International Review of Management and Marketing

ISSN: 2146-4405

available at http: www.econjournals.com

International Review of Management and Marketing, 2026, 16(5), 544-555.

Environmental Management Accounting through the Lenses of Stakeholder, Institutional, and Legitimacy Theories: Implications with Environmental and Financial Performance in Albanian Companies

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Received: 02 March 2026 **Accepted:** 10 June 2026 **DOI:** https://doi.org/10.32479/irmm.24072

ABSTRACT

The present study investigates the implementation and implications of environmental management accounting (EMA) in Albanian companies' environmental performance (EP) and financial performance (FP) through the perspectives of stakeholder, institutional and legitimacy theories. The research further, explores the impact of environmental performance on financial performance (EP). This study tested the proposed hypotheses in the research model utilizing the data collected from 287 participants, accountants and senior officers employed in companies across various industries in Albania. Structural equation modeling (SEM) was utilized to assess the collected data and to examine the relationships between the constructs. The findings of this study validate the direct and positive relationship between environmental management accounting (EMA) with both environmental performance (EP) and financial performance (EP) considered separately. Moreover, the empirical analysis confirmed that EP positively contributes to the enhancement of FP among Albanian companies. The empirical findings underscore the strategic importance of EMA implementation in emerging economies where environmental and financial objectives are often perceived as conflicting rather than complementary.

Keywords: Coercive Pressures, Environmental Management Accounting, Sustainable Development, Financial Performance
JEL Classifications: M41, Q51, Q56

1. INTRODUCTION

The impact of human activities on environment have become more tangible through time and manifested through various factors such as climate change, polluted air and water, increased waste accumulation and water scarcity. The severe degradation of environment has sparked widespread public concerns characterized by increased public environmental consciousness. The growing awareness has intensified the pressure on organizations to act responsibly and implement sustainable practices and invoke a legitime demand for greater transparency and accountability related to environmental impacts (Xiaomei, 2004). In line with this approach governments and different regulatory bodies have responded by tightening environmental laws and regulations, encouraging sustainable practices. To address the on-growing pressures for more transparency regarding environmental impacts and sustainable practices, companies are increasingly compelled to integrate environmental and social considerations into all aspects of their operations (Chen and Huang, 2020; Christmann, 2000). The efforts to improve environmental information disclosure and integrate sustainable practices into business objectives has significantly influenced the accounting field, where two core

approaches have submerged: the critical perspective and the pragmatic perspective (Wang and Qi, 2020; Baker and Schaltegger, 2015; Gray, 2010). The critical approach conceptualize accounting as a tool oriented toward environmental transparency and accountability, focusing more in auditing and external reporting (Al-Tuwaijri et al., 2004; Gray, 2010). The pragmatic approach on the other hand, argues that accounting should assume a more pro-active role in addressing environmental issues by supporting internal reporting and providing useful information to managerial decision-making to enhance environmental performance within organizations (Baker and Schaltegger, 2015; Wang and Qi, 2020; Ikram et al., 2019). The pragmatic approach prompted the adoption of environmental management accounting (EMA) as a key strategic managerial tool, which combines essential environmental and financial data relevant to the internal decision-making (Sari et al., 2021; Deswanto and Siregar 2018). Through the identification and analysis of the environmental data, managers can assess different environment-related costs, enabling them to recognize inefficiencies, improve resource efficiency and thereby reducing environmental costs. From this perspective EMA adoption enhances organizational transparency by ensuring external stakeholders of the compliance with environmental regulations while simultaneously contributes in improving environmental performance (Danso et al., 2019). The adoption and implementation of EMA can be further explored through the perspectives of three main theories: stakeholder, institutional and legitimacy theory.

Stakeholder theory suggests that companies should adopt and implement EMA to respond to growing expectations from government regulatory institutions, customers, suppliers, communities and different investors for transparent and responsible environmental performance. The expectations of each stakeholder can influence organizations behavior and EMA implementation in diverse ways. Regulatory institutions, compel organizations to measure and report environmental costs under the pressure of environmental laws and reporting standards (Liu and Zhang 2022). Certain group of customers can shift the demand to environmentally responsible suppliers and products, motivating companies to report their environmental impacts and to develop green products and services. Suppliers may require certain environmental standards as a condition for collaboration. Local communities can pressure the organizations to disclose their environmental impact, while investors can request environmental performance data to assess the environmental and financial risks before providing funding (Fuzi et al., 2020). From the company's standpoint EMA implementation and the disclosure of environmental costs and risks contributes in increasing the sense of responsibility of the management and consequently the sustainable initiatives will be more likely to be promoted (Vola et al., 2025; Deswanto and Siregar 2018). According to the stakeholder theory despite the fact that EMA implementation is associated with added costs and expenses, in the long-term its implementation can result profitable. In long-term the implementation of sustainable practices positively influences firm's reputation and consequently enforces customers loyalty and contributes to the augmentation of market share. EMA implementation significantly contributes in lowering the environmental risks such as fines and penalties and also increases operational efficiency through optimizing environmental inputs and waste reduction (Hadj, 2020). Thus, stakeholder theory links directly EMA implementation with company's environmental and economic performance (Mohamed 2018; Deswanto and Siregar 2018; Baloch et al., 2020).

The institutional theory emphases the fact that organizations adopt certain environmental practices not only to increase efficiency but also as a response to institutional pressures. Institutional pressures are materialized in forms of law, regulations and norms which can define what is considered appropriate or legitime behavior. According to institutional theory the organizational sustainable practices and behaviors are significantly influenced by institutionalized formal and informal elements such as regulations and laws, culture norms and social expectations (Ferdous et al., 2019; DiMaggio et al., 1983). Institutional pressures are exhibited through three main forms: coercive pressure, normative pressure and mimetic pressure.

Coercive pressure is exerted by powerful stakeholders such as governments, international organizations and financial institutions in form of legal or environmental regulatory requirements that are compulsory for companies. Under coercive pressure organizations adopt and implement EMA to meet these regulations to avoid different legal liabilities and penalties thus, avoiding reputational damage (Berrone, et al., 2013; Ferdous and Boyce 2019). According to Berrone et al. (2013) in developing countries, where environmental laws and regulations are scarce, the coercive pressure may come from international buyers and from different foreign investors and associations. In developing countries like in the case of Albania, coercive pressure plays a vital role in EMA implementation.

Normative pressure is primarily manifested through encouragement and incentives provided by different professional associations, academic institutions and international bodies, urging companies to adopt EMA. Normative pressure generally is derived from suppliers, customers, media and different social entities (Agustia et al., 2019). Under normative pressure companies are encouraged to adopt EMA mainly to manage public perception and transparency in regards to environmental practices therefore, significantly contributing in enhancing company's public image and reputation (Dias-Sardinha and Reijnders 2001).

Mimetic pressure emerges when organizations imitate the best practices of successful competitors to gain legitimacy or competitive advantage. Mimetic pressure emerges when companies engage in intense competition by responding to their competitors' actions and behaviors. If the competitors are utilizing EMA the companies under mimetic pressure respond in similar behaviors by adopting EMA (Azzone et al., 1996; Ferdous et al., 2019). Therefore, by reacting to mimetic pressures companies can increase their environmental performance and increase their competitive advantage (Deswanto and Siregar 2018; Doorasamy and Garbharran 2015; Agustia et al., 2019; DiMaggio and Powell, 1983).

Legitimacy theory is based on the concept that the organizations are interested in ensuring that their activities are perceived as

socially acceptable and are consistent with the values, norms and expectations of the community where they operate or of the society at large. If they lose legitimacy they risk of losing stakeholder support, reputation and even the social support to continue their activity (Burlea and Popa, 2013; Latan et al., 2018). Through the adoption of EMA, companies can demonstrate to the third parties that they are environmentally responsible. In this perspective EMA is not just a reporting tool for the management but also a communication strategy with external stakeholders to maintain legitimacy and thus, enhancing public reputation. The growing awareness of environmental protection, increasing government regulations and customer consciousness towards the ethical issues have forced firms to be more environmentally responsible (Agan et al., 2013; Chen and Huang, 2020). Companies that utilize EMA are perceived as more environmentally focused and often enjoy better financial performance through the reinforcement of customer trustworthiness and on the other side by contributing in lowering future environmental risks (Mathews, 1995; Zyznarska-Dworczak, 2018; Deegan, 2002).

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Although different theories such as that of stakeholder, institutional and legitimacy theory have different perspectives and approaches, they converge on the understanding that companies do not operate in isolation rather than in a broader social and environmental context where different external and internal factors exert significant influence on their behavior (Susanto and Meiryani 2019; Malavige and Wiesinghe, 2021). The common denominator of these three theories is the emphasis on adoption of sustainable practices and transparency regarding the company's environmental impacts (Pillay et al., 2025; Montabon et al., 2007). Initially propelled by stakeholder demand under different institutional pressures, EMA has since evolved into a pivotal managerial instrument that support sustainable practices by identifying and minimizing environmental costs therefore, improving firm's cost-effectiveness (Appiah et al., 2022). EMA has a pivotal role in supporting managerial decision-making across diverse strategic functions, including cost and efficiency improvement decisions, pricing and investment decisions, product and market decision and ultimately, strategic planning (Abdelhalim et al., 2023; Mayndarto and Murwaningsari, 2021; Dias-Sardinha and Reijinders 2001; Gunarathne et al., 2023). This transformation reflects a continuous cycle of improvement, positioning EMA as an indispensable managerial tool that integrates environmental considerations into organizational decision-making, inducing efficient resource utilization, consequently enhancing both environmental and financial performance (Burritt et al., 2002; Jermsittiparsert et al., 2020; Henri and Journeault, 2008). Although the main drivers of EMA implementation may vary the majority of studies imply that environmental management accounting (EMA) is a pivotal tool that at the same time accomplishes the objectives of all three theoretical perspectives translating various external pressures and stakeholders' expectations into tangible organizational reaction by enhancing company's both environmental and financial performance (Mayndarto and Murwaningsari, 2021; Huynh and Lan, 2021; Doorasamy and Garbharran, 2015; Erandi and Jayasinghe, 2021; Henri and Journeault, 2008; Watson et al., 2004; Russell et al., 2017).

2.1. The Relationship between Environmental Management Accounting (EMA) and Environmental Performance (EP)

Environmental performance (EP) is the evaluation of an organization's environmental policies, objectives and responsibilities regarding the efficient use of resources, the reduction of waste and emissions, and commitment to the environmental regulations (Sroufe, 2003; Dias-Sardinha and Reijnders, 2001). Environmental management accounting (EMA) provides to the companies a set of indicators to identify, measure and manage the environmental costs by providing an analytical framework that aid decision-making in optimizing resource utilization, thereby enhancing environmental performance (Saeidi et al., 2018; Zandi and Lee, 2019; Christ and Burritt, 2013). Different authors such as Deb et al. (2023); Amir and Khan (2020); Burritt et al. (2002), Gibson and Martin (2004); Latan et al. (2018); Susanto and Meiryani (2019); Malavige and Wiesinghe (2021); Albertini (2013); Huynh and Nguyen (2024); Christine et al. (2019) argue that EMA has an essential contribution in enhancing firm's environmental performance (EP) that extends beyond the optimization of environmental costs that contributes in the development of sustainable processes and greener products.

In a study conducted in manufacturing firms in Pakistan, Deb et al. (2023) found that EMA is positively and significantly associated with EP and financial performance (FP). Amir and Khan (2020), in a study based on manufacturing firms of Pakistan found that environmental management accounting (EMA) and control system significantly mediate the relationship between top management commitment and environmental performance. Ultimately, the authors conclude that a firm's environmental performance can be improved through the environmental management accounting. In a study of Saribu et al. (2024) conducted in healthcare industry among 77 hospitals in Indonesia the authors demonstrated the use of EMA enables monitoring and assessment of the environmental effects of hospital operations. The findings empirically indicate that the adoption of EMA and green innovation impacts hospital performance. Huynh and Nguyen (2024) in their study across various industries in Vietnam conclude that businesses in competitive and unpredictable environments should prioritize the implementation of environmental management accounting practices to improve their environmental performance. Malavige and Wiesinghe (2021) in their study conducted in selected SMEs in Sri Lanka concluded that EMA practices have a direct impact in environmental performance by reducing environmental damage and increasing ecological sustainability. In a similar study by Christine et al. (2019) targeting SMEs in Indonesia the authors conclude that environmental strategies are significantly impacted by EMA, Furthermore, the findings empirically confirm the significant and positive relationship between EMA and EP of SMEs in Indonesia. Jermsittiparsert et al. (2020), in their study explored the relationship of green innovation, environment proactiveness and environment management accounting with environment performance and energy efficiency in selected companies in

Thailand. Among other findings the authors provide empirical evidence linking EMA with EP. Same result was obtained by Susanto and Meiryani (2019) in their study in Indonesian SMEs, where authors empirically confirmed the positive and significant impact of EMA on EP. Following the insights from the above literature this research proposes the following hypothesis:

- Hypothesis 1: Environmental management accounting (EMA) has a positive and significant effect on environmental performance (EP).

2.2. The Relationship between Environmental Management Accounting (EMA) and Financial Performance (FP)

Environmental management accounting (EMA) has been increasingly recognized as a strategic tool that provide vital environmental information to the decision-making to optimize resource utilization, lowering operating costs and reduce waste therefore, providing a substantial role in improving firm's financial performance (Schaltegger et al., 2003; Watson et al., 2004). Different authors such as Pillay et al. (2025); Molina-Azorín et al. (2009); Nyahuna and Doorasamy (2023); Deb et al. (2023); Erandi and Jayasinghe (2021); Prasetya and Safitri, (2023); Mayndarto and Murwaningsari (2021); Saeidi et al. (2018); Mayndarto and Agustine (2021); Erandi and Jayasinghe (2021); Nyahuna (2022); Amir and Khan (2020), argue that EMA has direct impact in firms' financial performance. According to the authors EMA has a pivotal role in quantifying environmental data with financial information enabling firms to support cost-reduction and efficiency gains strategies, improve resource productivity, enhance decision-making, strengthening environmental risk management and contributing in the development of greener products and markets which can directly impact firms' financial performance.

Pillay et al. (2025) in their study conducted in the wooden furniture manufacturing in South Africa, found a positive correlation between EMA implementation and FP. According to the authors EMA practices reported improved profitability, significant cost reductions in waste management and resource utilization, enhancing overall FP compared to the companies that do not implement EMA practices. The same results were obtained by Deb et al. (2023) in a study targeting manufacturing firms in Pakistan, the authors found that EMA is positively and significantly associated with EP and financial performance (FP). Prasetya and Safitri (2023) conducted a similar study targeting textile manufacturing companies in Indonesia. The authors empirically found that EMA has a direct and significant effect on financial performance, while the working capital management contributes to the indirect effect of EMA on FP. In a study conducted in domestically licensed commercial banks in Sri Lanka Erandi and Jayasinghe (2021) found a significant and positive relationship between environmental information, environmental evaluation, environmental laws and environmental cost saving with financial performance. The authors further, empirically found that EMA practice has a positive and significant impact on FP in licensed commercial banks in Sri Lanka.

Mayndarto and Murwaningsari (2021) found a significant effect of environmental management accounting to encourage economic performance. In a similar study Amir and Khan (2020) indicate the significant relationship of EMA with EP as a mediator between top management commitment and firm's environmental performance (EP). In a study of Nyahuna (2022) conducted on hospitality industry of South Africa empirically proved the clients preferred the hotels that promote environmentally initiatives, promoted by EMA, establishing a significant relationship between EMA and FP. In another study by the same author Nyahuna and Doorasamy (2023), the researchers conducted research in mining companies located in South Africa. The study found that two accounting measures, namely return on assets and net profit margin, had no significant relationship with EMA practices. However, the study also revealed that one accounting-based measure, namely returns on equity, had a positive and significant relationship with EMA. Their findings provide empirical evidence that EMA practices increase financial sustainability in an emerging economy such as South Africa. In a similar study of Huynh and Lan (2021) conducted among 298 publicly listed enterprises in Vietnam's three main stock exchanges, the authors empirically confirm a positive influence of environmental management accounting on economic performance and environmental performance that in turn puts a positive impact on economic performance. Based on the above findings the following hypothesis is proposed:

- Hypothesis 2: Environmental management accounting (EMA) has a positive and significant effect on financial performance (FP).

2.3. The Relationship between Environmental Performance (EP) and Financial Performance (FP)

Environmental performance reflects a firm's activities and its utilization of the natural resources and represents the tangible outcomes of environmental management accounting (Klassen and Whybark, 1999). The relationship between environmental performance (EP) and financial performance (FP) has sparked debate among researchers due to divergent empirical outcomes. Some researchers such as Collison et al. (2004); King and Lenox (2001) state that the relation between EP and FP cannot be proved due to the difficulties in the quantification of environmental decisions' consequences on financial performance. Other researchers such as McPeak et al. (2010); Yu et al. (2009) have concluded that the EP has a negative influence on FP due to timing discrepancy between environmental initiatives implementation and the timeframe in which the financial outcome becomes tangible. Even though the divergences regarding the topic, most of the researchers confirm a significant and positive relationship between EP and FP (Appiah et al., 2025; Huynh and Lan, 2021; Al Tuwaijri et al., 2004, Bassetti 2021; Al-Tuwaijri et al., 2004; Montabon et al., 2007; Albertini, 2013; Deb et al., 2023).

More concretely Albertini (2013) conducted a meta-analysis of 52 studies over a 35-year period that confirms a positive relationship between environmental performance and financial performance, highlighting that this relationship is significantly shaped by different quantifiable approaches. In a study conducted in 224 manufacturing SMEs in Ghana, Appiah et al. (2025) states that the materialized products of environmental performance like green process innovation and green products supported by suppliers and customers can be directly translated into better

financial performance. Deb et al. (2023) in their research found a substantial relationship between EP and FP. Montabon et al. (2007) conducted a research based on environmental data and performance indicators among 45 corporate reports to explore the relationship between environmental management practices and firm performance. The result confirms the significant and positive relationship between environmental performance and specific measures of firm's overall performance. Al-Tuwaijri, et al. (2004) empirically suggested that "good" environmental performance is significantly associated with "good" economic performance. In a similar study conducted by Huynh and Lan (2021) on 298 publicly listed enterprises in Vietnam, the author empirically explored the relationship between environmental management accounting, economic performance, environmental performance. The study indicates a positive effect of environmental management accounting on both economic performance and environmental performance that results in stronger impact of environmental performance in economic performance. Bassetti et al. (2021) considered a panel of 998 US companies over a 14 years period of time to explore the relationship between environmental performance and financial performance measured by return on assets and equity. The author concludes that green firms tend to be more efficient in generating future wealth resulting in overall better financial performance. Grounded on the above empirical evidence the following hypothesis is presented:

- Hypothesis 3: Environmental performance (EP) has a positive and significant effect on financial performance (FP).

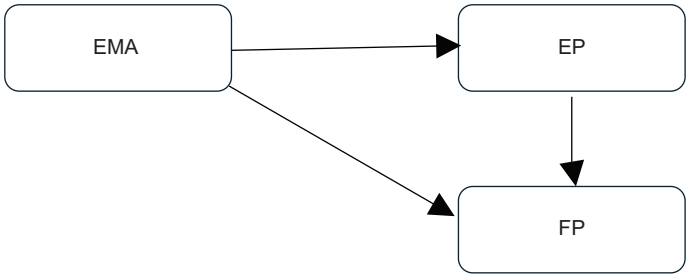
The hypothesized model research of this study is illustrated in Figure 1.

3. METHODOLOGY

The objective of this empirical study aims to measure the effect of environmental management accounting (EMA) on environmental performance (EM) and financial performance (FP), while also examining the relationship between EP and FP. To address this research goal, the study collected data from targeted companies across various industries in Albania. To ensure the relevance of the research the targeted companies were selected based on several criteria such as the current capabilities of adopting and implementing EMA, the number of employees and the potential environmental impact.

To examine the hypotheses of the study, the researcher designed an empirical quantitative research study through the questionnaire's utilization. The questionnaires were distributed to the personnel that were more likely to be knowledgeable and engaged in sustainable practices, specifically accountants and senior officials. For the purpose of data collection, 430 questionnaires were distributed across 96 targeted companies, resulting in 287 completed responses between November 2025 and January 2026, which corresponds to a response rate of approximately 66.7%. In structural equation modeling, Hair et al. (2006) suggested that the sample size needs to be a minimum of 5 times larger than the number of variables for factor analysis. As a general rule, larger sample sizes are highly preferred. A sample size between 200 and 400 is normally recommended and accepted as a critical sample size.

Figure 1: Research model examining the direct relationships between variables



To analyze the data and empirically test the proposed hypothesis, structural equation modeling (SEM) was employed. SEM is a multivariate statistical tool used to test and analyze complex relationships between different variables simultaneously using multiple regression analysis. Moreover, it integrates measurement models with structural models, allowing researchers to account for latent constructs and measurement error while testing theoretical frameworks (Hair et al., 2006). It combines elements of regression and factor analysis to assess casual relationships between observed and unobserved variables (latent) (Hoyle, 2014). Each observed variable is measured using Likert scale methodology from 5 (strongly agree) to 1 (strongly disagree). The structural model is composed of three unobserved variables: EMA, EP and FP. To measure the constructs proposed by the model, a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree") were utilized. The observed variables or measurement items representing each construct were selected and adopted by the authors based on prior studies of Susanto and Meiryani (2019); Malavige and Wiesinghe (2021); Huynh and Nguyen (2024); Christine et al. (2019); Azzone et al. (1996); Dias-Sardinha and Reijnders (2001); Deb et al. (2023); Amir and Khan (2020); Burritt et al. (2002); Albertini (2013); Latan et al. (2018) and Liu and Zhang (2022). Concretely six items were selected and adopted for each construct EMA, EP and FP respectively (Table 1).

4. DATA ANALYSIS AND INTERPRETATION

The data analyses were conducted using IBM SPSS Statistics 23.0 for descriptive statistics and reliability and AMOS Graphics 23.0 for hypothesis testing, utilizing structural equation modeling (SEM). The descriptive statistic indicates that approximately 37.2% of the respondents were male and 62.8% female. Regarding the level of education aproxiately 28% had completed a bachelor's degree, 64% a master's degree, and 8% possessed postgraduate certifications. In terms of professional experience 18.4% of the respondents had <5 years of work experience, 35.5% had between 6 and 10 years of experience and the majority aproximately (46.1%) had over 10 years of experience.

4.1. Measurement Model

The first step in data analyzing is variable screening form missing data, unengaged responses and outliers. There were no outliers and unengaged responses. The missing data were <5% so the mean imputation method was utilized. The items were subject

Table 1: Measurement model results

Code	Constructs and items description	Factor loadings (CFA)	Cronbach's alpha	Composite reliability	AVE
EMA	Environmental management accounting		**0.875**	**0.853**	**0.556**
• EMA1	• Our organization collects and analyzes data on material, energy, and waste flows related to production activities.	0.659			
• EMA2	• The organization uses environmental performance indicators for internal performance evaluation.	0.72			
• EMA3	• Environmental costs (e.g., waste disposal, energy use, emissions) are routinely identified and monitored.	0.91			
• EMA4	• EMA is used to identify opportunities for resource efficiency and cost savings.	0.655			
• EMA5	• Managers receive periodic reports containing both environmental and financial information.	0.692			
• EMA6	• Environmental information is communicated across departments for continuous improvement.	0.798			
EP	Environmental performance		**0.878**	**0.879**	**0.549**
• EP1	• Levels of waste generation and emissions have decreased due to environmental initiatives.	0.689			
• EP2	• The organization uses renewable or environmentally friendly materials in its operations	0.726			
• EP3	• Our organization has reduced energy consumption over the past 3 years.	0.805			
• EP4	• We have achieved improvements in resource utilization efficiency (e.g., water, raw materials).	0.799			
• EP5	• Environmental incidents or violations have been significantly reduced	0.767			
• EP6	• The organization complies with all environmental laws and regulations	0.648			
FP	Financial performance		**0.892**	**0.892**	**0.581**
• FP1	• The organization's profitability has improved over the past 3 years.	0.777			
• FP2	• Operational costs have decreased due to resource efficiency and waste reduction.	0.77			
• FP3	• Investments in environmental initiatives have generated positive financial returns	0.827			
• FP4	• Financial risk exposure (e.g., from fines, waste costs, energy prices) has decreased	0.748			
• FP5	• Our organization has improved its long-term financial stability through sustainable practices	0.771			
• FP6	• The company's reputation for environmental responsibility has attracted more customers or investors	0.673			

Source: Author's computations

to normal distribution as skewness and kurtosis of all the items resulted between the accepted range of −2 and +2.

The exploratory factor analysis (EFA) was performed using a principal axis factoring analysis and varimax with kaiser normalization rotation. An essential step involved assessing the overall significance of the correlation matrix using Bartlett's Test of Sphericity, which evaluates weather the correlations among the variables are statistically significant. Bartlett's test ($\chi^2 = 2{,}721$; $P < 0.000$) indicates the suitability for factor analysis and Kaiser-Meyer-Olkin (KMO = 0.919) which measures the sampling adequacy, indicates the appropriateness of the data for the factor analysis. The communality of the scale, representing the proportion of variance explained by each factor, was also examined to ensure acceptable levels of explanation. The results show that all communalities exceeded the threshold value of 0.50 and loaded to three main constructs. Kaiser's rule identified three factors, that correspond to EMA, EP and FP as defined by the research. The results of factor analysis confirmed the three-dimensional structure theoretically defined in the research study (Table 1).

After the assessment of EFA, Confirmatory Factor Analysis (CFA) was computed using IBM AMOS 23.0 to test the measurement models. As part of confirmatory factor analysis, factor loadings were assessed for each item, and all items resulted over the acceptable range (>0.50). The model-fit measures were used to assess the model's overall goodness of fit (CMIN/df: <2, CFI: >0.90, TLI: >0.90, SRMR: <0.08, and RMSEA: <0.08) and all values were within their respective common acceptance levels, concretely CMIN/df = 1.288, CFI = 0.986, TLI = 0.983, SRMR = 0.045, and RMSEA = 0.032 (Ullman, 2001; Hu and Bentler, 1998; Bentler, 1990). Table 2, reports the mean and Pearson's Correlation of the factors utilized in the current study. To address potential multicollinearity issues, the guideline proposed

Table 2: Pearson correlations

	EMA	EP	FP
EMA			
EP	0.429		
FP	0.471	0.504	

n=287, ***Correlations significant at the 0.01 level (2-Tailed). Source: Author's computations

by Hair et al. (2013) was followed, which suggests that Pearson's correlation coefficients should be underneath 0.90 benchmark. Accordingly, the results confirmed the absence of multicollinearity among the variables (Hair et al., 2021; Frooghi et al. 2015; Onyinye et al., 2018). Construct Reliability was assessed using Cronbach's Alpha and Composite Reliability. Cronbach's Alpha is utilized to measure internal consistency reliability to show how closely related a set of items are as a group. Reliability is the validation of construct by stating the internal consistency under the the assumption that the multiple items evaluate similar basic variables (Kim and Kim, 2010; Hair et al., 2021). Cronbach's Alpha for each construct in the study was calculated utilizing the following formula:

$$\alpha = \frac{k}{k-1}\left(1 - \frac{\sum_{i=1}^{k}\sigma_{Y_i}^2}{\sigma_X^2}\right)$$

Where:
k: Number of items in the scale
$\sigma_{Y_i}^2$: Variance of each individual item
σ_X^2 : Variance of the total score

Cronbach's Alpha for each construct was over the minimum required limit of 0.70, thereby confirming the internal consistency (Nunnally and Bernstein, 1994; Hair et al., 2012). Composite reliabilities (CR) unlike Cronbach's Alpha accounts for standardized factor loadings and error variances and was calculated utilizing the following formula:

$$CR = \frac{\left(\sum_{i=1}^{k}\lambda_i\right)^2}{\left(\sum_{i=1}^{k}\lambda_i\right)^2 + \sum_{i=1}^{k}\theta_i}$$

Where:
k: Number of items for the construct
λ_i: Standardized factor loading of item i
θ_i: Error variance of item i

Composite reliabilities ranged from 0.853 to 0.892, above the 0.70 benchmark. Hence, construct reliability was established for each construct in the study.

4.2. Convergent and Discriminant Validity

Convergent validity of scale items was estimated using Average Variance Extracted (Fornell and Larcker,1981), utilizing the following formula:

$$AVE = \frac{\sum_{i=1}^{n}\lambda_i^2}{n}$$

Where:
λ_i = Standardized factor loading of indicator i
n = Number of indicators for the construct

All the AVE values for the latent constructs EMA, EP and FP were above the recommended threshold. Discriminant validity shows the discrimination of a variable from others, and is measured by calculation of cross-loading of measures. The discriminant validity in the study was evaluated using both the Fornell and Larcker Criterion and the Heterotrait-Monotrait (HTMT) Ratio. According to the Fornell and Larcker criterion, discriminant validity is confirmed when the square root of AVE for each construct exceeds its correlations with other constructs in the model. However, Fornell and Larcker criterion has recently faced criticism, leading to the adoption of a more robust technique, the HTMT ratio. However, when assessed using the HTMT ratio, all ratios were below the recommended threshold of 0.85 (Henseler et al., 2015). Hence, discriminant validity was confirmed, as presented in Tables 3 and 4.

4.3. Structural Model

Structural equation modeling (SEM) is a multivariate statistical analysis tool which is utilized to examine the structural correlation between the variables. SEM combines both factor analysis as well as multiple regression analysis to explore the structural association between measured items and latent variables. In the final stage, the structural model specified by the proposed research model was examined, consisting of three unobserved latent constructs: EMA, EP, and FP. Each latent constructs is measured through multiple indicators as follows:

$$EMA_i = \lambda_i \cdot EMA + \varepsilon_i; \qquad i = 1, 2, 3, 4, 5, 6$$

$$EP_j = \lambda j \cdot EP + \varepsilon_j; \qquad j = 1, 2, 3, 4, 5, 6$$

$$FP_k = \lambda_k \cdot FP + \varepsilon_k; \qquad k = 1, 2, 3, 4, 5, 6$$

Where:
λ = Standardized factor loadings
ε = Measurement error terms

The structural model shows that EMA is measured by six indicators (EMA1-EMA6), while EP is measured by six indicators (EP1-EP6). FP is measured through six indicators (FP1-FP6). All indicators loaded positively into the respective latent constructs with standardized factor loading within acceptable thresholds, indicating satisfactory convergent validity. Measurement errors for each indicator are explicitly specified to account the unexplained variance, thus ensuring rigorous model representation. The structural model in Figure 2, illustrates the hypothesized relationships between the latent constructs.

Figure 2: Structural model depicting the direct paths between latent constructs

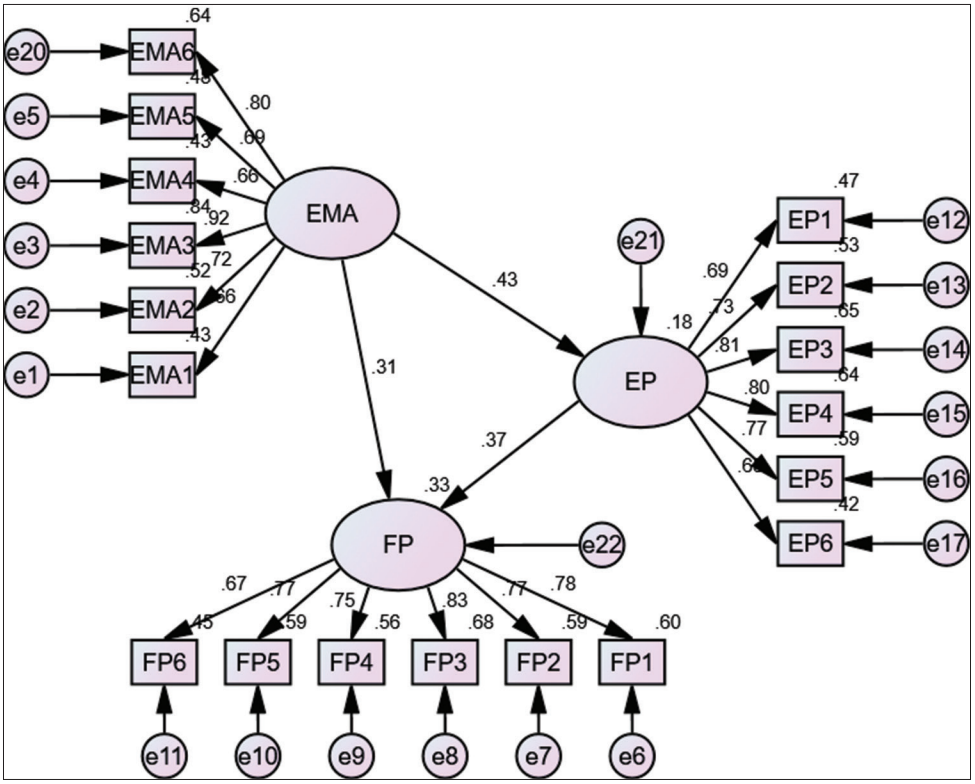


Table 3: Discriminant validity results based on Fornell and Larcker criterion

	EMA	EP	FP
EMA	0.745		
EP	0.429	0.74	
FP	0.471	0.504	0.762

Source: Author's computations

Table 4: Discriminant validity results based on Heterotrait-monotrait ratio (HTMT)

	EMA	EP	FP
EMA			
EP	0.429		
FP	0.472	0.519	

Source: Author's computations

Coefficient of determination (R^2) represents the proportion of variance explained by the predictors and was calculated utilizing the following formula:

$$R^2_{GHRM} = 1 - \frac{Var(\zeta_1)}{Var(GHRM)}$$

$$R^2_{GOB} = 1 - \frac{Var(\zeta_2)}{Var(GOB)}$$

Where, R^2 represents the proportion of variance explained by the predictors. In our case $R^2_{EP} = 0.18$ *and* $R^2_{FP} = 0.33$. This indicates that EMA explain 18% of the variance in EP, while EMA and EP jointly explain 33% of the variance in FP. Given the coefficient of determination (R^2) we can derive the disturbance term for each endogenous latent EP and FP respectively as following:

$$Var\,(\zeta_1) = 1\text{-}R^2_{EP} = 1\text{-}0.18 = 0.82$$

$$Var\,(\zeta_2) = 1\text{-}R^2_{FP} = 1\text{-}0.33 = 0.66$$

The exogenous variable, EMA exert direct influences on EP and FP. In addition, EP also has direct relationship with FP. These relationships can be expressed as:

$$EP = \beta_1 \cdot EMA + \zeta_1$$

$$FP = \beta_2 \cdot EMA + \beta_3 \cdot EP + \zeta_2$$

Where:
β = Standardized regression weights (path coefficients)
ζ = Structural error terms (disturbances)

Following the assessment of the measurement model, the structural equations indicate that EP is predicted by EMA ($\beta_1 = 0.43$) with a disturbance term of 0.82. Similarly, FP is predicted by EMA ($\beta_2 = 0.31$) and EP ($\beta_3 = 0.37$) with a disturbance term of 0.66.

The relationships between variables are demonstrated through the direct paths in the structural model represented in the Figure 2.

The standard model-fit measures were employed to evaluate the model's overall goodness of fit (CMIN/df: <2, CFI: >0.90, TLI: >0.90, SRMR: <0.08, and RMSEA: <0.08) and all values fell within their commonly accepted thresholds, thereby indicating an

Table 5: Results of structural model

Hypothesis code	Hypothesized path	Path coefficient	T-value	P-value	R^2	Remarks
H_1:	EP<--EMA	0.429	5.906	0.001	0.18	Supported
H_2:	FP<--EMA	0.312	4.592	0.001	0.33	Supported
H_3:	FP<--EP	0.37	5.269	0.001	0.33	Supported

Source: Author's computations

adequate model fit (Ullman, 2001; Hu and Bentler, 1998, Bentler, 1990). The three-factor model (EMA, EP and FP) yielded good fit for the data: CMIN/df = 1.288, CFI = 0.986, TLI = 0.983, SRMR = 0.045, and RMSEA= 0.032. Table 5, presents the beta coefficients, t-statistics, and their P-value along the remarks about the theory testing. The results of the structural equation modelling, confirmed the findings through regression path coefficient, t-statistics, probability values (P-values) and related interpretations of the tested hypothesis. Thus, the research model was consistent with the collected data.

Overall, the results confirm that each conctruct exert a positive and statistically significant influence on predetermined constructs within specified model. The empirical investigation confirms that:

EMA ($\beta = 0.429$, $P < 0.001$) has a significant and positive impact on EP, hence affirming H_1.

EMA ($\beta = 0.312$, $P < 0.001$) has a significant and positive impact on FP, hence affirming H_2.

EP ($\beta = 0.37$, $P < 0.001$) has a significant and positive impact on FP, hence affirming H_3.

In conclusion, the results of SEM confirm that EMA has a significant and positive role in enhancing both environmental performance (EP) and financial performance (FP) independently. Furthermore, the results confirm that EP positively effects FP.

5. DISCUSSION AND CONCLUSION

This study aims to explore the relationship of environmental management accounting (EMA) and both economic performance (EP) and financial performance (FP) individually, while further investigating the linkage between EP and FP among the Albanian companies.

The findings of this study validate the direct and positive relationship between environmental management accounting (EMA) with both environmental performance (EP) and financial performance (EP) considered separately. Moreover, in alignment with prior research conducted in other countries the analysis confirmed that EP positively contributes to the enhancement of FP among Albanian companies.

These insights contribute theoretically by refining the relationship between EMA, EP and FP in emerging economies like Albania where similar studies remain limited. By empirically validating these linkages, the study provides solid empirical evidence in demonstrating how different theoretical drivers and pressures influence EMA. Consequently, the strategic adoption and implementation of EMA as part of sustainability development can translate into tangible environmental performance and quantifiable economic and financial outcomes. The findings provide to both, Albanian decision makers and policy makers valuable empirical evidence that environmental initiatives are not merely a compliance tool due to the coercive and normative pressures but can serve as valuable drivers in improving both environmental and financial performance. This dual contribution underscores the strategic importance of EMA implementation in emerging economies where environmental and financial objectives are often perceived as conflicting rather than complementary.

Practically, the results underscore the need for Albanian companies to integrate EMA not as a compliance mechanism to different pressures but as a strategic tool that in long-term enhances competitiveness, market share and finally financial sustainability. The study offers practical implications for both regulatory bodies and decisionmakers. The results of this study emphases the importance of EMA in both enhancing environmental and financial performance of the companies operating in Albania. Thus, it is fundamental for both regulatory bodies as well as the companies to invest in environmental reporting systems through different incentives, awareness programs and supportive frameworks. In this perspective further investments should be undertaken to train accounting professionals in implementing and adopting sustainable practices and establish clear performance indicators that link environmental initiatives to financial outcomes. In emerging economies, where coercive pressure exerts a significant influence, such as in the case of Albania, mandatory reporting frameworks and government incentives can foster the awareness and commitment of the decision-makers to accelerate the EMA implementation, ensuring that both environmental and financial objectives are pursued in tandem. By institutionalizing these practices, the Albanian firms can strengthen their competitive positioning in both regional and global markets, where the demand for environmentally sustainable products and technologies are decisive.

Although this study provides important insights, several limitations should be acknowledged. The research was conducted by employing a cross-sectional analysis, which can provide a snapshot of the relationships but does not permit a comprehensive outcome of how the variables can change over time. To address these limitations the authors, suggest a longitudinal study design in the future. Additionally, the study was based on self-reported data, which could be of a subjective nature. Future studies could include the collection of data from sources different than self-reports to make the research finding more reliable and valid.

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