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Importance of Sustainability Accounting in Measuring the Costs of Electric and Conventional Cars on Investment and Average per Capita Income in Jordan

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Abstract: This study aims to investigate the impact of sustainability accounting, which includes environmental accounting, social accounting, and governance information, on investment costs and average per capita income in Jordan, focusing on comparing electric and conventional vehicles. The Jordanian car sector, where the research is being conducted, provides a crucial framework for understanding the financial effects of sustainable accounting practices. The top players in Jordan's automotive sector and sustainability accounting field comprise the target demographic for this study. A standardized questionnaire was used to survey an initial sample of 500 individuals. The 373 responses were legitimate and included in the final study following a thorough data screening. Data processing and evaluation meticulously used partial least squares multigroup analysis (PLS-MGA). According to the results, conventional automobiles' path coefficient—which measures how much sustainability accounting affects investment costs and average per capita income—was visibly worse than electric cars. This study provides important new information about the function of sustainability accounting in the automotive industry and how it affects conventional and electric cars differently. The findings have important implications for decision-makers in the public and private sectors, as well as for investors and other industry participants, supporting their attempts to link sustainability programs with economic performance.

Keywords: average per capita income, investment costs, Jordan, partial least squares multigroup analysis, sustainability accounting.

利用紅血球膜穩定性研究印地語萃取物

摘要：本研究旨在調查永續發展會計（包括環境會計、社會會計和治理資訊）對約旦投資成本和人均收入的影響，並著重於電動車和傳統汽車。這項研究正在進行的約旦汽車產業為理解永續會計實務的財務影響提供了一個重要的框架。約旦汽車產業和永續發展會計領域的頂級參與者構成了本研究的目標群體。使用標準化問卷對500人的初始樣本進行了調查。這373份答案是合法的，並在經過徹底的資料篩選後納入最終研究。資料處理和評估精心使用偏最小二乘多組分析。結果顯示，傳統汽車的路徑係數（衡量永續發展會計對投資成本和人均收入的影響程度）明顯比電動車差。這項研究提供了有關永續發展會計在汽車產業中的作用以及它如何對傳統汽車和電動車產生不同影響的重要新資訊研究結果對公共和私營部門的決策者以及投資者和其他行業參與者俱有重要意義，支持他們將永續發展計畫與經濟績效聯繫

起來的嘗試。

关键词：人均收入、投資成本、約旦、偏最小二乘多组分析、永續發展會計。

1. Introduction

Environmental, social, and governance (ESG) practices have gained significance over the past ten years, not only for policymakers but also for the public and investors in businesses [36]. Developing a solid rapport with stakeholders is essential for businesses to acquire a competitive edge. ESG practices, including resource and risk management, have a significant impact on how management makes decisions. Efficiency, customer loyalty, company reputation, access to financing, cost savings, and innovation capability improve over time in businesses that embrace ESG metrics [4, 21]. For a business to be successful, it is necessary to get not only shareholders but also other stakeholder groups on your side. Because ESG data are now frequently disclosed, there is a lot of study interest in this field. The empirical results, however, are inconsistent, and both research and practice in this area are still in their infancy [55]. ESG interactions contain intriguing research gaps not yet fully addressed. The relationship between ESG practices and their effects on investment costs and average per capita income in Jordan is an unresolved problem that still needs to be investigated [60].

The United Nations-founded Principles for Responsible Investment (PRI) initially advocated ESG investing in 2006. A collection of 35 potential actions that institutional investors can take to voluntarily incorporate environmental, social, and corporate governance (ESG) factors into their investment activities in PRI's six principles for responsible investment. Since then, ESG investing has expanded rapidly as more institutional investors and funds adopt various ESG investment methodologies. According to forecasts, sustainable investment assets will grow by 34% between 2016 and 2018, reaching $30.7 trillion in industrialized nations or regions [47] and $1.87 trillion in China by 2019 [27]. Improved long-term financial returns, risk management, and social rewards are the primary drivers of ESG investment [15, 53]. The lack of material and comparable ESG disclosure by companies, which makes it difficult for investors and ESG rating agencies to accurately assess the impacts of firms' ESG performance on financial returns and social effects [48, 51], may play a significant role in slowing the growth of global ESG investing practices.

The present study explores the connection between ESG reporting and its effects on average per capita income and investment costs by examining all three ESG reporting aspects collectively and individually [6]. The three ESG aspects are interrelated, and studies have shown that integrating them improves management practices and has a beneficial impact on investment costs and average per capita income [2]. The idea that ESG practices impact investment costs and average per capita income has occasionally been viewed as irreconcilable, even though existing research has frequently concentrated on only one of the three ESG dimensions and its relationship with investment costs and average per capita income. A problem for management decision-making is finding a balance between meeting the expectations of many stakeholders and the requirements and wishes of traditional shareholders, as highlighted by investment costs and average per capita income [62]. This study investigates the conflict between financial businesses' desire to satisfy shareholders following agency theory and their obligation to consider a broader range of stakeholders according to stakeholder theory. This study adds to the theoretical debate over how ESG accounting affects investment costs and average per capita income and concentrates on the non-financial industry to provide additional background information because this sector is essential to the economic development and social well-being of countries and businesses. Trust in finance during the 2007–2008 financial crisis decreased, and systematic risks increased [12]. Due to the crisis, ESG practices gained more attention than financial goals [26]. For financial institutions, ESG practices have become a crucial tool for reducing systematic risks [31].

The study emphasizes electric and conventional cars, providing insightful information related to a particular geographic area. Jordan has made a name for itself as a primary proponent of sustainable development among Asian nations. Its non-financial institutions crucially support a highly integrated business climate and the country's excellent economic performance. These institutions operate within similar risk, policy, and regulatory frameworks, which impact how they make decisions. For companies looking to establish a presence in the region, Jordan's open and welcoming business environment, characterized by few cultural barriers, has made it an appealing option. Understanding how these practices affect investment costs and average per capita income is becoming increasingly essential as worldwide concerns about ESG practices continue to develop. The purpose of this research is to investigate the relationship between ESG practices and these primary economic indicators in the context of Jordan's non-financial businesses. This study attempts to offer distinctive and regionally

specific knowledge by concentrating on the Jordanian setting. This study can provide important information about ESG practices in Jordan's non-financial industry decision-making processes and how they might affect investment costs and average per capita income. The findings of this study may help clarify the relationship between sustainable practices and Jordan's economic performance. Additionally, it can provide insightful guidance and lessons for decision-makers in industry, government, and finance who want to align their operations with sustainable development objectives while promoting economic progress and social well-being. This study contributes to the body of information regarding efforts made globally to adopt ESG practices for a more sustainable and prosperous future by examining the backdrop of Jordanian non-financial industries.

2. Literature Review

2.1. Sustainability Accounting Practice

Organizations must be able to evaluate and explain their effects on the environment, society, and the economy [17] using sustainability accounting to support sustainable development. It entails incorporating these factors into financial reporting systems to provide a thorough assessment of an organization's overall performance and its attempts to adopt sustainable business practices. Environmental accounting, social accounting, and governance data are the three essential elements of sustainable accounting.

According to [19], environmental accounting focuses on quantifying and disclosing an organization's environmental consequences, which include resource consumption, emissions, waste generation, and other environmental issues. Organizations can pinpoint opportunities for improvement and maximize their resource efficiency by quantifying these factors. By addressing issues such as pollution, climate change, and other environmental problems, environmental accounting encourages the wise use of natural resources [28]. Organizations can create strategies for reducing their carbon footprint and switching to greener energy sources by assessing their greenhouse gas emissions and energy use. To reduce ecological impacts, water and waste management techniques have also been studied [25]. Organizations can use environmental accounting to define performance goals, track advancement, and show stakeholders that they are committed to sustainable practices.

An organization's social implications on its constituents, such as its employees, communities, clients, and suppliers, are assessed through social accounting. It considers factors such as worker satisfaction with labor laws, involvement in the community, and charitable giving [42]. Organizations may develop a positive workplace culture and advanced employee well-being by evaluating employee happiness, diversity and inclusion efforts, and fair labor practices.

Social accounting assesses charitable endeavors and community development initiatives, highlighting an organization's dedication to assisting regional communities. It evaluates how goods and services affect the health and safety of consumers while promoting moral corporate conduct and responsible product creation [50]. Social accounting enables businesses to better match their values with stakeholder expectations, enhancing their brand and ability to operate in society. The openness, accountability, and moral behavior of an organization's management and board of directors are the main topics of governance information [6]. It assesses various aspects of corporate governance, such as executive compensation, board composition, risk management, and adherence to moral principles. Organizations foster confidence with stakeholders and encourage responsible decision-making by being open about their governance systems. Transparent reporting on executive remuneration ensures fairness, aligning incentives with long-term sustainability goals [54]. Effective risk management practices that guard against reputational, financial, and environmental hazards increase the organization's resilience. Information on governance also includes the disclosure of anti-corruption policies and the observance of applicable laws and professional standards. An effective governance structure ensures that social and environmental factors are incorporated into the organization's strategic planning and day-to-day operations [29].

In conclusion, by including environmental, social, and governance components in financial reporting, sustainability accounting practices are critical in furthering sustainable development. Organizations can assess their environmental impacts through environmental accounting and implement ecological footprint-reduction plans. Social accounting evaluates the social effects on stakeholders while promoting goodwill among staff, neighbors, and consumers. Information on governance enables ethical and transparent management practices, encouraging responsibility and accountable behavior. Organizations can demonstrate their dedication to sustainability, increase stakeholder trust, and support a more sustainable and responsible global economy by adopting sustainability accounting and reporting.

2.2. Effect of Sustainability Accounting Practices on Investment Costs and Average Per Capita Income

The ESG asset management scale handled by ESG funds typically measures the extent of ESG investments. The importance of ESG disclosure quality has gained attention in the recent literature, but empirical research on how ESG disclosure quality influences the scope of ESG investment is lacking. According to [11], an SRI fund's ESG intensity

increases when holding companies update their GRI sustainability reports. It is interesting to note that this beneficial effect is stronger in countries with laxer disclosure laws, increasing the signaling power of GRI disclosure.

However, the literature mainly concentrated on the financial performance of ESG funds [33] or evaluated the ESG performance of these funds [45] and has ignored issues impacting the scope of ESG investing. ESG assets managed by ESG funds may gain in value as the market value of companies with strong ESG performance rises, indicating an increase in investment in such companies. As a result, market value can be a stand-in for the firm-level ESG investment scale [7]. However, prior research on the relationship between ESG performance and market value rarely considers the quality of ESG disclosure. There has been an increase in studies examining the link between ESG and financial performance because of the growing interest in ESG problems and sustainable investing. The financial returns of a single company with higher ESG performance and the financial returns of portfolios based on ESG screening can approach this. Over 1,000 research papers on this topic were thoroughly analyzed by [24], which divided them into studies focusing on company financial performance and those focusing on investment performance.

[23] examined the impact of environmental accounting practices on the corporate performance of listed Nigerian oil and gas businesses in a separate study. According to their research, environmental accounting practices have a sizable beneficial influence on turnover and return on capital employed (ROCE) but little impact on net profit. To modernize financial accounting and harmonize with public policy, individual investor incentives, and global demands, [40] proposed a public policy approach. They suggested combining financial, social, and environmental accounting and justified that the current financial accounting framework does not adequately account for the motivations of private investors, necessitating a change in the accounting standard as a matter of public policy.

The theory of planned behavior was used by [10] to determine the main antecedents of managerial intent to engage in EA practices in Sri Lanka. Analysis using a partial least square structural equation model (PLS-SEM) shows that attitudes toward subjective norms of EA practices and perceived behavioral control significantly influence managers' intentions. Perceived behavioral control variance is most significantly explained by perceived cost and complexity, perceived regulatory pressure, and organizational environmental orientation. [8] investigated the relationship between sector performance (operational, financial, and market) and the degree of sustainability reporting in the MENA region. The study, which analyzed information from 316 observations across seven sectors and 11 countries from 2008 to 2017, shows that the effects of sustainability reporting (ESG) on firm performance vary depending on the sector. [22] provided a thorough analysis of recent sustainable accounting research by examining 1,283 scholarly works published in 54 journals between 2014 and 2020. They created a conceptual framework of sustainability accounting influences based on this analysis, emphasizing significant themes, empirical findings, and potential contradictions. If a nation's governance landscape—democracy, political stability, and regulatory quality—creates possibilities or hurdles that influence corporate ESG performance. [38] investigated this issue. Their study, which used fixed effects multiple linear regression, discovered that corporate governance performance was bigger in nations with superior regulatory quality and that ESG performance was higher in nations with lower levels of democracy and political stability. [35] discussed how crucial sustainability is to overcoming the problems of the twenty-first century. He emphasized that the National Bank of Hungary was a pioneer in incorporating environmental sustainability issues into its legal system, monetary policy, collateral management, and information sharing. [9] also investigated the link between food industry performance and sustainability reporting levels and discovered a substantial correlation between ESG and financial performance (ROE). However, there was no discernible connection between ESG and market performance (TQ), operational performance (ROA), or both.

[13] examined the effects of green accounting on financial performance and sustainable development. In contrast to financial performance, their research revealed no impact of green accounting on sustainable development. The conversation about the curved relationship between corporate sustainability performance and its reporting practices (CSPR) and corporate financial performance (CFP) was furthered by [30]. They discovered an inverted U-shaped link between CSPR and CFP, which was especially noteworthy for the environmental and social components of CSPR. To reflect the social metrics of a circular company model, [46] compiled the findings of 137 quick surveys from Spain. From a sustainable accounting standpoint, this study expands on the knowledge already available about the circular economy. [58] examined the relationship between ESG investment growth and the effectiveness of enterprises' ESG disclosure. It discovered that the level of ESG investment was highly influenced by the quality of ESG disclosure, particularly in nations or regions with CSR reporting required.

[37] used data from 4458 observations made over ten years in 60 different countries to examine the effects of sustainability reporting levels on the performance of banks and financial services in seven different areas. The performance of banks' operational,

financial, and market activities negatively correlates with their environment, social, and governance scores. In 2023, [39] offered a critique of current economic theories, pointing out their biases and potential weaknesses in the context of long-term effects such as climate change. They demonstrate how to use the shadow price of capital (SPC) technique and show how well it works by using it to analyze the regulatory impact of the 2015 Clean Power Plan. According to [32], resource limitations may make it difficult for emerging market enterprises to achieve specific legitimacy standards for promoting sustainability practices that could have a detrimental impact on accounting performance. A large sample of Taiwanese publicly traded companies from 2010 to 2016 was used to test the hypothesis that foreign ownership of these companies further moderates this relationship. [41], focusing on internal and external influences, examined the impact of corporate governance structures on sustainability accounting practice (SAP) in Nigeria. The findings show a moderate SAP implementation significantly correlated with market orientation and corporate strategy but not with other internal factors. Furthermore, there is no discernible impact of external governance systems on SAP. [43] explored the connections between green accounting, energy efficiency, and environmental performance in Bangladeshi chemical and pharmaceutical firms. They discovered that energy efficiency and environmental performance are both significantly improved by green accounting and that energy efficiency also partially mediates the relationship between green accounting and environmental performance. [52] carefully examined the impact of green accounting on the value of publicly traded ASEAN corporations, concentrating on firms that won the Asia Sustainability Reporting Awards in 2021. According to the study, certain aspects of green accounting reporting, such as water usage, have a considerable detrimental effect on business value. [57] offers a thorough examination of the differences between intellectual capital disclosure and sustainability disclosure as businesses move from voluntary to required sustainability reporting. He discovers that the average disclosure size rose during regulatory debates about required reporting but fell after it went into force. [61] evaluated the adoption of sustainable swine manure management practices (SMMPs) and their consequences on household income and satisfaction levels using survey data from 710 rural Hubei, China, families. They learned that the adoption of SMMPs influenced by a variety of characteristics, such as well-being, swine breeding expertise, and internet connectivity, can dramatically boost household income and happiness. Hence, based on the above evidence, this study developed the following hypothesis:

H1: Sustainability accounting has a significant effect on investment costs and average per capita income in Jordan in a comparative analysis of electric and conventional cars.

2.3. Agency Theory and Stakeholder Theory

Stakeholder theory and agency theory, two well-known theoretical frameworks in sustainable development and corporate governance, are used to analyze the effects of sustainability accounting on investment costs and average per capita income. These theories offer insightful explanations of how businesses manage the difficulties of juggling the interests of various stakeholders while preserving sound governance and financial performance. According to stakeholder theory, organizations must consider the interests of parties other than shareholders. It acknowledges that businesses work in a larger social context and are influenced by many stakeholders, such as staff members, clients, suppliers, local communities, government officials, and environmental organizations [16]. This notion states that organizations should actively interact with these stakeholders and respond to their concerns and expectations. Stakeholder theory emphasizes the necessity for organizations to incorporate environmental, social, and governance (ESG) factors into their decision-making processes and reporting practices in the context of sustainability accounting [49]. By doing this, organizations are better equipped to discover opportunities that support sustainable development, reduce risks, and better align their objectives with the stakeholders' interests. Organizations can evaluate and share their ESG performance, such as their effects on the environment, social contributions, and ethical governance practices, through sustainability accounting. Open communication among stakeholders promotes accountability and trust, which strengthens bonds and enhances reputation [20]. According to stakeholder theory, organizations that actively address stakeholder concerns through sustainable practices have a long-term positive impact on investment costs and average per capita income. Investors and other stakeholders increasingly understand the significance of sustainability issues in decision-making. Businesses that exhibit a dedication to sustainable practices are more likely to attract ethical investors, gain access to money, and establish enduring bonds with clients [14]. In addition, by cultivating a favorable reputation, businesses may increase customer loyalty, draw in top talent, and fortify ties with their communities—all of which help them achieve long-term financial success and economic growth. In contrast, the focus of agency theory is on the interaction between principals (like shareholders) and agents (like managers). It recognizes that conflicts of interest may exist between these parties because of their divergent goals and information asymmetries [1]. This theory examines how businesses may make decisions more effectively and maximize shareholder value by balancing the interests of

principals and agents. Agency Theory emphasizes the relevance of sustainability measurements and reporting in lowering agency costs and lining up managers' interests with those of shareholders in the context of sustainability accounting [3]. Organisations can encourage managers to consider long-term sustainability goals in addition to financial performance by incorporating sustainability performance indicators into executive payment and incentive structures. Shareholders and investors can monitor management's actions and hold them accountable using the helpful information that sustainability accounting provides regarding an organization's ESG performance [56]. By lowering the risk of agency issues and encouraging more responsible decision-making, transparent reporting on sustainability practices can improve the board's oversight function. According to [44], sustainable accounting can assist in identifying potential risks and opportunities that could affect an organization's financial performance in the future. Managers can proactively address risks and capture opportunities by considering these aspects when making strategic decisions, which helps enhance financial results and sustain growth. Stakeholder and agency theories provide complementary viewpoints on how sustainability accounting affects investment costs and average per capita income. According to stakeholder theory, it is crucial to consider the interests of various stakeholders when implementing sustainability practices because doing so can improve reputation, draw in ethical investment, and promote long-term economic growth. Agency theory, on the other hand, emphasizes the function of sustainability accounting in bringing managers' interests into line with those of shareholders, cutting down on agency costs, and encouraging responsible decision-making. Organizations may negotiate the challenges of sustainable development and corporate governance by incorporating these theoretical frameworks, ultimately paving the way for a more sustainable and prosperous future.

3. Research Methodology

3.1. Model

Fig. 1 presents the conceptual framework for this study, which illustrates the interrelationships among the variables and the order of their effects.

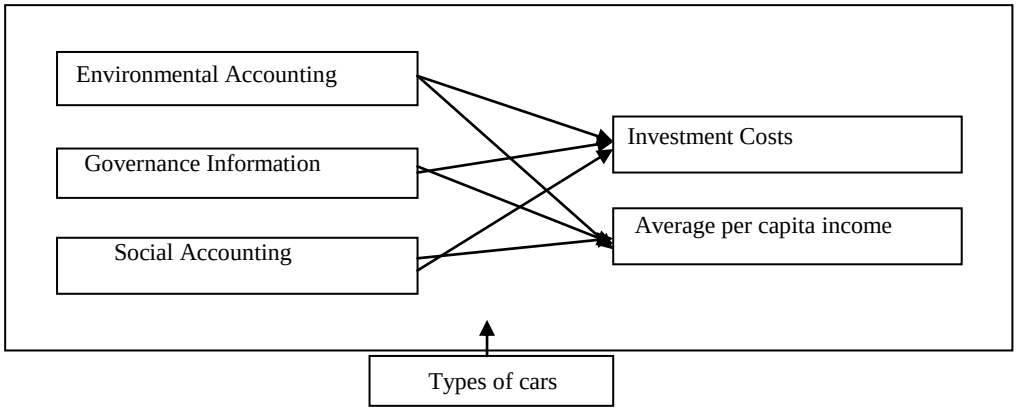

Fig. 1 Research framework (Developed by the authors)

3.2. Variable Measurement and Questionnaire Design

In this study, the measuring variables used previously validated scales. The Sustainability Accounting (environmental accounting (EA), social accounting (SA), and governance information (GI)) scale, consisting of 21 items, was adapted from [63] and [64] and rated on a 10-point Likert scale ranging from 1 (strongly disagree) to 10 (strongly agree). The investment cost (IC) scale was measured using a five-item scale adapted from several authors, using a 10-point Likert scale ranging from 1 (strongly disagree) to 10 (strongly agree). Finally, the Average per capita income (AP) scale was measured using a please select the range that your total personal income falls into for the last year before taxes (less than 5,000 JOD; 5,000; etc.). After the selection of the measurement scales, a structured questionnaire was developed and pre-tested with three academic experts and five participants to ensure the clarity, flow, and comprehensibility of the items. Minor concerns raised during pre-testing were considered when revising the question statements. The questionnaire was translated into Arabic and reviewed by a professional editor. The translated version was then back-translated into English to ensure content validity. The final questionnaire was designed in both English and Arabic to cater to the language preferences of the participants.

3.3. Sampling and Data Collection

This research methodology assesses the impact of sustainability accounting, including environmental, social, and governance information, on investment costs and average per capita income in Jordan, with a comparative analysis of electric and conventional cars. The target population for this study includes critical

stakeholders in the automobile industry and the sustainability accounting sphere in Jordan. This population can be further divided into five sub-groups: Automobile manufacturers, which include local manufacturers and importers of electric and conventional cars. Automobile dealerships: Dealerships selling both electric and conventional cars in Jordan. Financial institutions: Institutions that provide car financing options to consumers. Government officials: Particularly those from departments related to transportation, finance, environment, and any governmental bodies responsible for implementing and monitoring sustainability accounting practices. Consumers: Jordanian individuals who have purchased or are potential purchasers of electric or conventional cars. This target population is selected because it encompasses the key players who can provide the required information on investment costs, per capita income, and sustainability accounting practices in the context of electric and conventional cars [63]. This study followed the recommendation of [65], which suggested a rule of thumb that the sample size should be equal to the larger of ten times the maximum number of formative indicators used to measure a single construct. Therefore, the sample size of this study was 310. Then, we increased the sample size to 500 to avoid response bias. Stratified random sampling divided the population into distinct groups, such as manufacturers, dealers, financing institutions, government officials, and consumers. Within each stratum, we selected respondents randomly.

3.4. Ethical Considerations

To guarantee that the process is open, truthful, and considerate for all participants, ethical issues were considered when conducting this study. Every participant in the research got an informed consent form, including the study's goals, participants' roles in the study, potential advantages and dangers, and participants' freedom to withdraw at any time without suffering repercussions. All participants' identities were private and anonymized. The data gathered will only apply to this research, and their responses will not relate to their personal information. The participants in this study should not intend to suffer any physical or psychological harm. There are no touchy subjects that could make people feel uncomfortable or distressed. However, throughout their involvement in the study, individuals' stress levels were tracked and reduced. By giving each participant the freedom to decide whether or not to participate, the study respects their autonomy without forcing them to take part or to continue taking part. The gathered data were managed and safely kept to prevent unauthorized access. The data are only accessible to the research team and a predetermined amount of time following data protection laws. The objectives and procedures of the study were fully disclosed to the participants to avoid deception throughout the entire research procedure.

3.5. Estimation Method

The conceptual model analysis in this study used partial least squares multigroup analysis (PLS-MGA) instead of co-variance-based squared structural equation modeling (CB-SEM). PLS-MGA has several advantages over CB-SEM, such as suitability for exploratory research, target prediction, flexibility in handling non-normal data, and small sample sizes. Because this research predicted and explained primary variables, the PLS-MGA technique is highly suitable. In addition, the PLS-MGA method is statistically powerful for any sample size and data distribution. This statistical technique helps analyze complex relationships and interactions between variables, especially when dealing with latent variables. The model analysis used SmartPLS 4.0.8, following a two-step procedure recommended by [66]. First, we examined the composite reliability, convergent validity, and discriminant validity of the measurement scales. The second phase evaluated the structural model for hypothesis testing and prediction accuracy after the measurement model had achieved the target values. According to [66], the results of using standard measures such as R2, f2, and cross-validated redundancy Q2 to evaluate a model's predictive ability only reveal information about the accuracy of predictions made within the sample itself (in-sample prediction). Assessing a research model's prediction performance outside the sample population is called "out-of-sample predictive accuracy."

4. Results and Discussion

4.1. Measurement Model Analysis

The theoretical model for this study comprises three latent variables: sustainability accounting (environmental accounting (EA), social accounting (SA), and governance information (GI)), Investment Costs (IC), and average per capita income (AP). To evaluate construct reliability and convergent validity, composite reliability (CR), Dijkstra and Henseler's rho, factor loading, and average variance extracted (AVE) were used under the PLS-SEM method. The model was analyzed using SmartPLS 4.0.8 and followed the standard algorithm criteria. The evaluation of construct reliability was satisfactory. According to the standard, the composite reliability (CR) should be higher than 0.70, the factor loading should be higher than 0.70, and the AVE should be above 0.50 to ensure the reliability and convergent validity of the measurement model. As shown in Table 1, the CR is above 0.7, and Dijkstra and Henseler's rho are also above 0.7, indicating a satisfactory level of internal consistency reliability. All factor loadings are above the recommended level of 0.70 (see Table 2). Discriminant validity evaluation used the HTMT criteria. Due to the conceptual

definition of latent variables, a strict criterion of 0.85 (HTMT0.85) proposed by [59] assessed the discriminant validity. According to this criterion, any HTMT correlation value should be 0.85. Therefore, the reliability and validity of the measurement model were established, and the structural model was examined for hypothesis testing.

Table 1 Validity and reliability (Developed by the authors)

Constructs	Electric cars				Conventional cars			
	CA	CR (rho_a)	CR (rho_c)	AVE	CA	CR (rho_a)	CR (rho_c)	AVE
AP	0.916	0.917	0.937	0.75	0.915	0.917	0.937	0.748
EA	0.874	0.874	0.899	0.527	0.88	0.881	0.903	0.54
GI	0.867	0.87	0.898	0.561	0.872	0.877	0.902	0.572
IC	0.876	0.89	0.911	0.674	0.861	0.892	0.902	0.655
SA	0.824	0.831	0.872	0.536	0.829	0.841	0.873	0.537

Table 2 Factor loading (Developed by the authors)

Items	Electric cars: factor loading	Conventional cars: factor loading
Average per capita income		
AP1	0.861	0.862
AP2	0.92	0.919
AP3	0.891	0.883
AP4	0.822	0.815
AP5	0.832	0.843
Investment cost		
IC1	0.822	0.815
IC2	0.864	0.879
IC3	0.87	0.888
IC4	0.879	0.874
IC5	0.846	0.836
Environmental accounting		
EA1	0.752	0.742
EA2	0.805	0.796
EA3	0.757	0.78
EA4	0.731	0.788
EA5	0.723	0.793
EA6	0.759	0.76
EA7	0.716	0.75
EA8	0.754	0.756
Governance information		
GI1	0.806	0.89
GI2	0.812	0.831
GI3	0.804	0.822
GI4	0.839	0.847
GI5	0.809	0.799
GI6	0.887	0.781
GI7	0.754	0.885
Social accounting		
SA1	0.826	0.841
SA2	0.822	0.842
SA3	0.797	0.779
SA4	0.753	0.724
SA5	0.72	0.785
SA6	0.735	0.792

Table 3 Hetromonotrait discriminant validity (Developed by the authors)

Constructs	Electric cars					Conventional cars				
	AP	EA	GI	IC	SA	AP	EA	GI	IC	SA
AP	-					-				
EA	0.693					0.705				
GI	0.757	0.632				0.771	0.725			
IC	0.484	0.77	0.718			0.551	0.806	0.623		
SA	0.84	0.6	0.701	0.629	-	0.809	0.551	0.675	0.677	-

Table 4 The Fornell–Larcker discriminant validity (Developed by the authors)

Constructs	Electric cars					Conventional cars				
	AP	EA	GI	IC	SA	AP	EA	GI	IC	SA
AP	0.866					0.865				
EA	0.675	0.726				0.68	0.735			
GI	0.506	0.613	0.749			0.624	0.603	0.756		

Continuation of Table 4										
IC	0.431	0.692	0.596	0.821		0.489	0.618	0.702	0.809	
SA	0.635	0.582	0.65	0.589	0.732	0.614	0.55	0.649	0.651	0.733

4.2. Hypotheses Testing and Discussion

Table 5 presents the path analysis results of the research, showing the relationship between different variables in electric and conventional cars. This table lists each path's standard deviation (SD), T statistics, P values, and Beta (path coefficient) values. The results show a substantial positive connection between EA and average per capita income (AP), with a Beta value of 0.226 and a p-value of 0.000, suggesting that if all other factors remain constant, there is a 22.6% rise in AP for every unit increase in EA. In other words, the higher the average per capita income, the better the environmental accounting practices. The above implies that when the features of electric automobiles, such as their pollution levels, energy efficiency, and recycling policies, are correctly accounted for, they tend to boost consumer trust and can result in better sales and, thus, a higher per capita income [5]. With a Beta value of 0.112 and a p-value of 0.035, the link between EA and investment costs (IC) similarly exhibits a positive, albeit weaker, relationship, suggesting that increased investment costs may result from better environmental accounting. It is crucial to comprehend this from the perspective of sustainability and long-term profitability. Adopting cleaner technologies and energy-efficient processes may initially be expensive, but over time, these actions frequently result in lower operational costs due to reduced waste management expenses and tax advantages from government incentives [34]. We notice a greater impact regarding GI and how it affects AP and IC. The existence of effective governance structures is crucial to financial results, according to the positive link between GI and AP (Beta = 0.226, p = 0.001) and an even stronger relationship between GI and IC (Beta = 0.631, p = 0.000). These results are consistent with the idea that well-run businesses are more likely to gain the public's trust, which boosts sales and AP. As investors are more inclined to trust businesses with open, responsible, and effective governance systems, strong governance processes may also result in increased investment [18].

Another essential factor is SA's impact on both AP and IC. The effect on AP was the strongest of the pathways (Beta = 0.458, p = 0.000), probably because of investors' and customers' growing interest in social responsibility. A substantial positive link between SA and AP may be due to the recent trend of consumers choosing socially conscious businesses. The fact that SA and IC have a positive association (Beta = 0.114, p = 0.033) further supports the notion that SA has a small but significant impact on investment costs. The above implies that businesses that are open about their social consequences could need to invest more money, possibly because of the expenses involved in implementing socially responsible practices. However, these efforts frequently result in greater consumer trust and loyalty, which eventually improves financial performance [10]. A positive link between EA and AP was also discovered, as shown by a beta value of 0.244 and a p-value of 0.001, showing that provided other variables remain the same, there is a proportional 24.4% rise in AP for every unit increase in EA, implying that sound environmental accounting procedures, which cover matters such as waste management and pollution control, enhance business performance and raise average per capita income in the conventional vehicle industry. Similar to IC, EA exhibits a favorable connection (Beta = 0.192, p = 0.002), showing that as businesses improve their environmental accounting practices, investment costs tend to increase. Two implications result from this: First, adopting improved environmental practices could require one-time expenditures such as buying energy-efficient equipment or implementing waste management strategies. Second, through elements such as decreased operational costs and improved corporate reputation, the long-term advantages often offset the initial costs. According to these findings, GI and both AP and IC in conventional autos exhibit a substantial association. Although there is a strong correlation between GI and AP (Beta = 0.263, p = 0.002), the relationship between GI and IC is considerably stronger (Beta = 0.507, p = 0.000). According to the data, strong governance structures that promote accountability, openness, and wise decision-making have a considerable impact on both investment costs and per capita income. Organizations with good governance typically attract more investments, which eventually boost their profitability. Similarly, SA significantly influences AP (Beta = 0.409, p = 0.000) and affects IC (Beta = 0.217, p = 0.001), which highlights how social responsibility and ethical behavior in business are becoming increasingly important [23]. A growing trend among customers and investors to favor socially responsible businesses reflects the likelihood that businesses that demonstrate dedication to social causes, ethical labor practices, and community participation will see greater revenue levels and increased investments.

In summary, the research shows how crucial sustainable accounting is, especially in the traditional auto sector. Although conventional automakers can significantly improve their financial results by emphasizing solid environmental accounting, robust governance information, and strong social accounting practices, electric automobiles are often considered more environmentally friendly. However, these initiatives can have higher investment expenses, indicating the need for a long-term perspective. These investments typically result in superior financial

performance over the long term, although they may initially appear burdensome. Consequently, strategic decision-making for conventional automobile manufacturers in Jordan should include sustainable accounting.

Table 5 Path analysis results (Developed by the authors)

	Electric cars				Conventional cars			
	Beta	**SD**	**T statistics**	**P values**	**Beta**	**SD**	**T statistics**	**P values**
EA -> AP	0.226	0.059	3.799	0.000	0.244	0.074	3.287	0.001
EA -> IC	0.112	0.062	1.812	0.035	0.192	0.068	2.833	0.002
GI -> AP	0.226	0.075	3.016	0.001	0.263	0.090	2.913	0.002
GI -> IC	0.631	0.075	8.39	0.000	0.507	0.083	6.092	0.000
SA -> AP	0.458	0.062	7.376	0.000	0.409	0.074	5.520	0.000
SA -> IC	0.114	0.062	1.838	0.033	0.217	0.068	3.171	0.001

4.3. Multigroup Analysis (PLS-MGA)

It is recommended to establish, before conducting such an analysis, the acceptability of the measurement models and measurement invariance to ensure the reliability of the multigroup analysis results. The measurement invariance of composites (MICOM) is a tool advised to use to evaluate measurement invariance. Configurational invariance assessment, compositional invariance assessment, and evaluation of equal means and variances are the three steps of the MICOM method. Following these processes, the current study, for the first time, established configurational invariance by assessing and adjusting the same measurement model for the male and female groups. To prove compositional invariance, we used a permutation test with 1000 permutations and a 5% significance level. As values above the 5% quantile and permutation p-values were more than 0.05, the results showed the established compositional invariance. The study then examined the consistency of the composite mean values and variances, which showed that they were inconsistent. After establishing partial measurement invariance, a multigroup analysis compared electric and conventional cars to determine whether there was a significant difference in the path coefficient of the impact of sustainability accounting, which includes environmental, social, and governance information, on investment costs and the country's average per capita income.

When investigating the impact of sustainability accounting components – environmental, social, and governance information – on investment costs and average per capita income, the study reveals a striking finding that the path coefficient is weaker for conventional cars than for electric cars. This finding sheds critical light on the dynamics of the automotive sector in Jordan and the specific contributions that sustainability accounting has made to it. The more path coefficients in the case of electric automobiles show that sustainability accounting has a more significant impact on both average per capita income and investment costs. Given the intrinsic characteristics of electric vehicles as an epitome of environmental sustainability, this may not be shocking. As a result, the primary value of electric vehicles, sustainability, may be closely aligned with the adherence to environmental accounting, robust governance information, and social accounting practices. As a result, there may be a greater willingness on the part of consumers to pay as well as greater investor interest, which would raise average per capita income and investment costs, respectively. However, the less significant impact of sustainability accounting factors on investment costs and average per capita income exhibited by traditional cars is evident in the weaker path coefficients. The above might be because conventional cars are, as considered, less environmentally friendly, which makes sustainability practices in these businesses seem less real or significant, reflecting the shifting market dynamics where investors and consumers are more environmentally aware, placing a higher value on actual sustainability efforts. In addition, the lower correlation raises the possibility that other variables may have an even greater impact on investment costs and average per capita income in the conventional auto sector. For instance, in this market, elements such as pricing strategy, brand recognition, technological development, and fuel efficiency can be more critical. However, the study emphasizes that the traditional auto business should not ignore sustainable accounting. Sustainability accounting still has significant positive associations with average per capita income and investment expenses, even though the impact might not be as vast as that in the electric car sector. Therefore, implementing strong sustainability accounting practices might help conventional automakers improve their financial performance and acquire a competitive edge in the market as consumers become more environmentally sensitive. In conclusion, while evaluating the influence of sustainability accounting in the automotive industry in Jordan, the type of car—conventional or electric—should be considered. The research highlights how consumers' and investors' perceptions and evaluations of sustainability programs change, affecting financial consequences.

Table 6 Results of partial invariance measurement testing (Developed by the authors)

Constructs	Original correlation	Correlation permutation mean	5.00%	Permutation p-value	Partial measurement invariance
AP	1	1	0.999	0.803	Yes
EA	0.998	0.999	0.996	0.228	Yes
GI	0.999	0.999	0.998	0.506	Yes
IC	0.995	0.997	0.994	0.118	Yes
SA	0.994	0.997	0.991	0.101	Yes

Table 7 Multi-group analysis (Developed by the authors)

Constructs	Difference (electric cars - conventional cars)	P-value
EA -> AP	0.250	0.032
EA -> IC	0.208	0.045
GI -> AP	0.335	0.000
GI -> IC	0.356	0.007
SA -> AP	0.370	0.000
SA -> IC	0.289	0.008

4.4. Model Prediction Accuracy

In the analysis, comparing its R2 and Q2 values evaluated the generated model's predictive power. As shown in Table 8, the data show that the theoretical framework can successfully explain a sizable portion of the variance in both AP and IC, implying that both electric cars (66% and 69%) and conventional cars (65% for both) have excellent predictive accuracy for the responder categories. The above implies that the theoretical framework developed for this study is robust and exhibits high accuracy in predicting the impact of sustainability accounting (which includes data on the environment, society, and governance) on investment costs and the average per capita income in Jordan. The Q2 value of cross-validated redundancy further evaluated the theoretical structure's predictive usefulness. A higher Q2 score indicates a model with better predictive accuracy. This investigation used an omission distance (D=7), and as shown in Table 8, the Q2 values for both AP and IC exceeded zero, assuming that the model exhibits acceptable predictive accuracy. These results support that the theoretical framework can forecast investment costs and Jordan's average per capita income. The model's strong prediction skills allow the study's results to be relied upon with a high degree of confidence.

Table 8 Prediction accuracy (Developed by the authors)

Constructs	Electric cars R^2	Conventional cars R^2	Electric cars Q^2	Conventional cars Q^2
AP	0.658	0.648	0.475	0.464
IC	0.687	0.647	0.429	0.426

5. Conclusion and Implications

In this study, we examined the significance of sustainability accounting, which includes environmental accounting, social accounting, and governance information, to assess its impact on investment costs and average per capita income in Jordan. Our focus was to compare the impacts of electric and conventional vehicles in the Jordanian automotive sector. We found that sustainability accounting plays a significant role in shaping the financial landscape of the Jordanian automotive industry. Sustainability accounting practices, including environmental, social, and governance information, positively influence investment costs and average per capita income. Our results show that the impact of sustainability accounting differs significantly between electric and conventional cars. The path coefficient analysis, which measures the strength of this impact, shows that electric cars benefit more from sustainability accounting practices, assuming that sustainable accounting practices are particularly well suited to electric vehicles and have a more pronounced positive effect on their financial outcomes. To contextualize our findings, it is essential to draw comparisons with other relevant studies in the field of sustainability accounting and its impact on different industries. While few studies are directly comparable to our study in the Jordanian automotive context, the broader literature offers valuable insights. [37] conducted a study using data from 4458 observations over 10 years in 60 countries to examine the impact of sustainability reporting on the performance of banks and financial services. They found a negative correlation between the environmental, social, and governance (ESG) score and banks' operational, financial, and market performances. This contrasts with our findings, which indicate a positive impact of sustainability reporting in the automotive sector, particularly for electric cars. These discrepancies highlight the industry-specific nature of the impact of sustainability accounting. [41] examined the impact of corporate governance structures on SAP in Nigeria. Their study found that moderate SAP implementation significantly correlated with market orientation and corporate strategy but not with other internal factors. Moreover, external governance systems had no discernible influence on SAP. Although these results differ in detail, they underscore the nuanced

relationship among governance, accounting practices, and industries. Our study also highlights the importance of tailoring sustainability accounting approaches to specific sectors, as illustrated by the different impacts on electric and conventional cars in the Jordanian automotive industry. [43] investigated the relationships among green accounting, energy efficiency, and environmental performance in chemical and pharmaceutical companies in Bangladesh. They discovered a positive relationship between green accounting, energy efficiency, and environmental performance. This study is consistent with a broader understanding of the positive impact of sustainability accounting on financial and environmental outcomes. In our research, we concur with this view by emphasizing the positive role of sustainability accounting in improving financial outcomes in the Jordanian automotive industry. [52] investigated the impact of green accounting on the firm value of listed ASEAN companies, focusing specifically on companies that received the 2021 Asia Sustainability Reporting Awards. Their study found that certain aspects of green accounting, such as water consumption, harm enterprise value. This divergence of results highlights the complexity of sustainability reporting impacts and the importance of industry-specific analysis, as demonstrated in our study of the Jordanian automotive sector. Policymakers in Jordan should consider promoting sustainable accounting practices in the automotive industry, especially for electric vehicles. This approach supports economic growth, creates jobs, and mitigates environmental externalities. Investors and decision-makers in the automotive sector can use these insights to make informed resource allocation decisions. By recognizing the financial benefits of sustainability accounting, they can prioritize environmentally and socially responsible practices to increase investment returns and economic prosperity. This study highlights the central role of sustainability accountants in shaping the financial landscape of the automotive sector. It highlights the need for tailored sustainability accounting strategies for different segments within the industry as electric cars become more responsive to these practices.

6. Limitations and Recommendations for Future Studies

This research has some significant limitations: most notable is the narrow emphasis on the Jordanian market. It is possible that what works in Jordan's unique economic and environmental context will not work anywhere else. In addition, while the sample size of 373 valid responses is sufficient, it may reduce the reliability of the results. As for the study's applicability, future studies could duplicate it in various regional settings. The influence of sustainability accounting on investment costs and average per capita income is an intriguing topic, but other elements should also be considered. Possible factors include changes in legislation, public opinion on environmental protection, and automotive industry innovation. Finally, a long-term study could shed light on the ever-changing nature of these bonds.

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