

Effect of Green Accounting, Quality Management on Financial Performance, and Green Innovation as Moderation Variables



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ABSTRACT: This study empirically examines whether green innovation moderates the relationship between Green Accounting, Quality Management, and Financial Performance. This research is a causal descriptive quantitative research on traditional banking companies listed on the Indonesia Stock Exchange (IDX). This survey data is secondary data from the 2018-2021 Financial and Sustainability Reports of banking companies listed on the Indonesia Stock Exchange. It consists of three independent variables. Green accounting, Quality Management, and Green Innovation. The dependent variable is Financial Performance. The results show that Green Accounting affects Financial Performance, but Quality Management does not, whereas Green innovation moderates the relationship between Green Accounting and Financial Performance and between Quality Management and Financial Performance.

KEYWORDS: Green Accounting, Quality Management, Green Innovation, Financial Performance

I. INTRODUCTION

Banking is one of the many financial institutions that have long shaped the Indonesian economy. In this context, banks play a very important and strategic role in supporting the economic development of the country as financial institutions or entities involved in finance, and as institutions that are trusted by the public. Banking is an entity that collects funds from the public in the form of savings and returns the funds to the public in the form of credit or otherwise. Banking itself aims to support the implementation of national development, enhance the distribution of development, economic growth and national stability, thereby improving the living standards of the people. The rapid development and high complexity of the banking industry can affect bank performance. One of them is about environmental protection. The financial strength of environmental accounting and monitoring is of increasing concern to taxpayers, states, creditors and the general public (Maama & Appiah, 2019). Environmental issues such as waste, energy crises, and climate change can therefore create business opportunities rather than just threats (Shaumya & Arulrajah, 2017). In this regard, the era of implementing sustainable finance has entered a new chapter with the issuance of the Financial Services Authority Regulation (POJK) Number 51/POJK.03/2017 concerning the Implementation of Sustainable Finance for Financial Services Institutions, Issuers, and Public Companies, followed by the launch of the Implementation Technical Guidelines Sustainable Finance for the Banking Sector by OJK in November 2018. This POJK is issued to enable a financial system that applies sustainable principles in the development and implementation of green economy tools such as social and environmental policies in the financial services industry/IJK including banks, capital markets, and non-bank financial industry. In this regard, the era of implementing sustainable finance has entered a new chapter with the issuance of the Financial Services Authority Regulation (POJK) Number 51/POJK.03/2017 concerning the Implementation of Sustainable Finance for Financial Services Institutions, Issuers, and Public Companies, followed by the launch of the Implementation Technical Guidelines Sustainable Finance for the Banking Sector by OJK in November 2018. This POJK was released to realize a financial system that applies sustainable principles to develop and implement environmental economic instruments, including social and environmental care policies in the Financial Services Industry/IJK which include banking, capital market, and non-bank financial industry. The bank's overall performance is an illustration of the achievements of the bank in its operations, both in terms of finance, marketing, collection, distribution of funds, technology, and human resources. Bank performance is very important as a tool for evaluating bank operations and determining management plans and strategic analysis. In addition, banks also play an important role in economic growth. Meanwhile, companies with good governance, management control systems and planning will have an impact on the survival of the company. The existence of financial

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performance in the company is one measure of success, (Nengzih, 2014). Environmental aspects are a sensitive matter because people are very concerned about environmental conditions for future generations. As explained by (Ali Mustafa Magabli, 2017) where Green Accounting aims to reduce environmental impact costs (social costs) that companies do not need to incur because they have been anticipated at the start of production. The existence of Green Accounting in a company can help provide information outside the business to stakeholders related to environmental concerns. Green accounting is a concept whose application emphasizes the efficient and effective use of resources and is sustainable, so that it can provide benefits to society. In this case, the application of green accounting pays close attention to saving concepts such as saving land, saving materials, and saving energy based on the ecosystem concept (Choiriah & Lysandra, 2022) The application of green accounting itself aims to increase efficient environmental management, namely by assessing environmental activities from the perspective of benefits (economic benefits) and costs (environmental costs), as well as producing environmental protection effects.

With the increasing world population, global warming, and increasing pollution, green innovation has become a hot topic from various scientific perspectives. Early adopters of green innovation technologies are more likely to achieve and maintain market competitiveness (Aguilera et al., 2013). To maximize bank performance, green innovation is used as a strategic planning variable that goes beyond financial institution goals (Calomiris, 2009). Successful green innovation design and excellent quality management and leadership skills therefore give companies a monopoly competitive position that gives them a competitive advantage and superior performance (Allen, 2012).

According to previous research (Endiana et al., 2020), the application of green accounting to companies affects the value of financial results because there is an economic valuation that allocates environmental costs according to their proportions, so that it has a positive impact on financial performance. However, the results of this study do not agree with those of (Mukhzardfa et al., 2018), (Dita & Ervina, 2021), and (Faizah, 2020), which stated that the study found no significant impact of green accounting on finance. Based on the findings, has power. This explains why companies implementing green accounting incur additional environmental costs, especially over short periods of time, so that costs seen as costs can eat into the profits earned. No significant effect on improving company financial performance was shown.

II. LITERATURE REVIEW AND HYPOTHESES

Stakeholder Theory

Stakeholders are all internal and external parties who have a relationship that directly or indirectly influences or is influenced by the company. Meanwhile, according to (Freeman, 1984), stakeholder theory is the relationship between businesses, groups, and individuals who can influence or be influenced by them so that they have the opportunity to effectively deal with the problems of these three things which consist of a business environment where there are customers, suppliers, employees, investors and on the other hand external forces that help businesses survive and thrive in the capitalist system. According to stakeholder theory, companies usually use Corporate Environmental Reporting (CER) and Corporate Social Reporting (CSR) to reduce conflict problems between management and stakeholders. CER and CSR are considered communication tools between management and stakeholders Ali et al. (2019). The emergence of stakeholder theory as the main paradigm further strengthens the idea that companies are responsible not only to shareholders but also to stakeholders (Maulida & Adam, 2012). Green Accounting adopts stakeholder theory to meet the various needs of stakeholders such as society, the environment, employees, customers, friends and family, competitors, and shareholders. Thus, the application of green accounting is based on the relationship between companies and stakeholders in the concept of benefit that builds cooperation for the creation of a sustainable business, managers must explain environmental performance through disclosure of environmental information to stakeholders as access to sustainability. Based on this, stakeholder theory can encourage company management decisions to disclose the resulting carbon emission performance (Borghei-Ghomi & Leung, 2013). In addition, according to (Ramadhany et al., 2021), the role of stakeholders is important when companies are going to carry out green innovations to reduce negative impacts on the environment..

Legitimacy Theory

Legitimacy theory states that companies or organizations need to ensure on an ongoing basis that they have operated according to the norms upheld by society and ensure that their activities can be accepted by outsiders (legitimized). Legitimacy theory postulates that organizations must not only appear to be concerned about the rights of investors but in general must also pay attention to the rights of the public (Deegan & Rankin, 1996). Therefore, legitimacy is important for the sustainability of the company, so the company must maintain its image and credibility in society through social responsibility, including in the application of green accounting. Banking companies implement green accounting as an effort to gain legitimacy from the

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community around the company and optimize the bank's financial condition in the long term. Where the more banks implement their green accounting activities, the greater the public support for the bank so that the bank will be able to achieve the expected profit.

Green Accounting

Green accounting refers to the concept that enterprises give priority to the efficiency and effect of sustainable utilization of resources in the production process, so as to combine enterprise development with environmental functions and bring benefits to society. In this case, when applying green accounting, it pays great attention to the concept of saving, that is, saving land, saving materials, and saving energy. It is based on the concept of an ecosystem.

The generation of enforcing sustainable finance has entered a brand new bankruptcy with the issuance of the Financial Services Authority Regulation (POJK) Number 51/POJK.03/2017 regarding the Implementation of Sustainable Finance for Financial Services Institutions, Issuers, and Public Companies, observed through the release of the Technical Guidelines for Implementing Sustainable Finance for the Sector Banking through OJK in November 2018. As a banking business entity, the objective is to increase economic growth and social welfare and to realize social responsibility and sustainable development. This study uses the green banking index as a proxy for green accounting. The Green Banking Index (GBI) was developed by (Shaumya & Arulrajah, 2017) using 16 green banking reporting indicators, which consist of 1) environmental awareness training and education; 2) evaluation of environmental performance; 3) environment-based reward system; 4) saving paper use (paperless); 5) use of energy-efficient equipment; 6) waste management/recycling; 7) eco-friendly banks; 8) green loans; 9) green project financing (green project); 10) green company facilities; 11) environmental-based credit evaluation; 12) management of green branches; 13) green policy; 14) green partnerships; 15) environmental-based strategic planning, and 16) green procurement.

Quality management

Quality management is a management activity within a company that aims to maintain any desired level of quality. The company not only maintains product quality but other aspects as a whole, such as service, employees, to the quality of the company in the eyes of consumers.

Based on ISO 9001:2015, there are 7 basic principles of quality management as guidelines for improving organizational performance, including 1. Customer focus. 2. Leadership to set and determine goals for the organization 3. Employee involvement to improve capabilities 4. Business process approach, consistent results can be achieved more effectively as a whole system. 5. Continuous improvement of the system to achieve success. 6. Factual Approach, based on existing data and facts. 7. Mutually beneficial supplier relationship. Quality management represents the quality of company management of a company at a certain time. Management quality is measured based on World Economic Forum metrics based on ISO 9001 of 2015 to measure the extent to which companies in certain countries depend on professional management. Ratings range from 1 to 7, where 1 represents poor management quality and 7 indicates high management quality.

Green Innovation

Innovation refers to any change, modification, improvement, or creation implemented or carried out in the market, regardless of the subject matter (product, process, structure, method, etc.) (Corrocher & Ozman, 2020). Therefore, innovation involves a multi-step process where new ideas have to be created, tested, produced, and finally commercialized to impact individuals, firms, and society as a whole (Agarwal & Zhang, 2020). In the field of finance, green financial innovation is defined as the process of developing and commercializing new financial products based on different financial technologies, financial institutions, and financial markets, such as the concept of green (Akdere & Benli, 2018). (Qian & Allen, 2009) define green innovation as process change, which includes the change of different financial products.

Green innovation means that green financial innovation is defined as technology that reduces risk, lowers transaction costs or improves products and services" (Akdere & Benli, 2018). & (Baah et al., 2021). In today's business environment, the most prominent financial companies, especially the banking industry, are the most prominent in terms of products and services, organizational structures, and legal and procedural innovations (Amore & Bennesen, 2016). Green innovation measurement uses a proxy based on (Allen, 2012) which states that technological advances in information processes have created many innovations in the financial services business and successful green innovation planning financial innovations have resulted in exclusive competitive positions that give companies competitive advantages and superior performance (Allen, 2012). Innovations in companies such as the financial sector, especially the banking sector, products that are widely used as a means of financial innovation include internet banking, mobile banking, automated teller machines, debit cards, point-of-sale machines, and other innovations as measured by $\text{Log}(1 + \text{green innovation})$.

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Financial Performance

Financial results reflect the achievement of the company's financial goals within a certain period of time. Financial performance can measure how well a company uses its assets to generate income (Mogwambo et al., 2018). An analysis of the Bank's financial performance determines the success of the Bank's financial management, in particular the liquidity position, capital adequacy, and profitability achieved in the current and previous years, as well as the ability of the Bank to generate all income. In this study, financial metrics are used to measure bank performance, i.e. Return on Assets (ROA) (Mabrurroh & Anwar, 2022). This is because ROA better reflects a bank's performance. ROA reflects the value of a bank's profitability measured against its assets, most of which are funded by public deposits. The formula used to calculate ROA is net income divided by total assets.

Effect of Green Accounting on Financial Performance

Green accounting aims to provide environmental information to external and internal stakeholders, but the environment must be identified, recorded, measured and evaluated fully in reports by internal and external parties. and social phenomena, which should be presented as they are and relevant (Lako, 2018). Currently, green accounting reporting, in this case the disclosure of carbon emissions in Indonesia, is still voluntary, so not all large manufacturing and banking companies in Indonesia disclose information about disclosing carbon emissions in their reports (Nurlis, 2019). Based on this, the role of green accounting in making the information contained in the financial statements can be presented more fully, namely containing information about the company's responsibility for the use of resources related to the environment. Applying green accounting to companies also enables sustainable profit growth and allows stakeholders to positively assess the financial results presented. Investor interest in environmentally sensitive and concerned companies stems from the fact that companies tend to be able to generate long-term profits to improve their financial performance (Soa et al., 2020).

Effect of Quality Management on Financial Performance

The quality of the company will increase when adopting a management approach that includes processes to identify, understand and control all the processes that are interconnected. Companies in increasingly tight and competitive economic conditions are to get the maximum profit with long-term growth and also to maintain the survival of the company itself (Choiriah, 2019). Good quality management helps a company achieve its goals more effectively and efficiently. This is one of the interrelated quality management principles that can influence the effective management of resources and create a competitive advantage over competitors. Quality management that uses company resources effectively and manages employee potential well can increase employee productivity, improve quality and improve company performance (Chang et al., 2015), (Ali et al., 2019), and (Solikhah et al., 2021).

Effect of Green Innovation on the relationship between Green Accounting and Financial Performance

Applying green accounting and demonstrating good environmental performance contributes to good financial performance. This is well documented in several studies showing that financial performance, in this case the market value of a company, is strongly influenced by environmental performance and the impact is positive. The relationship between environmental performance and financial performance can be viewed in terms of revenue and cost. Companies that implement green accounting focus on sustainability and typically integrate green innovation strategies to reduce their negative environmental impact (Tariq et al., 2019). Green innovation or green innovation in the banking sector refers to using the concept of green, effective and efficient innovation to transform various financial technologies, financial institutions and financial markets. Consideration is the process of developing and marketing new financial products. Improve corporate competitiveness and increase corporate value.

Effect of Green Innovation on the relationship between Quality management and Financial Performance.

It is important for companies to have a quality management system aimed at maintaining desired quality levels. The company cares not only about the quality of its products but also across other aspects such as the quality of the company in the eyes of consumers, such as services and employees. Consistent and optimal implementation of quality management impacts all business activities and enhances satisfaction, corporate governance, customer loyalty, improved and optimal use of corporate resources. Companies that implement quality management typically have work systems that are environmentally friendly, facilitative, effective, efficient, and constantly evolving. Applying green innovation to companies that share the same vision can have a significant impact, thereby increasing competitive advantage and improving company performance (Widyaningdyah & Aryani, 2013).

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III. METHOD

Operation variable

A research variable is explicit, but theoretically based and supported by a hypothesis. The variables used in this study are the dependent and independent variables.

Table 1 . Variable Operationalization

Variable	Indicator	Scale	Source
Financial Performance (Y)	ROA = (Profit After Tax / Total Asset) x 100	Ratio	(Endiana, et al., 2020)
Green Accounting (X ₁)	GA: Total corporate environment items/Environmental items from GBI	Ratio	(Soa, et al., 2020), (GBI, 2016)
Quality Management (X ₂)	Quality management: _Total QM items in the company / Total Item ISO 9001 - 2015	Ratio	(Maama & Gani, 2022)
Green Innovation	Log (1 + green innovation)	Ratio	(Desalegn & Tangl, 2022)

Research method

This study used secondary data types, data that comes from existing sources and does not need to be collected by the researchers themselves. The data used is information created by companies, such as securities reports, business reports, sustainability reports, and GRI standards. The data for this study is based on a sample of banking companies listed on the Indonesian Stock Exchange (IDX) for the period 2017-2020.

Analysis and results

Descriptive statistics are statistics that describe specific values of variables in a study, such as mean, maximum, minimum, and standard deviation.

Table 4.1. Descriptive statistics

N	Minimum	Maximum	Mean	Std. Deviation	
Green Accounting	185	,000	1,000	,65473	,290025
Quality Management	185	,143	1,000	,80076	,169876
Green Innovation	185	,000	1,176	,74194	,211254
Financial Performance	185	-18,058	3,251	,28350	2,442101
Valid N (listwise)	185				

Based on the results in the descriptive statistics analysis table above, we know that:

1. The number of samples (N) used in the study was 185.
2. The minimum value for green accounting is 0. The highest value is 1. The mean is 0.65473 and the standard deviation is 0.290025.
3. Quality Control has the lowest score of 0.143. On the other hand, the maximum value is 0.80076 mean and 0.169876 standard deviation.
4. The minimum value for Green Innovation is 0. The highest value is 1.176. The mean is 0.74194 and the standard deviation is 0.211254.
5. The lowest financial performance is -18.058. Maximum value maximum 3.251. The mean is 0.28350 and the standard deviation is 2.442101.

Analysis Results

The study uses the dependent variable 'financial performance', two independent variables consisting of 'green accounting' and 'quality control', and a moderator variable 'green innovation'. The results of the hypothesis tests performed are summarized in the following table.

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Table 4.2 Coefficient Overall Test Results

VARIABLE	+ / -	β	t	Sig
GA	+	0.212	2,628	0.009
QM	-	-0,047	-0,584	0,560
GA *GI	+	0,569	2,446	0,015
QM *GI	+	0.413	3,615	0,000

GA=Green Accounting, QM=Quality Management, GI=Green Innovation

Table 4.3 Summary of Hypothesis Testing Results

code	hypothesis	Conclusion
H1	Green Accounting has a positive effect on Financial Performance	Accepted
H2	Quality Management has a negative effect on Financial Performance	Rejected
H3	Green Innovation strengthens the influence of Green Accounting on Financial Performance	Accepted
H4	Green Innovation strengthens the influence of Quality Management on Financial Performance	Accepted

Effect of Green Accounting on Bank Performance

Environmental accounting is an important tool in supporting environmental management and operating costs of natural resources. Test results using regression analysis show that the bank's performance coefficient is positive and significant, with a significance level of 0.009 ($\text{sig} < 0.05$). Thus, the test explains that green accounting variables have a positive impact on bank performance as expressed in Return on Assets (ROA). Therefore, the first hypothesis is accepted. Environmental management is a major issue when companies regard the environment as a corporate asset as a corporate strategy. Green banking as part of environmental accounting ensures that banking activities do not contribute to pollution (Dhar & Ferdous Chowdhury, 2021). Green banking practices in banks can therefore reduce negative environmental impacts (reduce paper consumption, save energy, reduce fuel consumption and emissions) and positive environmental impacts (environmental education and environmental awareness) will improve the bank's environmental performance. employee. (Construction of green buildings and utilization of solar and wind energy) Banks. Therefore, if a bank has good environmental management, the company's performance will also improve. On the other hand, as environmental problems in banks become more and more apparent, it is imperative to introduce environmentally friendly banking operations, which will ultimately lead to environmental protection and improved environmental performance of banks. In this case, green banking as a form of social responsibility improves a bank's reputation in the eyes of investors through its positivitye (Rosdwianti & Dzulkriom, 2016). This is consistent with the study (Shaumya & Arulrajah, 2017) that green banking impacts banks' financial performance. Through green banking practices, banks can improve their environmental performance. This allows the bank to protect the environment and build its image as a good corporate citizen. Green banking can therefore be a way to reduce pollution and protect the environment.

Effect of Quality Management on Bank Performance

Total Quality Management is a management system aimed at improving the quality of company performance and making changes to ensure customer satisfaction. The test results determined by regression analysis indicate that the quality control variable represented by the quality control indicator hurts bank results. This is expressed as return on invested capital (ROA) and its significance level is 0.560 ($\text{sig} > 0.05$). Therefore, the second hypothesis is rejected. As a service provider, banks must maintain and improve customer satisfaction and meet customer needs by offering quality products and services. If bank management becomes unstable, it will affect service quality as well as generate profits. In addition, according to (Hosen et al., 2021), during the process of implementing TQM, organizations usually experience confusion, instability and various obstacles in the process. Therefore, lack of continuity or lack of top management involvement in all TQM activities can change employee attitudes towards improving organizational quality and negatively impact customer satisfaction and bank profits. On the other hand, as part of good TQM practices, companies also offer staff support, rewards and incentives to, increase employee motivation. However, this does not rule out the possibility that this can actually reduce bank revenues if it is not implemented in a transparent and targeted manner. According to (Lleshi & Lani, 2017), the quality management system has no impact on the

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financial performance of the banking sector in Kosovo. We see that the bank does not adhere to service quality, but pays attention to the "voice of the customer", which represents the wishes, thoughts, perceptions, expectations, needs and specifications of users. Financial institutions and services provide services that meet these requirements to meet user needs and avoid errors in the provision of banking services. Banks that can get the right combination of what they sell and the quality of service they provide have a real opportunity to increase their market share (which is what every bank wants) and implicitly increase their profits.

Effect of Green Innovation on the Relationship between Green Accounting and Bank Performance

A regression analysis of the interaction variable between the green accounting and green innovation variables for bank performance shows a significant value of 0.015, which is less than 0.05. This means that Hypothesis 3 is accepted and that green innovation can reduce the impact of firm size on bank performance. As such, green innovation strengthens the link between green accounting and bank performance. According to (Merton, 1992), the use of green innovation can improve the competitiveness of firms and create added value for firm owners. In the financial sector, especially the banking sector, ATMs, debit cards, automated teller machines, Internet banking, and mobile banking are widely used products as vehicles for financial innovation (Agarwal & Zhang, 2020). Especially internet banking, mobile banking, debit cards and credit cards are classified as green financial products in the banking sector compared to other products. The above are some of the implementation of green innovations that lead to improved green accounting practices in banks and indirectly increase bank revenues. (Desalegn & Tangl, 2022) found that green innovation in banking addresses all social and environmental/ It turns out that environmental issues are taken into consideration. It shows that the concepts of ethical investment, environmental protection and energy efficiency are also included. Protect the environment and natural resources. As part of sustainability practices, this will help increase the adoption of green accounting by banks. In general, better green accounting practices lead to better bank performance (Deb et al., 2020). This is consistent with the work of (Barra & Ruggiero, 2022), who found that process innovation has a significant positive effect on bank performance efficiency in Italian firm innovation and regional bank efficiency.

Effect of Green Innovation on the Relationship between Quality Management and Bank Performance

The results of the regression analysis of bank performance interaction variables between quality management and green innovation variables show a value of 0.000 (sig <0.05). In other words, green innovation strengthens the relationship between quality control and banking performance. Hypothesis 4 is accepted: Green innovation reduces the impact of green accounting on bank profitability. TQM is a management system that can improve individual and organizational performance. This not only makes it easier for companies to gain competitive advantage (Zwain et al., 2017), but also helps them develop competitive products and services with high quality, low cost, and timely delivery. This is green innovation, facilitating the impact of quality control on bank performance, and also with the help of green innovation technology, banking companies can remain competitive in the market (Aguilera-Caracuel & Ortiz-de-Mandojana, 2013). Therefore, green innovation can play a key role in improving quality control to meet bank profit targets. This is in accordance with the statement (Abbas, 2020) that TQM is a management system that has the potential to improve individual and organizational performance.

IV. CONCLUSIONS

The purpose of this study is to investigate the impact of green accounting and quality control on banks' financial performance and to investigate the inhibitory effects of green innovation in banking companies listed on the Indonesian Stock Exchange. Also, with the issuance of Financial Services Authority Regulation (POJK) No. 51/POJK.03/2017 on Sustainable Finance Practices for Financial Service Institutions and Issuers, the implementation of sustainable finance has entered a new phase. Learn. Whether it has been introduced by Indonesian banks through the introduction of green accounting. Research has shown that green accounting has a positive impact on a bank's financial performance, while quality control has a negative impact. Green innovation influences the relationship between green accounting and financial performance. Green innovation influences the relationship between quality control and financial performance of banks listed on the Indonesian Stock Exchange. We suggest that future research examines the topic under the same entity performance conditions but focuses more on providing financing loans for businesses engaged in sustainable sectors such as green bonds and financing of environmentally sound projects.

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