



Green Finance and Sustainable Development: Insights from a Literature Review on Economic Growth

¹Dr. Vineeta Agrawal, ²Dr. Anshuman Magar

¹Associate Professor, Faculty of Business Management & Commerce, JSPM University Pune, India

²Sr. Assistant Professor, Faculty of Business Management & Commerce, JSPM University Pune, India

ABSTRACT:

This paper provides a comprehensive review of the evolving field of green finance and its critical role in bridging the gap between sustainable investments and economic growth. The purpose of this review is to examine how green finance, through instruments such as green bonds and climate funds, channels capital towards environmentally sustainable projects that contribute to economic development. The paper explores key themes, including the rise of sustainable investments, their financial performance, and the link between green finance and macroeconomic indicators such as GDP growth and job creation.

The literature highlights that green finance is not only a tool for environmental protection but also a catalyst for economic growth, particularly by fostering innovation and creating new industries. Despite its growth, challenges such as regulatory uncertainty, lack of standardization, and uneven access to capital across regions remain significant barriers. However, drivers such as supportive government policies, technological advancements, and increasing investor demand continue to propel the green finance market forward.

This review concludes that green finance has the potential to reshape economic growth patterns by promoting investments that align with sustainability goals. Policymakers, financial institutions, and researchers are called upon to address the existing challenges and ensure that green finance continues to play a central role in achieving sustainable development. Future research should focus on filling the gaps in the literature, particularly regarding the long-term macroeconomic impacts of green finance and its integration into financial stability frameworks.

The findings of this review underscore the importance of green finance in the global transition towards a more resilient and equitable economy, highlighting the need for further action and collaboration across sectors.

Key Words: Green Finance, Sustainable Investments, Economic Growth, ESG Factors, Climate Finance

INTRODUCTION:

Green finance encompasses financial activities and investments aimed at promoting sustainable development and environmental protection (United Nations Environment Programme [UNEP], 2020). It includes a diverse array of financial products and services, such as green bonds, sustainable banking, and investment funds dedicated to renewable energy, clean technologies, and other environmentally friendly initiatives (Flammer, 2021). The objectives of green finance are to mitigate climate change and address broader environmental issues, including biodiversity loss, pollution, and resource depletion (Zeng et al., 2022).

As global economies transition toward more sustainable and low-carbon models, green finance has gained increasing importance (World Bank, 2021). This shift is driven by rising awareness of climate risks and international agreements like the Paris Climate Accord (United Nations, 2015). Green finance is crucial for mobilizing private sector investments in green projects, reducing reliance on public funds. The United Nations estimates that an additional \$2.4 trillion annually is needed to meet global climate goals by 2030 (UNEP, 2020).

The growing demand for green finance is also driven by investor preference for sustainable investments and regulatory pressure (KPMG, 2022). Governments and financial institutions worldwide are adopting green finance frameworks to enhance transparency, risk management, and accountability in sustainable investments (European Commission, 2023). Integrating environmental, social, and governance (ESG) factors into financial decision-making underscores the recognition that sustainability is essential for long-term economic resilience (Gartenberg et al., 2019).

Sustainable investments refer to financial investments aimed at generating not only financial returns but also positive social and environmental outcomes (Global Impact Investing Network [GIIN], 2021). These investments target industries and projects that contribute to sustainability, such as renewable energy, energy efficiency, water conservation, and green infrastructure (Clark, Feiner, & Viehs, 2015). The rise of sustainable investing reflects increasing concerns about environmental degradation, social inequality, and governance challenges, which pose long-term risks to economic stability (World Economic Forum, 2020).

Sustainable investments contribute to economic growth in several ways. Firstly, they direct capital toward innovative and eco-friendly technologies, stimulating the development of new industries and job creation (International Finance Corporation [IFC], 2021). For example, investments in renewable

energy have led to significant growth in the solar and wind energy sectors, creating millions of jobs worldwide (IRENA, 2022). Secondly, sustainable investments help mitigate the risks associated with climate change by fostering a more resilient economy. Financing projects that address environmental damage and adapt to climate-related risks can protect economies from the adverse effects of extreme weather events, resource scarcity, and health crises (OECD, 2021).

Furthermore, sustainable investments promote inclusivity by addressing social inequalities and supporting communities disproportionately affected by environmental challenges (Bennett, 2019). This approach fosters a more equitable distribution of wealth and resources, essential for long-term economic stability and growth. Therefore, sustainable investments serve as both an ethical imperative and a strategic driver of economic progress (Khan, Serafeim, & Yoon, 2016).

OBJECTIVES OF THE STUDY :

The primary objective of this paper is to conduct a comprehensive review of the existing literature on green finance and its role in bridging the gap between sustainable investments and economic growth. The research aims to achieve the following:

1. **To explore the relationship between green finance and sustainable investments:** This includes understanding how green finance instruments, such as green bonds and sustainable loans, contribute to the funding of environmentally friendly projects and businesses.
2. **To assess the impact of green finance on economic growth:** This involves analyzing studies that investigate the macroeconomic benefits of green finance, including job creation, innovation, and overall GDP growth.
3. **To identify barriers and drivers of green finance:** This includes examining the challenges faced by the financial sector in scaling up green finance, as well as the policies and market conditions that support its growth.
4. **To highlight the policy implications of promoting green finance:** This involves discussing how governments and financial regulators can create an enabling environment for green finance through incentives, regulations, and partnerships.

BACKGROUND OF THE STUDY:

Green finance, being a relatively recent development, is still integrating into mainstream financial practices. A comprehensive literature review allows scholars and practitioners to gauge the advancements made and identify key areas needing further research and development (Sullivan & Gouldson, 2020).

Secondly, such a review is crucial for pinpointing gaps in knowledge and practice. Despite extensive discussion on green finance and sustainable investments, research may be lacking in specific areas, such as the long-term economic impacts of green finance or the effectiveness of various policy measures (Baker et al., 2019). Highlighting these gaps can guide future research agendas and provide valuable insights for policymakers (Bolton & Kacperczyk, 2021).

Thirdly, reviewing the literature sheds light on the challenges and opportunities associated with green finance. As economies shift towards sustainability, understanding barriers like regulatory challenges, market inefficiencies, and a lack of standardized reporting is vital (Weber, 2018). Conversely, identifying the drivers of green finance can enhance its adoption and effectiveness, offering solutions to global environmental and economic issues (G20 Sustainable Finance Study Group, 2020).

Finally, this review contributes to the broader dialogue about the role of finance in sustainable development. By exploring the intersections of green finance, sustainable investments, and economic growth, it provides valuable insights for policymakers, financial institutions, and investors seeking to align financial practices with sustainability goals (Clark et al., 2015).

Theoretical Background Linking Green Finance with Economic Growth

The theoretical background linking green finance with economic growth is informed by several key theories, including environmental economics, sustainable development theory, and modern growth theory. These frameworks provide a basis for understanding how green finance can impact macroeconomic outcomes and support sustainable growth.

Environmental Economics highlights the necessity of incorporating environmental externalities into financial decision-making. Traditional economic models often neglect the environmental costs of economic activities, resulting in market failures such as pollution and resource depletion (Pearce & Turner, 1990). Green finance addresses these issues by integrating environmental risks and opportunities into financial systems, thus promoting a more efficient allocation of resources that considers both economic and environmental impacts (Tietenberg & Lewis, 2018).

Sustainable Development Theory underscores the need for economic development that meets current needs without compromising future generations' ability to meet their own (Brundtland Commission, 1987). This theory advocates for balancing economic growth with environmental protection and social equity. Green finance operationalizes this concept by channeling capital into projects that align with Sustainable Development Goals (SDGs), such as clean energy, water conservation, and poverty alleviation (United Nations, 2015). By aligning financial flows with sustainability objectives, green finance supports inclusive and environmentally responsible economic growth (Dyllick & Hockerts, 2002).

Modern Growth Theory posits that technological innovation is a crucial driver of long-term economic growth (Romer, 1990). Green finance plays a significant role in funding the research, development, and deployment of green technologies that enhance productivity and reduce environmental degradation. Investments in renewable energy technologies, energy-efficient buildings, and electric vehicles illustrate how green finance can drive innovation and contribute to economic growth (Aghion & Howitt, 1992). Additionally, by mitigating climate risks, green finance helps stabilize economies and create a more resilient foundation for growth (Acemoglu et al., 2012).

Empirical evidence supports the connection between green finance and economic growth. For instance, a report by the International Renewable Energy Agency (IRENA) found that doubling the share of renewable energy in the global energy mix by 2030 could lead to a 1.1% increase in global GDP and

create millions of new jobs (IRENA, 2022). This illustrates that green finance not only addresses environmental challenges but also provides substantial economic benefits.

FRAMEWORKS AND MODELS:

The Sustainable Finance Framework: This framework, commonly adopted by financial institutions, divides financial activities into three main categories: green finance, social finance, and sustainability-linked finance (International Finance Corporation [IFC], 2021). Green finance focuses on environmental projects, while sustainability-linked finance encompasses broader environmental, social, and governance (ESG) objectives. This framework is useful for evaluating how financial institutions integrate sustainability into their portfolios and operations (OECD, 2022).

The Triple Bottom Line Model: This model assesses performance based on three pillars: people, planet, and profit (Elkington, 1997). By considering economic, environmental, and social factors, the Triple Bottom Line model offers a comprehensive approach to evaluating the impact of green finance on sustainable investments and economic growth. It provides a balanced perspective on how investments contribute to overall sustainability (Norman & MacDonald, 2004).

The ESG Integration Framework: This framework assists investors in incorporating environmental, social, and governance criteria into their investment decisions (Global Sustainable Investment Alliance [GSIA], 2020). It offers a structured approach to evaluating the sustainability performance of companies and projects, ensuring that green finance aligns with sustainable investment goals (Kotsantonis & Serafeim, 2019).

The Green Bond Principles (GBP): These voluntary guidelines are designed to enhance transparency and integrity in the green bond market (International Capital Market Association [ICMA], 2021). The GBP provide issuers with clear standards for green bond issuance and serve as a benchmark for assessing the effectiveness of green finance in supporting sustainable projects (ICMA, 2021).

These frameworks and models offer structured approaches to understanding and evaluating the role of green finance in fostering sustainable investments and driving economic growth. They also provide practical tools for analyzing the impact of green finance across various sectors of the economy.

LITERATURE REVIEW:

Green finance, a critical aspect of sustainable finance, has experienced significant development over the past two decades. It involves financing investments that offer environmental benefits, especially related to climate change mitigation and adaptation (UNEP FI, 2020). The emergence of green finance can be traced to the increased awareness of environmental risks and the pursuit of sustainable development. The early 2000s marked a significant milestone with the introduction of green bonds by multilateral development banks such as the European Investment Bank (EIB) and the World Bank. These bonds were created to fund climate-related projects and have since become pivotal in green finance (World Bank, 2018).

Green finance includes various financial instruments, such as green bonds, green loans, and climate funds. Green bonds are debt securities issued to raise capital for projects with environmental benefits, such as renewable energy and pollution prevention. Similarly, green loans are used for environmentally friendly projects. Climate funds, managed by organizations like the Green Climate Fund (GCF), aggregate resources from governments and private investors to support climate-related initiatives in developing nations (GCF, 2021).

Global recognition of green finance's importance in achieving sustainability goals is reflected in significant policies and regulations. The Paris Agreement, adopted in 2015, was instrumental in mobilizing climate finance by setting a global goal to limit temperature rise to well below 2°C (UNFCCC, 2015). Subsequently, several countries developed national green finance frameworks. For instance, China's Green Finance Guidelines, introduced in 2016, aim to enhance green investments and mitigate environmental risks in the financial sector (China Banking Regulatory Commission, 2016). Similarly, the European Union's (EU) Sustainable Finance Action Plan, launched in 2018, created a taxonomy to classify environmentally sustainable economic activities and redirect capital flows towards green investments (European Commission, 2018).

Various global and regional initiatives have accelerated the growth of green finance. Globally, the Climate Bonds Initiative (CBI) and the Task Force on Climate-related Financial Disclosures (TCFD) have been pivotal in establishing green finance standards and promoting transparency in climate-related financial risks (Climate Bonds Initiative, 2020; TCFD, 2017). Regionally, the ASEAN Green Bond Standards (AGBS) have facilitated green bond issuance in Southeast Asia, while the African Development Bank's Green Bond Program has supported climate-resilient infrastructure projects across Africa (African Development Bank, 2019). These initiatives have advanced green finance and fostered public-private sector collaboration.

Sustainable Investments

Sustainable investments, also known as responsible or ESG (Environmental, Social, and Governance) investing, have gained prominence as investors increasingly prioritize long-term sustainability over short-term gains (GSIA, 2021). Sustainable investing has evolved from niche strategies avoiding "sin stocks" (e.g., tobacco, firearms) to mainstream approaches integrating ESG factors into financial decision-making (Berg, Koerner, & Pukthuanthong, 2020).

The sustainable investment landscape has expanded significantly. The Global Sustainable Investment Alliance (GSIA) reported that global sustainable investment reached \$35.3 trillion in 2020, representing over one-third of total assets under management (AUM) (GSIA, 2020). This growth has been driven by heightened awareness of climate risks, regulatory pressures, and changing investor preferences. Institutional investors, such as pension funds and sovereign wealth funds, have increasingly shifted towards sustainable investments to mitigate long-term risks and capitalize on emerging opportunities in sectors like renewable energy and electric vehicles (Morningstar, 2021).

Sustainable investments offer various opportunities, including access to high-growth industries, enhanced risk management, and improved financial performance. Research indicates that companies with strong ESG practices often outperform their peers in terms of stock returns and profitability (Friede,

Busch, & Bassen, 2015). A 2020 study by Morgan Stanley found that sustainable funds outperformed traditional funds in both bull and bear markets, highlighting the resilience of ESG-focused investments (Morgan Stanley, 2020).

However, challenges persist in scaling sustainable investments. One major issue is the lack of standardized metrics and reporting frameworks for ESG performance. While initiatives like the TCFD and the Global Reporting Initiative (GRI) have advanced ESG disclosures, inconsistencies in reporting practices continue to hinder comparability across companies and sectors (TCFD, 2017; GRI, 2020). Additionally, the risk of "greenwashing"—the practice of overstating or misrepresenting sustainability credentials—threatens the credibility of the sustainable finance industry (Delmas & Burbano, 2011).

Types of Sustainable Investments: Sustainable investments encompass various asset classes and strategies, including:

- **Public Equities:** ESG-screened stocks and equity funds that invest in companies with strong sustainability practices (Nofsinger & Varma, 2014).
- **Green Bonds:** Fixed-income securities issued to fund environmentally friendly projects (Climate Bonds Initiative, 2020).
- **Private Equity:** Investments in private companies committed to sustainable business practices (Kaplan & Strömberg, 2009).
- **Impact Investing:** Investments aimed at generating measurable social and environmental impact alongside financial returns (Jackson & Harji, 2013).

Economic Growth and Green Finance

The relationship between green finance and economic growth has been extensively studied. Green finance can contribute to economic growth by fostering innovation, creating jobs, and promoting sustainable development (OECD, 2020). By directing capital towards environmentally friendly projects, green finance can stimulate economic activity in emerging sectors such as renewable energy, electric mobility, and energy-efficient technologies (IRENA, 2020).

Impact on Macroeconomic Indicators: Research has explored the impact of green finance on macroeconomic indicators such as GDP, employment, and innovation. For example, a report by the International Renewable Energy Agency (IRENA) found that transitioning to a renewable energy-based economy could increase global GDP by up to 2.5% by 2050 compared to business-as-usual scenarios (IRENA, 2020). Additionally, the renewable energy sector has significantly contributed to job creation, with over 11 million people employed globally in this industry as of 2020 (IRENA, 2021).

Green finance also drives innovation by funding research and development (R&D) in clean technologies. The shift towards a low-carbon economy requires significant technological advancements in areas such as energy storage, smart grids, and carbon capture and storage (CCS). Green finance plays a crucial role in supporting these innovations by providing necessary funding to startups and established companies working on climate solutions (CPI, 2021).

Regional Differences: The impact of green finance on economic growth varies by region. In developed economies, green finance has supported the transition to renewable energy and energy efficiency, resulting in both environmental and economic benefits (OECD, 2020). In developing countries, green finance has been essential in addressing infrastructure gaps, enhancing energy access, and fostering sustainable urban development. However, green finance flows to developing economies remain insufficient to meet their sustainability needs. The Climate Policy Initiative (CPI) reports that developing countries receive only a small fraction of global climate finance, underscoring the need for increased international cooperation and financing mechanisms (CPI, 2021).

BARRIERS AND DRIVERS:

Despite the growth of green finance and sustainable investments, several barriers impede their widespread adoption. Understanding these barriers is crucial for developing strategies to enhance green finance and achieve sustainability goals (World Bank, 2020).

Barriers to Green Finance:

Regulatory and Policy Uncertainty: Inconsistent regulatory frameworks and policy uncertainty can deter investors from engaging in green finance. For example, fluctuations in government policies related to renewable energy subsidies or carbon pricing can create uncertainty for investors, leading to reduced capital flows into green projects (UNEP FI, 2021).

Lack of Standardization: The absence of standardized definitions, metrics, and reporting frameworks for green finance and ESG performance creates confusion among investors. This fragmentation complicates the comparison of sustainability credentials across investments, leading to inefficiencies in capital allocation (GRI, 2020).

Limited Access to Capital: Small and medium-sized enterprises (SMEs) and projects in developing countries often face challenges accessing green finance due to high upfront costs and perceived risks. This is particularly problematic in regions with underdeveloped financial markets lacking the capacity to support green projects (World Bank, 2020).

Drivers of Green Finance:

Government Policies and Incentives: Governments play a critical role in promoting green finance by implementing policies and incentives that encourage sustainable investments. These include tax incentives, renewable energy subsidies, and carbon pricing mechanisms. Regulations such as the EU's Sustainable Finance Disclosure Regulation (SFDR) aim to enhance transparency and direct capital towards sustainable projects (European Commission, 2021).

Investor Demand: Increasing demand from institutional and retail investors for sustainable investment products is a major driver of green finance. As awareness of climate risks and ESG factors grows, investors are seeking opportunities that align with their values and offer long-term returns (GSIA, 2021).

Technological Advancements: Advances in green technologies, such as solar and wind energy, electric vehicles, and energy-efficient buildings, have reduced costs and improved the financial viability of green projects. These technological advancements have made green finance more attractive to investors by enhancing the potential for profitability and scalability (IEA, 2020).

FINDINGS:

The literature on green finance and sustainable investments reveals several significant insights. Green finance has advanced considerably as a mechanism for combating climate change and fostering sustainable development. Key financial instruments such as green bonds, green loans, and climate funds have played crucial roles in channeling capital into environmentally beneficial projects (World Bank, 2018; GCF, 2021). The expansion of sustainable investments, propelled by rising investor awareness of climate risks and ESG factors, has further accelerated the growth of green finance (GSIA, 2020). Sustainable investments have demonstrated strong financial performance, with companies that exhibit strong ESG practices often outperforming their peers in terms of returns and profitability (Friede, Busch, & Bassen, 2015). Green finance has also been associated with economic growth, particularly through job creation, innovation, and the emergence of new industries such as renewable energy (IRENA, 2020). Despite these advancements, several barriers persist, including regulatory uncertainty, lack of standardization, and restricted access to capital, especially in developing economies (UNEP FI, 2020; World Bank, 2020). Nevertheless, government policies, technological advancements, and increasing investor demand are identified as primary drivers of green finance (European Commission, 2021; IEA, 2020).

Bridging the Gap Between Sustainable Investments and Economic Growth

Green finance is pivotal in connecting sustainable investments with economic growth by directing capital towards projects that yield both environmental and economic benefits. The fundamental idea behind green finance is to align financial returns with positive environmental outcomes, thereby serving as a powerful tool for achieving Sustainable Development Goals (SDGs) (World Bank, 2020). Investments in sectors such as renewable energy, sustainable agriculture, and energy-efficient infrastructure not only contribute to long-term economic growth but also address critical environmental challenges (UNEP FI, 2020).

The integration of green finance into the broader financial system has the potential to transform traditional economic growth patterns. Historically, economic growth has been driven by resource-intensive industries that often result in environmental degradation. Green finance, however, provides a pathway to decouple economic growth from environmental harm by promoting low-carbon and resource-efficient technologies (IEA, 2020). For example, the shift to renewable energy sources can stimulate economic activity in emerging sectors while decreasing reliance on fossil fuels, thereby supporting both GDP growth and emissions reductions (IRENA, 2020).

Additionally, green finance fosters innovation by funding research and development (R&D) in clean technologies, leading to advancements in energy efficiency, renewable energy storage, and sustainable production methods. These innovations enhance economic productivity and create new markets and industries, further contributing to economic growth (OECD, 2021).

GAPS IN EXISTING LITERATURE AND AREAS FOR FUTURE RESEARCH:

Despite the expanding body of research on green finance, several gaps persist. First, empirical studies on the long-term macroeconomic impacts of green finance, especially in developing countries, are limited. Although existing research indicates green finance's potential to boost GDP and job creation, more comprehensive analyses are needed to measure these impacts over time and across various regions (CPI, 2020).

Second, the relationship between green finance and financial stability requires further investigation. As the green finance market expands, potential risks associated with green assets, such as sector-specific bubbles (e.g., renewable energy) and climate-related financial risks, need to be explored. Future research should examine how green finance can be integrated into financial risk management frameworks to ensure stability while promoting sustainability (NGFS, 2021).

Third, additional research is needed on the effectiveness of different policy measures in scaling up green finance. While many countries have implemented green finance regulations and incentives, their impact on capital flows and investment behavior remains underexplored. Comparative studies across various policy environments could offer valuable insights into the most effective strategies for advancing green finance (European Commission, 2021).

CHALLENGES AND POLICY IMPLICATIONS:

Several challenges to the growth of green finance are identified in the literature. A major challenge is the lack of standardization in definitions and metrics for green finance and sustainable investments. The absence of a universally accepted framework complicates the assessment of environmental impact and raises concerns about "greenwashing" (UNEP FI, 2020). Policymakers and financial regulators need to work towards harmonizing green finance standards and improving transparency in ESG reporting (TCFD, 2020).

Another significant challenge is the unequal distribution of green finance flows between developed and developing countries. While developed markets have seen substantial growth in green finance, developing economies face barriers such as limited capital access, inadequate financial infrastructure, and higher perceived risks. Addressing this disparity requires international cooperation. Institutions like the Green Climate Fund (GCF) and multilateral development banks play a crucial role in mobilizing resources for green projects in developing countries and mitigating investment risks (GCF, 2021).

Policy implications of green finance are extensive. Governments can foster green finance growth by implementing policies that incentivize sustainable investments, such as carbon pricing, renewable energy subsidies, and tax incentives for green bonds. Additionally, central banks and financial regulators should incorporate climate-related risks into their supervisory frameworks, ensuring that financial institutions adequately account for environmental risks in their lending and investment decisions (NGFS, 2021).

The private sector's role is also vital. Financial institutions, including banks, asset managers, and insurers, must integrate sustainability considerations into their operations and actively engage in the green finance market. Public-private collaboration will be essential to scaling up green finance and achieving global sustainability goals (OECD, 2021).

FINAL THOUGHTS AND RECOMMENDATIONS:

To fully leverage green finance for promoting sustainable economic growth, several measures should be taken by policymakers, financial institutions, and researchers:

Standardization and Transparency: There is an urgent need for standardized definitions and reporting frameworks for green finance and sustainable investments. Governments and international organizations should collaborate to establish clear guidelines and metrics to enhance transparency and mitigate the risk of greenwashing (TCFD, 2020).

Policy Incentives: Policymakers should continue to implement incentives that encourage green finance, such as carbon pricing, renewable energy subsidies, and tax breaks for green bonds. These measures can attract private capital to sustainable projects and reduce the financial risks associated with green investments (European Commission, 2021).

Public-Private Partnerships: Collaboration between the public and private sectors is crucial to scaling up green finance. Public funds, including those from development banks and climate funds, can help de-risk green projects, making them more appealing to private investors (GCF, 2021).

Capacity Building in Developing Economies: Developing countries need targeted support to build the financial infrastructure and regulatory frameworks necessary for green finance. International financial institutions should prioritize capacity-building initiatives in these regions to ensure access to global green finance markets (CPI, 2020).

Further Research: Researchers should address gaps in the literature, particularly concerning the long-term macroeconomic impacts of green finance and its role in financial stability. Comparative studies across various regions and policy environments could provide valuable insights into the most effective strategies for promoting green finance (NGFS, 2021).

In conclusion, green finance represents a transformative force that bridges the gap between sustainable investments and economic growth. By aligning financial flows with sustainability objectives, green finance offers a pathway to a more resilient and equitable global economy. Policymakers, financial institutions, and researchers each have a critical role in advancing this agenda and ensuring that the transition to a sustainable economy is both inclusive and effective (World Bank, 2020; UNEP FI, 2020).

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