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The Impact of Adopting the Sustainability Balanced Scorecard (SBSC) by Audit Clients on the External Auditor's Assessment of Internal Control Risk: An Empirical Study.

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ABSTRACT: This study aimed to examine the impact of audit clients' adoption of the Sustainability Balanced Scorecard (SBSC) on the external auditor's assessment of internal control risk. To achieve the objectives of this study and test its hypotheses, the researchers reviewed 50 audit engagements conducted by two auditing firms operating in the Middle East (UAE, KSA, Jordan, Lebanon, Syria). The data necessary to measure the dependent variable - control risk for these engagements - was obtained using specific matrices. Additionally, the independent variable (SBSC) was measured using a model developed by the researchers, which incorporates the five dimensions of the SBSC. Subsequently, the data were analyzed, and the study's hypotheses were tested using regression analysis through the SPSS software. The statistical tests revealed that clients' adoption and use of the SBSC in measuring their strategic performance led to a reduced auditor assessment of control risk associated with the client. This, in turn, has favorable implications for the audit process overall.

Keywords: sustainability balanced scorecard (SBSC), control risk, external audit, risk assessment, sustainable accounting.

I. INTRODUCTION

The fast changes in the economic environment have made things more complicated and created risks for companies' sustainability. As a result, companies have started to take action to face these risks and make sure they can continue and stay strong in the market [1]. In recent years, companies have recognized the importance of addressing critical social and environmental issues [2], leading them to focus on improving their performance in environmental, social, and economic levels [3]. Performance measurement has emerged as a significant topic for companies and organizations. For instance, humanitarian organizations measure their performance because funding decisions by donors are based on their demonstrated performance[4] . Performance is a critical tool for achieving a company's strategic goals and vision [2]. Performance measurement can be defined as the process of periodically measuring the effectiveness and efficiency of work to evaluate the achievement of short - and long-term objectives, identify weaknesses, and improve performance [4]. Among the various methods used for performance measurement, the Balanced Scorecard (BSC) stands out. Introduced in a 1992 article in the Harvard Business Review by Norton and Kaplan, it was developed to enhance corporate performance evaluation systems[5] and monitor companies' success in achieving their strategic goals [1]. The BSC has proven to be one of the most influential tools in strategic management [3], addressing issues arising from the sole reliance on financial performance metrics, which focus only on historical data [6]. The BSC integrates financial and non-financial factors [4] through a multidimensional approach to performance measurement [6]. It evaluates

companies across four key perspectives: financial performance, customer satisfaction, internal processes, and learning and growth [7]. Over time, the BSC has become a widely adopted management accounting tool [8]. However, it has been criticized for excluding sustainability issues in its performance evaluations [3], particularly as companies are increasingly required to play a vital role in addressing environmental and social concerns and measuring their environmental and social performance[2] . In response to these challenges, researchers have developed the Sustainable Balanced Scorecard (SBSC) to incorporate environmental and social dimensions into corporate performance evaluations. Müller and Schaltegger introduced the concept of the SBSC, which integrates sustainability issues into the main components of the traditional BSC [1]. By including environmental and social factors in performance measurement, the SBSC has enhanced the achievement of sustainable strategic goals, improved sustainability performance assessment, and strengthened corporate contributions to sustainability-related issues[2]. Moreover, it has improved companies' environmental, social, and economic practices [9], addressing the limitations of the traditional BSC [8]. On the other hand, auditing firms provide services to various clients, particularly publicly listed companies that increasingly use the SBSC to measure their strategic performance. External auditing is one of the most critical services provided, as it aims to form an impartial and professional opinion on the fairness of the financial statements [10]. To achieve this, auditors must conduct audits in accordance with International Standards on Auditing (ISAs). These standards require auditors to assess the going concern of entities, as outlined in ISA 570, and to evaluate the internal control systems of audited companies, as detailed in ISA 200. The evaluation of internal control systems, particularly the determination of control risk, plays a significant role in the audit process. It influences audit risk assessment, the determination of audit sample size, and the extent of audit procedures, thereby affecting the efficiency and effectiveness of the audit process.

The adoption of the Sustainability Balanced Scorecard (SBSC) by audit clients today may have several effects on the auditing process. However, earlier studies on the SBSC have not explored or proven its impact on external audits. Most of the existing research has focused on using the SBSC to measure the strategic performance of companies, often adjusting the scorecard to include environmental and social dimensions. For example, the study by Lu et al. (2022) [11], aimed to integrate the SBSC with fuzzy information to evaluate sustainability and concluded that the environmental and social dimensions were more critical than others. Stavropoulou et al. (2023) [12], employed the SBSC as a tool for sustainable information systems to achieve energy efficiency. Pineyrua et al. (2021) [13], focused on applying the SBSC to small and medium-sized enterprises (SMEs) operating in the service sector. Meanwhile, Eifert and Julmi (2022) [14], highlighted the challenges of implementing the SBSC and discussed how to overcome these challenges. Heebkhoksung et al. (2023) [15], developed a new SBSC model specifically for the tourism sector, whereas Agarwal et al. (2022) [4], demonstrated how the SBSC could be used to measure the performance of humanitarian organizations, i.e., non-profit entities. Ayvaz et al. (2020) [1], proposed an early warning system based on the SBSC and neural networks. From the above, it is evident that the majority of prior research has not addressed the impact of implementing the SBSC by audit clients on auditing processes, whether internal or external. The problem addressed in the current study is that an inappropriate control risk assessment process can lead to poor or ineffective use of audit resources, and as a result, audit firms may fail to perform their duties properly. Therefore, there is an urgent need for an objective control risk assessment, supported by suitable methods and tools, to achieve an efficient and effective audit process, including reliance on the SBSC. The importance of this study lies in its aim to raise the level of the auditing profession, improve its overall quality, and enhance auditor performance by contributing to the development of a structured approach to assessing control risk. It also helps strengthen the confidence of users of audit services in the information presented in financial statements, which they rely on for decision-making, especially given the growing expectation gap in auditing. This study focuses on an important area in auditing: the role of the SBSC in control risk assessment.

Therefore, this study aims to explore how the adoption of the Sustainability Balanced Scorecard (SBSC), across its five dimensions, affects the external auditor's assessment of internal control risk. Understanding this relationship is important because it can provide insights into how sustainability initiatives impact the audit process and help auditors make more accurate risk assessments. Specifically, the study seeks to answer the following main research question:

- Does the adoption of the Sustainability Balanced Scorecard (SBSC) by audit clients significantly influence the external auditor's assessment of internal control risk?

II. RELATED WORK

1. THE CONCEPT AND DIMENSIONS OF THE SUSTAINABILITY BALANCED SCORECARD (SBSC)

The assessment of performance plays a pivotal role in evaluating whether objectives have been achieved and to what extent, identifying discrepancies between planned and actual performance, and determining the necessary actions to eliminate such discrepancies. Performance measurement and management systems, therefore, enable managers to monitor, control, and improve organizational performance, optimize progress efforts, and motivate employees to accomplish tasks [16]. In this context, the Balanced Scorecard (BSC) approach was first introduced by Kaplan and Norton in 1992 in an article published in the Harvard Business Review. It aimed to develop a hierarchical system for evaluating business performance based on strategic objectives across four key perspectives: financial, customer, internal processes, and learning and growth [5]. Organizations lacking clear or shared strategies have adopted the BSC framework to generate strategies for business units. The BSC assists in defining objectives and determining how to achieve them [3]. It has been defined as a set of financial metrics, which reflect the outcomes of past actions, complemented by operational metrics such as customer satisfaction, internal processes, innovation, and organizational improvement collectively serving as drivers of future financial performance [17]. The BSC has also been recognized as a tool for strategy execution and management [18]. It effectively translates an organization's vision and strategy into a comprehensive set of performance indicators, which form the backbone of strategic measurement and management systems [19]. Organizations have adopted the BSC for several reasons, including (a) translating strategy into actionable steps, (b) managing quality programs, (c) supporting change agendas, (d) adopting modern management practices, and (e) moving away from traditional budgeting systems [20]. The BSC is an open system that integrates the interests of various stakeholders, balances short- and long-term concerns as well as leading and lagging indicators, and provides information necessary for feedforward control [6]. Over time, the BSC has become one of the most widely used tools for managing and measuring organizational performance [21]. Over the past decade, there has been a significant global increase in awareness of environmental sustainability and corporate social responsibility (CSR). This has driven organizations to integrate sustainability principles into their business and operational strategies [22]. In response, the Sustainability Balanced Scorecard (SBSC) was developed as an evolution of the traditional BSC by incorporating environmental and social perspectives and indicators [23]. The SBSC has been defined as a strategic tool used to assess and manage organizational efficiency based on sustainability goals and objectives. It is employed in strategic management by executives across five perspectives to evaluate businesses comprehensively, ensuring operational and strategic precision [15]. The SBSC aims to enhance the integration of environmental, social, and economic dimensions in measuring and managing corporate sustainability. It directs management's attention toward key performance metrics, both financial and non-financial [24]. The SBSC has established itself as one of the most important tools for assessing sustainability performance due to its inclusion of both financial and non-financial metrics. Additionally, the causal relationships between environmental and social metrics and other performance measures aid in interpreting and evaluating the impact of environmental and social initiatives on the four perspectives of the BSC, particularly the financial performance of the organization [25]. The implementation of the SBSC enhances a company's market value and contributes to a more efficient allocation of resources and increased process innovation, ultimately driving profitability. It also identifies opportunities for cost reduction through environmental sustainability initiatives [26]. Furthermore, making it an effective tool for integrating sustainability into business strategy [27]. The SBSC can be utilized to evaluate, manage, and improve an organization's sustainability performance by enhancing corporate sustainability management in a holistic and systematic manner across three dimensions: economic, environmental, and social [28]. It aids organizational management in developing and implementing strategies to achieve vertical and horizontal alignment [29]. It also translates an

organization's strategic goals into performance objectives [30]. As such, it is one of the most successful tools in management, functioning as an administrative tool used post-strategy formulation but prior to its implementation [31]. It articulates the organization's targeted outcomes and the pathways to achieving them [9]. The SBSC is a promising framework for measuring, managing, and reporting the outcomes of corporate sustainability strategies [32]. It encompasses five dimensions, as outlined in the following sections [33].

- Financial Perspective: The financial perspective outlines how the organization wishes to be perceived by its shareholders and serves as the outcome of cause-and-effect relationships from lower-level indicators. It provides insights into the organization's achievements and objectives from a financial standpoint. This perspective demonstrates how and to what extent the strategy contributes to improving the organization's financial results. Typically, it includes accounting metrics such as profitability, return on investment (ROI), or revenue growth [16].

- Internal Processes Perspective: This perspective encompasses all processes, events, and activities within the organization that distinguish it from other entities. It focuses on fulfilling the needs and objectives of customers and stakeholders. It involves identifying critical organizational processes that are essential for enhancing business performance. Key areas include on-time delivery according to client-set deadlines and conditions, addressing delivery failures by pinpointing incorrect deliveries, and managing customer complaints and claims to improve service quality [34, 35].
- Customer Perspective: This perspective links the company's strategy and vision to its customers, treating their needs and desires as indicators that generate business value. Customers, as a resource for the organization, require analysis to assess organizational efficiency. Focusing on customer-centric strategies creates value and ultimately drives business growth. In competitive markets, customers are viewed as a source of revenue that helps achieve financial objectives [36].
- Learning and Growth Perspective: This dimension emphasizes the importance of investing in human potential. It focuses on measuring the development of employee capabilities, motivation, and goal orientation. This perspective evaluates the level of employee motivation, goal achievement, and the strategic potential of human resources and information systems. It differentiates between three key areas: employee retention, employee satisfaction, and employee productivity [16].
- Environmental and Social Perspective: This perspective highlights the organization's responsibility and role in managing the interests of various stakeholders, including shareholders, customers, employees, society, and the state. It seeks to achieve a balance among these interests, promoting harmony and ensuring the organization's alignment with broader social and environmental goals [35].

2. INTERNAL CONTROL RISK (CR) AND ITS MEASUREMENT METHODS

The Institute of Certified Public Accountants (IACPA) defines the internal control system as a mechanism that enables organizations to achieve their objectives. An effective control system provides organizations with clarity regarding whether they are on the right track or not [37]. Internal control is further described as a set of controls designed, implemented, and maintained by management to address specific risks threatening the achievement of the company's objectives related to financial reporting [38]. It is the responsibility of management to design and implement these controls to prevent fraud and ensure the credibility of financial reports [39]. From this perspective, the importance of designing and implementing an effective internal control system arises, as it offers early warning indicators to the board of directors and governance personnel when deviations occur. The internal control system offers numerous benefits, including the reduction of audit fees, particularly when the external auditor evaluates the internal control system as robust and effective. Based on the evaluation results, the auditor can determine the level of work and effort required in the audit process. A strong internal control system results in reduced audit costs [37]. Moreover, international auditing standards require auditors to conduct an initial evaluation of the internal control system during the planning phase of the audit process, as outlined in International Standard on Auditing (ISA) 200, paragraph 7. Consequently, the external auditor is required to assess control risk, which is considered a critical step in the audit process. International auditing standards define control risk as the risk that a material misstatement in a financial statement or disclosure, whether individual or in combination with other misstatements, will not be prevented or detected and corrected on a timely basis by the internal control system [10]. Researchers argue that control risk refers to the risk that the client's financial statements and related disclosures contain material misstatements before the audit commences, which the client's internal controls fail to detect, prevent, or correct in a timely manner due to the weakness of those controls, lack of commitment to the controls, or the potential for bypassing them by higher management. Therefore, the auditor must ensure that employees adhere to these controls. According to et al. (2023) [40], the size and nature of audit procedures are determined based on the assessment of control risk, along with other factors. The stronger and more effective the internal control system and the greater the commitment of employees, the more the auditor can reduce the extent and scope of audit procedures. This, in turn, reduces audit costs and improves audit efficiency. The Chinese Institute of Internal Auditors considers evaluating control risk a critical process for accurately determining and assessing audit risk [41]. This assessment plays a decisive role in audit quality [42]. International auditing standards leave the approach and method for assessing control risk open to the auditor, whether conducted quantitatively or qualitatively, as outlined in ISA 200, paragraph 42. However, auditors are obligated to assess control risk as a mandatory step. Louwers et al. (2018) [43], indicate that the quantitative evaluation of control risk ranges between 10% and 100%, and it cannot be zero. Control risk is associated with the audit client, as noted by Sudarma & Kumalawati (2022) [44], who explain that external auditors cannot influence control risk, although internal factors within the client organization may affect the evaluation of those risks. Key factors, such as the client's characteristics and the client's information system, have

the most significant influence on the assessment of control risk, as found in studies by Nguyen et al. (2020) [45]. In light of this, the importance of this study lies in determining whether the adoption of the Sustainable Balanced Scorecard (SBSC) by audit clients influences the reduction of internal control.

III. DEVELOPMENT OF STUDY HYPOTHESES

To achieve the objectives of this study and answer its main question, The researchers formulated the following two main hypotheses:

- H1: There is an effect of adopting the Sustainable Balanced Scorecard (SBSC) by audit clients on the external auditor's assessment of internal control risk.
- To test this hypothesis, the following hypotheses were formulated:
- H1-1: There is an effect of adopting the Sustainable Balanced Scorecard (SBSC) by audit clients on the assessment of control risk with respect to the financial performance dimension.
- H1-2: There is an effect of adopting the Sustainable Balanced Scorecard (SBSC) by audit clients on the assessment of control risk with respect to the customer dimension.
- H1-3: There is an effect of adopting the Sustainable Balanced Scorecard (SBSC) by audit clients on the assessment of control risk with respect to the internal processes dimension.
- H1-4: There is an effect of adopting the Sustainable Balanced Scorecard (SBSC) by audit clients on the assessment of control risk with respect to the learning and growth dimension.
- H1-5: There is an effect of adopting the Sustainable Balanced Scorecard (SBSC) by audit clients on the assessment of control risk with respect to the environmental and social dimension.
- H2: There are statistically significant differences in the external auditor's assessment of internal control risk between companies that adopt the Sustainable Balanced Scorecard (SBSC) and those that do not.

The following figure illustrates the study model (study variables):

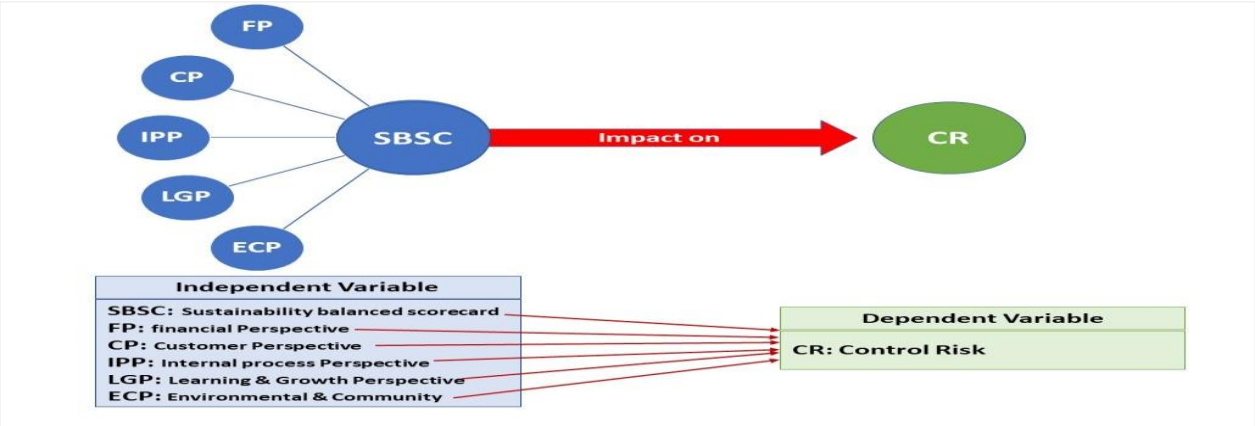

FIGURE 1. Research model of the study.

IV.METHODS

1. DATA COLLECTION

To test the study hypotheses, the researchers collected data from a few auditing firms operating in the Middle East (UAE, KSA, Jordan, Lebanon, Syria), which adopt international auditing standards in their practices. The data collected included 50 auditing contracts executed in previous periods. The researchers reviewed these contracts to assess the internal control risk and the degree of adherence to the internal controls by the employees of these companies. They also examined how these risks were evaluated by the auditors, either qualitatively or quantitatively. In cases where the audit firm's evaluation of internal control risk was qualitative, the researchers relied on Table (1) to convert the qualitative assessment of internal control risk into a quantitative assessment. This conversion was based on the professional judgment of the auditors involved in the auditing process. This approach was applied to certain auditing contracts that had been evaluated qualitatively for the purpose of conducting statistical analysis on the study sample.

Table 1. Converting qualitative internal control risk assessment to quantitative assessment.

Internal Control Support	Risk Level	
	Qualitative	Quantitative
High, excellent control over internal controls and adherence to them	Low	10% - 30%
Moderate, good control with some weaknesses in internal controls or adherence	Medium	20% - 70%
Low, deficiencies in internal controls or adherence to them	High	60% - 100%

Source: [46]

The researchers collected the necessary data to measure the independent variable, which is the Sustainability Balanced Scorecard (SBSC) and its five dimensions, by designing and applying Table (2) to the companies under audit (the study sample), regardless of whether they implemented SBSC or not. Table (2) illustrates how the independent variable was measured for each company individually, taking into consideration the necessary adjustments to the ratios outlined in the table to align with the specific sector of the study sample, while maintaining the integrity of each scale and its criteria to ensure the accuracy of the statistical tests. The ratios for the dimensions of this card can be modified for the banking sector, for example, by adding the growth ratios of deposit accounts, current account growth, savings account growth, and insurance growth for facilities to the customer axis. Subsequently, the researchers employed Several types of mathematical methods and statistical tools were used in the study. Microsoft Excel was primarily used to apply SBSC to the study sample. The Statistical Package for Social Sciences (SPSS) was also used to perform the following:

- Descriptive Statistics Measures: Descriptive statistics transform raw data into a form that can be used and described to describe a set of factors in a specific situation or circumstance. This is accomplished by arranging and processing the data. Among the measures used in the study are:
  - Measures of central tendency: These express the values at which the studied data are concentrated, such as the arithmetic mean and median.
  - Measures of dispersion: These express the distance between values from the center, such as the standard deviation, the maximum value, and the minimum value.
- Inferential statistics tests: A set of methods used to infer population parameters from sample data. They are useful for using available data to identify differences between several subgroups on a specific variable. The following tests have been used:
  - Simple linear regression analysis is a statistical method used to examine the relationship between two continuous variables: one independent (predictor) variable and one dependent (outcome) variable. It aims to model how the dependent variable changes as a function of the independent variable. The simple linear regression model is expressed as Equation (1):

$$y = \beta 0 + \beta 1x + \varepsilon y\ \varepsilon \quad (1)$$

Where y is the dependent variable, x is the independent variable, β0 is the intercept (the expected value of y when x = 0), β1 is the slope coefficient (the change in y for a one-unit change in x), ε is the error term, representing the deviation of the observed values from the predicted. One-way ANOVA test: This test shows whether there is a significant difference between the means of several samples.

Table 2. Measurement method for the independent variable (SBSC) in the study sample.

Dimension	Measure	Calculation Method	Score for Each Measure(%)	Measure Criterion
Financial	Current Ratio	Current Assets / Current Liabilities	10	Measure result: None =0, Weak = 3.33, Medium = 6.67, Very Good = 10
	Quick Liquidity Ratio	(Current Assets - Inventory) / Current Liabilities	10	
	Cash Ratio	Cash and Cash Equivalents / Current Liabilities	10	
	Profit Margin Ratio	Gross Profit / Total Revenue	10	
	Return on Equity (ROE)	Net Profit After Tax / Shareholders' Equity	10	
	Return on Assets (ROA)	Net Profit (Loss) / Total Assets	10	

	Receivables Turnover Ratio	Net Sales / Receivables	10	
	Asset Turnover Ratio	Net Sales / Total Assets	10	
	Revenue to Cost Ratio	Total Revenue / Total Costs	10	
	Debt to Total Assets Ratio	Total Debt / Total Assets	10	
Internal Operations		Total for Dimension1: 100%		
	Daily Production Rate	Actual Annual Production / Number of Days in a Year	20	Measure result: None = 0, Weak = 6.66, Medium = 13.3, Very Good = 20
	Capacity Utilization Ratio	Actual Production / Available Capacity	20	
	Maintenance Services Rate	Maintenance Cost / Actual Annual Production	20	
	Material Productivity	Output Value (Actual Production) / Cost of Materials Used	20	
	Inventory Turnover Ratio	Cost of Goods Sold / Inventory	20	
Customers		Total for Dimension2: 100%		
	Annual Sales Growth Rate (Market Share)	(Current Year Sales - Previous Year Sales) / Previous Year Sales	20	Measure result: None = 0, Weak = 6.66, Medium = 13.3, Very Good = 20
	Customer Retention Rate	(Current Year Customers - Previous Year Customers) / Previous Year Customers	20	
	Customer Contribution to Income	Net Income / Number of Customers	20	
	Marketing Cost Growth Rate	(Current Year Marketing Cost - Previous Year Marketing Cost) / Previous Year Marketing Cost	20	
	After-Sales Service Quality	Number of Repair Requests / Total Units Sold	20	
Learning & Growth		Total for Dimension3: 100%		
	Employee Growth Rate	(Current Year Employees - Previous Year Employees) / Previous Year Employees	20	Measure result: None =0, Weak = 6.66, Medium = 13.3, Very Good = 20
	Employee Turnover Rate	Employees Leaving / Total Employees	20	
	Training and Development Expenses Growth	(Current Year Training Expenses - Previous Year Training Expenses) / Previous Year Training Expenses	20	
	Research & Development Expenses Growth	(Current Year R&D Expenses - Previous Year R&D Expenses) / Previous Year R&D Expenses	20	
	Travel & Mission Expenses Growth	(Current Year Mission Expenses - Previous Year Mission Expenses) / Previous Year Mission Expenses	20	
Social & Environmental		Total for Dimension4: 100%		
	Social Security Contribution	Social Security Expenses for Employees / Total Expenses	20	Measure result: None = 0, Weak = 6.66, Medium = 13.3, Very Good = 20
	Employee Transport Contribution	Employee Transport Expenses / Number of Employees	20	
	Water & Electricity Expenses Growth	(Current Year Water & Electricity Expenses - Previous Year Water & Electricity Expenses) / Previous Year Expenses	20	
	Vehicle Maintenance Expenses Growth	(Current Year Transport Maintenance Expenses - Previous Year Transport Maintenance Expenses) / Previous Year Expenses	20	

	Environmental Protection Expenses Growth	(Current Year Environmental Protection Expenses - Previous Year Environmental Protection Expenses) / Previous Year Expenses	20
		Total for Dimension5: 100%	
		Total for All Dimensions (SBSC) %100	

Source: Prepared by the Researchers

2. DATA ANALYSIS

Table (3) illustrates the researchers' method for measuring the dependent variable, represented by the internal control risk (CR), for each accounting cycle within the study sample. The measurement relied on data obtained from auditing firms. For cases where the internal control risk was quantitatively assessed, the original data were used directly. However, for cases where the risk was qualitatively assessed, the researchers referred to Table (1) to convert qualitative evaluations into quantitative ones, considering the professional judgment of the auditors involved. The variable CR shown in the table below represents the arithmetic mean of the internal control risk for each accounting cycle. Additionally, Table (3) presents the measurement of the independent variable, the Sustainable Balanced Scorecard (SBSC), and its dimensions for the study sample. This measurement was conducted using Table (2) for the companies under audit (the study sample).

Table 3. Measurement of study variables.

Apply		**SBSC**					**Strategic**	
Audits	SBSC	FP	CP	IPP	LGP	ECP	Performance	CR
X1	No	40.02	46.58	53.28	39.94	26.64	41.29	82
X2	yes	73.34	86.60	79.90	93.30	86.66	83.96	28
X3	yes	93.34	100	86.60	79.90	93.30	90.63	16
X4	No	60.01	53.28	53.22	46.56	39.90	50.59	74
X5	yes	83.33	93.30	86.60	86.66	79.96	85.97	24
X6	No	76.67	66.62	59.92	39.92	46.62	57.95	68
X7	yes	86.68	79.90	86.60	86.60	73.32	82.62	36
X8	No	76.68	59.98	53.28	59.90	26.60	55.29	66
X9	yes	70.00	73.26	66.5	66.56	59.86	67.24	42
X10	No	70.00	66.62	53.28	66.62	13.32	53.97	72
X11	No	70.02	53.22	46.58	33.28	19.98	44.62	88
X12	yes	100	86.66	86.60	93.3	86.66	90.64	18
X13	No	63.36	46.58	53.22	33.3	26.62	44.62	86
X14	yes	90.00	86.60	79.90	73.20	73.32	80.60	32
X15	yes	90.01	79.96	73.20	79.98	66.50	77.93	30
X16	yes	83.34	73.32	79.90	86.60	66.56	77.94	34
X17	No	63.34	53.22	53.28	46.56	33.3	49.94	78
X18	No	53.34	53.28	39.92	66.62	26.60	47.95	82
X19	No	63.32	73.26	59.92	53.28	39.98	57.95	72
X20	yes	86.68	79.90	93.30	86.66	86.60	86.63	30
X21	No	56.67	46.56	59.98	39.94	33.26	47.28	76
X22	yes	100	93.30	93.30	86.60	86.60	91.96	22
X23	No	56.68	66.5	59.86	46.64	39.90	53.92	68
X24	yes	96.67	100	86.66	93.30	86.60	92.65	24
X25	yes	100	100	93.30	86.60	86.66	93.31	20
X26	no	49.98	59.92	46.58	46.62	33.28	47.28	70

X27	yes	86.67	86.6	93.30	79.90	93.30	87.95	30
X28	yes	90.01	73.26	79.90	86.66	73.20	80.61	34
X29	yes	83.34	86.60	73.20	93.30	86.66	84.62	32
X30	no	73.33	46.58	53.28	66.56	46.6	57.27	66
X31	yes	93.33	86.66	79.90	79.96	79.90	83.95	34
X32	no	56.68	46.56	46.56	39.90	26.64	43.27	78
X33	yes	90.00	93.3	86.66	86.66	93.3	89.98	22
X34	no	60.01	66.5	53.26	46.66	53.2	55.93	68
X35	no	66.7	46.64	39.90	39.92	26.6	43.95	76
X36	yes	90.01	80	73.30	100.00	86.6	85.98	30
X37	yes	86.68	73.26	73.20	66.60	73.3	74.61	42
X38	yes	83.35	86.66	66.56	80.00	73.2	77.95	38
X39	no	53.31	39.92	46.62	19.98	26.62	37.29	86
X40	yes	96.67	93.3	86.66	79.98	79.90	87.30	28
X41	no	66.7	53.22	59.92	26.64	19.98	45.29	78
X42	no	70.03	66.5	53.28	26.60	33.3	49.94	74
X43	yes	90.01	86.66	100.00	93.30	93.30	92.65	22
X44	no	66.66	53.26	53.20	19.98	26.64	43.95	78
X45	no	56.69	46.58	33.30	13.32	33.32	36.64	88
X46	yes	86.66	100	93.30	86.66	73.32	87.99	24
X47	yes	73.34	79.96	86.66	80.00	66.56	77.30	30
X48	no	53.32	53.2	59.86	19.96	33.28	43.92	80
X49	yes	83.33	86.6	73.30	73.20	80	79.29	32
X50	yes	100	93.3	86.60	100.00	86.66	93.31	20
MAX		100.00	100.00	100.00	100.00	93.30	93.31	88.00
MIN		40.02	39.92	33.30	13.32	13.32	36.64	16.00
Mean		76.2062	72.0708	68.7280	64.4836	58.0796	67.9134	50.5600
Std		15.77827	18.13063	17.70090	25.18332	26.18684	19.40205	24.92451

Source: Prepared by the Researchers

The researchers found an inverse relationship between strategic performance (the average of the five dimensions) and control risk in Table (3). In other words, as strategic performance improves, control risk assessments decrease. Conversely, when strategic performance drops, control risk assessments increase. The study also noted a direct relationship between adopting the Sustainable Balanced Scorecard (SBSC) and control risk assessments. Companies using the SBSC had lower control risk assessments, while companies not adopting it had higher control risk assessments. To confirm these findings, the study tested the hypotheses using linear regression analysis.

3. TESTING HYPOTHESES

The researchers utilized the SPSS software to test the first set of sub-hypotheses of the study, relying on simple linear regression analysis. This approach aimed to determine whether the adoption of the Sustainable Balanced Scorecard (SBSC) by audit clients has a significant impact on reducing the external auditor's assessment of internal control risk.

3.1 Testing The First Hypothesis (H1)

Table (4) presents the results of the simple linear regression analysis for the following sub-hypothesis:

- H1: There is an effect of adopting the Sustainable Balanced Scorecard (SBSC) by audit clients on the assessment of internal control risk according to the financial performance dimension.

Table 4. Testing the first hypothesis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.886[a]	.785	.780	11.68354

a. Predictors: (Constant), FP

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23888.079	1	23888.079	174.998	.000[b]
	Residual	6552.241	48	136.505		
	Total	30440.320	49			

a. Dependent Variable: CR
b. Predictors: (Constant), FP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	157.201	8.229		19.103	.000
	FP	-1.399-	.106	-.886-	-13.229-	.000

a. Dependent Variable: CR

Table 4 illustrates the results of the regression model test for the first sub- hypothesis using SPSS. Analysis of variance shows the statistical significance of the explanatory power of the model through the F statistic and the significance of the arithmetic significance. It is evident from the table that the significance level of the F-statistic (Sig = 0.000) is less than the 5% threshold. This indicates a significant effect of the adoption of the Sustainability Balanced Scorecard (SBSC) by audit clients on the evaluation of internal control risk based on the financial performance dimension. The correlation coefficient (R) is 0.886, reflecting a positive effect, while the coefficient of determination (R^2) is 0.785. This suggests that the independent variable (FP) accounts for 78.5% of the variance in the evaluation of internal control risk, with the remaining 21.5% attributable to other random factors. The model's significance levels show that the p-value is below the 5% threshold, confirming a statistically significant effect of SBSC adoption by audit clients on the evaluation of internal control risk based on the financial performance dimension. Based on the data, the following regression equation can be derived as Equation (2).

$$y = 157.201 - 1.339x + \varepsilon \quad (2)$$

This analysis indicates that a one-unit increase in the adoption of the SBSC by audit clients leads to a decrease of 1.399 in the evaluation of internal control risk, with a constant of 157.201due to other factors. As a result, the following hypothesis is accepted: There is a significant effect of the adoption of the Sustainability Balanced Scorecard (SBSC) by audit clients on the evaluation of internal control risk based on the financial performance dimension.

3.2 Testing The Second Sub-Hypothesis (H2)

Table 5 presents the results of the linear regression analysis for the following hypothesis:

- H2: There is an effect of audit clients' adoption of the Sustainable Balanced Scorecard (SBSC) on the assessment of internal control risk according to the customer perspective.

Table 5. Testing the second hypothesis

Model Summary

Model	R	R Square	Adjusted R Squar	Std. Error of the Estimate
1	.937[a]	.878	.875	8.79905

a. Predictors: (Constant), CP

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26724.006	1	26724.006	345.168	.000[b]
	Residual	3716.314	48	77.423		
	Total	30440.320	49			

a. Dependent Variable: CR
b. Predictors: (Constant), CP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	143.392	5.149		27.847	.000
	CP	-1.288-	.069	-.937-	-18.579-	.000

a. Dependent Variable: CR

Source: SPSS outputs

The results of testing the regression model for the second sub-hypothesis using (SPSS) are presented in Table 5. The analysis indicates that the F-statistic's significance level (Sig = 0.00) is below the 5% threshold, leading to the conclusion that there is a significant impact of audit clients adopting the Sustainable Balanced Scorecard (SBSC) on the evaluation of control risk based on the customer perspective. Additionally, the correlation coefficient (R = 0.937) reflects a positive effect, while the coefficient of determination (R^2 = 0.878) indicates that the independent variable (CP) explains 87.8% of the variance or changes in control risk evaluation. The remaining 12.2% is attributed to other random factors. The model's parameters confirm that the p-value is less than 5%, supporting the existence of a statistically significant impact of adopting the SBSC by auditing clients on control risk evaluation under the customer perspective. Based on the table, the regression model can be expressed as: $y = 143.392 - 1.288x + \varepsilon$. The analysis shows that a one-unit increase in the adoption level of the SBSC by audit clients leads to a 1.288 decrease in the control risk evaluation, with the constant value of 143.392 attributed to other factors. Therefore, the hypothesis is accepted: There is an impact of audit clients adopting the Sustainable Balanced Scorecard on the evaluation of control risk under the customer perspective.

3.3 Testing The Third Sub-Hypothesis (H3)

Table 6 presents the results of the regression analysis for the following hypothesis:

- H3: There is an impact of audit clients' adoption of the Sustainable Balanced Scorecard (SBSC) on the evaluation of control risk according to the internal processes dimension.

Table 6. Testing the third hypothesis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.932[a]	.868	.865	9.15269

a. Predictors: (Constant), IPP

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26419.277	1	26419.277	315.372	.000[b]
	Residual	4021.043	48	83.772		
	Total	30440.320	49			

a. Dependent Variable: CR
b. Predictors: (Constant), IPP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	140.717	5.239		26.859	.000
	IPP	-1.312-	.074	-.932-	-17.759-	.000

a. Dependent Variable: CR

Table 6 shows the results of the regression model test for the third sub-hypothesis using (SPSS). It is observed that the relative significance level of (F) is less than the accuracy level of 5% (Sig = 0.00). From this, it can be concluded that there is an impact of audit clients' adoption of the Sustainable Balanced Scorecard (SBSC) on the evaluation of control risk according to the internal processes dimension. Additionally, the correlation coefficient (R) reached 0.932, indicating a positive effect, while the coefficient of determination (R^2) was 0.868, suggesting that the independent variable (IPP) explains 86.8% of the variation in control risk evaluation, while 13.2% of the variation is attributed to other random factors. The model levels indicate that the p-value is less than the significance level of 5%, thus confirming a significant impact of audit clients' adoption of SBSC on the evaluation of control risk concerning the internal processes dimension. Based on the table, the following regression model can be derived: ($y = 140.717 - 1.312x + \varepsilon$). The analysis indicates that a one-unit change in the SBSC adoption score by audit clients leads to a 1.312 decrease in control risk evaluation, with 140.717 being attributable to other factors. From the above, the hypothesis is accepted: There is an impact of audit clients' adoption of the Sustainable Balanced Scorecard on the evaluation of control risk according to the internal processes dimension.

3.4 Test Of Sub-Hypothesis 4 (H4)

Table 7 shows the results of the linear regression analysis for the following sub-hypothesis:

- H4: There is an effect of audit clients adopting the Sustainable Balanced Scorecard on the evaluation of control risk according to the learning and growth dimension.

Table 7. Test of hypothesis 4.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.917[a]	.841	.837	10.05052

a. Predictors: (Constant), LGP

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25591.699	1	25591.699	253.351	.000[b]
	Residual	4848.621	48	101.013		
	Total	30440.320	49			

a. Dependent Variable: CR
b. Predictors: (Constant), LGP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	109.078	3.942		27.673	.000
	LGP	-.907-	.057	-.917-	-15.917-	.000

a. Dependent Variable: CR

Source: SPSS outputs

Table 7 shows the results of the regression model test for the first sub-hypothesis using (SPSS). It is observed that the relative significance level (F) is less than the 5% precision level (Sig = 0.00). From this, it is concluded that there is an effect of audit clients adopting the Sustainable Balanced Scorecard (SBSC) on the evaluation of control risk according to the learning and growth dimension. Additionally, the value of (R = 0.917) indicates a positive effect, while the coefficient of determination (0.841) suggests that the independent variable (LGP) contributes to explaining 84.1% of the variance or change in the evaluation of control risk, with the remaining 15.9% attributed to other random factors. The model levels indicate that the p-value is less than the 5% significance level, which leads to the conclusion that there is a significant effect of audit clients adopting the SBSC on the evaluation of control risk according to the learning and growth dimension. Based on the table, the following model can be inferred: (y = 109.078 - 0.907x + ε). The analysis indicates that a change of one unit in adopting the SBSC leads to a decrease of 0.907 in the evaluation of control risk, with a constant of 109.078 attributed to other factors. Thus, the following hypothesis is accepted: There is an effect of audit clients adopting the Sustainable Balanced Scorecard on the evaluation of control risk according to the learning and growth dimension.

3.5 Testing The Fifth Sub-Hypothesis H5

Table 8 shows the results of the regression analysis for the following sub-hypothesis:

- H5: There is an effect of audit clients adopting the Sustainable Balanced Scorecard (SBSC) on the evaluation of control risk according to the environmental and social dimension.

Table 8. Testing the fifth hypothesis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.958[a]	.919	.917	7.18623

a. Predictors: (Constant), ECP

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27961.507	1	27961.507	541.450	.000[b]
	Residual	2478.813	48	51.642		
	Total	30440.320	49			

a. Dependent Variable: CR
b. Predictors: (Constant), ECP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	103.541	2.493		41.526	.000
	ECP	-.912-	.039	-.958-	-23.269-	.000

a. Dependent Variable: CR

The table (8) illustrates the results of the regression model test for the fifth sub- hypothesis using SPSS. It is observed that the relative significance level (F) is less than the accuracy level of 5% (Sig = 0.00), from which we conclude the presence of an effect for adopting the Balanced Scorecard Sustainable (SBSC) by audit clients in evaluating control risk according to the environmental and social dimension. Furthermore, the R value is 0.958, indicating a positive effect, and the coefficient of determination is 0.919, which means that the independent variable (ECP) explains 91.9% of the variance or change in control risk evaluation, while 8.2% of the variance is attributed to other random factors. The model levels indicate that the p-value is less than the 5% significance level, thus concluding the existence of a significant effect for adopting the Balanced Scorecard Sustainable in evaluating control risk according to the environmental and social dimension. Based on the previous table, the following model can be inferred: ($y = 103.541 - 0.912x + \varepsilon$). The analysis indicates that a one-unit change in adopting the Balanced Scorecard Sustainable by audit clients leads to a decrease of 0.912 in the evaluation of control risk and 103.541 due to other factors. Therefore, the following hypothesis is accepted: There is an effect of adopting the Balanced Scorecard Sustainable by audit clients in evaluating control risk according to the environmental and social dimension .

3.6 Testing The Main Hypothesis

The main hypothesis test was conducted using simple regression analysis between the independent variable (strategic performance), which is the arithmetic mean of the five dimensions of the Balanced Scorecard Sustainable, and the dependent variable (CR). Table (9) shows the results of the linear regression test for the following main null hypothesis: There is an effect of adopting the Balanced Scorecard Sustainable (SBSC) by audit clients in the external auditor's evaluation of internal control risk.

Table 9. Testing the main hypothesis.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.986[a]	.972	.971	4.21410

a. Predictors: (Constant), SP

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	29587.907	1	29587.907	1666.116	.000[b]
	Residual	852.413	48	17.759		
	Total	30440.320	49			

a. Dependent Variable: CR
b. Predictors: (Constant), SP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	136.574	2.190		62.365	.000
	SP	-1.267-	.031	-.986-	-40.818-	.000

a. Dependent Variable: CR

Table No. (9) presents the results of the regression model test for the first hypothesis. The significance level (Sig = 0.00) is below the 5% threshold, which means that the results are statistically significant, and we can confidently say that the adoption of the Sustainable Balanced Scorecard (SBSC) by audit clients affects the assessment of internal control risk. Additionally, The correlation coefficient (R = 0.986) shows a very strong positive relationship between SBSC adoption and internal control risk assessment. The coefficient of determination (R^2 = 0.972) indicates that 97.2% of the change in internal control risk assessment can be explained by the adoption of SBSC, while the remaining 2.8% is due to other random factors. The model levels indicate that the p-value is below the 5% significance level, and thus we infer a statistically significant effect of adopting the Sustainable Balanced Scorecard (SBSC) by audit clients on internal control risk assessment. Based on the previous table, the following model can be inferred: ($y = 136.576 - 1.267x + \varepsilon$). The analysis reveals that a one-unit change in the adoption of the Sustainable Balanced Scorecard by audit clients results in a decrease of 1.267 in the internal control risk assessment, with 136.576 attributable to other factors. Therefore, the following hypothesis is accepted: There is an effect of adopting the Sustainable Balanced Scorecard (SBSC) by audit clients on the assessment of internal control risk.

3..7 Testing The Second Main Hypothesis

The second hypothesis states: There are statistically significant differences in the external auditor's assessment of internal control risk between companies that have adopted and those that have not adopted the Sustainable Balanced Scorecard. To investigate whether there is a difference in the internal control risk (CR) assessment by auditors of companies (the study sample) when these companies have adopted or not adopted the Sustainable Balanced Scorecard, One-Way Analysis of Variance (ANOVA) was applied, as shown in Table No.(10) .

Table 10. Testing The Second Main Hypothesis

ANOVA

CR

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	28133.885	1	28133.885	585.504	.000
Within Groups	2306.435	48	48.051		
Total	30440.320	49			

Source: SPSS outputs

It can be observed from Table No. (10) that the F-value in the model test indicates how well the regression model fits the data. A high F-value, such as 585.504, combined with a significance level of Sig = 0.000 (which is much smaller than 0.05), shows that the model is statistically reliable and that the relationship between SBSC adoption and control risk assessment is significant. This confirms that there are statistically significant differences in the external auditor's assessment of internal control risk between companies that have adopted and those that have not adopted the SBSC.

V. DISCUSSIONS AND RESULT

The theoretical aspect of this study highlighted the importance and objectives of implementing the Balanced Scorecard (BSC) in general and the Sustainable Balanced Scorecard (SBSC) in particular. The results of the applied side of this study revealed that the adoption of SBSC by companies has a positive impact on the evaluation of control risk, as evidenced by the statistical tests conducted. Previous studies on SBSC have emphasized its importance in measuring corporate performance, particularly by incorporating environmental and social dimensions. However,

to the best of our knowledge, they have not addressed the impact of SBSC on audit processes, particularly in relation to internal control risk assessment. Since various stakeholders rely on external auditors' reports for investment decision-making, the findings of this study extend prior research by illustrating the effect of audit clients adopting SBSC on external auditing processes in general and external auditors' control risk evaluations specifically. Statistical analysis showed that clients' adoption of SBSC leads to the following reductions in control risk evaluations in terms of the following dimensions: Financial Performance (FP): A decrease of 1.399. Customer Performance (CP): A decrease of 1.288. Internal Process Performance (IPP): A decrease of 1.312. Learning and Growth Performance (LGP): A decrease of 0.907. Environmental and Community Performance (ECP): A decrease of 0.912. Overall Strategic Performance (Combined Dimensions): A decrease of 1.267. From the researchers' perspective, this reduction in control risk evaluation resulting from clients' adoption of SBSC can be attributed to the fact that the use of SBSC in measuring performance helps clients identify weaknesses across various dimensions. It also integrates sustainability issues and addresses barriers that hinder the achievement of strategic objectives, prompting clients to address these issues. The design and implementation of an internal control system involve identifying risks that hinder goal achievement and implementing appropriate procedures to mitigate those risks. The more effective the internal control system is evaluated, the lower the control risk assessment by auditors. As noted by Louwers et al. (2018)[43], "evaluating the internal control system and control risk at the client level significantly impacts audit strategy." International Standard on Auditing (ISA) 315 states that "assessing control risk assists auditors in designing the nature, timing, and extent of audit procedures" (IAASB, 2023). Therefore, enhanced performance through SBSC adoption results in lower control risk assessments by auditors. Consequently, auditors can reduce substantive testing, audit sample sizes, and the scope of audit procedures, thereby improving audit efficiency [47].

Audit clients' adoption of SBSC results in lower internal control risk assessments, thereby enhancing audit efficiency. Auditors can leverage the insights from SBSC to make more informed professional judgments, improve audit planning, and tailor audit procedures to focus on areas of higher risk. This targeted approach leads to a more thorough and effective audit. Additionally, SBSC gives auditors a clear framework to check if a company has achieved its set goals. By using both financial and non-financial performance measures, auditors can assess the company's performance from different angles. This approach helps auditors better understand how well the company is operating and managing its controls, leading to more reliable and higher-quality audit results. The statistical tests conducted on the study sample (50 audit contracts) revealed that the independent variable (SBSC) explains 97.2% of the variation in the dependent variable (internal control risk).

VI.CONTRIBUTION AND LIMITATIONS

This study contributes to theory by emphasizing the importance of adopting the Sustainable Balanced Scorecard (SBSC) for companies being audited, as well as its significance for audit firms and investors. The study shows that SBSC positively impacts reducing internal control risk evaluations, improving audit efficiency, and speeding up the preparation of independent auditors' reports. Additionally, it develops an SBSC model that companies in various sectors can use, with the option to adjust specific ratios for certain industries. This study is the first to show the impact of the Balanced Scorecard on internal control risk evaluations based on statistical analysis of real data, rather than relying on survey data from a small number of auditors, making the results more reliable. The study also adds to the academic literature by introducing the SBSC as a new factor influencing internal control risk evaluations, making it a key element in auditors' assessments.

The limitations of this study include its temporal scope, as the findings were derived based on audit contract data executed during the years 2022–2024. The geographical scope of the study was limited to audit contracts conducted in the Middle East (UAE, KSA, Jordan, Lebanon, Syria). The researchers recommend conducting further studies in different environments and with larger sample sizes to validate and support the results of this study. Future research should focus on exploring the impact of adopting the SBSC by audit clients on the efficiency and effectiveness of audit processes. This is particularly important due to the significance of audit efficiency and effectiveness for all stakeholders, and the risks and damages resulting from the lack of audit quality for users of audited financial statements and audit firms alike. Additionally, future research could examine the feasibility of auditors adopting the SBSC to assess the going concern status of audited entities. This is especially relevant given that the SBSC incorporates sustainability issues, including environmental and social dimensions, and the scarcity of research that explores the impact of SBSC on external audit processes in general. The adoption of SBSC by audit firms could be studied more through qualitative or mixed-methods research. This would allow to understand how auditors think sustainability factors affect their audit procedures and control risk assessments. Future research could also look at audit contracts from different regions to get a broader view of how SBSC adoption impacts control

risk evaluations. Additionally, studying the long-term effects of SBSC adoption over several years would help understand how its impact changes over time. It would also be helpful to explore which parts of the SBSC (such as environmental, social, or governance performance) have the biggest impact on auditors' risk assessments. This would provide a clearer picture of how these factors help reduce control risk.

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Author Contributions

Author (1) wrote the original draft, methodology, formal analysis, funding acquisition, project administration, software, supervision, validation, investigation, Funding acquisition, and Corresponding, author (2) wrote the original draft, Investigation, Resources, Investigation, Methodology, Funding acquisition, author (3) writing original draft, Data curation, Investigation, Methodology, Funding acquisition, author (4) Resources, Resources, Supervision, And the adjustments of the auditors. All the authors have read and approved the published copy of the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest

Data Availability Statement

Data are available from the authors upon request.

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