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**The Role of Sustainability Strategy and Cost Reduction in the
Relationship Between Green Environmental Accounting and
Organizational Performance: Evidence from Iraqi Manufacturing**

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Abstract: This study investigates the impact of green environmental accounting practices on organizational performance in the Iraqi manufacturing sector. The mediating role of sustainability strategy and the moderating effect of cost reduction are examined. Data are collected from 247 respondents in Iraqi manufacturing companies using a structured questionnaire. Partial Least Squares Structural Equation Modelling is employed for data analysis. The results indicate that green environmental accounting positively and significantly influences organizational performance. Furthermore, sustainability strategy partially mediates the relationship between green environmental accounting and organizational performance. Cost reduction also positively moderates the association between green environmental accounting and organizational performance. This study contributes to the literature by providing empirical evidence on the interplay between green environmental accounting, sustainability strategy, cost reduction, and organizational performance in the Iraqi manufacturing context.

دور استراتيجية الاستدامة وتخفيض التكاليف في العلاقة بين المحاسبة البيئية الخضراء والأداء التنظيمي: أدلة من قطاع الصناعات التحويلية العراقية

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المستخلص

تبحث هذه الدراسة أثر ممارسات المحاسبة البيئية الخضراء على الأداء التنظيمي في قطاع الصناعات التحويلية العراقي. وتدرس دور استراتيجية الاستدامة كوسيط، وتأثير تخفيض التكاليف كعامل مُعدِّل. جُمعت البيانات من 247 مستجيباً في شركات صناعية عراقية باستخدام استبيان مُهيكل. استُخدم نموذج المعادلات الهيكلية باستخدام طريقة المربعات الصغرى الجزئية لتحليل البيانات. تشير النتائج إلى أن المحاسبة البيئية الخضراء تؤثر إيجاباً وبشكل كبير على الأداء التنظيمي. علاوة على ذلك، تُساهم استراتيجية الاستدامة جزئياً كوسيط في العلاقة بين المحاسبة البيئية الخضراء والأداء التنظيمي. كما يُعد تخفيض التكاليف عاملاً مُعدِّلاً إيجابياً للعلاقة بين المحاسبة البيئية الخضراء والأداء التنظيمي. تُساهم هذه الدراسة في الأدبيات من خلال تقديم أدلة تجريبية حول التفاعل بين المحاسبة البيئية الخضراء، واستراتيجية الاستدامة، وتخفيض التكاليف، والأداء التنظيمي في سياق الصناعات التحويلية العراقية.

الكلمات المفتاحية: المحاسبة البيئية الخضراء، الأداء التنظيمي، استراتيجية الاستدامة، تخفيض التكاليف.

1. Introduction

Sustainable development and Cost Reduction can be considered among the most important requirements that management needs to achieve organizational goals. In general researchers in strategy management concur that Green Environmental Accounting can be an efficient instrument for achieving those strategic objectives of an organization (Rubaie, 2023; Wahyuni et al., 2019), and acquiring Organizational Performance (Gunarathne, Lee & Kaluarachchilage, 2021). Today, interest in environmental practices in organizations has become great, and organizations spend a lot of money on these practices. Researchers have discussed environmental practices and their relationship to organizational performance, and some of the results of those studies have found positive relationships, some have found negative relationships (Aziz, 2018) and some have found no relationship (Bassey, Effio, & Eton, 2013; Schaltegger & Synnøstvedt, 2002).

This paper aims to analyze the correlation between Green Environmental Accounting and Organizational Performance under the mediation of Sustainability Strategy and moderation Cost Reduction.

There is increased stress on organizations to explore new ways and create advanced profit-generating methods to keep organizational performance. Sustainability Strategy and Cost Reduction acts as the driving power to success of many organizations in changing business environment, and this aids to improvement of organizational performance (Endiana et al., 2020; Latan et. Al., 2018; Okoye, P. V. C., & Asika, 2013). Recently, researchers have recommended study of relationships among Green Environmental Accounting and Sustainability Strategy and Cost Reduction to gain organizational performance better (Rubaie, 2023; Gunarathne, Lee & Kaluarachchilage, 2021; Fares & Zabin, 2021; Aziz, 2018; Qasaimeh & Jaradeh, 2022).

The study will also investigate the role of Sustainability Strategy in and Cost Reduction in an organization's performance. Consequently, the following research questions are addressed:

Q1: Is Green Environmental Accounting positively related to Organizational Performance?

Q2: Do Sustainability Strategy mediate the association between Green Environmental Accounting and Organizational Performance?

Q3: Do Reducing Cost moderate the relationship between the Green Environmental Accounting and Organizational Performance?

Q4: Does cost reduction moderate the relationship between green environmental accounting and organizational performance through sustainability strategy?

1-1. Green Environmental Accounting: Green environmental accounting is a comprehensive concept that focuses on integrating environmental dimensions into economic activities, whether at the macro level of the economy or at the micro level of units and institutions. although it is more applicable to the latter level. Green Environmental Accounting, which calls for the introduction of a system that supports sustainable development (SD), has many meanings and uses. Environmental accounting can support national income accounting, Green Environmental Accounting at the local administration level and at the micro level related to financial accounting, cost accounting or management accounting for internal business (Sundarassen et al., 2024).

Environmental costs defined as the costs associated with creating, detecting, treating and preventing environmental degradation At AT&T,

according to the US Environmental Protection (Okoye, Oraka & Ezejiofor, 2013), Green environmental accounting (or green accounting) is a method that focuses on identifying and measuring the costs associated with environmental materials and activities, and then using this data to support management decisions related to the environment (Al-Harawi & Sajad, 2023). It aims to provide decision-makers with information that helps reduce costs, mitigate risks, and enhance value within the company. (Okoye, Oraka & Ezejiofor, 2013).

In Iraq, the study (Abdulwahid, 2014) revealed that some of the companies included in it contribute significantly to environmental pollution during their production operations. It was also observed that some companies dump their waste in public roads and waterways such as streams and rivers. Furthermore, some oil and chemical companies continue to flare gas into the atmosphere, exacerbating environmental pollution and leading to the contamination of several waterways in those areas.

By cultivating the enlightened approach to Green Environmental Accounting, companies can increase their image of being enlightened to the outside world, and this can be considered as enlightened companies (Bassey, Effiok & Eton, 2013).

1-2. Organizational Performance: (Tjahjadi.et al., 2019) stated that performance refers to the results of activities in the form of outputs and results, and is also linked to the achievements of the organizational vision and mission. (Ullah.et al., 2020) also confirmed that performance takes into account three aspects of financial performance, business, and the effectiveness of the organization, which is known as organizational performance, and is described by the extent to which the organization is able to meet the needs of stakeholders and its own needs to survive among competitors (Nguyen, 2019) that performance is the degree Accomplishing the task in the workplace does not only mean identifying problems, but also solutions to them.

1-3. Sustainability Strategy: The term sustainability strategy is used to describe the comprehensive action plan adopted by a company to achieve a balance between the needs of society, the economy, and the environment. This strategy aims to build a sustainable economy by meeting the needs of the present without compromising the ability of future generations to meet their own future needs (Al-Gasaymeh et al., 2021).

The sustainability strategy also considers the company's impact on the environment, society, and profitability, and its most prominent potential outcomes include mitigating the effects of climate change, conserving resources, promoting fairness and equity, and improving the well-being of employees and the community (Rubaie, 2023).

Adopting a sustainability strategy can have numerous benefits for an organization, including cost savings through increased efficiency and reduced waste, improved reputation and brand recognition, increased employee engagement and satisfaction, and enhanced competitive advantage through differentiation and innovation.

1-4. Reducing Cost: Cost control focuses on monitoring actual costs and ensuring they do not exceed planned limits, while cost reduction focuses on reducing those limits themselves by improving efficiency and minimizing waste. In other words, the goal of cost reduction is to find out whether there is any possibility of savings in the costs incurred - materials, labor, overhead, etc. Cost reduction, according to the concepts of the Institute of Cost and Management Accountants in London, means achieving an actual and permanent reduction in the cost per unit produced, while maintaining the quality of the product and its ability to perform the purpose for which it was designed (Akeem, 2017).

The need to reduce costs arises when an organization seeks to increase its profit margin without expanding its sales volume, i.e., to achieve higher profits by reducing costs while maintaining a constant level of sales.

2. Literature Review and Hypotheses Development: According Sumiati et. al. (2021), Homan (2016) and Bassey, Effiok & Eton (2013) Green Environmental Accounting ability to improve the Organizational Performance.

The first hypothesis is developed to explore the relationship between Green Environmental Accounting and Organizational Performance:

H1: Green Environmental Accounting are positively related to Organizational Performance.

The accounting sector can play a role in implementation of the Corporate Sustainability Management System could be a key factor that can improve the company's financial performance (Endiana et. Al., 2020; Okoye, P. V. C., & Asika, 2013; Latan et. Al., 2018)

The second hypothesis is developed to examine the Sustainability

Strategy as mediator between Green Environmental Accounting and Organizational Performance:

H2: Sustainability Strategy mediates the association between Green Environmental Accounting and Organizational Performance.

Improved environmental performance would induce cost savings and increase sales and thus improve organizational performance (Schaltegger & Synnестvedt, 2002)

Environmental cost management allows the companies to keep track of the costs associated with the environmental effect of its operations, therefore controlling environmental costs and encouraging environmental benefits will increase the company's overall profitability (Rohit & Mythili, 2022).

The third hypothesis is developed to explore impact of Reducing Cost as moderator between Green Environmental Accounting and Organizational Performance:

H3: Reducing Cost moderates the relationship between the Green Environmental Accounting and Organizational Performance.

According to Appannan et. Al., (2023) argued of encourage companies to adopt specific environmental strategies to attain better environmental performance through environmental management accounting and improving environmental performance.

Abdelhalim (2023) said that there is relationship between eco-efficiency and corporate sustainability performance, while there is a moderating impact of environmental management account ingon the linkage between eco-efficiency and corporate environmental sustainability.

The fourth hypothesis is developed to explore impact of Sustainability Strategy as mediator and Reducing Cost as moderator on relationship between Green Environmental Accounting and Organizational Performance:

H4: Moderating Effect of cost reduction on the Relationship between Green Environmental Accounting and Organizational Performance through Sustainability Strategy.

The figure illustrates the conceptual model of the study, showing the nature of the relationships between the research variables. Green environmental accounting represents the independent variable, directly influencing organizational performance, and indirectly through the sustainability strategy, which is the mediating variable. The pathway

extending from green environmental accounting to the sustainability strategy indicates that adopting green environmental accounting practices contributes to strengthening sustainability strategies within the organization. Similarly, the pathway between the sustainability strategy and organizational performance demonstrates that implementing sustainability strategies leads to improved organizational performance. The figure also demonstrates a direct relationship between green environmental accounting and organizational performance, indicating that implementing green environmental accounting can directly contribute to increasing organizational efficiency and improving operational and financial results. Cost reduction acts as a moderating variable, influencing the strength of the relationship between green environmental accounting and organizational performance. In other words, the impact of green environmental accounting on organizational performance may increase or decrease depending on the level of cost reduction achieved by the organization.

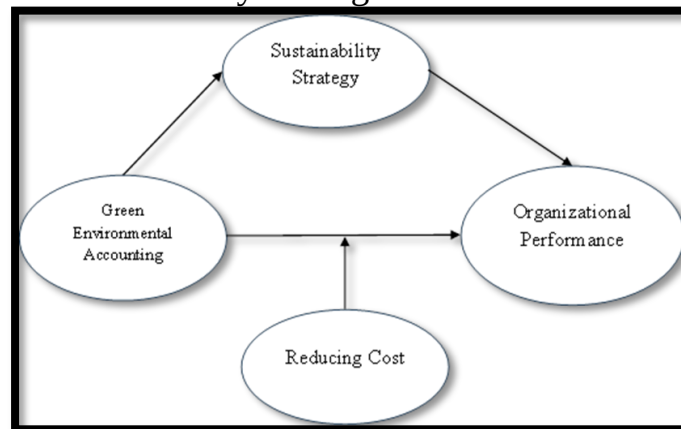


Fig. 1: The theoretical framework.

Source: Author concept.

3. Methodology

3-1. Questionnaire development: This article includes four constructs: organizational performance as the dependent variable, reducing cost as the moderator, sustainability strategy as a mediator variable and green environmental accounting as the independent variable. The variables items were adapted from prior studies. organizational performance (10 items) from (Gunarathne, Lee & Kaluarachchilage, 2021; Akeem, 2017), reducing cost (7 items) from (Rubaie, 2023; Aziz, 2018; Cohen & Robbins, 2011), sustainability strategy (10 items) from (Rubaie, 2023; Hulaihel & Salman,

2022), green environmental accounting (12 items) from (Fares & Zabin, 2021; Wahyuni, et al., 2019; Bassey, Effiok & Eton, 2013).

All measures used the same scale; where a five-point Likert scale were used: whereby 1 represents "strongly disagree", 2 represents "disagree", 3 represents "neutral", 4 represents "agree", and 5 represents "Strongly agree".

The data analysis was carried out using the partial least squares (PLS) technique of structural equation modelling was used for data analysis.

3-2. Data Analysis

3.2.1 Descriptive Analysis

In this study done is descriptive analysis by studying the demographics of the respondents with the help of frequency and percentage. The results of the descriptive analysis are given in the Table 1:

Table (1): The results of the descriptive analysis

Variable	Category	Frequency	Percentage
age	Less than 25 years	23	9.31%
	25-35 year	87	35.22%
	More than 35 years	137	55.47%
Firms' size	Less than 100 employees	74	29.96%
	100-300 employees	102	41.30%
	More than 300 employees	71	28.74%
Hierarchy level	Junior Manager	98	39.68%
	Senior Manager	149	60.32%

Table 1 reveals most of the respondents were ages more than 35 years, which equals (137) and percentage (55.47%), and age 25 to 35 years were (87) and percentage (35.22%), and respondents were ages less than 25 years, which equals (23) and percentage (9.31%).

From the firm's size perspective, the majority of the companies have employees between 100 to 300 and equal to (102) and percentage (41.30%), while, companies with employees less than 100 were (74) and percentage (29.96%), employees and companies with more than 300 were (71) and percentage (28.74%).

Hierarchically, junior managers were (98) and percentage (39.68%), and senior managers were (149) and percentage (60.32%).

3-3. Sample size: The primary data are used to obtain by the surveys for current study; the population in this study are management employees at the

industrial companies listed on Iraq Stock Exchange. The researchers were used simple random sampling method because all individuals in the study population are homogeneous, it also shortened time, effort, and costs, and this method reaches results quickly, easily, and clearly, and can be generalized. (274) questionnaires were distributed to the sample members, and (249) questionnaires were received, which is a return rate of (90.87%). After examining the received questionnaires, (6) questionnaires were excluded due to incomplete answers or missing data, and thus the number of questionnaires valid for analysis was (243) questionnaires, which is (88.69%) of the total questionnaires distributed.

4. Results

4-1. Measurement Model: In PLS-SEM are used two tools that is construct reliability (Cronbach's alpha) and composite reliability. An acceptable level of construct reliability is indicated by a Cronbach's alpha value of (0.70) and above, as well in the composite reliability test According to the composite reliability test, the minimum acceptable value in PLS-SEM analysis must be higher than (0.70) (Hair et al., 2014). In this study, the composite reliability values for all the constructs are higher than (0.70) thus the reliability assessment of all the study variables are acceptable. in table 2 The results of measurement model are exhibited as following:

Table (2): Measurement summary of Research Model in PLS-SEM

Construct	Code	Loading	Cronbach's Alpha	CR	AVE
Green Environmental Accounting			0.948	0.954	0.637
	GA1	0.743			
	GA2	0.773			
	GA3	0.771			
	GA4	0.784			
	GA5	0.703			
	GA6	0.880			
	GA7	0.767			
	GA8	0.798			
	GA9	0.776			
	GA10	0.821			

Construct	Code	Loading	Cronbach's Alpha	CR	AVE
	GA11	0.866			
	GA12	0.874			
Organizational Performance			0.953	0.960	0.705
	OP1	0.862			
	OP2	0.891			
	OP3	0.834			
	OP4	0.886			
	OP5	0.841			
	OP6	0.825			
	OP7	0.769			
	OP8	0.805			
	OP9	0.854			
	OP10	0.822			
Sustainability Strategy			0.941	0.950	0.654
	SS1	0.811			
	SS2	0.733			
	SS3	0.845			
	SS4	0.834			
	SS5	0.820			
	SS6	0.829			
	SS7	0.857			
	SS8	0.820			
	SS9	0.789			
	SS10	0.738			
Reducing Cost			0.912	0.930	0.656
	RC1	0.784			
	RC2	0.834			
	RC3	0.871			
	RC4	0.811			
	RC5	0.813			
	RC6	0.757			
	RC7	0.797			

4-2. Convergent and Discriminant Validity: Convergent validity looks the evaluation of whether the constructs are measuring exactly what they are aimed to measure. According to Bagozzi and Yi (1988), the recommended value is at least 0.5 for the AVE of each construct. Shown in this study, the AVE for all the constructs is higher than 0.5 as shown in Table 2 which confirms the convergent validity of all the constructs. For the discriminant validity, the Fornell-Larcker (1981) criterion, according to the Fornell-Larcker criterion indicate that the square root of the AVE for a construct should be higher than its maximum correlation with the other constructs in the model. All the average variance extracted values are higher than the squared inter-construct correlations as shown in Table 3. Based on the above results, the measurement model considered that adequate for this study.

Table (3): Discriminant Validity

Construct	Green Environmental Accounting	Organizational Performance	Reducing Cost	Sustainability Strategy
Green Environmental Accounting	0.798			
Organizational Performance	0.764	0.840		
Reducing Cost	0.509	0.668	0.810	
Sustainability Strategy	0.501	0.613	0.398	0.809

4-3. Multicollinearity: The multicollinearity test using variance inflation factors (VIF) was conducted, and the results of the (VIF) Numbers smaller than five as shown in Table 4, showing no multicollinearity in the model (Hair J. J., 2017).

Table (4): Multicollinearity Statistics (VIF)

Construct	Organizational Performance	Sustainability Strategy
Green Environmental Accounting	1.585	1.000
Moderating Effect	1.090	-
Reducing Cost	1.414	-
Sustainability Strategy	1.411	-

4-4. Valuation of Significance and Relevance of Structural Model Relationship:

As stated by Hair J. F. (2013) the determination coefficient (R^2) measures the predictive accuracy of the model, with a higher value of R^2 indicating better fitness. R^2 values for endogenous latent variables based on (Chin, 1998) less than 0.19: no effect; 0.20-0.33; weak; 0.34-0.67: moderate and more than 0.67: substantial.

The R^2 values of regression coefficients for Organizational Performance and Sustainability Strategy are (0.744) and (0.251) respectively, Table 5 show that all R^2 values of the model its effect. So, the result the explanatory power of the model confirms, table 5 shows the result of predictive relevance, shows All Q^2 values are above zero, this confirm the predictive relevance of the endogenous constructs.

Table (5). R^2 and predictive relevance (Q^2)

Construct	R^2	Adj. R^2	Q^2
Organizational Performance	0.744	0.739	0.516
Sustainability Strategy	0.251	0.248	0.159

4-5. Effect Size (f^2): The Table 6 presented the effect size of Cohen that shows the influence of exogenous variables on endogenous variables; Cohen (2013) suggested benchmarks to interpret effect size, as follow: no effect (less than 0.02); small effect (0.02-0.15); medium effect (0.15-0.35) and large effects (more than 0.35), table 6 shows the effect size value of each predictor variable.

Table (6): f square values

Construct	f^2	Result
Green Environmental Accounting	0.557	Large
Sustainability Strategy	0.190	Medium
Reducing Cost	0.323	Medium
Moderating Effect	0.047	Small

The low effect size does not imply that the moderator effect not important (Chin, Marcolin & Newsted, 2003). "Even a small interaction effect can be meaningful under extreme conditions, if the resulting beta changes are meaningful, then it is important to take these conditions into account" (Chin, Marcolin & Newsted, 2003).

4-6. Hypothesis testing

4-6-1. Direct Relationship Analysis

H1: Green Environmental Accounting are positively related to Organizational Performance

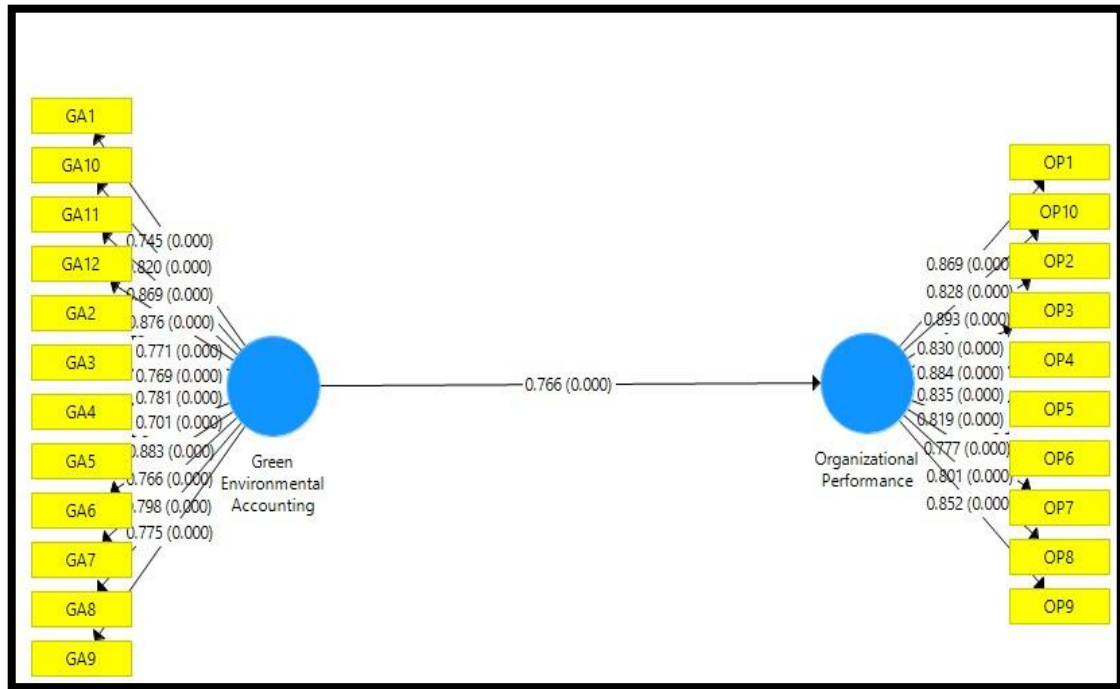


Fig. (2): Model 1 Results; Source: Smart Pls 3.

The direct nexus between GA (independent variable) and OP (dependent variable) are addressed. Table 7 present that GA has positive substantial influence on OP ($\beta = 0.766$, $t = 24.508$, $p = 0.000$) based on result of data analysis. H1 is supported.

Table (7): Direct Effect between Green Environmental Accounting and Organizational Performance

Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Value
Green Environmental Accounting -> Organizational Performance	0.766	0.772	0.031	24.508	0.000

4-6-2. Mediation Test

H2: Sustainability Strategy mediate the association between Green Environmental Accounting and Organizational Performance.

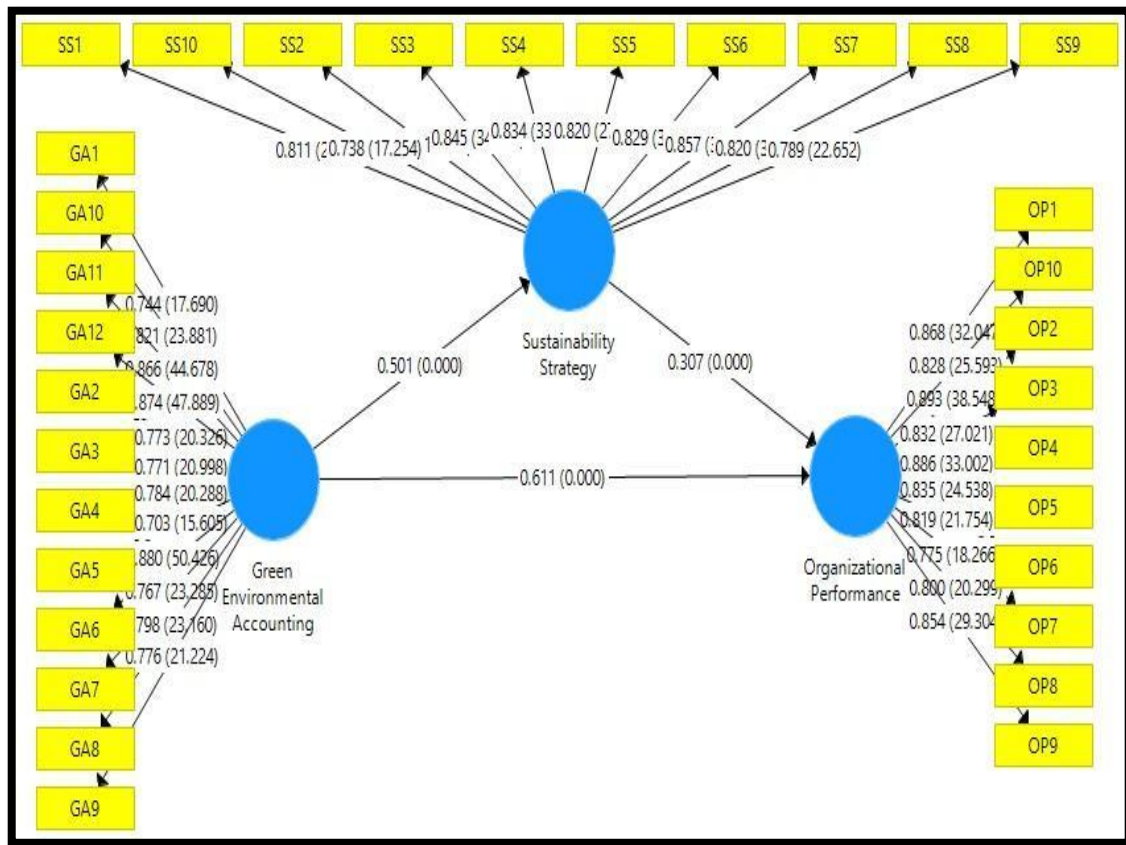


Fig. (3): Model 2 Results; Source: Smart Pls 3

In model 2, Sustainability Strategy was included as a mediator, table 8 shows the total, and direct effect and specific indirect effect of GA on OP is reported. Results indicate significant total effect ($B = 0.765$, $p = 0.000$). The specific indirect effects indicate that access to Sustainability Strategy significant mediating role in the relationship between Green Environmental Accounting and Organizational Performance ($B = 0.154$, $p = 0.000$). Analysis confirmed significant direct effect ($B = 0.611$, $p = 0.000$) which means that the effect occurs partially through the Sustainability Strategy (Partial, because both total and direct effects are significant.), thus H2 supported.

Table (8): Mediation analysis in PLS-SEM

Path	B	SE	t-value	P-value	2.5% LL	97.5% UL
Green Environmental Accounting -> Organizational Performance (Total Effect)	0.765	0.031	24.508	0.000	[0.704-0.831]	

Path	B	SE	t-value	P-value	2.5% LL	97.5% UL
Green Environmental Accounting -> Organizational Performance (Direct Effect)	0.611	0.051	12.001	0.000	[0.513-0.704]	
Green Environmental Accounting -> Sustainability Strategy -> Organizational Performance (specific indirect effect)	0.154	0.034	4.535	0.000	[0.093-0.221]	

4-6-3. Moderator Test

H3: Reducing Cost moderates the relationship between the Green Environmental Accounting and Organizational Performance.

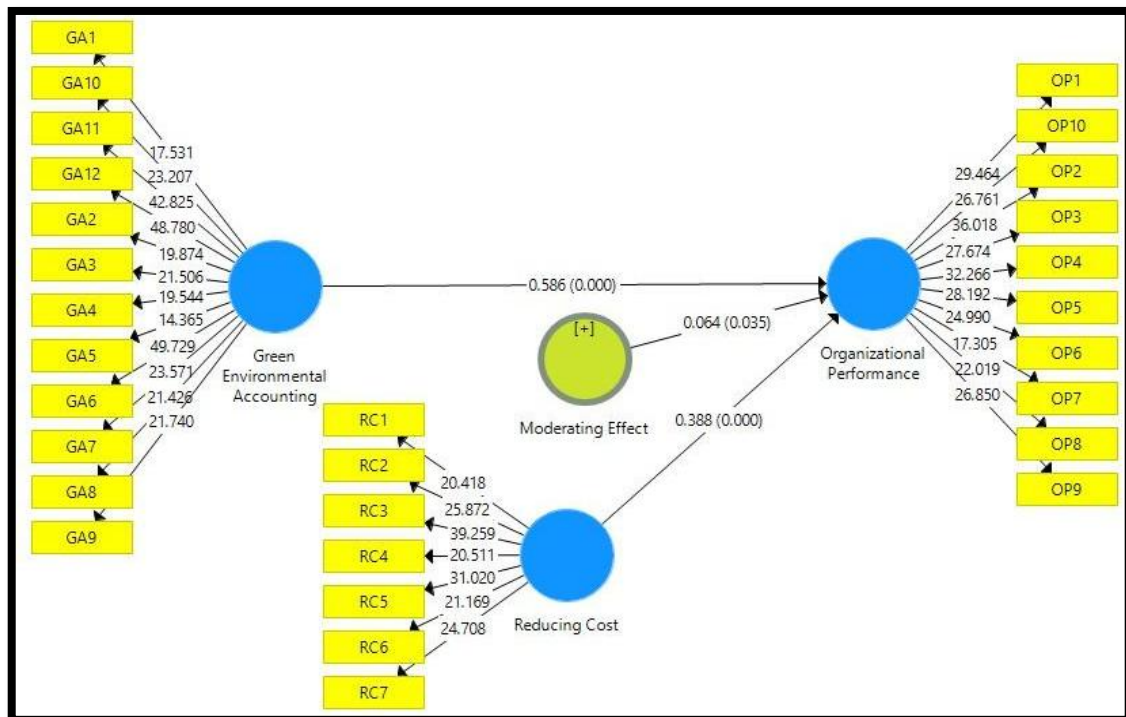


Fig. (4): Model 3 Results; Source: Smart Pls 3

The moderating impact [Green Environmental Accounting * Reducing Cost] ($\beta = 0.064$, $t = 2.116$, $p = 0.035$); therefore, the moderating impact of $GA * RC \rightarrow OP$ demonstrates that the interaction between GA and RC is significant, thus H3 supported.

Table (9): Moderation analysis in PLS-SEM

Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Reducing Cost -> Organizational Performance	0.388	0.387	0.061	6.379	0.000
Green Environmental Accounting -> Organizational Performance	0.586	0.586	0.065	9.041	0.000
Moderating Effect -> Organizational Performance	0.064	0.061	0.030	2.116	0.035

To confirm moderation effect result, a graphical impact of moderation effect was tested. Figure 5 illustrated the plotted graph used for analyzing the moderating effect of RC on the nexus between GA and OP. This suggests that RC positively moderates the nexus between GA and OP.

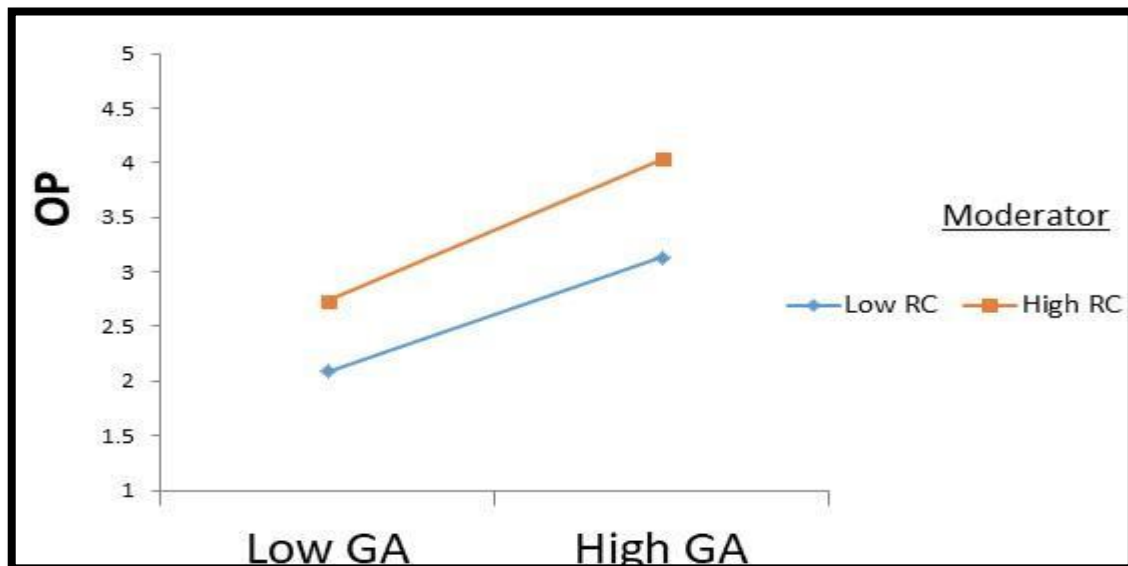


Fig. (5): Interaction diagram of RC between GA and OP.

4-6-4. moderation-mediation Test

H4: Moderating Effect of Reducing Cost on the Relationship between Green Environmental Accounting on Organizational Performance by Sustainability Strategy.

In model 4, Sustainability Strategy was included as a mediator, table 10 shows The specific indirect effects indicate that access to Sustainability

Strategy that significant mediating role in the relationship between Green Environmental Accounting and Organizational Performance ($B=0.131$, $t=4.163$, $p=0.000$), also the moderating impact [Green Environmental Accounting * Reducing Cost] ($\beta= 0.087$, $t = 3.550$, $p = 0.000$); Therefore, the result supports the fourth hypothesis, where Green Environmental Accounting affects Organizational Performance to a greater extent by together both variables: Sustainability Strategy as a mediating variable and cost reduction as a moderating variable, thus H4 supported.

Table (10): Moderated Mediation test result by PLS

Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Green Environmental Accounting -> Organizational Performance	0.484	0.480	0.056	8.665	0.000
Green Environmental Accounting -> Sustainability Strategy	0.501	0.506	0.065	7.708	0.000
Moderating Effect -> Organizational Performance	0.087	0.085	0.024	3.550	0.000
Reducing Cost -> Organizational Performance	0.342	0.343	0.051	6.749	0.000
Sustainability Strategy -> Organizational Performance	0.262	0.262	0.043	6.160	0.000
Green Environmental Accounting -> Sustainability Strategy -> Organizational Performance	0.131	0.134	0.032	4.163	0.000

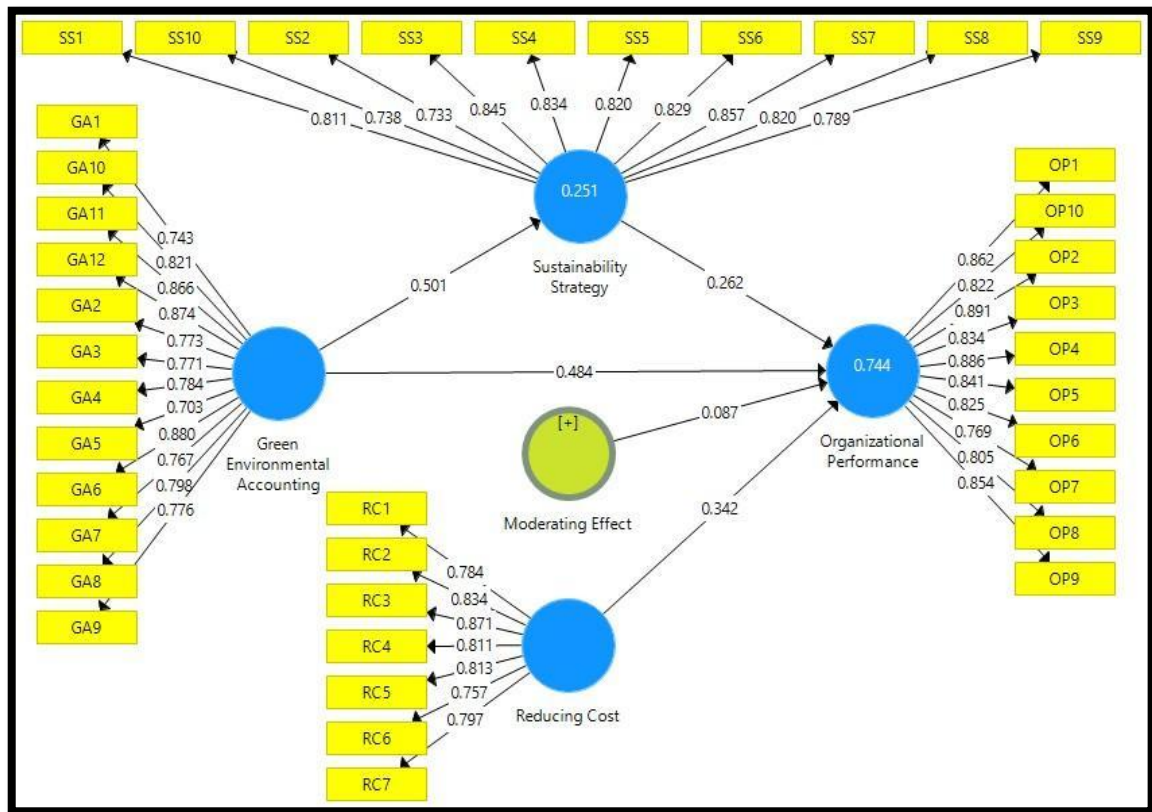


Fig. (6): Model 4 Results; Source: Smart Pls 3

To confirm the result of the smart PLS bootstrapping for moderating-mediating. Latent variable scores were analyzed using the PROCESS macro in SPSS, and the moderated mediation index for the conditional indirect effect of Green Environmental Accounting on Organizational Performance by Sustainability Strategy (mediator) based on Reducing Cost (moderator) was significant. As reported in Table 11, the conditional indirect effect rises with the moderator and retains statistical significance, confirming the robustness of the moderated mediation effect. The indirect effect is greater at higher values of the moderator (+ 1 SD) of RC was, $B = 0.562$, 95% percentile CI [0.462, 0.661], it was significant for medium values of RC, $B = 0.473$, CI [0.392, 0.554] and for small values (- 1 SD) of RC, $B = 0.384$, CI [0.292, 0.476]. The indirect effect is greater at higher values of the moderator. Thus, H4 was accepted.

Table (11): Moderated Mediation test result by macro in SPSS

Panel A: Conditional indirect effects of X on Y						
Moderator Reducing Cost	Effect Value	SE	t	P	LLCI	ULCI
Low (-0.513)	0.384	0.047	8.212	0.000	0.292	0.476

Medium {mean} (0.000)	0.473	0.041	11.486	0.000	0.392	0.554
High (+.513)	0.562	0.050	11.128	0.000	0.462	0.661
Panel B: Indirect effect(s) of X on Y:						
Mediator Sustainability Strategy	Effect Value		SE	LLCI	ULCI	
Green Environmental Accounting -> Sustainability Strategy -> Organizational Performance	0.130		0.031	0.075	0.193	

There was a significant interaction between GA and RC, where $B = 0.173$, $p = 0.001$, and confirmed this R square change $\Delta R^2 = 0.013$ and significant. So, this confirms the above result, and so on **H4 supported**.

Table (12): Regression results by macro in SPSS

Construct	Path						Path				
	GA -> SS						RC -> OP/GA->OP				
	B	SE	t	P	LLCI	ULCI	B	SE	P	LLCI	ULCI
Green Environmental Accounting	0.484	0.054	9.008	0.000	0.378	0.590	0.473	0.041	0.000	0.392	0.554
Sustainability Strategy	-	-	-	-	-	-	0.269	0.040	0.000	0.190	0.348
Reducing Cost	-	-	-	-	-	-	0.364	0.041	0.000	0.283	0.444
Moderating Effect	-	-	-	-	-	-	0.173	0.051	0.001	0.074	0.273
Note. N = 247. Model for the GA -> SS path $R^2 = 0.249$, $F(1, 245) = 81.145$, $p = 0.000$, Model for SS -> OP path and GA->OP path $R^2 = 0.737$, $F(4, 242) = 169.414$, $p = 0.000$.											

5. Conclusion: This study investigated the impact of green environmental accounting on organizational performance in Iraqi manufacturing companies, considering the mediating role of sustainability strategy and the moderating effect of cost reduction. The findings reveal that green environmental accounting practices positively and significantly influence organizational performance, both directly and indirectly through the mediating effect of sustainability strategy.

Furthermore, cost reduction initiatives positively moderate the

relationship between green environmental accounting and organizational performance, amplifying the positive impact of green accounting practices. These findings highlight the importance of adopting a holistic approach that integrates green environmental accounting, sustainability strategies, and cost reduction initiatives to enhance organizational performance in the manufacturing sector.

The study contributes to the existing literature by providing empirical evidence on the interplay between these factors in the Iraqi manufacturing context. It also offers practical implications for managers and policymakers, emphasizing the need to prioritize green accounting practices, sustainability strategies, and cost-cutting measures to improve organizational performance while addressing environmental concerns.

However, it is important to acknowledge the limitations of this study, such as the potential for common method bias due to the use of self-reported data and the limited generalizability of the findings to other industries or geographical contexts.

References

1. Abdelhalim, A. M., Ibrahim, N., & Alomair, M. (2023). The moderating role of digital environmental management accounting in the relationship between eco-efficiency and corporate sustainability. *Sustainability*, 15(9), 7052.
2. Abdulwahid, Ghazi Mohammed. (2014). The role of environmental accounting and environmental auditing in activating sustainable development. *Tikrit Journal of Administrative and Economic Sciences*, Vol. 10, No. 32.
3. Akeem, L. B. (2017). Effect of cost control and cost reduction techniques in organizational performance. *International business and management*, 14(3), 19-26.
4. Al-Gasaymeh, A. S., Kaddumi, T. A., & Qasaimeh, G. M. (2021). Measuring risk exposure in the banking sectors: evidence from Gulf Cooperation countries. *Journal of Financial Economic Policy*, 13(4), 491-501.
5. Al-Harawi, Maryam Ayad Ahmed, & Sajad, Hiyam. (2023). The impact of environmental auditing on enhancing voluntary disclosure of sustainability information: An exploratory study on a sample of individuals in industrial companies. *Tikrit Journal of Administrative and Economic Sciences*, Vol. 19, No. 62, Part 1, pp. 17–34. *Tikrit University – College of Administration and Economics*.
6. Appannan, J. S., Mohd Said, R., Ong, T. S., & Senik, R. (2023). Promoting sustainable development through strategies, environmental management accounting and environmental performance. *Business Strategy and the Environment*, 32(4), 1914-1930.
7. Aziz Muhammad Aziz. (2018). the role of accounting disclosure of environmental costs in Iraqi industrial companies: An applied study on some companies listed on the Baghdad Stock Exchange. *Muthanna Journal of Administrative & Economic Sciences*, 8(4).

8. Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the academy of marketing science*, 16, 74-94.
9. Bassey, B. E., Effiok, S. O., & Eton, O. E. (2013). The impact of environmental accounting and reporting on organizational performance of selected oil and gas companies in Niger Delta Region of Nigeria. *Research Journal of finance and accounting*, 4(3), 57-73.
10. Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern methods for business research*, 295(2), 295-336.
11. Chin, W. W., Marcolin, B. L., & Newsted, P. R. (2003). A partial least squares latent variable modeling approach for measuring interaction effects: Results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study. *Information systems research*, 14(2), 189-217.
12. Cohen, J. (2013). *Statistical power analysis for the behavioral sciences*. Routledge.
13. Cohen, N., & Robbins, P. (2011). *Green business: An A-to-Z guide*, Thousand Oaks. In *green business: An A-to-Z guide*.
14. Endiana, I., DICRIYANI, N. L. G. M., ADIYADNYA, M. S. P., & Putra, I. P. M. J. S. (2020). The effect of green accounting on corporate sustainability and financial performance. *The Journal of Asian Finance, Economics and Business*, 7(12), 731-738.
15. Fares, Dhia Mohsen, & Zabin, Dr.Haider Atta. (2021). The impact of accounting for environmental and social costs in the economic unit. *Al Kut Journal of Economics and Administrative Sciences*, 13(42).
16. Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, 18(1), 39-50.
17. Gunarathne, A. N., Lee, K. H., & Hitigala Kaluarachchilage, P. K. (2021). Institutional pressures, environmental management strategy, and organizational performance: The role of environmental management accounting. *Business Strategy and the Environment*, 30(2), 825-839.
18. Hair Jr, J. F., Matthews, L. M., Matthews, R. L., & Sarstedt, M. (2017). PLS-SEM or CB-SEM: updated guidelines on which method to use. *International Journal of Multivariate Data Analysis*, 1(2), 107-123.
19. Hair Jr, J., Sarstedt, M., Hopkins, L., & G. Kuppelwieser, V. (2014). Partial least squares structural equation modeling (PLS-SEM) An emerging tool in business research. *European business review*, 26(2), 106-121.
20. Hair, J. F., Gabriel, M., & Patel, V. (2014). AMOS covariance-based structural equation modeling (CB-SEM): Guidelines on its application as a marketing research tool. *Brazilian Journal of Marketing*, 13(2).
21. Hair, J. F., Ringle, C. M., & Sarstedt, M. (2013). Partial least squares structural equation modeling: Rigorous applications, better results and higher acceptance. *Long range planning*, 46(1-2), 1-12.

22. Hair, J., Hollingsworth, C. L., Randolph, A. B., & Chong, A. Y. L. (2017). An updated and expanded assessment of PLS-SEM in information systems research. *Industrial management & data systems*, 117(3), 442-458.
23. Homan, H. S. (2016). Environmental accounting roles in improving the environmental performance and financial performance of the company. *South East Asia J Contemp Bus Econ Law*, 11, 9-15.
24. Hulaihel, Prof. Dr Jalelah Edan & Salman, Saja Mohammed. (2022b). Economic Performance Evaluation and Reflection on Achieving Sustainable Development. *Entrepreneurship journal for fiinance and business* Vol-3, Issue 3
25. Latan, H., Jabbour, C. J. C., de Sousa Jabbour, A. B. L., Wamba, S. F., & Shahbaz, M. (2018). Effects of environmental strategy, environmental uncertainty and top management's commitment on corporate environmental performance: The role of environmental management accounting. *Journal of cleaner production*, 180, 297-306.
26. Nguyen, T. A. (2019). Improving organizational performance by implementing customer complaint management through socio economic approach to management in a case study of SME, Vietnam (Doctoral dissertation, Université de Strasbourg).
27. Okoye, P. V. C., & Asika, E. R. (2013). An appraisal of sustainability environmental accounting in enhancing corporate productivity and economic performance. *International Journal of Advanced Research*, 1(8), 685-693.
28. Okoye, P. V. C., Oraka, A., & Ezejiofor, R. (2013). The effects of sustainability reporting on the growth of corporate organizations in Nigeria. *European journal of economics, finance and administrative sciences*, 59(8), 12-34.
29. Qasaimeh, G. M., & Jaradeh, H. E. (2022). The impact of artificial intelligence on the effective applying of cyber governance in jordanian commercial banks. *International Journal of Technology, Innovation and Management (IJTIM)*, 2(1).
30. Rohit, R., & Mythili, G. (2022). A Study on Environmental Accounting with Special Reference to Environmental Cost Management. *Baltic Journal of Law & Politics*, 15(4), 1033-1046.
31. Rubaie, Fatima Alzahraa Shamel Asi. (2023). The Impact of the Sustainability Strategy in Reducing Costs and Improving Competitive Advantages - An Applied Study in Iraqi Industrial Companies. Doctor of Philosophy in Accounting Sciences. Higher Institute of Accounting and Business Administration (Iscae).
32. Schaltegger, S., & Synnestvedt, T. (2002). The link between 'green'and economic success: environmental management as the crucial trigger between environmental and economic performance. *Journal of environmental management*, 65(4), 339-346.
33. Sumiati, A., Susanti, S., Maulana, A., Indrawati, L., Puspitasari, D., & Indriani, R. (2021). Influence of green accounting and environmental performance on profitability.
34. Sundarasan, S., et al. (2024). Environmental Accounting and Sustainability: A Meta-Synthesis Review (1995–2024). *Sustainability*, 16(21), 9341. <https://doi.org/10.3390/su16219341>
35. Tjahjadi, B., Soewarno, N., Astri, E., & Hariyati, H. (2019). Does intellectual capital matter in performance management system-organizational performance relationship?

Experience of higher education institutions in Indonesia. *Journal of intellectual capital*, 20(4), 533-554.

36. Ullah, A., Nawli, N. M., & Khan, M. H. (2020). BAT algorithm used for load balancing purpose in cloud computing: an overview. *International Journal of High Performance Computing and Networking*, 16(1), 43-54.
37. Wahyuni, W., Meutia, I., & Syamsurijal, S. (2019). The effect of green accounting implementation on improving the environmental performance of mining and energy companies in Indonesia. *Binus Business Review*, 10(2), 131-137.