

The Impact of Environmental Management Accounting Adoption on the Shipping Industry's Environmental Performance, Influenced by Green Shipping and Regulatory Pressure

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ABSTRACT

The concept of sustainability within the realm of the industry is closely related to sustainable development. In East Kalimantan's shipping industry, environmental concerns related to the Mahakam River, carbon emissions, and international regulations have created a pressing need to adopt Green Shipping practices. The pressing need for Green Shipping practices stems from the accountability of the shipping industry in this context. The aim of this research was to explore the consequences of Green Shipping and Regulatory Pressure on the implementation of environmental management accounting (EMA) techniques in the maritime sector, specifically in East Kalimantan, as well as its subsequent effect on Environmental Performance. This is a quantitative study. The sample for this research was a shipping company registered with the Indonesian National Shipowners Association (INSA). The survey subjects were operational managers from a shipping company, and they were chosen because they possessed substantial knowledge about environmental accounting and shipping regulations. This study emphasizes that the adoption of Environmental Management Accounting (EMA) is influenced positively and significantly by Green Shipping and Regulatory Pressure, and it also has an impact on environmental performance. The study demonstrates that the shipping industry's adoption of EMA is influenced by Green Shipping and Regulatory Pressure. Environmental Management Accounting (EMA) is an essential instrument utilized by organizations in the shipping industry to evaluate the financial implications of their environmental activities and to divulge pertinent information regarding their environmental performance. This, in turn, facilitates the enhancement of their overall environmental performance.

Keywords: Coercive Pressure, Environmental Performance, Regulatory Pressure, Environmental Management Accounting, and Green Shipping

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INTRODUCTION

Environmental concerns have emerged as a significant global issue in the past several decades, as natural disasters such as global warming are increasing, posing a threat to humanity. Humans also cause disasters such as the overuse of non-renewable natural resources, plastic waste, and air and marine pollution due to oil spills. (Jones, 2010).

The global community is committed to sustainable development in light of environmental concerns. The main goal of sustainable development is to eradicate poverty, reduce inequality, and protect the environment. Sustainable Development Goal 13 focuses on implementing measures to address climate change and its consequences, whereas Goal 14 aims to preserve and responsibly utilize marine resources and seas.

Global sustainability is significantly influenced by the significant contributions of leading international maritime industries. (Benamara et al. 2019). The maritime industry fights to control and address environmental issues and shipping activities, both on the surface and in the sea. The International Maritime Organization (IMO) created and implemented the International Convention for the Prevention of Pollution from Ships (MARPOL) with the aim of mitigating the environmental consequences caused by cruise lines. This convention sets restrictions on the emission of air and water pollutants during the operation of these ships (IMO 2017).

Shipping companies have a considerable impact on environmental degradation, resulting from the extensive marine environmental issues caused by global shipping, such as climate change and its detrimental effects on human health. According to Poulsen et al. (2016), the maritime environment is not progressing as quickly as other industrial sectors. The expanding scope of global trade has resulted in an increase in the size of the worldwide fleet, as businesses seek to capitalize on economies of scale despite the potential negative effects on the environment, including waste generation, noise pollution, greenhouse gas emissions, and the transport of hazardous materials (Yang et al., 2013). The Mahakam River surrounds East Kalimantan and has dense shipping activities for the exploitation of natural resources such as coal and oil palm. Several cases of work owing to this shipping activity include the sinking of an oil palm transport ship in 2021 and the Mulia Mandiri self-propelled oil barge (SPOB) loaded with palm oil, which sank in the waters of Simpang Pasir, Palaran, and Samarinda. The sinking point of the ship is not far from the fish farm, only about six kilometers away, and is connected to the coast of the river, causing pollution that results in the death of fish in the pond.

The shipping industry is conscious of environmental preservation, and adheres to environmental policies and regulations. Furthermore, accounting is recognized as playing a crucial role in conservation efforts. Conventional accounting systems have been criticized for their inability to incorporate environmental information into financial accounting, as highlighted by Chang and Deegan (2008).

EMA is a system designed to provide information about the environment, both in terms of finances and physical measurements. This system aims to improve resource efficiency and decrease environmental impacts. The purpose of EMA is to

rectify the deficiencies of traditional management accounting systems, which have failed to adequately handle environmental costs (Hossain, 2019). Using EMA, companies can more effectively manage their environmental issues and improve their treatment of the environment (Asiri et al., 2020; Schaltegger & Burritt, 2018; Saedi et al., 2018).

Institutional theory underlies the application of EMA in companies. Institutional Theory posits that a company's success in terms of social, environmental, and economic aspects is greatly influenced by its operational practices within its institutional setting. (Latif et al., 2020). Businesses must adjust to shifts in the external environment in order to guarantee the long-term viability of their operations. Adaptation is essential as alterations in the external environment might have an impact on organizations. (Teo et al., 2003). Institutional Theory categorizes institutional pressure into three main types: coercive, normative, and mimetic pressure. In addition, institutional pressures encompass external stakeholders such as government authorities, suppliers, customers, and non-governmental groups (Roxas & Coetzer, 2012). Government agencies and non-governmental organizations frequently employ coercive tactics to enforce environmental legislation and standards on corporations. Green shipping is part of the institutional theory, which is caused by customer pressures (such as shipping and receiving goods) (Erikson, 2004) or regulatory compliance with ship speed reduction programs (Bailey and Solomon, 2004). The IMO International Convention for the Prevention of Pollution from Ships is a crucial treaty that aims to regulate and reduce maritime pollution caused by ships (Lun, 2016).

The implementation of environmental accounting in developing nations is an empirical problem that encompasses various industries, including the shipping sector, which contributes to environmental degradation because of its commercial activities. The adoption and implementation of EMA have consequences for costing methods and pricing in manufacturing, and reducing waste disposal and hazards (Schartegger & Burritt, (2018) Burritt et al., (2009). Several previous studies have widely recognized the benefits of EMA. The adoption of EMA improves environmental and corporate performance (Doorrasamy & Garbharran, 2015). Nevertheless, the implementation of EMA is perceived to be slower in emerging industries, like Malaysia (Che Ku Kassim et al., 2021). The statement from Zaradat et al. (2021) reveals that there has been inadequate investigation into EMA in developing countries, particularly in the context of Indonesian shipping companies. This study aims to determine the effects of Green Shipping and Regulatory Pressure on the Adoption of EMA and its impact on Environmental Performance in the shipping industry in East Kalimantan.

LITERATURE REVIEW

Environmental Management Accounting

The cognitive weaknesses associated with environmental information are a weakness of conventional management accounting systems and focus only on profits. Conventional management accounting practices frequently categorize environmental

expenditures as indirect costs associated with goods or services, which can make them hard to detect and render environmental information inaccessible (Doorasamy & Nyahuna, 2021). EMA systems are designed to enable businesses to make more sustainable decisions, which involve identifying, allocating, creating, and utilizing physical information. This development builds upon conventional management accounting systems and was first introduced in academic sources such as Fuadah et al. (2021). According to Doorasamy and Nyahuna (2021), companies may assess their environmental financial and non-financial data by classifying environmental expenses as overhead costs using the EMA (Environmental Management Accounting) technique. The adoption of EMA can help alleviate the pressure of environmental regulation and enhance an organization's environmental reputation (Christ & Burritt, 2013; Johnstone, 2018). EMA comprises of two key components. The environmental aspect provides information about the environmental impact in physical terms, whereas the monetary aspect delivers information about the environmental impact in financial terms. This information is valuable for decision-making and management (Burritt, 2002).

Institutional Pressure and Environmental Management Accounting Adoption

Institutional Theory asserts that external factors, including laws, regulations, societal expectations, and cultural norms, have a significant impact on organizations (Dimaggio & Powell, 1983; Heugens & Lander, 2009). This influence is characterized by institutional pressure, which operates through coercive, mimetic, and normative mechanisms (Dimaggio & Powell, 1983). Institutional pressure can manifest through explicit restrictions, such as rules and mandates, as well as informal constraints, such as practices, norms, and beliefs. An organization's response to this pressure determines its institutional legitimacy (Tionpre et al., 2018). Stakeholders exert powerful influences on companies through the imposition of coercive pressures, which can take the form of rules, regulations, punishments, and penalties. Normative pressure is created when expectations of values, norms, standards, and corporate culture arise (Abdulaziz et al., 2017). When a company competes, its superior performance is a mimetic pressure (Latan et al., 2018). Normative pressures arise from several sources, including suppliers, consumers, and associations such as the company's trade unions and social groups (Latan et al., 2018). These pressures have influenced companies to adopt EMA practices.

Green Shipping and the Adoption of Environmental Management Accounting

Ports and their surrounding areas are negatively impacted by pollution caused by maritime operations, which include both liquid and solid sediments (Helfre and Boot, 2020). Green Shipping is a set of efficiency measures implemented in shipping operations, as reported by Hjelle (2010) and Shi (2018). The environmental impacts of the maritime industry have led to the development of new environmental management systems. This includes the negative effects of routine operations or accidents such as air and water pollution, which have prompted the industry to take

action (Dabra et al., 2009; Hyyattinen and Hilden, 2004; Loreiro, 2006; Toffolli et al., 2005). Technological advancements in green shipping are being utilized to reduce environmental harm, support eco-friendly entrepreneurship, and maintain sustainable trade. Instances of environmental repercussions encompass atmospheric contamination resulting from the emission of sulfur oxides (SO_x) and nitrogen oxides (NO_x), aquatic contamination caused by oil spills and water ballast, as well as the generation of waste products.

Maritime transport in Europe has an environmental impact on government agencies and citizens. To mitigate this impact, European and global regulations have focused on reducing air pollution caused by toxic gases, Enhancing ship engine efficiency to minimize emissions, promoting the utilization of onshore electricity when in port., and promoting the use of new fuels such as hydrogen. Another measure that aids in reducing pollution at sea is the practice of storing waste on board and discharging it upon arrival at the port. This practice also facilitates the recycling of ship materials through the establishment of ecological ship dismantling networks. Additionally, environmental practices are implemented during the construction phase (Wakler et al., 2018). Additionally, routine operations in harbors have environmental consequences, such as contamination of rivers or seawater by diesel waste, cargo residue, and water ballast (Shi et al., 2018).

Institutional theory influences the likelihood of enterprises embracing environmentally-friendly shipping practices. This is due to the presence of governmental mandates, industry standards, and consumer demands, which function as catalysts for the adoption of green shipping (Lun, 2016). As the global economy becomes more interconnected, shipping firms play a larger role as providers of transportation solutions for the global market. This suggests that the shipping sector will be more likely to embrace Green Shipping practices due to rising demand from institutions (Cui et al., 2009). Institutional theory also promotes the use of Environmental Management Accounting (EMA) by shipping businesses. EMA is a concept that helps organizations manage the environmental costs associated with their products or operations. The adoption of management accounting in companies that implement Green Shipping helps them identify the costs and benefits that will be obtained by implementing it in the shipping industry. Thus, the proposed hypotheses for this investigation are as follows:

Hypothesis 1: Green shipping positively and significantly affects EMA adoption.

Regulatory Pressure (IMO Regulation) and Adoption of Environmental Management Accounting

Public concern has been aroused by the adverse environmental impacts of maritime activities, resulting in increased awareness and improvements in the environment and other types of regulations, laws, measures, and directives worldwide (Abadie et al., 2018). Governments and international organizations, including the IMO and Government Regulations, have amplified public concern to motivate shipping businesses to prioritize environmental concerns. Through its MARPOL regulations, the IMO provides guidelines for handling waste created by ship activities and controls

this type of pollution.(Waljer et al., 2017); (Cariou et al., 2019). Environmental regulations established by IMO have undergone gradual enhancements. The International Maritime Organization (IMO) Convention requires shipbuilding to reduce greenhouse gas (GHG) emissions by around 15%-20% by 2020 and 30% by 2025. In addition, the International Maritime Organization (IMO) has implemented rules for greenhouse gas (GHG) emissions and updated the Marine Pollution (MARPOL) regulations to reduce carbon dioxide (CO₂) emissions from ships by 2030. These changes were agreed during the 2012 MEPC General Meeting (Kim S, 2015).

IMO has intensified the oversight of the shipping industry by implementing stricter regulations. European firms are required to achieve environmental sustainability goals, which including reducing sulfur and CO₂ emissions and preventing water contamination caused by ships. It is anticipated that companies would utilize scrubbers, cleaner fuels, and ballast water-treatment systems on their vessels (Yang et al., 2013). IMO regulations are used to strengthen legitimacy and avoid penalties for companies to pressure them applying Green Innovation and Practices (Zhu et al., 2013).

The Institutional Theory posits that coercive pressure may be exerted by many entities such as international purchasers (such as the EU), foreign investors, professional groups, and transnational institutions (Berrone et al., 2013). External stakeholders, including government agencies and non-governmental groups, frequently exert coercive pressure on companies to comply with environmental legislation and standards (Roxas & Coetzer, 2012). Coercive pressures play an important role in environmental management (Latan et al. 2018). In this study, the coercive pressure referred to in the second hypothesis is regulatory pressure on environmental standards from the IMO. EMA will help shipping companies identify the cost impact of implementing regulatory pressure that the company must follow. Thus, the hypothesis of this investigation are as follows:

Hypothesis 2: There is a positive relationship between Regulatory Pressure and adoption of EMA

Environmental Management Accounting and Environmental Performance

In a study conducted by Latan (2018), it was discovered that EMA has an impact on a company's environmental performance and plays a role in enhancing its ecological performance. Environmental performance refers to the extent to which a corporation has successfully managed and minimized its environmental effect (Christine et al., 2019). Generating a sustainable competitive advantage often requires a solid neighborhood strategy, which can be challenging to attain without unique and hard-to-replicate resources or capabilities (Phan et al., 2017). Multiple research have examined the impact of EMA (Environmental Management Accounting) on environmental performance. One such study by Qian et al. (2018) discovered that the implementation of EMA resulted in a noteworthy and beneficial influence on disclosure quality and carbon management. Fuadah et al. (2021) have discovered a strong and statistically significant correlation between the implementation of

Environmental Management Accounting (EMA) and improvements in environmental performance. Simultaneously, Fuzi et al. (2021) discovered that implementing EMA can enhance enterprises' environmental management by furnishing valuable information. By implementing EMA, the depletion of natural resources and their subsequent environmental consequences can be minimized. Accordingly, a favorable and substantial correlation exists between EMA and environmental performance, as indicated by Rasit et al. (2020). Thus, the hypothesis of this investigation are as follows.

Hypothesis 3: There is a positive relationship between EMA adoption and environmental performance.

METHODOLOGY

The study's conceptual framework highlights The correlation between coercive pressure, regulatory pressure, and environmentally friendly shipping practices, which all impact the adoption of EMA in the maritime sector.

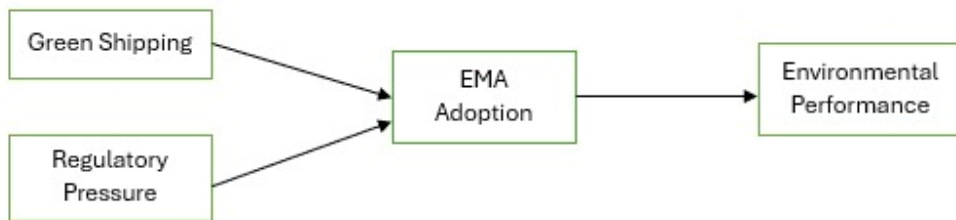


Figure 1: Research Conceptual Framework

This research employed a quantitative approach. The target population for this study comprised shipping companies in East Kalimantan. Specifically, 120 such companies were registered with the Indonesian National Shipowners Association (INSA) in the region. The subjects of this research were the operational managers of these firms, who has in-depth understanding of green shipping, IMO standards, and environmental accounting data. These topics are of great significance to the shipping business as it exists now and are crucial for promoting corporate sustainability. The sampling methodology used in this study was straightforward and simple (Sekaran & Bougie, 2016). The questionnaires were distributed via WhatsApp using the Google Forms application. Of the 120 questionnaires that were distributed, 100 were returned and analyzed using descriptive statistics and the SEM-PLS Modelling equation to test the study's hypotheses.

Variable Measurement

The EMA Adoption Variable questions were revised according to the findings of Phan et al. (2017) research. Implementing Environmental Management Accounting (EMA) is thought to enhance a company's environmental reputation (Christ and Burritt, 2013;

Johnstone, 2018). The Environmental Management Agency (EMA) offers information on the environmental consequences of activities and helps improve a company's environmental performance (Jasch, 2003). The questions on the Green Shipping variable were derived from Felicio's (2021) research, which proposes a series of measures to mitigate shipping pollution and highlights the financial consequences for the shipping sector. The regulatory pressure inquiries were derived from Yang's (2018) study, which pertains to the International Maritime Organization (IMO) and the European Union (E.U.) implementing environmental standards on sulfur, as well as national environmental regulations within the shipping sector.

Table 1: Research Instruments

Construction	Operationalization	Adapted from
Environmental Performance	<ol style="list-style-type: none"> 1. Our company is reducing the amount of air emissions from shipping activities. 2. Our company reduces wastewater emissions from shipping activities 3. Our company reduces the amount of solid waste from shipping activities 	Yusoh et al., 2023
Green Shipping	<ol style="list-style-type: none"> 1. Technologies to reduce environmental impact are present in our vessels 2. Waste segregation aboard a ship 3. Travel-related fuel consumption 4. Port experiencing significant traffic congestion. 5. Ballast-induced water pollution 	Felicio, 2021
Regulatory Pressure	<ol style="list-style-type: none"> 1. The International Maritime Organization (IMO) has established a set of environmental agreements, directives, and rules, such as the Marpol convention. 2. The environmental rules of the European Union (EU), guidelines, and policies, including the EU Sulphur Directive, are designed to protect and preserve the environment. 	Yang, (2018)
Environmental Management Accounting	<ol style="list-style-type: none"> 1. Our accounting system meticulously documents all inputs and outputs, encompassing energy, 	Phan et.al, (2017)

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- trash, water, emissions, and materials, for our organization.
 2. Our accounting system is capable of recognizing, quantifying, and categorizing expenses and obligations that are related to the environment.
 3. The accounting system of our organization has the capability to produce and employ cost accounts that are tailored to environmental circumstances..
 4. Our company's accounting system allocates expenses related to the environment to the products it serves.
-

Data Analysis and Variable Measurement

This study's SEM which is the abbreviation of structural equation model explores the connections between various constructs by employing second-generation multivariate analysis (Ringle, 2014). The model uses SEM-PLS to evaluate the relationship between the hypotheses and the data collected, and includes both measurement and structural model analyses. Data measurement is dependent on many instruments, like Cronbach's alpha, average variance extracted, and composite reliability, which are used to confirm the accuracy and credibility of the data. The validity of the model was assessed using cross-loading and factor loading techniques. The structural model additionally evaluates the statistical significance of the hypothesis by utilizing route coefficients (Hair et al., 2017).

Measurement models play a crucial role in evaluating the compatibility between theoretical concepts and empirical data as well as the interdependence between observable and unobservable variables. The precision of a concept depends on its dependability and authenticity, both of which are established by its measurement value. In the context of the SEM PLS, a reflective and formative measurement model was employed (Henseler, 2015). In reflective measurement, the dependent variable becomes the observed variable and can replace each other based on previous research, in which the latent variable is a trigger that describes the observed variable and can be adequately explained by theory (Gefen, 2000). Several techniques may be used to assess measurement models, including internal consistency, indicator reliability, convergent validity, and discriminant validity (Gefen, 2000). The term "AVE" refers to the grand average value of squared loadings, which is a measure of the ubiquity of a construct. The assessment of data reliability was conducted using Cronbach's alpha, composite reliability, and AVE (Henseler 2015). In order for constructs to be deemed dependable, their values must satisfy the following criteria: The Cronbach's alpha

coefficient should be equal to or more than 0.70, the composite reliability coefficient should be equal to or greater than 0.70, and the average variance extracted should be equal to or greater than 0.50. Henseler (2015) utilized factor and cross-loadings to assess the validity of the data at the indicator level. Indicators are deemed to be legitimate if their factor loading value is equal to or greater than 0.60 (Hair et al., 2017).

To guarantee the accuracy and dependability of the survey data, several precautions were taken, including a thorough review of relevant literature. Questionnaires were distributed to five shipping companies in Samarinda. This work utilizes Structural Equation Modeling with Partial Least Squares (SEM-PLS) as it is considered the most suitable approach for constructing this theory. The reliability of the measurement model was examined by calculating Cronbach's alpha values and completing tests for internal consistency and outer loading dependability.

The dependability of the indicators largely depends on their outer loadings, which are no less than 0.60. Generally, the range of acceptable outer loadings is considered to be between 0.60-0.70, this denotes a suitable degree of dependability (Hair et al., 2017). Any indicators that fail to meet this requirement are removed to increase the composite reliability or AVE which is the abbreviation of average variance extracted.

RESULT AND DISCUSSION

The model was evaluated by examining the reliability of the indicators, the convergent validity, the internal consistency, and the discriminant validity. The statistical results obtained using the SEM PLS are shown in Figure 1 and Table 2, which show the modified measurement model.

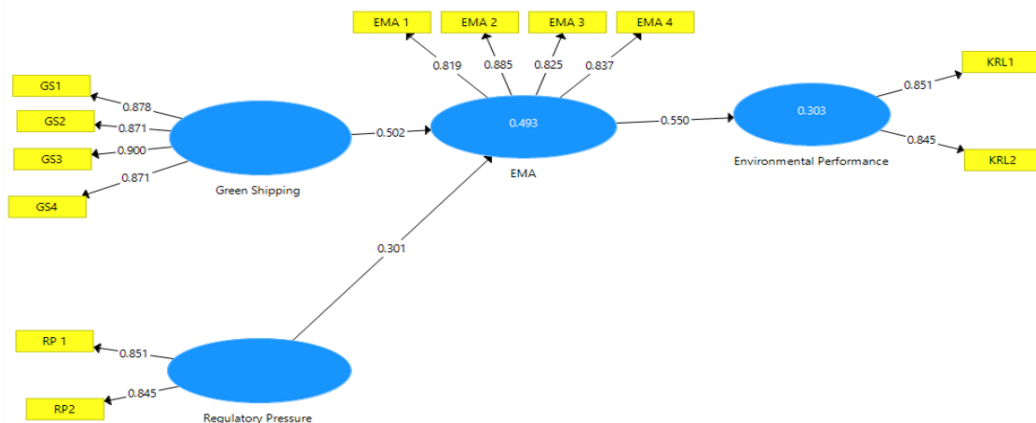


Figure 2: The Modified Measurement Model

The level of reliability demonstrated in a test is evaluated by the consistency of its findings, ensuring that the different components being examined are created in distinct ways and that consistent scores are achieved using Composite Reliability (C.R.). The study found that the Composite dependability above the criterion of 0.70, suggesting that the construct had a high level of internal consistency dependability.

Table 2: Validity and reliability analysis results

Latent Construct	Label	Cronbach Alpha	Rho A	Composite Reliability	AVE
Environmental Performance	KRL3 KRL 4	0,710	0,710	0,837	0,719
Green Shipping	GS1 GS2 GS3 GS4	0,903	0,906	0,932	0,774
Regulatory Pressure	R.P. 1 RP2	0,710	0,710	0,837	0,719
Environmental Management Accounting	EMA1 EMA2 EMA3 EMA4	0,864	0,873	0,907	0,709

Discriminant validity pertains to the degree to which a concept is clearly distinguishable from another based on empirical criteria. In order to evaluate discriminant validity, the heterotrait–monotrait ratio of correlations was employed, as described by Hair et al. (2017).

Table 3: Heterotrait-Monotrait ratio (HTMT) Result

Latent Construct	Environmental Performance	Environmental Management Accounting	Green Shipping	Regulation Pressure
Environmental Performance	0.848	0.550		
Environmental Management Accounting	0.842			
Green Shipping	0.495	0.652	0.880	
Regulation Pressure	1.000	0.550	0.495	0.848

The link between exogenous and endogenous factors may be discerned by examining the structural or inner models. To test this hypothesis using path analysis, SEM-PLS bootstrap procedures were performed, as seen in Figure 2 and presented in Table 4. The results indicated that the use of coercive pressure did not have a meaningful influence on the adoption of EMA. However, both green shipping and regulatory pressure had positive and statistically significant effects.

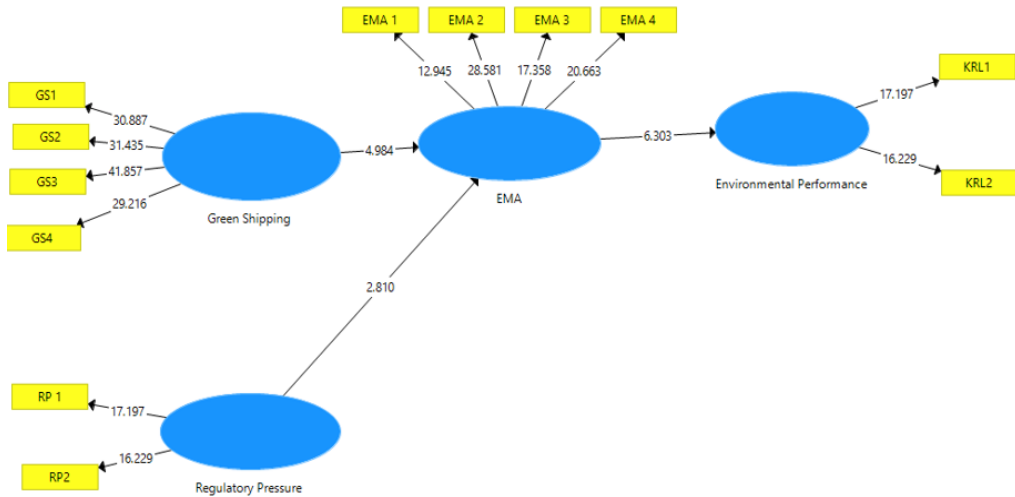


Figure 3: The Modified Measurement Model

Table 4: Result of the structural model

Hypothesis	Original samples (O)	Sample Mean	Standard Deviation (STDEV)	T Statistics	P Values	Result
EMA-Environmental Performance	0.550	0.554	0.088	6.267	0.000	Supported
Green Shipping EMA→	0.502	0.504	0.091	5.513	0.000	Supported
Regulation Pressure EMA→	0.301	0.307	0.101	2.976	0.005	Supported

As shown in Table 4, the implementation of Green Shipping has a beneficial and substantial impact on the utilization of Environmental Management Accounting (EMA); thus, Hypothesis 1 is accepted. Increased environmental awareness among stakeholders and the international community encourages shipping companies to implement Green Shipping. Currently, the shipping industry is aggressively conducting Green Shipping, including the shipping industry in East Kalimantan, to reduce pollution in the Mahakan River and carbon emissions resulting from shipping activities. EMA can help to identify the costs and benefits of implementing Green Shipping. Applying EMA to shipping companies can help them identify and allocate environmental costs to products or processes appropriately in shipping activities,

encouraging the shipping industry in East Kalimantan to adopt the EMA. This finding was consistent with that reported by Latif et al. (2020).

Moreover, the imposition of regulations has a beneficial and substantial impact on the implementation of EMA in maritime firms; thus, Hypothesis 2 is supported. The rules of the IMO on the shipping industry to reduce the amount of emissions with low sulfur fuel are contained in the rules of the Director General of the Ministry of Transportation of Sea Transportation, which the shipping industry must implement to identify the costs incurred, and from these international regulations, it encourages shipping companies in East Kalimantan to adopt EMA because it relates to the amount of financing that must be allocated in order to implement IMO rules. Therefore, it is necessary to identify the costs borne by shipping companies.

The adoption of Environmental Management Accounting (EMA) had a notable and meaningful impact on environmental performance. As a result, the third hypothesis was confirmed. The negative impact of natural resources on the environment encourages shipping companies to contribute toward environmental preservation. The company's actions to maintain sustainability include environmental performance, and its obligation to preserve the environment requires the identification of the costs that the company must bear. Hence, the implementation of EMA enables the identification of previously unnoticed environmental prospects, such as enhancing waste management strategies, minimizing material and energy usage, and facilitating material recycling (Larojan & Thevaruban, 2014). Consequently, this motivates shipping companies in East Kalimantan to embrace EMA.

Table 5: Result of the structural model (Indirect Effect)

Hypothesis	Original samples (O)	Sample Mean	Standard Deviation (STDEV)	T Statistics	P Values	Result
GS EMA→→ EP	0.277	0.275	0.049	5.606	0.000	Supported
RP EMA->EP→	0.166	0.178	0.080	2.081	0.038	Supported

According to this study, the implementation of Management Accounting plays a significant role in reducing the impact of Regulatory Pressure on Environmental Performance in the shipping industry in East Kalimantan, by mediating the relationship between Green Shipping and Environmental Performance. The commitment of the East Kalimantan provincial government to Green Development in East Kalimantan encourages every Company in East Kalimantan to comply with the rules and programs made by institutions and governments, one of which is reducing the amount of carbon emissions within the realm of maritime transportation. This promotes the implementation of the EMA (Environmental Maritime Accounting) in the shipping sector, with the goal of tracking the funding of environmentally friendly practices in order to enhance the industry's environmental performance.

CONCLUSION

The worsening environmental circumstances provide a significant risk to the environment, prompting the corporation to prioritize reducing the environmental effect of their operations within the shipping sector in East Kalimantan. The Mahakam River is affected by this, resulting in carbon emissions. This drives the shipping sector to adopt environmentally friendly practices and comply with international regulations. It also motivates firms to reduce the environmental effect of their operations. The use of Environmental Management Accounting (EMA) is crucial for enterprises to accurately assess and quantify the environmental expenses. EMA also enhances the environmental disclosure process, hence enhancing the overall environmental performance in the shipping sector. This study investigates the impact of Green Shipping and Regulatory Pressure on the adoption of EMA (Environmental Management Accounting) and its consequences for the shipping sector.

This study has specific constraints. Specifically, the sample of respondents includes operational managers of the shipping industry in Kalimantan. As a result, the personal perspectives obtained from this study may not accurately reflect the overall perceptions of the shipping industry in other regions. The indicator in this research, regulatory pressure, is a policy that continues to change according to environmental conditions, so it may produce different research results. Future research could include new indicators or regulatory pressures using the latest policies.

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