# ELEVEN YEARS OF GREEN ACCOUNTING RESEARCH IN INDONESIA: DESCRIPTION OF METHODS, THEORIES AND RESEARCH OBJECTS

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#### **ABSTRACT** (Tahoma, 10 pt)

Economic and environmental damage is the result unsustainable industrial governance. The concept of corporate sustainability, especially in terms of the environment, makes every activity carried out by the company need to be considered. The concept of green accounting is a concept of environmental responsibility where companies include environmental costs in their activities. Along with the development of the concept of green accounting in practice, research for this concept has also developed globally and nationally. This study provides knowledge to researchers interested in the field of green accounting about objects and variables that have and have not been used, methods that can be used, related theories, and objects or research samples that have been carried out for further research. The method used is Charting the field, where the research used is an article published in the journal Sinta 2 and Sinta 3 Kemendikbud with the accounting journal category. The results of this study show that 51 articles use green accounting as a variable in the study, with the dominant type of research being quantitative, namely 42 articles, while the dominant theory used is legitimacy theory, namely 25 articles and 12 articles using objects or samples in the form of manufacturing companies, this type of research obiect is the highest in Indonesia.

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#### I. INTRODUCTION

Natural disasters are currently occurring frequently in various parts of the world. Not only are social activities disrupted, these disasters have little to no impact on business activities. Natural disasters are also said to be the cause of serious social and economic disasters.(Samosir et al., 2020).Karni & Obrien (2020)states that economic and environmental damage are the main risks resulting from unsustainable industrial governance.

Economic actors, whether from the government, company owners, management or the wider community, certainly hope that these natural, social and economic disasters can be reduced, and should even be able to be repaired. Ashari & Anggoro (2021) stated that companies are currently starting to change their main objectives, not only to pursue financial gain (profit), but also to pay attention to the welfare of society (people) and to preserving the environment (planet). This concept is known as the triple bottom lines concept. This concept is expected to increase the value of the company and the welfare of shareholders, as well as to know the financial and non-financial potential concerning the sustainability of the company from a social and environmental perspective. (Dewi & Narayana, 2020).

The concept of corporate sustainability, especially in terms of the environment, makes every activity carried out by the company need to be considered, whether the activity has a positive or

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negative impact on the environment. If the activity has a negative impact, then in the future the company must spend a lot of money to be responsible for the consequences, both in terms of law and social and economic aspects, such as demands from the government and society, repairing its good name and attracting back lost consumers.

The concept that is currently starting to develop is green accounting, where this concept first started to develop in Europe since the 1970s. Green accounting or green accounting, also known as environmental accounting, is the application of accounting by considering environmental sustainability, namely by including environmental costs that are treated as expenses in company activities.(Dewi & Narayana, 2020). Environmental management information in environmental accounting is used by companies in deciding prices, controlling overhead and reporting environmental information to the public.(Sari & Hadiprajitno, 2013).

Research on green accounting only developed a century later, namely in the 1980s. (Musyarofah, 2013). Along with its development, the concept of green accounting is currently used in all types of profit companies, namely manufacturing, trading, and service companies, as well as in non-profit companies such as universities. The industry with the most complex activities is the manufacturing industry, where in its business process the company processes raw materials into ready-to-use goods which usually produce waste. This waste is an element that causes environmental damage(Ramadhani et al., 2022). Environmental damage will have an impact on the lives of the surrounding community and give a bad image to the company. The application of green accounting shows how the company is responsible for its business processes. (Hamdani et al., 2022).

The concept of green accounting can be applied from the time a company prepares its vision and mission, creates a business strategy, makes plans, carries out production of goods or services, distributes goods and services, until the goods and services are finished being used by customers.(Kurniawansyah & Prastiwi, 2022). If this corporate social and environmental responsibility is associated with the triple bottom line theory, it will incur large costs in the short term and provide benefits to stakeholders, increase public trust and increase sales and profits in the long term.(Hamdani et al., 2022).

Ashari & Anggoro (2021)states that in an integrated, relevant and comprehensive annual report of the company, it is necessary to disclose green accounting that provides financial, social and environmental impacts that are useful for decision making. Publication of environmental cost reporting serves as a communication tool that the company has carried out environmental responsibilities to stakeholders. The company's commitment to sustainable development will provide positive value so as to attract investors, increase consumer trust and increase the company's value in the eyes of the public.(Abdullah & Yuliana, 2018;(Dewi & Wardani, 2022). The importance of green accounting and environmental accounting disclosure in Indonesia is proven by the implementation of Financial Accounting Standards Statement Number 1 Paragraph 9 which encourages companies to disclose the implementation of social and environmental responsibility.(Anggita et al., 2022). Apart from that, in the banking industry regulations regarding green banking governance are also stipulated by Bank Indonesia and the Financial Services Authority(Samosir et al., 2020).

Several studies on the development of an accounting research topic have been conducted, including the development of budgetary slack research in Indonesia. (Nisa & Rokhayati, 2022) and the dynamics of Accounting Information Systems research in Indonesia (Penatari et al., 2020) which also uses the same method, namely Charting the field. There has been no research that maps green accounting research in Indonesia. Thus, this study aims to describe the development of green accounting research in Indonesia over the past 10 years (2012-2022). This period was chosen because in 2012, Government Regulation Number 47 of 2012 concerning Social and Environmental Responsibility of Limited Liability Companies began to be enforced, which requires companies to implement Corporate Social Responsibility (CSR) based on social and the environment and requires companies to include it in the Company's annual report and be accountable to the GMS.

Along with the increasing environmental awareness from both stakeholders and companies, research on green accounting is also expanding, both in terms of the diversity of variables, methods and research objects. This research will provide knowledge to researchers interested in the field of green accounting about objects and variables that have and have not been used, methods that can be used, related theories, and objects or research samples that have been carried out for further research.

#### II. METHODS

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The Charting the Field method used in this research is a method developed byHesford et al. (2006)namely mapping the phenomena and developments of existing research in several categories. The articles in this study are articles published in journals with Sinta 2 and 3 rankings with the keywords green accounting, green accounting, and environmental accounting. While in journals with Sinta 1 rankings, no articles were found with the keyword green accounting. Researchers chose journals with rankings 2 and 3 because journals with high rankings have quality and have undergone strict selection. In this study, the mapping categories used are based on research methods, theories, and objects or research samples.

Researchers conducted a systematic review of 51 articles in 28 journals accredited by Sinta 2 and 3 Kemendikbud. The article period is 11 years from 2012 to 2022. There are 3 articles published in early 2023, but researchers assume that the articles are the results of research in 2022 because the articles were collected in February 2023. There are 4 articles published in 2023, namely from the EJA journal 1 article, JAS 1 article, TIAR 1 article, and JDAB 1 article. The EJA, JAS, and JDAB journals are indexed by Sinta 2 and TIAR is a journal indexed by 3.

Table 1. Green Accounting Research Data in Sinta 2 and Sinta 3

No	Journal Name	Sinta	Title	Year	Writer
1	Accounting Analysis Journal	2	Green Earth: Carbon Emissions, ISO 14001, Governance Structures, Militarily Connected from The Manufacturing Industries in Indonesia	2020	Iswati, S & Setiawan, P
2	Accounting Analysis Journal	2	Analysis of Green Accounting Implementation in Semarang City	2013	Musyarofah, Siti
3	Accrual: Accounting Journal	2	Analysis of Green accounting to Support Corporate Social Responsibility (Case Study: Semen Gresik Hospital)	2016	Khoirina, Mahdia M
4	International Business and Accounting Research Journal	2	Implementation of Green accounting on Company Performance from Maqashid Syariah Index	2022	Wati, EE; Razimi, MSA; Sisdianto, E & Aprilian, L
5	International Business and Accounting Research Journal	2	Accounting Education: The Role of Universities in Imparting Sustainability Accounting Knowledge to the Stakeholders Through Industry Linkages	2017	Onyango, S; Muchina, SW & Ng'ang'a, SI

No	Journal Name	Sinta	Title	Year	Writer
6	Journal of Islamic Accounting and Finance Research	2	How Is the Implementation of Green Accounting in Public Hospitals?	2021	Ashari, MH & Anggoro, Y
7	Journal of Islamic Accounting and Finance Research	2	Comparative Study on The Application of Green accounting Based on University Social Responsibility at Universities In Pontianak	2020	Prasetyo, H; Indriani, IK & Widodo, A
8	Journal of Accounting (Tarumanegara)	2	Corporate Environmental Responsibility: An Effort to Develop a Green accounting Model	2018	Abdullah, MW & Yuliana, A
9	Journal of Accounting (Tarumanegara)	2	Determinants of Corporate Social Responsibility and Its Implications of Financial Performance	2022	Hamdani, Zatira, D & Suharti, E
10	Journal of Accounting (Tarumanegara)	2	Green accountingand Intellectual Capital Effect on Firm Value Moderated by Business Strategy	2023	Gantino, R; Ruswanti, E & Widodo, AM
11	Journal of Accounting (Tarumanegara)	2	Carbon Emission Disclosure and Green Accounting Practices on The Firm Value	2022	Anggita, W; Nugroho, AA & Suhaidar
12	Journal of Accounting (Tarumanegara)	2	Application Green accounting to Sustainable Development Improve Financial Performance Study in Green Industry	2022	Dura, J & Suharsono, RS
13	Indonesian Journal of Accounting and Finance (JAKI UI)	2	Greenhouse Gas Emissions Disclosure, Environmental Performance, and Corporate Value	2015	Anggraeni, DY

<b>No</b>	Journal Name	Sinta	Title	Year	Writer
14	Indonesian Journal of Accounting and Finance (JAKI UI)	2	The Influence of Environmental Performance on Economic Performance	2012	Titisar, KH & Alviana, K
15	Multiparadigm Accounting Journal	2	Voluntary Report Based on Green Accounting	2016	Fatwadi, Handajani, L & Fitriah, N
16	Multiparadigm Accounting Journal	2	Legitimacy of Green Accounting in Plastic Bag Restrictions	2020	Yulyanti, AE & Shauki, ER
17	Multiparadigm Accounting Journal	2	Does Foreign Ownership Contribute to Green Accounting and Firm Value?	2022	Soleha, AP & Isnalita
18	Multiparadigm Accounting Journal	2	Actualization of Islamic Teachings in Environmental Accounting Practices	2020	Rahim, S & Mus, SF
19	Journal of Accounting and Business Dynamics	2	Green Banking and Performance: The Role of Foreign and Public Ownership	2020	Karyani, E & Obrien, VV
20	Journal of Accounting and Business Dynamics	2	The Disclosure of Carbon Emissions in Indonesia: A Systematic Literature Review	2023	Nursulistyo, ED; Aryani, YA & Bandi
21	Journal of Accounting and Business Dynamics	2	The Impact of Carbon Disclosure on Firm Value with Foreign Ownership As a Moderating Variable	2020	Muhammad, GI & Aryani, YES
22	Journal of Accounting and Business Dynamics	2	Market Response to Companies Sustainability Disclosure and Environmental Performance in Indonesia	2021	Ihsani, MA; Firmansyah, A & Estutik, RS

No No	<b>Journal Name</b>	Sinta	Title	Year	Writer
23	Journal of Accounting and Business Dynamics	2	Corporate Governance and Green Banking Disclosure: A Study on Banks in Indonesia	2019	Handajani, Lilik
24	Journal of Accounting and Business Dynamics	2	Environmental Accounting from The New Institutional Sociology Theory Lens: Branding or Responsibility?	2020	Suryani, AW & Rofida, E
25	Journal of Accounting and Business Dynamics	2	Does Eco-Efficiency Improve Financial Performance of Manufacturing Companies in Indonesia?	2019	Meutia, I; Ramadhani, M; & Adam, M
26	Journal of Accounting and Business Dynamics	2	Climate Change Disclosure Impact on Indonesian Corporate Financial Performance	2021	Iriyadi & Antonio, Y
27	Journal of Accounting and Business Dynamics	2	Do Board of Commissioners Characteristics and International Environmental Certification Affect Carbon Disclosure? Evidence From Indonesia	2021	Ummah, YR & Setiawan,D
28	Journal of Contemporary Accounting Research	2	Green accounting Based on University Social Responsibility: Understanding and Concern in Application	2021	Sartika, N & Iznillah, ML
29	Journal of Contemporary Accounting Research	2	Implementation of Green Accounting on Financial Performance	2020	Faizah, Bella SQ
30	Accounting Research Media Auditing & Information	2	Optimizing Business Performance in Property Management with Green Building Evidence in Indonesia	2022	Samosir, David KBMT

<b>No</b>	Journal Name	Sinta	Title	Year	Writer
31	Accounting Research Media Auditing & Information	2	Environmental Management Accounting in Universities: Evaluation of EMA Implementation Readiness in Paper, Electricity and Water Consumption	2013	Suhartono, B & Frisko, D
32	The Indonesian Accounting Review	2	The Effect of Implementing Green Accounting on the Environmental Performance of Cement, Energy, and Mining Companies in Indonesia	2023	Melenia, F; Agustini, AT & Putra, HS
33	AFRE Accounting Financial Review	3	Implementation of Green Accounting on Company Profitability in Indonesia	2019	Chasbiandani, T; Rizal, N & Satria, I
34	Indonesian Accounting and Finance Periodical	3	Does Green Company Improve Financial Performance?: Empirical Study on Mining Companies in Indonesia	2022	Kurniawansyah, D & Prastiwi, I
35	Udayana University Accounting E- Journal	3	Green accounting, Disclosure of Corporate Social Responsibility and Profitability of Manufacturing Companies	2022	Dewi, PP & Wardani, IGADS
36	Udayana University Accounting E- Journal	3	Implementation of Green Accounting, Profitability and Corporate Social Responsibility on Company Value	2020	Dewi, PP & Narayan, IPE
37	Udayana University Accounting E- Journal	3	Good Corporate Governance Moderates the Influence of Corporate Social Responsibility and Green Accounting Implementation on Financial Performance	2021	Misutari, NMS & Ariyanto, D
38	International Journal of	3	The Benefits of Green Building for Cost Efficiency	2020	Samosir, DKBMT;

<b>No</b>	Journal Name	Sinta	Title	Year	Writer
	Finance, Accounting, and Management				Murwaningsari, E; Augustine, Y & Mayangsari, S
39	JABI (Indonesian Journal of Sustainable Accounting)	3	Green Banking Practices in Mediating the Influence of Corporate Social Responsibility on Banking Company Performance	2022	Wrespatiningsih, HM & Mahyuni, LP
40	Journal of Accounting Science	3	The Effect of Green accounting Implementation on Islamic University Social Responsibility	2023	Haryati, T; Kirana, NWI; Wilasittha, AA & Putri, SY
41	Journal of Accounting and Auditing (UNDIP)	3	The Influence of Green Innovation on Economic Performance with Environmental Management Accounting as a Moderating Variable	2019	Mariyamah & Handayani, S
42	Journal of Accounting and Auditing (UNDIP)	3	Supervision of the Implementation of "Green Accounting" Based on University Social Responsibilities (USR) at Semarang State University and Comparative Study of Universities in Semarang City	2013	Sari, MP & Hadiprajitno, PB
43	Journal of Financial and Business Accounting	3	Implementation of Green Accounting and Women on Board in Sustainable Development	2022	Wiguna, M; Indarti, S; Thamrin & Andreas
44	Trisakti Accounting Journal	3	The Moderating Role of Environmental Management Accounting on Firm Value	2022	Damas, D & Tarisa, B

<b>No</b>	Journal Name	Sinta	Title	Year	Writer
45	Trisakti Accounting Journal	3	The Influence of Green Accounting Implementation and Environmental Performance on Financial Performance with Corporate Governance as a Moderating Variable	2022	Ramadhani, K; Saputra, MS & Wahyuni, L
46	Journal of Information, Taxation, Accounting, and Public Finance	3	The Relationship between Organizational Size and Management Understanding of Green Accounting Implementation	2020	Ashari, MH; Muawanah, U & Lisa, O
47	Journal of Accounting and Finance Research (UPI)	3	The Impact of Green Accounting and Environmental Performance Implementation on Economic Performance	2020	Rosaline, VW & Wuryani, E
48	Journal of Research and Application: Accounting and Management	3	Achieving Business Success with Green Accounting Implementation	2021	Ashari, MH & Anggoro, Y
49	Nominal: Barometer of Accounting and Management Research	3	Implementation of Green Accounting Based on University Social Responsibility (USR) at Yogyakarta State University	2014	Astiti, W
50	Owner: Accounting Research and Journal	3	The Role of Environmental Management Accounting in Mediating Environmentally Friendly Innovation on Corporate Value of Companies on the IDX	2022	Sari, N & Gantino, R
51	Indonesian Accounting and	3	The Influence of Green Accounting and Corporate Social Responsibility Implementation on Profitability	2022	Kholmi, M & Nafiza, SA

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No	Journal Name	Sinta	Title	Year	Writer
	Business		(Study on Manufacturing		
	Review		Companies Listed on the IDX in 2018-2019)		

## **III. RESULTS AND DISCUSSION**

The development of green accounting research for 11 years has increased along with the awareness of all parties regarding the importance of preserving the environment, both from the government in issuing environmental regulations, companies in carrying out environmental improvements and maintenance, communities that directly participate in preserving the environment and supervising business actors in carrying out environmental responsibilities. Meanwhile, in terms of knowledge and academics, environmental awareness is carried out by increasing research on the environment, one of which is green accounting, the results of which can be utilized by all types of stakeholders.

Perkembangan Penelitian Green accounting di Indonesia

18

12

7

2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022

Figure 1. Development of Green Accounting Research in Indonesia

Figure 1. Development of Green Accounting Research in Indonesia

Based on the image above, the highest number of studies was in 2022. Insignificant growth occurred from 2012 to 2019, but in 2020 research increased sharply. In 2021, green accounting research decreased slightly, but in 2022 it increased sharply again. This proves that green accounting, which is a form of relationship between business and the environment, is important to study sustainably.

## **Classification based on Research Method**

The article groups are divided into three main groups in this study, namely quantitative research method groups, qualitative research methods, and mixed methods. It is known that 42 articles (82.3%) use quantitative research methods with regression data analysis models of 33 articles, SEM 3 articles, descriptive data analysis 5 articles and Mann Whitney U-test model 1 article. The data collection method for quantitative methods in this group comes from secondary data in the form of financial reports, annual reports and sustainability reports as many as 33 articles, with questionnaires 6 articles, and multiple methods such as interviews, questionnaires, observations as well as secondary data 3 articles.

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The qualitative and mixed method research groups have a much different number from the previous group. The qualitative research method group consists of only 7 articles (13.7%) with the interview data collection method 1 article, secondary data in the form of literature 1 article, and multiple methods 5 articles. While the mixed method group consists of only 2 (4%) articles with the questionnaire data collection method 1 article, questionnaire and interview 1 article and multiple methods 1 article.

Table 2. Types of Research and Data Collection Techniques

Data collection Types of Questionnaires and Secondary Multiple Method Amount research (or) interviews 6 articles 33 articles Quantitative 3 articles 42 articles Qualitative 1 article 1 article 5 articles 7 articles Mixed Method 1 article 1 article 2 articles

**Amount** 8 articles 34 articles 9 articles

Mutltiple Method Secondary Questioner and or Interview 5 10 15 20 25 30 35

Figure 2. Data Collection Method

Based on the types of research above, quantitative research is research that is predominantly secondary data from financial reports, annual reports, and/or sustainability reports. Quantitative research allows researchers to use a lot of data from various companies over a long period of time. Some quantitative research uses figures in the form of environmental costs measured by environmental investment.(Haryati et al., 2023), environmental performance measured by electricity usage listed in the annual report(Kurniawansyah & Prastiwi, 2022), green innovation as measured by GRI indicators(Sari & Gantino, 2022), the application of green accounting is measured by environmentally friendly products(Faizah, 2020)obtained from financial reports and processed according to the researcher's needs. The selection of research methods must be adjusted to the data available and the research analysis conducted.

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## **Classification of Articles Based on the Theory Used**

Grand theory used in research in Indonesia is very diverse, ranging from legitimacy theory, stakeholder theory, Signaling theory, Agency theory, Nudge theory, Organizational Behavior theory, Shari'ah enterprise theory, Institutional theory, New Institutional Sociology theory, theory of Socially Responsible Investment (SRI), Upper Echelon theory, Discretionary Disclosure theory, Triple Bottom Line theory, Resources-Based Theory (RBT), Political Economy theory, Three Basic Pillars theory, Social Constructivism theory, The theory of Sustainability Accounting. However, not all studies clearly state the theory used in their research, because it was found that 9 articles did not mention one of the theories above or other relevant theories.

Some theories sound very foreign in the world of accounting. The use of these theories cannot be blamed. Shonhadji (2021) stated that accounting is a social science where humans as members of society are not separated from their environment, both the social environment and their professional environment, so it is possible that accounting research will involve other social sciences such as sociology and anthropology.

Good research is not based on the number of theories used. 20 articles chose to use only 1 basic theory, 14 articles used 2 theories, and 8 articles used 3 theories. The most widely used theory is legitimacy theory, which is 25 articles and stakeholder theory as many as 19 articles, of which 15 articles use the theory simultaneously. This means that the two theories support each other and are closely related to green accounting. Among the 15 articles, 4 articles are also equipped with other theories, namely 2 articles with signaling theory and 2 articles with upper echelon theory.

Legitimacy theorystates that management will choose a strategy that does not violate and is legally accepted, so that the company's image remains good in the eyes of stakeholders (Patten, 1992). The company will disclose all its activities if the activities are in accordance with norms and in accordance with public needs. (Wrespatiningsih & Mahyuni, 2022). So this theory is relevant for use in green accounting and environmental accounting research where several research results on green accounting or environmental accounting disclosures specifically provide a positive influence on company value. (Anggraeni, 2015; Damas & Tarisa, 2022), economic performance(Titisari & Alviana, 2012;Rosaline & Wuryani, 2020), company profitability(Chasbiandani et al., 2019;Dura & Suharsono, 2022), business performance(Samosir, 2022), market performance(Ihsani et al., 2021).

Stakeholder theoryfirst proposed by R. Edward Freeman in 1984. This theory states that a company's business is not solely carried out to provide benefits to one person, but also to provide benefits to all stakeholders, including owners, employees, government and society. Disclosure of information by companies, either through annual reports or other forms about company activities, can change stakeholder perceptions and expectations.(Dewi & Wardani, 2022). Disclosure of green accounting in annual reports, as well as details of environmental costs in financial reports are expected to be useful and influence stakeholders' economic decisions towards the company. Economic decisions here are investment decisions for investors, consumption decisions for customers, to regulatory decisions for the government. So it can be said that this theory is relevant to use in green accounting research.

In addition to legitimacy theory and stakeholder theory, 9 studies used signaling theory. This theory states that company management will provide signals in the form of information that is expected to provide positive value for the company. (Spence, 1973). The relationship between signal theory and green accounting is not much different from legitimacy and stakeholder theory, where management provides green accounting information through annual reports or other forms of reports containing environmental responsibilities to investors,

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employees, and the community in the hope that it can provide benefits to the public and the company itself. The expected benefits can be in the form of increased stock value or investment value, increased financial performance through increased sales made to the community. Ihsani et al. (2021) states that companies will tend to present complete information and higher environmental performance ratings as signals given to external parties to gain a good reputation to influence shareholder investment decisions, which will increase company value or market performance.

Table 3. Research Theory

Writer	Research Theory		
The Last Supper (2012)	Legitimacy theory		
Sari & Hadiprajitno (2013)	Agency theory, legitimacy theory and political economy theory		
Suhartono & Frisko (2013)	Didn't mention		
The Greatest Showman (2014)	Didn't mention		
Anggraeni (2015)	Legitimacy theory, Agency theory, Signaling theory		
Koirina (2016)	Didn't mention		
Fatwadi et al. (2016)	Didn't mention		
Samosir (2022)	Theory of organizational behavior		
Yulyanti & Shauki (2020)	Legitimacy theory and nudge theory		
Soleha & Isnalita (2022)	Signaling theory and Legitimacy theory		
(Rahim & Mus, 2020)	Shari'ah enterprise theory		
The Handmaid (2019)	Institutional theory		
The Last Supper (2020)	New Institutional Sociology (NIS) theory		
Karni & Obrien (2020)	Theory of socially responsible investment (SRI)		
Nursulistyo et al., (2022)	Didn't mention		
Meutia et al. (2019)	Signaling theory, legitimacy theory and stakeholder theory		
Iriyadi & Antonio (2021)	Legitimacy theory		
Muhammad & Aryani (2020)	Legitimacy theory		
The People & The People (2021)	Legitimacy theory, upper echelon theory and stakeholder theory		
Ihsani et al. (2021)	Signaling theory		
The Last Supper (2018)	Stakeholder theory, Legitimacy theory, and Discretionary Disclosure Theory		
Hamdani et al. (2022)	Signaling Theory, Triple Bottom Line Theory, Stakeholder theory		
Gantino et al. (2023)	Signaling theory, Resource-based theory (RBT)		
Anggita et al., (2022)	Legitimacy theory		
The Last Supper (2022)	Stakeholder theory, Legitimacy theory.		
The Last Supper (2021)	Didn't mention		
Faizah (2020)	Didn't mention		
Ashari et al. (2020)	Legitimacy theory, stakeholder theory		
Damas & Tarisa (2022)	Legitimacy theory, Stakeholder theory, Signal Theory		
Ramadhani et al. (2022)	Stakeholder theory, Legitimacy theory.		
Ashari & Anggoro (2021b)	Stakeholder theory, Legitimacy theory.		

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Stakeholder theory, Legitimacy theory
Legitimacy theory
Legitimacy theory
Stakeholder theory
Stakeholder theory, Legitimacy theory
Signaling Theory
Stakeholder theory, Legitimacy theory
Stakeholder theory
Stakeholder theory, Legitimacy the1bory
Stakeholder theory, legitimacy theory, Upper-Echelon
theory
Didn't mention
stakeholder theoryand legitimacy theory
Stakeholder theory
theory of the three basic pillars
Social constructivism theory
Sharia Enterprise Theory
Sharia Enterprise Theory
Theory of sustainability accounting
Didn't mention
Stakeholder theory, Legitimacy theory

## Classification based on Object, Sample or Research Location

The objects, samples or research locations are classified based on the type of industry in the following chart:



Figure 3. Object, Sample, or Research Location

Articles using manufacturing companies as objects are the highest number, namely 12 articles or 23% of all articles used in this study. Manufacturing companies mostly have a large impact on the environment.(Suryani & Rofida, 2020). Starting from the process of procuring raw

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materials, processing, to packaging and shipping finished goods, at least consuming energy and producing little waste that has the potential to pollute the environment. The Last Supper (2022) explains that in the manufacturing process, green accounting also focuses on the efficiency and effectiveness of resources in the long term for the alignment of company growth with the environment and providing benefits to society. Articles that use manufacturing companies as objects, samples or research locations are Onyango et al. (2017), The Last Supper (2018), Dura & Suharsono, 2022), Rahim & Mus (2020), The Last Supper (2020), Meutia et al. (2019), Chasbiandani et al. (2019), The Goddess & Wardani (2022), Mariyamah & Handayani, (2019), Wiguna et al. (2022), Ramadhani et al. (2022), as well as Kholmi & Nafiza (2022).

The second sequence is companies in general, almost all of which were selected using purposive sampling, there is only one article that uses the convenience sampling technique to determine the sample, namely researchMusyarofah (2013). Etikan et al. (2016) stated that these two types of sample collection methods were not selected based on the type of research, but based on the objectives to be achieved in the research. The purposive sampling method emphasizes comprehensive understanding by taking samples until no new information is received, in other words this method emphasizes sample saturation. The convenience sampling method or practical sampling is used with the assumption that the existing sample can represent the entire sample or ensure that the condition of the entire sample is general. Articles with general company samples amount to 11 studies or 21% consisting of The Last Supper (2020), Musyarofah (2013), Hamdani et al. (2022), Anggraeni (2015), Titisari & Alviana (2012), Muhammad & Aryani (2020), Iriyadi & Antonio (2021), The People & The People (2021), Faizah (2020), Misutari & Ariyanto (2021), as well as Damas & Tarisa (2022).

Samples or research objects using other types are ranked third, namely 18%, where these samples or objects consist of Automotive and Components companies and Consumer Goods sectors (1 article), customer goods companies (1 article), Retail Companies (1 article), Property Management Companies (2 articles), basic and chemical industry companies (2 articles), cement, energy and mining companies (1 article), and one article that does not use objects, samples or research locations in the form of agencies or organizations, but uses literature review techniques where the focus of the research object is scientific articles. The number of studies with this type of object or sample is 9 articles.

The selection of objects or locations for green accounting research is not only limited to companies, but some studies also choose objects or locations in the form of universities and hospitals. Research with objects or locations of research in the form of universities totals 6 articles and hospitals 5 articles. Prasetyo et al. (2020) conducted research at Pontianak University and explained that universities also have social and environmental obligations that are no less great than companies. University Social Responsibility (USR) is a term for social and environmental responsibility for universities that is considered equivalent to Corporate Social Responsibility (CSR). Universities throughout Semarang City(Sari & Hadiprajitno, 2013), University in Surabaya(Suhartono & Frisko, 2013), Yogyakarta State University(Astiti, 2014), Bengkalis State Polytechnic(Sartika & Inzillah, 2021), UIN Sunan Ampel Surabaya, Muhammadiyah University of Surabaya, and Nahdatul Ulama University of Surabaya(Haryati et al., 2023), is a university that has been selected as an object or location of research with the topic of green accounting. While for the object or location of hospital research, among others, is Semen Gresik Hospital(Khoirina, 2016), General Hospital in Malang Raya Regency(Ashari et al., 2020; (Ashari & Anggoro, 2021), Mataram City Regional Hospital(Fatwadi et al., 2016), in the second level region (Dati II) this includes Malang (Regency and City) and Batu City(Ashari & Anggoro, 2021b).

Non-financial public companies listed on the Indonesia Stock Exchange (IDX) were taken as research objects or samples bySoleha & Isnalita (2022)as well asIhsani et al. (2021). Both studies took the same observation year, namely 2015 to 2019. Soleha & Isnalita (2022)using a sample of 260 companies with the main sample criteria being companies with SIC Code 6, whileIhsani et al. (2021)using 32 companies for 5 years, so that the sample becomes 160 companies with special criteria, namely companies participating in KLHK PROPER.

Research with banking and mining companies as objects was identified with the same number, namely 3 articles each. Research using banking companies used different observation years, including:Karni & Obrien (2020)with observation years from 2012 to 2018,(Handajani, 2019)using observation years 2015 to 2017,The Last Supper (2022)using banking data from 2018 to 2020. Different observation years are also found in articles that use manufacturing companies as research objects or samples, including:Wati et al. (2022)using data from 2016-2020,(Kurniawansyah & Prastiwi, 2022)using data from 2016-2021, andGoddess & Narayana (2020)using 2015-2019 data.

Mapping on this type of research object shows that all types of business activities have an impact on the environment, however a business must use energy obtained at the expense of the environment so it must provide accountability. This strengthens the statementRamadhani et al. (2022)that green accounting is a concept of environmental responsibility that must be applied to all types of companies. So that in the research, all types of companies are relevant to be used as objects of green accounting research. Ramadhani et al. (2022)also stated that the companies that produce the most waste are manufacturing companies. In this study, it was found that there were 12 studies that used manufacturing companies as research objects.

## IV. CONCLUSION

Research on green accounting is one of the things that is currently increasing. This can be caused by the increasing global attention to the concept of sustainability. The responsibility of companies today is not only to provide benefits to shareholders, but also to provide environmental responsibility to the wider community. The development of green accounting research for 11 years has increased. Mapping of green accounting research conducted from 2012 to 2022 with a systematic review in the Sinta 2 and Sinta 3 Kemendikbud journals with the accounting category, shows that the highest number of studies was in 2022. Not too significant growth occurred from 2012 to 2019, but in 2020 research increased sharply. In 2021, green accounting research decreased slightly, but in 2022 it increased sharply again. This proves that green accounting, which is a form of relationship between business and the environment, is important to study sustainably.

Based on the research method, the quantitative research method group is the most widely chosen method, namely 42 articles (82.3%) with a regression data analysis model of 33 articles, SEM 3 articles, descriptive data analysis 5 articles and a Mann Whitney U-test model 1 article. The data collection method used is secondary data in the form of financial reports, annual reports and sustainability reports as many as 33 articles, questionnaires 6 articles, and multiple methods such as interviews, questionnaires, observations as well as secondary data 3 articles. Quantitative research allows researchers to use a lot of data from various companies over a long period of time. Some quantitative studies use figures in the form of environmental costs, environmental performance, green innovation, application of green accounting obtained from financial reports. The selection of research methods must of course be adjusted to the data available and the research analysis conducted.

Grand theoryused in research in Indonesia turned out to be very diverse. Legitimacy theory, stakeholder theory, and Signaling theory are the most widely used. These three theories are actually not much different, where legitimacy theory states that management will choose strategies and disclose information that is in accordance with norms, does not violate existing regulations, and is legally accepted in the community environment. Stakeholder theory states that a company's business is not solely carried out to provide benefits to one person, but also to provide benefits to all stakeholders,

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both from owners, employees, government and society. While signaling theory states that company management will provide signals in the form of information that is expected to provide positive value for the company.

In terms of objects, samples or research locations, it was found that most research in Indonesia uses manufacturing companies. This can be because manufacturing companies have a major impact on the environment because their activities include the process of procuring raw materials, processing, to packaging and shipping finished goods, which at least consume energy and produce little waste that has the potential to pollute the environment. However, the selection of objects or locations for green accounting research is not only limited to companies, but some studies also choose objects or locations in the form of universities and hospitals.

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