The Effects of the Implementation of Sustainable Finance on the decision-making of Financial Institutions

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ABSTRACT,

The importance of sustainable finance is gradually increasing along with environmental and social issues. This study adopts a systematic literature review on the application of sustainable finance by financial institutions and the effect this has on these institutions. A systematic analysis of research papers was obtained through the formulation of a comprehensive search query. Furthermore, a visual representation is provided of the analysis conducted in this study, presenting two tables that comprehensively depict the list of studies included in the analysis. Enabling readers to access detailed information regarding the studies examined in the research. Moreover, the findings indicate that although a standardized framework for understanding sustainable finance is absent, there is a common thread emphasizing the incorporation of Environmental, Social and Governance (ESG) principles into financial and investment decision-making processes. Sustainable finance is increasingly recognized as a vital tool for achieving long-term economic growth while safeguarding the environment and promoting social well-being. The main themes depicted in this research are stakeholder theory and ethical investments, with ongoing debates focusing on the regulation of sustainable finance practices in financial institutions. Future studies could build on the thorough understanding produced by this literature review and dive further into certain aspects of sustainable finance's impact on financial institution's decision-making.

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Keywords

Sustainable finance, ESG, Financial institutions, Green finance

1. INTRODUCTION

In recent years the need to solve environmental and social issues has become more urgent. One of the main forces behind this development is people's increased understanding of the dangers that climate change pose to the environment. This development has also shifted its way into the financial industry. Nowadays, many investors are searching for opportunities to invest in businesses that are dedicated to reducing their carbon footprint and preventing climate change. This shift in the decision-making process of investors has caused businesses to bring more attention to sustainable finance. Sustainable finance refers to "*the integration of environmental, social, and governance (ESG) aspects into financial decision-making*" (Edmans & Kacperczyk, 2022). Growing interest in sustainable finance and its potential to promote favourable environmental and social outcomes while providing financial benefits has accompanied the rise in sustainability concerns. This topic of sustainable finance is relatively new and trendy, which causes many unknowns and challenges with the implementation of policies and compliance to regulations by financial institutions. The implementation of sustainable finance means adding social and environmental issues in economic models, which sounds simple. However, the existing traditional economic models cannot simply add the social and environmental issues (Schoenmaker & Schramade, 2019b).

According to research done by Migliorelli (2021) "financial institutions, governments, and international organisations have tended to create definitions according to their underlying motivations". This begs the question what is and what is not considered to be sustainable finance. A survey held by European Banking Authority set to establish the definitions of ESG criteria currently being used by banks. The results of this survey demonstrated that "not only there was not one common definition being used, but also that some banks were using their own definitions" (Coleton et al., 2020). As more institutions establish their own definitions of the term, the absence of a universally accepted definition of sustainable finance poses a serious problem. This leads to confusion and inconsistency in how sustainable finance is understood and applied by diverse organizations and industries. Ultimately making it difficult to effectively incorporate sustainability factors into financial decision-making, which impedes the creation of unified policies and practices. This emphasizes the requirement for a uniform definition of sustainable finance to foster more accountability, comparability, and transparency among various players and markets (Coleton et al., 2020).

Sustainable finance has caught increased attention in recent years. There is a large amount of existing literature in the last decade serving as a good foundation of research for the topic sustainable finance. This literature review will include a thorough analysis of the present level of knowledge in sustainable finance, including an overview of its historical evolution, a list of its leading proponents and information on how sustainable finance affects financial institutions. Making an analysis and summary of the most recent academic and business literature on sustainable finance implemented by financial institutions, including reports, case studies, academic publications, and policy documents.

This literature review covers the years 2013 through 2023 and will concentrate on the most recent and pertinent material to identify knowledge gaps and prospective opportunities for additional study. Thus, the main research question of this research is: *To what extent does the implementation of sustainable finance affect the decision-making of financial institutions regarding investments?*

There are multiple objectives to be achieved derived from answering this research question. First, it can aid in determining how much financial institutions have incorporated sustainable finance concepts into their decision-making procedures. This can shed light on how well sustainable financing works to advance objectives including lowering carbon footprint of businesses and fostering social fairness. Second, it may assist in identifying the factors that promote and obstruct the adoption of sustainable finance, such as legislative frameworks, stakeholder expectations, and monetary incentives. This can help guide policy and regulatory actions meant to encourage financial institutions to use sustainable financing practices. Finally, addressing this research topic can increase knowledge of this significant and quickly developing subject and contribute to the continuing academic discussion on sustainable finance.

The main aim of this research is to identify themes and knowledge gaps in existing literature about sustainable finance and its impact in financial institutions' decision making. Also contributing to the ongoing discourse on their role in promoting sustainable development. This is done by critically synthesizing and analyzing existing literature. Ultimately gaining a vast amount of knowledge to be able to answer the research question and contribute to the existing literature.

The remainder of this paper is structured as follows. In the next section, the methodology is reviewed. It outlines the research design, data collection methods, and analytical techniques used in the study. In the section that follows, the findings are described in which the results of the research are presented, supported by relevant data, tables, and graphs. Then there is a discussion chapter which critically analyses the findings, contextualizes them within the existing literature, and explores their implications. Here the research question is also answered. Finally, the conclusion chapter summarizes the main findings, restates the thesis statement, and offers a comprehensive overview of the study's contributions. Highlighting avenues for future research and suggests practical applications based on the findings. Through this structured approach, the literature review aims to provide a coherent and insightful examination of the topic.

2. METHODOLOGY

2.1 Main methods to be used

The research design of this study is a systemic literature review, which relies on existing data. All data will be collected from scientific articles that are on the platform Web of Science[1]. It is important to identify and acquire relevant data through an effective literature search. There are many techniques for this, one of these techniques is called truncation. "This is done by using an asterisk * to represent any number of letters at the end of a word, for example susta* will find sustain, sustainable, sustainability" (University College London, n.d.). Not only is it important to know what to include in the search within a database, it is just as important to have a clear exclusion criterion.

For an effective search, first keywords needed to be posed. These key words are: "Sustainable Finance", "Green Finance", "ESG" and "Financial institutions". Then these key words are put together to form a narrow search on relevant material on the topic sustainable finance. This is done with the help of Boolean operators, AND, OR. Resulting in the following search term: "Sustainable Finance" AND "Financial Institutions" OR "ESG" OR "Green Finance"[1]. In this query 4,180 research papers were found. There are several exclusion and inclusion criteria that were used to refine the original query. First, the original query was refined by publication years, only including research papers from the last ten years. To capture the most

[1] The link of the query

relevant studies, while also ensuring a broad enough timeframe to comment on chronological developments. In this query 3,533 research papers were found. The next refinement to the original query was to exclude every other document type than an article. To ensure the results are peer-reviewed research studies, which are regarded as the most trustworthy and useful sources of information for academic and scientific purposes. In this query 3,131 research papers were found. Then, the category business finance was chosen within the category's given by web of science. As the main topic of this literature review is sustainable finance, this category ensures the search only contains journals that publish articles related to finance and excludes articles that are not relevant for this research. This addition to the query resulted in 761 research papers. Next, out of 300 available meso level citation topics, there was chosen for 6.3 management or 6.10 Economics or 6.115 Sustainability Science. This refinement was added to the query because these include journals that publish articles related to organizational behaviour among others, which is of a specific interest to this research. This resulted in a search of 674 research papers. Finally, to ensure all articles provided can be read without expense, the category all open access was chosen. Resulting in 216 research papers of papers which are relevant to this research about the topic sustainable finance[2].

Due to time constraints, a decision was made to forego the comprehensive reading of all 216 articles identified through the initial search query. Instead, a pragmatic approach was adopted wherein the oldest 20 papers and the most recent 20 papers were selected from the selection created by the search query. This method allowed for a representative sampling of the research landscape over time, enabling an examination of both early contributions and current developments in the field. By employing a chronological ordering of the selected papers, the study aimed to capture a longitudinal perspective and facilitate an understanding of the evolution of knowledge within the subject area.

Figure 1 presents a search flow chart that shows a step-by-step process, at each step encasing the refinement criteria used supported with the number of research papers as a result of the used criteria.

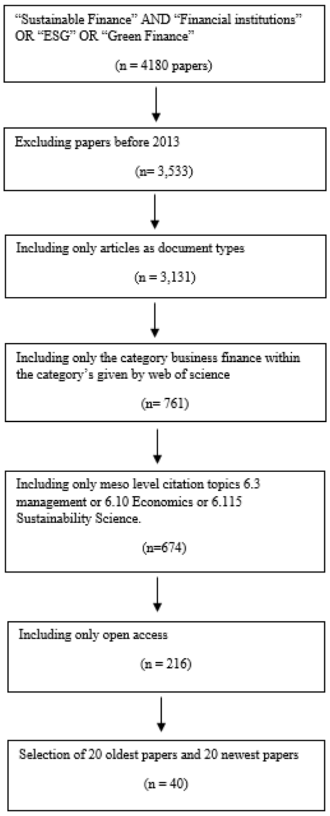

Figure 1: Search flow

2.2 Application Areas

The data extracted from the selected studies will be collated and subjected to a chronological structure highlighting the key trends, concepts, and challenges that have emerged in the research literature in a clear and structured way, helping to contextualize the current state of the field.

Furthermore, the literature review will benefit investors and academics. Investors can use the literature review as a tool to spot developing patterns, possible dangers, and business possibilities in the sustainable finance sector. Informed decisions regarding investments may also be made by investors with the aid of extensive knowledge of the available research and empirical data.

For academics, the literature review will contribute to the development of a more sophisticated and thorough knowledge of the topic of sustainable finance. It will also aid in directing the formulation of research hypotheses and queries. The literature evaluation will then improve the academic research's rigor and credibility by ensuring that it is based on the body of current knowledge.

3. FINDINGS

3.1 Descriptive Statistics

3.1.1 *Year wise statistics*

In this section the development of sustainable finance in the research papers will be discussed. The development will be measured by looking at key words and titles. In the research paper of Amel-Zadeh & Serafeim (2017) it states that there has been an exponential growth of the number of companies who measure ESG data. This can also be seen in the literature search. As a result of the query used for the literature search the distribution of the research papers is as follows: the amount of

[2] query

research papers came to a total of 216 research papers of which 44 were published between 2013-2020 and 172 after 2020 (Amel-Zadeh & Serafeim, 2017).

Figure 2 is a representation of the development of research papers found in the search query of this literature review. In this figure you can see that the topic of sustainable finance became increasingly popular in the last 5 years.

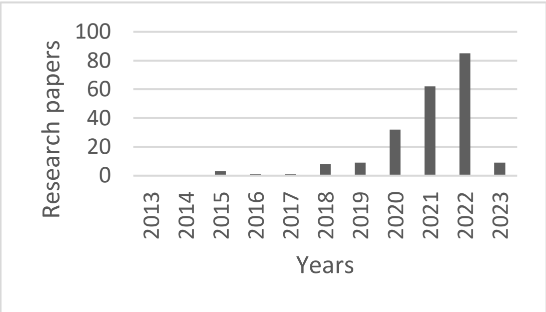

Figure 2: Research papers per year

3.1.2 *Field wise statistics*

In the existing literature there are many synonyms and words used when describing sustainable finance. Some of these synonyms were mentioned earlier as they were used as key words in the literature search. The most common word used when talking about sustainable finance was 'environmental, social and governance (ESG) aspects'. Camilleri (2015) describes the term corporate social responsibility (CSR) and explains the relationship it has with sustainable economic growth. It states that according to the European Council's Lisbon Summit: CSR can contribute towards achieving the strategic goal of the EU. This is the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion (Camilleri, 2015). In addition to the research paper of Camilleri, the study of Dorfleitner et al. (2018) offers data regarding how CSR initiatives affect stock returns over the long run. In which is stated that from a corporate finance perspective, CSR affects costs of capital.

Furthermore, to determine the development of the concept sustainable finance, key words were analysed throughout the years and word clouds were created. Through the search query, a complete collection of the selected research publications in the field of sustainable finance was used to produce the word clouds. To ensure representative coverage of the research environment and to make accurate assumptions about the prominence and trends in the subject of sustainable finance, it is crucial to use this appropriately large and diversified dataset. The text of each research paper was analysed, and key words were noted. Then, the frequency of occurrence of each keyword was calculated. The more frequently a keyword appeared across the entire dataset, the larger its size was depicted in the word cloud. This methodology ensured that the size of the words within the word clouds accurately reflected their relative frequency within the corpus of research papers.

The resulting word clouds provide a visual representation of the most frequently mentioned terms and concepts in the domain of sustainable finance. By presenting the words in varying sizes, the word clouds offered an intuitive and accessible means of discerning the relative importance and prevalence of different topics within the research papers analysed.

Five years ago (Figure 2), the key words that were found the most frequent were 'SRI', 'ESG' and 'shareholder engagement'. 'CSR' was found again in several papers. Also, sustainable finance appeared in several papers.

Figure 3: Word cloud Keywords five years ago

Recently (Figure 3), the key words such as CSR and ESG remained to be found often. The main key words found were 'Sustainable Finance', 'responsible investment', 'ESG' and 'Green finance'. Moreover, many new concepts have reached the surface as there is more and more information available on the topic.

Figure 4: Word cloud Keywords present day

3.2 Studies associated with this thesis' topic

3.2.1 *Sustainable Finance definition*

The studied selection of chosen papers on the topic of sustainable finance found an extensive number of definitions. Yet, there are still several papers which lacked an in-depth description of the concept of sustainable finance. The first clear definition used in several papers described sustainable finance as 'incorporating climate change factors into financial decision-making procedures to encourage long-term economic stability, reduce climate risks, and accelerate the shift to a low-carbon' economy (Y. Huang et al., 2023; Jung & Song, 2023).

Another definition described sustainable finance as 'finance that meets the social, environmental, and livelihood needs of the present generation without compromising the ability of future generations to meet their own needs' (Cash, 2018; Duygun et al., 2023; Kemfert & Schmalz, 2019; Raluca Gh. Popescu & Popescu, 2019). Papers also described sustainable finance as 'having financial focus which lies on corporate social responsibility performance, environmental, social and governance reporting and environmental, social and governance disclosure' (Aboud & Diab, 2018, 2019; Anazonwu et al., 2018; Li et al., 2018).

Beside these definitions there was one definition that could be seen in many studies. This definition of sustainable finance was described as 'the consideration of ESG issues in investment decisions, recognizing their potential impact on financial performance and aligning financial goals with long-term sustainable outcomes' (Agoraki et al., 2023; Amel-Zadeh & Serafeim, 2017; Bhaskaran, 2023; Capelle-Blancard et al., 2019; Ciciretti et al., 2023; Cohen, 2023; Dyck et al., 2023; Edmans, 2023; Indahl & Jacobsen, 2019; Juddoo et al., 2023; Kabderian Dreyer et al., 2023; Kilic et al., 2023; Lynch & O'Hagan-Luff, 2023; 'Newell et al., 2023; Onyali & Okafor, 2019; Schoenmaker & Schramade, 2019a; Tirodkar & Berkman, 2023).

In short, the extensive variation in definitions encountered across the reviewed articles indicates there is not a common definition within the scholarly discourse on sustainable finance. The absence of specific definitions in a subset of articles further underscores the absence of a standardized framework for understanding sustainable finance. However, a common thread can be identified, wherein sustainable finance entails the incorporation of environmental, social, and governance (ESG) principles into financial and investment decision-making processes.

3.2.2 *Area of Applications*

The papers that were selected show a wide range of applications in numerous domains. It is clear from this collection that many different topics have been examined. It is important to note that certain theme domains have become popular topics that feature in several publications. First, bonds and stock markets were a popular domain (Capelle-Blancard et al., 2019; Dorfleitner et al., 2018; Jung & Song, 2023; Onyali & Okafor, 2019). Furthermore, another popular domain was the domain of green infrastructure and financing (Agoraki et al., 2023; Y. Huang et al., 2023; Kabderian Dreyer et al., 2023; Mielke, 2019). Unsurprisingly the two most frequent domains were ESG information for investing and sustainable finance (Aboud & Diab, 2018, 2019; Amel-Zadeh & Serafeim, 2017; Bhaskaran, 2023; Bhatti & Sulaiman, 2023; Cash, 2018; Ciciretti et al., 2023; Duygun et al., 2023; Edmans, 2023; Kemfert & Schmalz, 2019; Khan, 2019; Li et al., 2018; Peng & Isa, 2020; Raluca Gh. Popescu & Popescu, 2019).

3.2.3 *Market*

The investigation of various markets within the chosen literature revealed the presence of market phenomena that can be observed and analysed across three distinct levels, namely at firm level, country level, and international/global level.

At firm level, the main focus of research revolved around firms that were publicly listed on a stock exchange. By focusing on this specific subset of firms, researchers aimed to gain deeper insights into the dynamics and performance of publicly traded companies operating within their respective markets (Agoraki et al., 2023; Bhaskaran, 2023; Ciciretti et al., 2023; Cohen, 2023; Edmans, 2023; Indahl & Jacobsen, 2019; Li et al., 2018; Lynch & O’Hagan-Luff, 2023; Tirodkar & Berkman, 2023).

At country level, it can be stressed that there are thirteen different countries present in this research's dataset, which has significant research implications. Given such a wide variety of countries were found in the dataset suggests that there are many markets available for in-depth investigation and research (Aboud & Diab, 2018, 2019; Anazonwu et al., 2018; Bax et al., 2023; Bhatti & Sulaiman, 2023; Capelle-Blancard et al., 2019; Du Rietz, 2018; Y. Huang et al., 2023; Juddoo et al., 2023; Kemfert & Schmalz, 2019; Matolcsy, 2020; Onyali & Okafor, 2019; Peng & Isa, 2020; Raluca Gh. Popescu & Popescu, 2019; Terták & Kovács, 2020; Wagemans et al., 2018).

At international/global level, the papers investigated the market phenomena. This allowed researchers to be able to examine and comprehend market dynamics and behaviors which extended across national boundaries, which provided important insights into the complexity and interdependencies of the global market (A. H. Huang et al., 2023; Jung & Song, 2023; Kabderian Dreyer et al., 2023; Khan, 2019; Kilic et al., 2023; Lynch & O’Hagan-Luff, 2023; Mielke, 2019).

In short, the dataset's inclusion of three distinct market levels: firm, country, and international/global levels presents researchers with an intriguing and varied field of study to pursue. This multi-level approach captures the nuances and interactions of markets at multiple levels, providing researchers with a thorough knowledge of market phenomena.

3.2.4 *Approach towards Investing*

Four dominant approaches towards investing have been identified, namely: socially responsible investment (SRI), principles for responsible investment (PRI), the integration of environmental, social, governance (ESG) criteria in investing, and green financing/investing.

First, socially responsible investing (SRI) is an investment approach that combines social and/or environmental benefits with financial rewards (Kilic et al., 2023).

Second, principles for responsible investment (PRI) creates value for investors and companies by incorporating various ESG factors and supporting the UN’s Sustainable Development Goals, acting in the long-term interests of all stakeholders (’Newell et al., 2023).

Furthermore, the incorporation of ESG criteria in investing creates long-term value for the business by optimizing the businesses’ financial, social, and environmental value in the long term.

Finally, green financing describes the approach of a core activity promoting low-carbon green growth, covers the operational costs, planning and preparation expenditures, and land purchase prices of green investments, connecting and enhancing all industries while also improving environmental quality on a global scale (Y. Huang et al., 2023).

To conclude, these approaches illustrate that sustainable finance is becoming more widely accepted as a necessary tool for attaining long-term economic growth, while also protecting the environment and supporting social well-being.

3.2.5 *Theories connected to Sustainable Finance*

Stakeholder theory has emerged as one of the main recurring theories across research papers due to its relevance in various fields such as management, strategy, corporate governance, and sustainability. This is caused by the fact that different CSR activities address different stakeholders and work through different economic channels (Dorfleitner et al., 2018). Li et al., (2018) argues that companies with stronger ESG disclosure might prove more appealing to financial investors and other important stakeholders, and that this enhanced connection between companies and their various stakeholders will create long-term financial benefits. Moreover, this paper presents several findings that suggest that ESG disclosures may increase corporate value by improving stakeholder confidence, accountability, and openness (Li et al., 2018). In addition to the paper of Li et al (2018), another paper states that “frameworks require the engagement of relevant stakeholders to foster a constructive environment that brings continuous improvements in ESG disclosures” (Camilleri, 2015).

The second recurring theme is the practice of ethical investments. Investors are becoming more aware of the significance of ESG elements when evaluating a company's long-term financial and sustainability success. The paper of Cash (2018) writes about concepts such as socially responsible investment (SRI) and principles of responsible investment (PRI). In essence these concepts mean that investors significantly consider governance, environmental and social concerns when investing. Furthermore, the study of De Zwaan et al. (2015) explains the concept of ESG financing which it defines as: “the systematic and explicit inclusion by investment managers of environmental, social and governance factors into traditional financial analysis and investment decision making based on an acceptance that these factors represent a core driver of both value and risk in companies and assets." (De Zwaan et al., 2015)

All findings mentioned in 3.2 Studies associated with this thesis' topic can be found in table 1 and table 2 in the Appendix.

4. DISCUSSION

4.1 Synthesis of literature

Table 1 and table 2 present a summary of the literature of the selection of the 20 oldest papers and the 20 most recent papers within the search query. There we can notice that there are many debates and contradictions. The most interesting debates found were regarding the approach of regulating sustainable finance practices of financial institutions. Tóth et al. (2021) poses the question to "why do companies publish ESG information." This question is answered by Li et al. (2018) who argue "firms with better ESG disclosure could be more attractive to both financial investors and other major stakeholders." In Ozili (2021) it is discussed whether regulating the sustainable finance sector will be beneficial or work counterproductive. It states that although regulations are a good idea, it must be done correctly in a manner that is rewarding and motivating. However, strict regulation can work adversely as there already exists many regulations within the financial sector, which can increase the burden on financial institutions. Thus, the proposed solution should be through light touch regulation and to make ESG disclosures voluntary (Ozili, 2021).

Through examination of the data presented in table 1 and table 2, major differences between the two tables have been identified. The first notable difference is the decline in frequency of papers lacking a specific definition for sustainable finance becomes evident. Table 1 presents 11 papers wherein no explicit definition of sustainable finance is provided. Conversely, table 2 shows only four instances are found where a definition for sustainable finance is absent. This contrast demonstrates that, over time, the number of articles that fail to present a comprehensive definition of sustainable finance has significantly decreased. These results suggest that the significance of defining sustainable finance within scholarly discourse is being increasingly acknowledged and accepted across the academic community.

Moreover, there is a clear distinction between the approaches to investing between the oldest papers and most recent papers. Table 1 shows that earlier approaches are primarily focused on social responsibility and sustainability reporting as essential components of financing approaches. On the other hand, the more recent articles included in table 2, demonstrate a noticeable shift in focus, emphasizing the significance of value creation for investors and businesses that combine Environmental, Social, and Governance (ESG) factors. Additionally, the results show that modern businesses use ESG concerns as an essential basis for the creation of investment strategies.

This finding indicates a shift in the way investing approaches are conceptualized and put into practice, with a growing focus on the integration of ESG factors and the aim of overall value creation.

4.2 Answering the research question

The analysis of literature and the subsequent findings have facilitated the attainment of an answer to the underlying research question: *To what extent does the implementation of sustainable finance affect the decision-making of financial institutions regarding investments?*

The implementation of sustainable finance by financial institutions has been shown by multiple studies to have positive effects on firm value. Firms with better ESG disclosure could potentially be more attractive to both financial investors and other major stakeholders. The resulting improved relationship between firms and their stakeholders will financially benefit the former in the long run (Li et al., 2018).

In addition, firms with good ESG scores are commonly perceived as possessing reduced investment risk, while those with lower scores are viewed as having increased investment risk (Kilic et al., 2023). Financial institutions that successfully incorporate ESG risks and opportunities into their investment strategy are likely to improve their returns while at the same time reducing their vulnerability to risk (Indahl & Jacobsen, 2019).

In conclusion, the implementation of sustainable finance exerts a positive influence on financial institutions by enhancing firm value and mitigating investment risk, ultimately leading to enhanced performance and resilience in the marketplace.

4.3 Limitations of Research

This research includes numerous of intrinsic limitations, among which is the use of a specific search query combined with exclusion criteria. This restriction results from the carefully selected and generated search phrases and criteria used to identify relevant information. The review's ability to cover the whole breadth and depth of the literature is inevitably constrained by the emphasis of the search query and the use of exclusion criteria. As a result, this restriction can unintentionally lead to the exclusion of relevant studies that could offer insightful contributions to this concern.

The second limitation with the methodology used in this research, is the time limitations that prevented a thorough examination of all relevant research within the restrictions of the literature review. It was impractical to incorporate every potentially relevant paper relating to the research issue given the constrained timeframe available for performing the review. As a result, it is possible that some papers were overlooked that would have offered insightful information or different viewpoints.

Finally, there is a specific required total length of the thesis. Strategic decisions had to be made about which research to include, perhaps leaving out some important articles. As a result, the thoroughness of the review's scope might be compromised, prohibiting a full analysis of all the relevant literature.

5. CONCLUSION

In conclusion, this literature review explored the effects of implementing sustainable finance practices on the decision-making processes of financial institutions. The findings indicate that the rise of sustainable finance has revolutionized investment decision-making, with traditional strategies giving way to those that incorporate environmental, social, and governance (ESG) considerations. These new approaches extend beyond financial value, recognizing the importance of ESG factors in financial decision-making. Companies that provide better ESG disclosure have the potential to attract both financial investors and other major stakeholders, leading to enhanced relationships and long-term financial benefits. Although a standardized framework for understanding sustainable finance is absent, there is a common thread emphasizing the incorporation of ESG principles into financial and investment decision-making processes. There is a noticeable shift in how financing approaches are conceptualized and implemented, emphasizing the integration of ESG factors and overall value creation.

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8. APPENDICES

Table 1: The oldest 20 papers

Study	SF Definition	Area of Applications	Market	Investing Approach	Theories connected to SF
Patience Pays off – corporate social responsibility and long-term stock returns (Dorfleitner et al., 2018)	N. A	Corporate social responsibility	International Market	CSR investments generate better long-term results	ESG scores Agency theory
Sustainable finance ratings as the latest symptom of 'rating addiction (Cash, 2018)	Finance that meets the social, environmental, and livelihood needs of the present generation without compromising the ability of future generations to meet their own needs	Rating addiction Sustainable Finance	International Market	Socially responsible investment (SRI) Principles for Responsible Investment initiative (PRI)	Triple bottom line
Engagement on ESG issues by Dutch pension funds: is it reaching its full potential? (Wagemans et al., 2018)	N. A	Dutch Pension funds	Dutch Market	Socially responsible investment (SRI) Principles for Responsible Investment initiative (PRI)	Engagement Theory of stakeholder salience Social network analysis
The impact of environmental, social, and governance disclosure on firm value: The role of CEO power (Li et al., 2018)	N. A	CEO power ESG Disclosure of businesses	FTSE 350 listed firms	Good ESG disclosure	Stakeholder theory Available funding or affordability theory
The impact of social, environmental, and corporate governance disclosures on firm value: Evidence from Egypt (Aboud & Diab, 2018)	N. A	ESG disclosure in emerging markets Egyptian stock exchange	Egyptian market 2007-2016	Linking ESG to firm value More voluntary environmental disclosure Higher quality environmental disclosure generates higher ROA than competitors	Principles of Corporate Governance Positive implication of CSR disclosures on firm value
Why and How Investors Use ESG Information: Evidence from a Global Survey (Amel-Zadeh & Serafeim, 2017)	Consideration of ESG information in their investment allocations	ESG information for investing.	International market	Principles for Responsible Investment (PRI) ESG disclosures Signatories to the UN Principles for Responsible Investment (PRI)	Sustainability reporting Corporate Social Responsibility (CSR)
Information vs knowledge: Corporate accountability in	N. A	Accounting literature Information usage	Nordic market/investors	Socially responsible investment (SRI)	Agency theory

environmental, social, and governance issues (Du Rietz, 2018)				Principles of responsible investment (PRI)	
Corporate Board Diversity and Sustainability Reporting: A Study of Selected Listed Manufacturing Firms in Nigeria (Anazonwu et al., 2018)	N. A	Corporate Board Diversity Sustainability Reporting	Nigeria	Corporations are increasingly pressured to report on additional issues, such as governance, social responsibility, and intellectual capital	Board diversity Sustainability reporting
Signals for 2 degrees C: the influence of policies, market factors and civil society actions on investment decisions for green infrastructure (Mielke, 2019)	Finance flows must be redirected towards sustainable, low-carbon and climate-resilient infrastructures as well as technologies	Green infrastructure and financing	European Market	Green financing/investment Green infrastructure investment decisions Green bonds brought higher returns	Barriers of green finance Solutions to barriers of green finance
Sovereign bond yield spreads and sustainability: An empirical analysis of OECD countries (Capelle-Blancard et al., 2019)	Investors may use ESG performance as a signal for the risk of losses when they consider lending money	Literature on sovereign bond yields	OECD countries	ESG performance signals a country's long-term orientation and is a buffer against shocks. Countries with good ESG performance may have lower default risk and, hence, lower costs of debt.	Relationship between ESG performance and sovereign bond spreads ESG ratings
Sustainable finance: political challenges of development and implementation of framework conditions (Kemfert & Schmalz, 2019)	Sustainable finance aims to promote sustainable investments while providing the necessary resources for the transformation of our society.	Sustainable Finance	German Market	Action plan for financing sustainable growth	Corporate Social Responsibility (CSR) CRA (Carbon Risk Assessment) Challenges in a green financial world
Assessment of the Influence of Foreign Directors on Integrated Sustainability Reporting of Consumer Goods Firms Listed on Nigerian Stock Exchange (Onyali & Okafor, 2019)	Inclusion of of social, environmental and governance issues in financial decision making	Nigerian stock exchange	Nigerian Market	Organizations are beginning to see the connection between long–term competitiveness, sustainability challenges and corporate sustainability policy	Integrated sustainability reporting
Private Equity 4.0: Using ESG to Create More Value with Less Risk (Indahl & Jacobsen, 2019)	Investing considering ESG conditions	Private Equity	Firm: Summa Equity	Private equity firms that successfully incorporate ESG risks and opportunities into their investment strategy are likely to improve their returns	UN Sustainable Development Goals ("SDGs") as a framework for assessing investments

				and reduce their vulnerability to risk.	
The financial and market consequences of environmental, social and governance ratings the implications of recent political volatility in Egypt (Aboud & Diab, 2019)	N. A	ESG ratings	Egyptian market	Firms with high-quality ESG practices enjoy higher stock liquidity, more trading activities, and higher return on assets	Sustainability index called the S&P/EGX founded in the effort to enhance ESG disclosures in Egypt
Corporate Governance, ESG, and Stock Returns around the World (Khan, 2019)	N. A	Corporate Governance ESG	Global Market	Good corporate governance is important for efficient capital allocation and for the preservation and growth of capital	Corporate Governance ESG
Investing for long-term value creation (Schoenmaker & Schramade, 2019a)	Financing considering ESG conditions	Investing	International market	Long-term value creation, aims to optimize its financial, social, and environmental value in the long term	The internalization of externalities is a dynamic process. Efficient markets hypothesis Portfolio theory
An Exploratory Study Based on a Questionnaire Concerning Green and Sustainable Finance, Corporate Social Responsibility, and Performance: Evidence from the Romanian Business Environment (Raluca Gh. Popescu & Popescu, 2019)	N. A	Sustainable Finance	Romanian Market	Creating a general framework for “green” and “sustainable finance”	Corporate social responsibility Non-financial performance
Competitiveness as a Decisive Criterion for Sustainability (Matolcsy, 2020)	N. A	Sustainability and Competitiveness	Hungarian Market	Competitiveness and sustainability are inseparable concepts. Competitiveness cannot be interpreted in the short term, and thus it cannot exist without sustainability as well.	UN’s Sustainable Development Report MNB’s Competitiveness Index
Challenges to Social Protection and Social Cohesion in Crisises in the Financial Sector (Terták & Kovács, 2020)	N. A	Crisis’s in the Financial Sector	Hungarian market	Fund projects that are also satisfying sustainable development and climate protection.	Social responsibility of the economic actors
Environmental, social and	Concept of the commitment of	ESG practices	Islamic market, Shariah firms	Strive to achieve a balance between	Stakeholder theory Agency theory

governance (ESG) practices and performance in shariah firms: agency or stakeholder theory? (Peng & Isa, 2020)	businesses to maximise the economic benefits of shareholders while protecting the interests of all stakeholders in terms of the ESG dimensions.			providing sufficient return to their shareholders, while, at the same time, not neglecting their social responsibilities and commitment to their various other stakeholders	Corporate management theory

Table 2: The 20 newest papers

Study	SF Definition	Area of Applications	Market	Investing Approach	Theories connected to SF
An impact investment strategy (Juddoo et al., 2023)	Usage of the Sustainability Accounting Standards Board disclosures (SASB)framework as a guide for ESG reporting	Corporate Social responsibility Tax avoidance	London Stock Exchange (LSE) from 1999 to 2021	Investments made with the aim to generate positive, measurable social and environmental impact alongside a financial return	Impact investing Corporate social responsibility ESG scoring
Relative corporate social performance and cost of equity capital: International evidence (Lynch & O'Hagan-Luff, 2023)	Sustainable finance emphasizes the consideration of material ESG issues in investment decisions, recognizing their potential impact on financial performance and aligning financial goals with long-term sustainable outcomes	Corporate social performance Cost of equity capital	25,938 firm-year observations during the period 2002–2021	An increase in sustainable investment may provide an avenue through which capital markets can provide a financial incentive for firms to improve their CSP, reducing the potential negative impacts and improving the positive impacts of business on society.	Stakeholder Theory Inverse relationship between CSP and the cost of equity
Improving the benchmarking of ESG in real estate investment (Newell et al., 2023)	Integration of ESG factors into investment portfolio strategies	ESG in real estate	Real estate industry	Incorporating various ESG factors and supporting the UN's Sustainable Development Goals sees a better alignment for investors and the broader objectives of society, acting in the long-term interests of all stakeholders	UN Finance Initiative Principles for Responsible Investment (PRI) Green Building Councils and the international initiative for a sustainable built environment ESG benchmarking in real estate
Country environmental, social and governance performance and economic growth: The international evidence (Wang et al., 2023)	N. A	Country's ESG performance and economic growth	International market	The economic benefit of country-level ESG efforts is driven mainly by the country's efforts toward environmental protection and institutional governance.	The concept of sustainable development Environmental Kuznets curve hypothesis
The Impact of Sustainability Practices on Share Performance with Mediation of Board Members Experience: A Stud(Bhatti & Sulaiman,	Sustainable finance refers to a set of principles and practices within the field of management that emphasize the integration of social, economic, and environmental	Sustainability practices	Malaysian Market from 2017-2020	The adoption of sustainability practices, such as environmental, social, and economic practices	Corporate social responsibility Sustainability reporting

2023)panies (Bhatti & Sulaiman, 2023)	considerations into business operations.				
Sustainability Initiatives, Knowledge-Intensive Innovators, and Firms' Performance: An Empirical Examination (Bhaskaran, 2023)	Sustainable finance focuses on the ESG perspectives of financial activities, with the aim of achieving a competitive advantage and improving business performance	Sustainability initiatives Firms' performance	Companies listed in Forbes World's Most Innovative Companies 2019 and BCG's 50 Most Innovative Companies 2019	Sustainability strategies elicit a positive effect on the implementation of environmental and social innovations, and environmental innovations have a positive effect on all measurements of firms' performance outcomes	Sustainable Innovation The triple bottom-line concept of sustainable organization Corporate sustainability
Are polluters shunned? A study on the institutional ownership and returns of polluter stocks (Tirodkar & Berkman, 2023)	Consideration of ESG while addressing financial decisions	Pollution by firms	Firm emissions of pollutants	Investors that consider ESG within their investment decisions are motivated by some combination of the expected financial performance of their ESG strategy, or investment "value, "and their ethical beliefs, or investor "values."	Non-financial information contained within firm ESG characteristics
The contributions of betas versus characteristics to the ESG premium (Ciciretti et al., 2023)	The incorporation of ESG characteristics in investment decision	ESG Premium	Firm level market	Socially responsible investment (SRI) might reduce exposure to e.g., stakeholder risk, by reducing stakeholder frictions	ESG Premium Green assets
Return and risk spillovers between the ESG global index and stock markets: Evidence from time and frequency analysis (Kilic et al., 2023)	Considering ESG factors in the inclusion of securities in the portfolio.	Socially responsible and impact investments	MSCI ESG global index and equity markets	To meet the social, ethical, ecological, and economic interests of investors, socially responsible investing (SRI) is an investment approach that combines social and/or environmental benefits with financial rewards	Types of ESG investments Corporate Social Responsibility Ethical investments SRI measures/portfolios Green bonds
ESG, risk, and (tail) dependence (Bax et al., 2023)	N. A	ESG ratings	United States market	Companies are awarded large scores for ESG responsible behaviour but are awarded low scores for ESG irresponsible behaviour.	Socially responsible investments Non-financial data Corporate social responsibility (CSR) ESG score/rating

The impact of ESG risks on corporate value (Cohen, 2023)	Investors being more aware of ESG issues and demand actions to mitigate the risks associated with them	Linkage between ESG sustainability scores to the frm's valuations.	S&P500 firms from 2019 till 2021	Embracement of environmental management, equal opportunity, work-life balance, labour rights, and other socially responsible policies as integral to the management of business risks and opportunities.	ESG disclosure Corporate environmental responsibility
The end of ESG (Edmans, 2023)	ESG factors are critical to a company's long-term(financial) value	ESG	"100 Best Companies to Work for in America"	Behavioural finance	PRI ESG
FinBERT: A Large Language Model for Extracting Information from Financial Text (A. H. Huang et al., 2023)	N. A	Extracting Information from Financial Text	Global Financial Market	Training of machine learning models to classify ESG-related discussions	Language model to decipher financial text
Green finance engagement: An empirical study of listed companies on Chinese main board (Y. Huang et al., 2023)	The provision of financial support for environmentally friendly growth.	Green Finance	Chinese Market	Green finance is a core activity promoting low-carbon green growth, and it may connect and enhance all industries while also enhancing environmental quality on a global scale	Sustainability Reporting Green initiatives Green growth
Analysis of Yields and Their Determinants in the European Corporate Green Bond Market (Grishunin et al., 2023)	N. A	Green bond market	European corporate debt capital markets	Green bonds are aimed at financing or re-financing projects helping to address climate and environmental issues	Green bonds Greenium
Managerial perspectives on climate change and stock price crash risk (Jung & Song, 2023)	Integration of climate change considerations into financial decision-making processes, with the aim of promoting long-term economic stability	Manager perspective on climate change on stock price crash risk	Global Market	Firms interest in environment and climate change ultimately translates into enhanced financial performance and a reduced risk of a stock price crash	Signaling theory
Warm-glow investment and the underperformance of green stocks (Kabderian Dreyer et al., 2023)	Incorporation of CSR and ESG into financial decision making	Green finance of Stocks	International Market	Ceteris paribus, an exogenous increase in the supply of green stocks should lower their prices and raise their expected returns, causing them to outperform	SRI Warm-glow investment

How has COVID-19 affected the performance of green investment funds? (Agoraki et al., 2023)	Investments that consider ESG criteria.	Effect of COVID-19 on green assets	Data on three of the largest green investment funds	Financing of climate-friendly projects through the issuance of corporate green bonds	Green investment funds Green Bonds
ESG complementarities in the US economy (Duygun et al., 2023)	ESG initiatives are incorporated into firm performance and are treated as part of the firm's production process	ESG complementarities	US market	Usage of a green factor to measure the risk and investigate whether this risk factor can explain stock returns.	CSR Green factor Green initiatives
Renewable Governance: Good for the Environment? (Dyck et al., 2023)	Emphasis on the link between Environmental, Social, and Governance (ESG) issues and long-term firm's financial performance	Governance Board renewal	Sample of 3,293 firms from 41 countries	Investors state that environmental risks have financial implications for their portfolio firms and that these risks have begun to materialize	Board renewal mechanisms