) emphasize that developing HC is a primary factor in long-term sustainability studies. Similarly, Githaiga et al. (2023) highlight the significance of firm-specific HC as a driver of competitive advantage and business sustainability from resource-based perspective theory and HC theories. Backman (2014) also indicates that the cognitive capabilities of HC positively affect company productivity. Piwowar-Sulej (2021) asserts that skilled and motivated employees are essential for successfully implementing sustainable development ideas in firms.

These findings reinforce the results of previous studies that assert HC efficiency positively impacts CS and CP (Azzam et al., 2020; Dal Maso et al., 2023; Hatch & Dyer, 2004; Rahi et al., 2023). According to Githaiga et al. (2023), human resource practices such as hiring suitable personnel, providing necessary training and motivation, evaluating performance, and fair compensation are crucial for financial sustainability. The theories of Mincer (1958), and Schultz (1961) propose that HC, like physical capital, can be improved through training, education, and health, thereby increasing output and accelerating economic growth (Teixeira, 2014). Schultz

and Becker noted that investing in education and training may increase productivity.

Similarly, H3 is supported by the analytical results ( $\beta = 0.309$ ,  $t = 3.725$ ,  $p < 0.05$ ). The results show a positive relationship between CS and CP, indicating that CP is affected by sustainability. Thus, H3 is accepted. This implies that a company's financial performance improves with increased disclosure of sustainability information, including environmental protection measures, climate change mitigation, clean water access, health risk management, natural resource usage, and responsible waste disposal. Enhanced financial performance is also supported by infrastructure development, worker welfare, gender equality, education, health promotion, and technology transfer. Furthermore, financial performance improves with disclosures on poverty eradication, economic growth support, local investments, industrialization, innovation, equal opportunities, social and economic inclusion, job creation over attracting foreign workers, and human development through employment and training.

The study reinforces previous findings that sustainability disclosure positively impacts CP (Azzam et al., 2020; Bhutta et al., 2021; Markota Vukić et al., 2018). In other words, Sales growth, company growth, liquidity, and return on investment are significantly influenced by sustainability reports. Alodat et al. (2023) show a strong correlation between CS and financial and operational performance. According to Garcia and Orsato (2020), there may be a favorable correlation between financial performance and actual ESG scores. Sustainability initiatives can lead to higher yields, lower costs, and better hazard management, enhancing the brand's reputation (Dal Maso et al., 2023).

**TABLE 4** T-value and *p*-value.

	Path	Path coefficient	<i>t</i> -value	<i>p</i> -value	Significance ( <i>p</i> < 0.05)
H1	HC → CS	0.841	39.167	0.000	Confirmed
H2	HC → CP	0.467	5.398	0.000	Confirmed
H3	CS → CP	0.309	3.725	0.000	Confirmed

Abbreviations: CP, corporate performance; CS, corporate sustainability; HC, human capital.

**TABLE 5** Summary of mediation results.

Total effect (HC → CP)					
		Coefficient	<i>t</i> statistics	<i>p</i> values	
HC → CP		0.727	22.843	0.000	
Direct effect (HC → CP)					
		Coefficient	<i>t</i> statistics	<i>p</i> values	
HC → CP		0.467	5.398	0.000	
Specific indirect effect of (HC on CP)					
	Relationship	Coefficient	<i>t</i> statistics	<i>p</i> values	Significance ( <i>p</i> < 0.05)
H4	HC → CS → CP	0.260	3.613	0.000	Confirmed

Finally, Table 5 reveals that the final hypothesis (H4) is statistically significant, supported by the indirect effects of HC on CS and CP ( $\beta = 0.260$ ,  $t = 3.613$ ,  $p < 0.05$ ). This indicates that CS partially mediates the relationship between HC and CP. Thus, H4 is accepted. This implies that teams with clear environmental policies, sustainable practice investments, and innovative societal, environmental, and economic support programs are more likely to enhance CP. Effective working capital management can boost revenue and profits, propelling faster growth rates. Srouji et al. (2023) emphasize that publishing sustainability data is crucial for evaluating company performance and its importance for profits and diversification.

These results reinforce previous studies that assert HC efficiency positively impacts CS and CP (Amouzesh et al., 2011; Dal Maso et al., 2023; Diebolt & Hippe, 2022; Nawaz & Ohlrogge, 2023; Rahi et al., 2023; Teixeira, 2014).

R-squared values play a crucial role in assessing the predictive capability of a study model within the sample data. They indicate the extent to which endogenous factors (dependent variables) can be explained by exogenous variables (independent variables). R-squared values range from 0.00 to 1.00, with higher values closer to 1 indicating greater predictive ability. According to Hair et al. (2019), R-squared scores of 0.75 and above, equal to or below 0.25, are classified as having strong, middling, and weak predictive power, respectively. CS (R-squared = 0.707) and CP (R-squared = 0.556) were the two variables with the highest R-squared values in this study, indicating moderate in-sample predictive power.

Furthermore, Stone-Geisser's metric (Q-squared) is widely used to assess the model's capacity to forecast data not used and its out-of-sample predictive power. For any reflective endogenous concept in the model, Q-squared should be greater than zero (Geisser, 1974; Hair et al., 2017). According to Hair et al. (2019), values of 0.02, 0.15, and

0.35 specifically indicate low, medium, and high predictive power. Based on the Q-squared values of the two reflective endogenous constructs in this investigation, the model has a strong capacity for prediction (see Table 6).

## 7 | CONCLUSION, IMPLICATION, CONTRIBUTIONS, AND LIMITATION

In light of global economic fluctuations and innovations, this study explores how CS influences the relationship between HC effectiveness and CP, with evidence from emerging economies. The results demonstrate a positive relationship between HC, CS, and CP, indicating that sustainability and performance are significantly influenced by HC competence. This means that implementing sustainability and improving company performance requires efficient HC, represented by knowledge, skills, and abilities, which can be leveraged to engage in socially, environmentally, and economically responsible activities.

Managers and executives with the necessary skills and knowledge to manage opportunities related to climate change, business ethics, and sustainability-related financial disclosures—such as “management report” and “management discussion and analysis”—play a crucial role. Familiarity with the CDSB framework requirements and the business's strategies for addressing sustainability-related risks and opportunities is essential. Additionally, enhancing social and environmental awareness, developing sustainable communication skills, and supporting workplace diversity contribute to improved CP and sustainability.

These findings align with previous studies that assert HC efficiency positively impacts CS and CP (Amouzesh et al., 2011; Azzam et al., 2020; Dal Maso et al., 2023; Diebolt & Hippe, 2022; Hatch & Dyer, 2004; Monica, 2018; Nawaz & Ohlrogge, 2023; Rahi

Endogenous construct	R-squared	R-squared adjusted	Q <sup>2</sup> predict	RMSE	MAE
CS	0.707	0.706	0.703	0.549	0.398
CP	0.556	0.553	0.522	0.697	0.523

Abbreviations: CP, corporate performance; CS, corporate sustainability.

**TABLE 6** Predictive relevance and explanatory.

et al., 2023; Teixeira, 2014). Additionally, the study demonstrates that enhanced business performance and sustainability are positively correlated. Companies that support the disclosure of sustainability information—such as measures to protect the environment, mitigate climate change, improve access to clean water, manage health risks, use natural resources responsibly, and dispose of waste—experience improved financial performance.

## 7.1 | Implications

This study advances the literature on HC and CS by highlighting the critical role CS plays in mediating the relationship between HC and CP, particularly in the context of emerging economies. While previous studies have explored the direct effects of HC on corporate outcomes, our research provides new insights into the underlying mechanisms that link HC efficiency with sustainability and performance. This contribution is especially relevant to emerging markets, where the integration of sustainability practices is still evolving, and HC is a crucial strategic asset. The findings emphasize the need for a more holistic view of HC, one that recognizes its potential not only as a driver of performance but also as a facilitator of sustainable development. Future studies should further investigate this relationship in other emerging economies to determine whether similar dynamics are present in different institutional and economic contexts.

For practitioners, our research offers actionable strategies to enhance CS and performance through HC development. Companies in emerging economies, particularly those listed on the Amman Stock Exchange (ASE), should prioritize continuous investment in HC, focusing on developing the technical, digital, financial, and sustainability-related skills that are increasingly essential in the modern economy. Our findings suggest that HC, when aligned with CS initiatives, becomes a critical lever for improving organizational resilience and long-term growth.

Businesses should conduct regular audits of their HC capabilities, ensuring they can attract and retain skilled workers who are equipped to meet the challenges posed by digitization, climate change, and evolving sustainability standards. This includes investing in employee training programs that foster proficiency in sustainability reporting, ESG risk management, and technological innovations such as blockchain and digital tools. Moreover, companies should adopt more comprehensive sustainability reporting frameworks that adhere to international disclosure standards, thereby enhancing transparency and stakeholder trust. These efforts will not only improve CP but also support broader social and environmental objectives, such as reducing

carbon footprints, improving worker well-being, and promoting gender equality.

From a policy perspective, regulators and policymakers in emerging economies should encourage businesses to integrate sustainability into their HC development strategies. This could include the introduction of incentives or guidelines that promote sustainable HR practices, such as training in environmental management, ESG reporting, and the development of green skills. Governments could also play a more active role in supporting the corporate sector by fostering public-private partnerships aimed at advancing sustainability education and capacity-building initiatives, particularly in areas like renewable energy, water management, and climate change mitigation.

## 7.2 | Contributions

This research provides insights into how Jordanian firms perceive sustainability as a guiding principle for the nation's financial markets. While CS and CP research has advanced in developed financial markets, this study addresses a crucial research gap by exploring these variables within developing markets. It identifies the fundamental skills and knowledge essential for HC in companies, particularly in emerging nations, and highlights existing gaps in sustainability performance, especially concerning human teams responsible for sustainability management.

The study offers a comprehensive guide outlining the critical HC capabilities required to achieve optimal sustainability performance and improved overall performance, particularly in challenging times. These efforts can lead to enhanced CS and expedite progress toward sustainability objectives, which should be a primary goal for businesses. Moreover, it encourages developing countries to accelerate the development of sustainability programs to improve their CP.

## 7.3 | Limitations

While this study makes valuable contributions to the literature on HC, CS, and CP, several limitations must be acknowledged. First, the research focuses exclusively on the manufacturing and service sectors of companies listed on the Amman Stock Exchange (ASE). This sectoral limitation restricts the generalizability of the findings, as the results may not be fully representative of firms operating in different industries or global markets. Future research should broaden its scope to include other sectors, such as finance, technology, or agriculture, and explore how HC and CS interact across diverse industries in both developed and developing markets.

Second, this study employed 12 CS dimensions as intermediary variables. While these dimensions provide useful insights, they may not capture the entire breadth of sustainability factors that influence CP. For instance, themes such as climate change, biodiversity, and resource scarcity are gaining significant global attention but were not fully covered in this study. Future research should extend this work by incorporating a more comprehensive set of sustainability metrics, especially those aligned with the United Nations SDGs, to better understand the holistic impact of sustainability on corporate outcomes. In particular, exploring firms' climate change disclosures and sustainability reports could offer deeper insights into how sustainability practices affect long-term performance.

Third, there is a lack of recent, in-depth research on Jordan's business performance and the specific characteristics of HC in the country. This highlights a need for further investigation into how HC strategies in Jordan can be optimized to meet the growing demands of a globalized economy. Future studies should delve into how businesses can equip employees with the digital, technological, and technical skills required in an increasingly knowledge-based economy. Given the rapid pace of technological advancements, understanding how firms in emerging markets, such as Jordan, can cultivate a workforce that adapts to these changes is critical for sustaining competitiveness.

Finally, this study's focus on industrial companies and service institutions was driven by the limited availability of nonfinancial data on sustainability practices over the years. This limitation suggests the need for future research to promote the collection and analysis of comprehensive sustainability data across all sectors, including those with limited reporting practices. Researchers in developing nations, particularly in Jordan, should be encouraged to examine sustainability indicators in a broader range of sectors, encompassing both financial and nonfinancial companies. This would enable a more robust understanding of the relationship between HC, sustainability, and CP in different institutional contexts.

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